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CONTINUING EDUCATION
FOR FLORIDA NURSES
2021

Published by NetCE,
a division of CE Resource, Inc.
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# Medical Error Prevention and Root Cause Analysis

**This course fulfills the Florida requirement for 2 hours of education on the Prevention of Medical Errors.**

***Audience***
This course is designed for all licensed healthcare professionals.

***Course Objective***
The purpose of this course is to satisfy the requirement of the Florida law and provide all licensed healthcare professionals with information regarding the root cause process, error reduction and prevention, and patient safety.

***Learning Objectives***
*Upon completion of this course, you should be able to:*

1. Describe how the Institute of Medicine defines "medical error."
2. Describe the types of sentinel events the Joint Commission has identified.
3. Discuss what factors must be included in a root cause analysis in order for the Joint Commission to consider it "thorough" and "credible."
4. Identify what types of adverse incidents must be reported to the Florida Agency for Healthcare Administration.
5. Identify the most common sentinel events reported to the Joint Commission.
6. Evaluate the most common misdiagnoses, as recognized by the Florida Board of Medicine, and outline the safety needs of special populations, including non-English-proficient patients.

***Faculty***
**Marjorie Conner Allen, BSN, JD**, received her Bachelor of Science in Nursing degree from the University of Florida, Gainesville, in 1984. She began her nursing career at Shands Teaching Hospital and Clinics at the University of Florida, Gainesville. While practicing nursing at Shands, she gave continuing education seminars regarding the nursing implications for dealing with adolescents with terminal illness. In 1988, Ms. Allen moved to Atlanta, Georgia where she worked at Egleston Children's Hospital at Emory University in the bone marrow transplant unit. In the fall of 1989, she began law school at Florida State University. After graduating from law school in 1992, Ms. Allen took a two-year job as law clerk to the Honorable William Terrell Hodges, United States District Judge for the Middle District of Florida. After completing her clerkship, Ms. Allen began her employment with the law firm of Smith, Hulsey & Busey in Jacksonville, Florida where she has worked in the litigation department defending hospitals and nurses in medical malpractice actions. Ms. Allen resides in Jacksonville and is currently in-house counsel to the Mayo Clinic Jacksonville.

*A full Works Cited list is available online at www.NetCE.com.* ***Mention of commercial products does not indicate endorsement.***

***Faculty Disclosure***
Contributing faculty, Marjorie Conner Allen, BSN, JD, has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

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This activity was planned by and for the healthcare team, and learners will receive 2 Interprofessional Continuing Education (IPCE) credits for learning and change.

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***Special Approvals***
This course fulfills the Florida requirement for 2 hours of education on the Prevention of Medical Errors.

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## INTRODUCTION

The Institute of Medicine's (IOM) 1999 publication *To Err is Human: Building a Safer Health System*, illuminated the unfortunate reality of medical errors in the healthcare industry. The report reviewed the prevalence of medical errors in the United States and highlighted measures that should be taken to prevent them. Specifically, the authors of the report noted that at least 44,000 and perhaps as many as 98,000 Americans were dying in hospitals each year as a result of medical errors and many more were being seriously injured [1]. They further noted that, even when using the lower estimate of 44,000, deaths in hospitals due to medical errors exceeded the annual deaths attributable to motor vehicle accidents (43,458), breast cancer (42,297), or AIDS (16,516) [1]. A 2016 report stated that the average number of annual in-hospital deaths attributable to medical error might actually be much higher, at around 400,000 [2]. This report places medical errors as the third leading cause of death in the United States. Certainly, these numbers must be balanced against the millions of admissions to hospitals in the United States, which is in excess of 35 million annually [1; 3].

It does appear that some progress has been made in the past decade. The Agency for Healthcare Research and Quality found a 17% decline in hospital-acquired conditions between 2010 and 2013, or 1.3 million fewer conditions and 50,000 fewer deaths than if the 2010 rate had remained steady [4]. Though the precise mechanism(s) responsible for this decline is not clear, it occurred following a concerted effort by federal agencies, organizations, and individual providers to curtail medical errors. However, the statistics indicate that medical errors continue to be an issue. Healthcare professionals should commit to continuing to pay greater attention to evaluating approaches for reducing errors and to building new systems to reduce the incidence of medical errors.

Spurred by a commitment to reducing medical error incidents, the Florida Legislature mandates that all healthcare professionals in Florida complete a two-hour course on the topic of prevention of medical errors [5]. This continuing education course is designed to satisfy the requirements of the Florida law and provide all licensed healthcare professionals with information regarding the root cause analysis process, error reduction and prevention, and patient safety, as well as information regarding the five most misdiagnosed conditions as determined by the Florida Board of Medicine.

## DEFINING "MEDICAL ERROR"

The IOM Committee on Quality of Healthcare in America defines error as "the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim" [1]. It is important to note that medical errors are not defined as intentional acts of wrongdoing and that not all medical errors rise to the level of medical malpractice or negligence. Errors depend on two kinds of failures: either the correct action does not proceed as intended, which is described as an "error of execution," or the original intended action is not correct, which is described as an "error of planning" [1]. A medical error can occur at any stage in the process of providing patient care, from diagnosis to treatment, and even while providing preventative care. Not all errors will result in harm to the patient. Medical errors that do result in injury are sometimes called preventable adverse events or sentinel events—sentinel because they signal the need for immediate investigation and response [6].

Preventable adverse events or sentinel events are defined as those events that cause an injury to a patient as a result of medical intervention or inaction on the part of the healthcare provider whereby the injury cannot reasonably be said to be related to the patient's underlying medical condition. Thus, for example, if a patient has a surgical procedure and dies postoperatively from pneumonia, the patient has suffered an adverse event. But was that adverse event preventable; was it caused by medical intervention or inaction? The specific facts of this case must be analyzed to determine whether the patient acquired the pneumonia as a result of poor handwashing techniques of the medical staff (i.e., an error of execution), which would indicate a preventable adverse event, or whether the patient acquired the pneumonia because of age and comorbidities, which would indicate a nonpreventable adverse event.

Healthcare professionals can learn much by closely scrutinizing and evaluating adverse events that lead to serious injury or death. The evaluation of such events would also enable healthcare professionals to improve the delivery of health care and reduce future mistakes. In addition, healthcare professionals should have a process in place to evaluate those instances in which a medical error occurred and did not cause harm to the patient. By reviewing these processes, healthcare professionals are afforded the unique opportunity to identify system improvements that have the potential to prevent future adverse events. The Joint Commission, recognizing the importance of analyzing both preventable adverse events and near-misses, has established guidelines for recognizing these events and requires healthcare facilities to conduct a root cause analysis to determine the underlying cause of the event [7].

## ROOT CAUSE ANALYSIS PROCESS

The Joint Commission is a national organization with a mission to improve the quality of care provided at healthcare institutions in the United States. It accomplishes this mission by providing accredited status to healthcare facilities. Accreditors play an important role in encouraging and supporting actions within healthcare organizations by holding them accountable for ensuring a safe environment for patients. Healthcare organizations should actively engage in a cooperative relationship with the Joint Commission through this accreditation process and participate in the process to reduce risk and facilitate desired outcomes of care.

The Joint Commission defines a sentinel event as "an unexpected occurrence involving the death or serious physical or psychological injury, or the risk thereof. Serious injury specifically includes loss of limb or function. The phrase 'or the risk thereof' includes any process variation for which a recurrence would carry a significant chance of a serious adverse outcome" [6]. Root cause analysis, as defined by the Joint Commission, is "a process for identifying the basic or causal factors that underlie variation in performance, including the occurrence or possible occurrence of a sentinel event" [6].

The following subsets of sentinel events are subject to review by the Joint Commission [6]:

- The event has resulted in an unanticipated death or major permanent loss of function, not related to the natural course of the patient's illness or underlying condition

or

- The event is one of the following (even if the outcome was not death or major permanent loss of function unrelated to the natural course of the patient's illness or underlying condition):
  - Suicide of any patient receiving care, treatment, and services in a staffed around-the-clock care setting or within 72 hours of discharge
  - Unanticipated death of a full-term infant
  - Abduction of any patient receiving care, treatment, and services
  - Discharge of an infant to the wrong family
  - Rape, assault (leading to death or permanent loss of function), or homicide of any patient receiving care, treatment, and services
  - Rape, assault (leading to death or permanent loss of function), or homicide of a staff member, licensed independent practitioner, visitor, or vendor while on site at the healthcare organization
  - Hemolytic transfusion reaction involving administration of blood or blood products having major blood group incompatibilities (e.g., ABO, Rh, other blood groups)
  - Invasive procedure, including surgery, on the wrong patient or wrong site
  - Unintended retention of a foreign object in a patient after surgery or other invasive procedures
  - Severe neonatal hyperbilirubinemia (bilirubin >30 mg/dL)
  - Prolonged fluoroscopy with cumulative dose >1,500 rads to a single field or any delivery of radiotherapy to the wrong body region or >25% above the planned radiotherapy dose
  - Fire, flame, or unanticipated smoke, heat, or flashes occurring during an episode of patient care
  - Any intrapartum (related to the birth process) maternal death
  - Severe maternal morbidity

Alternatively, the following examples are events that are NOT considered reviewable under the Joint Commission's sentinel event policy [6]:

- Any close call ("near miss")
- Full or expected return of limb or bodily function to the same level as prior to the adverse event by discharge or within two weeks of the initial loss of said function, whichever is the longer period
- Any sentinel event that has not affected a recipient of care (e.g., patient, individual, resident)
- Medication errors that do not result in death or major permanent loss of function
- Suicide other than in an around-the-clock care setting or following elopement from such a setting
- A death or loss of function following a discharge against medical advice
- Unsuccessful suicide attempts unless resulting in major permanent loss of function
- Minor degrees of hemolysis not caused by a major blood group incompatibility and with no clinical sequelae

(For further definition of terms, please refer to the Joint Commission's Sentinel Event Policy and Procedures at https://www.jointcommission.org/sentinel_event_policy_and_procedures.)

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As part of the accreditation requirement, the Joint Commission requires that healthcare organizations have a process in place to recognize these sentinel events, conduct thorough and credible root cause analyses that focus on process and system factors, and document a risk-reduction strategy and internal corrective action plan that includes measurement of the effectiveness of process and system improvements to reduce risk [6]. This process must be completed within 45 days of the organization having become aware of the sentinel event.

The Joint Commission will consider a root cause analysis acceptable for accreditation purposes if it focuses primarily on systems and processes, not individual performance [6]. In other words, the healthcare organization should minimize the individual blame or retribution for involvement in a medical error. In addition, the root cause analysis should progress from special causes in clinical processes to common causes in organizational processes, and the analysis should repeatedly dig deeper by asking why, then, when answered, why again, and so on. The analysis should also identify changes that can be made in systems and processes, either through redesign or development of new systems or processes, which would reduce the risk of such events occurring in the future. The Joint Commission requires that the analysis be thorough and credible. To be considered thorough, the root cause analysis must include [6]:

- A determination of the human and other factors most directly associated with the sentinel event and the process(es) and systems related to its occurrence
- Analysis of the underlying systems and processes through a series of "why" questions to determine where redesign might reduce risk
- Inquiry into all areas appropriate to the specific type of event
- Identification of risk points and their potential contributions to this type of event
- A determination of potential improvement in processes or systems that would tend to decrease the likelihood of such events in the future, or a determination, after analysis, that no such improvement opportunities exist

To be considered credible, the root cause analysis must meet the following standards [6]:

- The organization's leadership and the individuals most closely involved in the process and systems under review must participate in the analysis.
- The analysis must be internally consistent; that is, it must not contradict itself or leave obvious questions unanswered.
- The analysis must provide an explanation for all findings of "not applicable" or "no problem."
- The analysis must include consideration of any relevant literature.

Finally, as previously discussed, after conducting this root cause analysis, the organization must prepare an internal corrective action plan. The Joint Commission will accept this action plan if it identifies changes that can be implemented to reduce risk or formulate a rationale for not undertaking such changes, and if, where improvement actions are planned, it identifies who is responsible for implementation, when the action will be implemented, and how the effectiveness of the actions will be evaluated [6].

## FLORIDA LAW

Healthcare professionals have an obligation to report adverse events to leadership and ensure that organizations have processes in place to satisfy the Joint Commission requirement. In Florida, certain serious adverse incidents must also be reported to Florida's Agency for Health Care Administration (AHCA). Florida law requires that licensed facilities, such as hospitals, establish an internal risk management program. As part of that program, licensed facilities must develop and implement an incident reporting system, which requires the development of appropriate measures to minimize the risk of adverse incidents to patients, as well as imposes an affirmative duty on all healthcare providers and employees of the facility to report adverse incidents to the risk manager or to his or her designee. The risk manager must receive these incident reports within 3 business days of the incident, and depending on the type of incident, the risk manager may have to report the incident to AHCA within 15 days of receipt of the report.

Florida Statute 395.0197 specifically defines an adverse incident as [8]:

For purposes of reporting to the agency pursuant to this section, the term "adverse incident" means an event over which health care personnel could exercise control and which is associated in whole or in part with medical intervention, rather than the condition for which such intervention occurred, and which:

a) Results in one of the following injuries:
   1. Death;
   2. Brain or spinal damage;
   3. Permanent disfigurement;
   4. Fracture or dislocation of bones or joints;
   5. A resulting limitation of neurological, physical, or sensory function which continues after discharge from the facility;

6. Any condition that required specialized medical attention or surgical intervention resulting from nonemergency medical intervention, other than an emergency medical condition, to which the patient has not given his or her informed consent; or
7. Any condition that required the transfer of the patient, within or outside the facility, to a unit providing a more acute level of care due to the adverse incident, rather than the patient's condition prior to the adverse incident

b) Was the performance of a surgical procedure on the wrong patient, a wrong surgical procedure, a wrong-site surgical procedure, or a surgical procedure otherwise unrelated to the patient's diagnosis or medical condition;

c) Required the surgical repair of damage resulting to a patient from a planned surgical procedure, where the damage was not a recognized specific risk, as disclosed to the patient and documented through informed-consent process; or

d) Was a procedure to remove unplanned foreign objects remaining from a surgical procedure.

In 2018, the Florida AHCA reported that a total of 131 deaths occurred as a result of hospital error, 20.6% of 636 adverse incidents reported for the year. The next most common incidents during this period were surgical procedure to remove foreign object from a previous surgical procedure (16.5%), transfer of the patient to a unit providing a more acute level of care due to the adverse incident (14.2%), surgical procedures unrelated to the patient's diagnosis or medical needs (10%), and surgical procedure performed on the wrong site (5.3%) [9]. The following adverse incidents must be reported to the AHCA within 15 calendar days after their occurrence [8]:

- The death of a patient
- Brain or spinal damage to a patient
- The performance of a surgical procedure on the wrong patient
- The performance of a wrong-site surgical procedure
- The performance of a wrong surgical procedure
- The performance of a surgical procedure that is medically unnecessary or otherwise unrelated to the patient's diagnosis or medical condition
- The surgical repair of damage resulting to a patient from a planned surgical procedure, where the damage is not a recognized specific risk, as disclosed to the patient and documented through the informed-consent process
- The performance of procedures to remove unplanned foreign objects remaining from a surgical procedure

Each incident will be reviewed by the AHCA, who will then determine the penalty to be imposed upon the responsible party [8]. All Florida healthcare professionals who practice in licensed facilities should familiarize themselves with these requirements and ensure that the facility in which they practice has processes in place to ensure compliance.

Unlike Florida's mandatory reporting of serious adverse incidents, the Joint Commission recommends that healthcare organizations voluntarily report sentinel events, and it encourages the facilities to communicate the results of their root cause analyses and their corrective action plans. As a result of the sentinel events that have been reported, the Joint Commission has compiled Sentinel Event Alerts. These alerts are intended to provide healthcare organizations with important information regarding reported trends and, by doing so, highlight areas of potential concern so an organization may review its own internal processes to maximize error reduction and prevention with regard to a particular issue [7].

## ERROR REDUCTION AND PREVENTION

Between 2005 and 2018, the Joint Commission reviewed 11,622 sentinel events [11]. Some events, such as fire, impacted multiple patients. Sentinel event reviews during this time period were frequently conducted for unintended retention of a foreign body; wrong-patient, wrong-site, wrong-procedure surgery; delay in treatment; operative and postoperative complications; patient suicide; patient fall; and medication error [11].

### UNINTENDED RETENTION OF A FOREIGN BODY

In 2017–2018, the most frequently reported sentinel event reported to the Joint Commission was unintended retained foreign objects [11]. The prevalence of these events has remained relatively stable since 2009, indicating that preventing these errors remains difficult for practitioners and facilities. The most commonly retained items are sponges, followed by catheter guidewires and other (a broad category encompassing a wide variety of items) [10].

In addition to harming patients and contributing to distrust in the medical system, the unintended retention of foreign objects significantly contributes to patient care costs [13]. The average total cost of care related to unintended retained foreign objects is $166,000 to $200,000 [13].

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According to the sentinel event data, the most common root causes of unintended retained foreign objects reported to the Joint Commission are [13]:

- The absence of policies and procedures
- Failure to comply with existing policies and procedures
- Problems with hierarchy and intimidation
- Failure in communication with physicians
- Failure of staff to communicate relevant patient information
- Inadequate or incomplete education of staff

## WRONG-SITE SURGERY

Operating on the wrong part of a patient's body is an obvious sign that there is a problem in the operating room system. Interestingly, wrong-site surgery occurred more commonly in orthopedic procedures than in all other surgical specialties combined. The American Academy of Orthopaedic Surgeons takes this issue seriously, and it has taken special steps to eliminate the problem. For example, it recommends that a surgeon sign their initials at the correct site of surgery with an indelible pen. Unless the initials are visible, the surgeon should not make an incision [12]. Writing "NO" in large black letters on the side not to be operated on was suggested in the past, but this is discouraged due to possible confusion with the surgeon's initials. In spinal surgery, the Academy recommends that an intraoperative radiograph and radiopaque marker be used to determine the exact vertebral level of spinal surgery [12]. Whatever the mechanism used to prevent and reduce the incidence of this error, it is clear that this is not just the surgeon's problem. All of the operating room personnel, including physicians, nurses, technicians, anesthesiologists, and other preoperative allied health personnel, should monitor procedures to ensure verification procedures are followed, especially for high-risk procedures.

Due to the prevalence of wrong-site, wrong-procedure, and wrong-person surgeries, the Joint Commission, along with more than 50 professional healthcare organizations, convened two summits to help reduce the occurrence of these errors. The first summit, convened in 2003, developed a Universal Protocol that consisted of the following: a preprocedure verification process; marking the operative/procedure site with an indelible marker; taking a "time-out" with all team members immediately before starting the procedure; and adaptation of the requirements to all procedure settings, including bedside procedures. However, the incidence of wrong-site surgeries continued to increase, and in 2007 and 2010, additional summits were organized to pinpoint barriers in compliance and discover new strategies to eliminate these errors [14]. As of 2019, the Universal Protocol has been incorporated into the National Patient Safety Goal chapter of the Joint Commission accreditation manual [15].

## DELAYS IN TREATMENT

According to the Joint Commission, more than half of all reported delays in treatment sentinel events in 2010–2014 resulted in patient death [16]. It is important to keep in mind that delays in treatment can occur in any healthcare setting. The most common reason for a delay in treatment is misdiagnosis; however, delays can also result from delayed test results, physician availability, delayed administration of ordered care, incomplete treatment, and even inability to get an initial appointment or follow-up appointment in a timely manner [16]. The main root causes contributing to delays in treatment are inadequate assessments, poor planning, communication failures, and human factors. Recommendations from the Joint Commission include avoiding cognitive shortcuts, improving health information technology, incorporating diagnostic checklists into the electronic record, promoting provider-to-provider communication, engaging leadership in developing solutions, focusing organization attention on the scheduling process and on ordering tests and reporting test results, improving access to care, implementing a standardized communications method, maintaining adequate staffing levels, and increasing patient and family engagement/activation [16].

## OPERATIVE AND POSTOPERATIVE COMPLICATIONS

Many of the sentinel events reported to the Joint Commission regarding operative and postoperative complications occurred in relation to nonemergent procedures, such as interventional imaging and/or endoscopy, tube or catheter insertion, open abdominal surgery, head and neck surgery, orthopedic surgery, and thoracic surgery [17]. The majority of the reporting healthcare facilities cited miscommunication as the primary root cause. Other identified causes include failure to follow established procedures, incomplete preoperative assessment, inconsistent postoperative monitoring procedures, and failure to question inappropriate orders. In order to reduce the risk, reporting facilities have identified a number of strategies, including improving staff orientation and training, increasing educational opportunities for physicians, clearly defining expected channels of communication, and monitoring consistency of compliance with procedures. Healthcare facilities should review postoperative patient monitoring procedures to ensure an adequate level appropriate to the needs of the patient, regardless of the setting (e.g., operating room, endoscopy suite, radiology department) [17]. Based upon these findings, it is clear that direct communication among healthcare providers is key to preventing operative and postoperative complications. Healthcare facilities should provide more staff education regarding preventative measures, and healthcare providers can do their part by engaging in a healthy and mutual respect for all of the members of the healthcare team [17].

## PATIENT SUICIDE

It is estimated that between 48 and 65 hospital inpatient suicides occur per year in the United States. Most of these cases (31 to 52) occur in psychiatric units or involve psychiatric inpatients. The most common method is hanging [50]. Times of care transition are particularly risky, with a 200% increase in risk in the week after discharge from a psychiatric facility; the elevated risk continues for four years [18]. Other risk factors include previous suicide attempt or self-injury, mental or emotional disorders, history of trauma or loss, serious illness or chronic pain, substance use disorder, social isolation, and access to lethal means.

The most common root cause documented for patient suicide reported between 2010 and 2014 was shortcomings in assessment, most commonly psychiatric assessment [18]. In addition, nearly 25% of behavioral health facilities accredited by the Joint Commission were found noncompliant with the requirement to conduct an adequate suicide risk assessment in 2014.

The Joint Commission has recommended a number of suicide risk reduction strategies, including [18]:

- Review each patient's personal and family medical history for suicide risk factors.
- Screen all patients for suicide ideation, using a brief, standardized, evidence-based screening tool.
- Review screening questionnaires before the patient leaves the appointment or is discharged.
- Establish a collaborative, ongoing, and systematic assessment and treatment process with the patient involving the patient's other providers, family, and friends, as appropriate.
- To improve outcomes for at-risk patients, develop treatment and discharge plans that directly target suicidality.
- Educate all staff in patient care settings about how to identify and respond to patients with suicide ideation.
- Document decisions regarding the care and referral of patients with suicide risk.

A simple review of these measures demonstrates that healthcare providers can avoid the devastating impact of an inpatient suicide by implementing fairly routine preventative strategies, such as removing harmful items and careful screening through the admission and discharge processes.

## PATIENT FALLS

Patient falls are a constant challenge in healthcare facilities. Patients who are at highest risk include the elderly, those who have an altered mental status due to chronic mental illness or acute intoxication, and those who have a history of prior falls. It is obvious from these factors that a thorough and complete patient history may be the key to identifying those at risk. The root causes of those patient falls that healthcare facilities identified as sentinel events and reported to the Joint Commission included inadequate assessment, communication failures, lack of adherence to protocols and safety practices, inadequate staff orientation, supervision, staffing levels or skill mix, deficiencies in the physical environment, and lack of leadership [19]. Risk reduction strategies to these root causes are fairly straightforward, although in practice, preventing falls is difficult. The most important are the use of a standardized assessment tool to identify fall and injury risk factors, assessing an individual patient's risks that may not have been captured through the tool, and interventions tailored to an individual patient's identified risks [19].

Because patient falls often result in morbidity, mortality, immobility, and early nursing home placement for patients, it is imperative that healthcare facilities initiate adequate fall prevention programs, which will ultimately reduce injuries. Failure to do so will result in a spiraling increase in the number of falls in healthcare facilities, particularly among the elderly who are at highest risk. As more Americans live beyond 65 years of age, the need to develop mobility protocols and programs to reduce the risk of falls and injuries for the older adult grows more urgent.

## MEDICATION ERRORS

Unquestionably, medication errors are one of the most common causes of avoidable harm to patients. These errors may occur at three critical points: when ordered by a physician, dispensed by a pharmacist, or administered by a nurse.

The National Coordinating Council for Medication Error Reporting and Prevention defines a medication error as [20]:

> Any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the healthcare professional, patient or consumer. Such events may be related to professional practice, healthcare products, procedures, and systems, including prescribing: order communication; product labeling; packaging, and nomenclature; compounding; dispensing; distribution; administration; education; monitoring; and use.

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A number of medication errors can be linked to the prescriber who continually uses potentially dangerous abbreviations and dose expressions. Despite repeated warnings by the Institute for Safe Medication Practices about the dangers associated with using certain abbreviations when prescribing medications, this practice continues. To eliminate this factor, there are fairly simple steps that can eliminate much confusion. Prescribers should [21]:

- Avoid the use of the symbol "U" or "u" but rather spell "units" when ordering drugs, such as insulin.
- Spell out medication names completely rather than using abbreviations and acronyms.
- Avoid using abbreviations for "daily" (QD), "every other day" (QOD), or "four times daily" (QID), which are easily confused.
- Use leading zeros before a decimal point (e.g., 0.2 mg instead of .2 mg), and do not use trailing zeros (e.g., 2 mg instead of 2.0 mg).
- Write out "morphine sulfate" and "magnesium sulfate" instead of using the abbreviations (MS, $MSO_4$, $MgSO_4$).

The Institute for Safe Medication Practices publishes a list of error-prone abbreviations, symbols, and dose designations online at https://www.ismp.org/Tools/errorproneabbreviations.pdf.

Other factors contributing to prescriber errors are illegible or confusing handwriting and, a frequently cited cause of many adverse and sentinel events, the failure of healthcare providers to assess risk and prevent errors. Addressing illegibility may include developing appropriate policies and procedures, tracking and trending patterns, and evaluating results through peer review committees. Improving communication might include developing protocols for the use of verbal orders to assure that those from an onsite practitioner would be limited to an emergency situation only. No verbal orders should be taken for certain medications, such as for chemotherapy, and all verbal orders should be repeated for clarification and, whenever possible, reiterated to a third person. Another method of improving communication might involve reviewing the hospital formulary in collaboration with the Pharmacy and Therapeutics Committee of the medical staff to limit, where appropriate, the number of therapeutically and generically equivalent products [22].

It has been estimated that between 0.2% and 10% of prescriptions are dispensed incorrectly [23]. The most common type of medication error is wrong drug (43.8%), followed by wrong dose (31.5%), failure to consult with prescriber (4.9%), and compounding error (3.7%) [24]. Safe medication dispensing practices may include a number of risk reduction strategies to reduce the incidence of errors that may cause harm to patients [22; 25; 54]:

- Ensure that appropriate and current drug reference texts and/or online resources are immediately available to pharmacy personnel.
- Ensure that essential patient information, such as allergies, age, weight, current diagnoses, pertinent lab values, and current medication regimen, is available to the pharmacist prior to the dispensing of a new medication order.
- Require clarification of any order that is incomplete, illegible, or otherwise questionable using an established process for resolving questions.
- Whenever possible, dispense dosage units in a ready-to-administer form.
- Dispense single-dose vials and ampoules rather than multidose vials.
- Select oral rather than injectable routes, when possible.
- Require that a pharmacist double-check all mathematical calculations for neonatal and pediatric dilutions, parenteral nutrition solutions, and other compounded pharmaceutical products.
- Create an environment for the dispensing area that minimizes distractions and interruptions, provides appropriate lighting, air conditioning, and air flow, safe noise levels, and includes ergonomic consideration of equipment, fixtures, and technology.
- Require that a second pharmacist double-check the accuracy of order entry and dose calculations for all orders involving antineoplastic agents and other high-risk drugs dispensed by the pharmacy.
- Enhance the awareness of look-alike and sound-alike medications, and use warning signs to help differentiate medications from one another, especially when confusion exists between or among strengths, similar looking labels, or similar sounding names.
- Separate look-alike and sound-alike medications in pharmacy dispensing areas or consider repackaging or using different vendors.
- Follow-up and periodically evaluate the need for continued drug therapy for individual patients.

Once again, communication is likely the key to avoiding dispensing errors. Pharmacists should work closely with their staff to ensure that proper protocols are followed, and most importantly, when questions arise regarding a prescription, the pharmacist should take the time to contact the prescriber directly to obtain clarification.

The healthcare provider who has the responsibility to administer a medication has the final opportunity to avoid a mistake. In most cases, particularly in inpatient settings, this responsibility falls to the nurse. Nurses are often taught in nursing school to review the five "rights" prior to administering any medication: the right patient is given the right drug in the right dose by the right route at the right time [26]. Medication errors generally fall into four categories, which mimic these five "rights." The first is the failure to follow procedural safeguards, such as ensuring that essential patient information, including allergies, age, weight, and current medication regimen, is available. The second is unfamiliarity with a drug. In one case, a jury determined that a nurse was negligent for giving a drug without having reviewed the literature, which stated that the necessary precautions for the administration of the drug required the specialized skill of an anesthesiologist. The third category of drug administration is failure to use the correct mode of administration. A nurse in Delaware was held liable for administering a medication by injection after an order had been written to change the route to oral. The final category involves failure to obtain clarification if an order is incomplete, illegible, or otherwise questionable. In a case tried in Louisiana, a nurse was held liable for administering a medication that a physician ordered, notwithstanding that the dose was excessive. The nurse's administration of the drug led to the patient's death [27].

In addition, healthcare facilities should implement appropriate guidelines, policies, and procedures to ensure safe medication administration practice. These policies should require that staff members who administer medications [25; 54]:

- Are knowledgeable about the drug's uses, precautions, contraindications, potential adverse reactions, interactions, and proper method of administration
- Resolve questions prior to medication administration
- Only administer medications that have been properly labeled with medication name, dose to be administered, dosage form, route, and expiration date
- Utilize a standard medication administration time schedule and receive education on how and when to incorporate newly started medication orders safely into the standardized schedule
- Have a second person verify a dosage calculation if a mathematical calculation of a dose is necessary
- Receive adequate education on the operation and use of devices and equipment used for medication administration (for example, patient-controlled anesthesia pumps and other types of infusion pumps)
- Have another person double-check infusion pump settings when critical, high-risk drugs are infused
- Document all medications immediately after administration

Finally, healthcare facilities should have proper quality assurance measures in place to monitor medication administration practices. Included among these would be protocols and guidelines for use with critical and problem-prone medications to help optimize therapies and minimize the possibility of adverse events and to integrate "triggers" to indicate the need for additional clinical monitoring [25].

It is important to note that the pediatric population is especially vulnerable to medication errors. When children are prescribed adult medications, care must be taken to adjust dosage according to weight, requiring the physician to use pediatric-specific calculations. Also, many healthcare settings are not trained to care for the pediatric patient. Intolerance due to physiologic immaturity is also a factor in adverse response to medications, and in many cases, this population cannot communicate their discomfort due to adverse reactions. Risk reduction strategies include standardizing and effectively identifying medications and processes for drug administration, ensuring pharmacy oversight, and using technology, such as medication dispensing programs, infusion pumps, and bar-coding, judiciously [28].

## COMMON MISDIAGNOSES

As Florida healthcare professionals, it is important to be aware that in addition to wrong-site/wrong-procedure surgery, several medical conditions also continue to be misdiagnosed. As of 2020, the Florida Board of Medicine has determined the five most misdiagnosed conditions to be [29]:

- Cancer-related conditions
- Neurologic conditions
- Cardiac-related issues
- Obstetric/gynecologic conditions
- Gastroenterology-related issues

It is important to be aware of the possibility of misdiagnosis and incorporate this knowledge into practice.

### Cancer

The early detection and diagnosis of cancers is crucial for selecting the appropriate treatment approach and to ensure an optimum outcome. However, an estimated 12% of cancer patients are initially misdiagnosed, and the missed or delayed diagnosis of cancers remains a significant cause of medical malpractice claims [30; 31]. The causes of missed diagnoses vary widely among cancers in different parts of the body. In many cases, patients who do not fit the typical profile for a specific cancer (e.g., young age) may be underdiagnosed, and it is important that cancer is considered as part of the differential diagnosis in ambiguous cases [31; 32; 33]. In order to prevent missed or delayed cancer diagnosis, practitioners may take steps to ensure adherence to clinical guidelines for screening and diagnosis, use tools to facilitate communication, and engage strategies to ensure appropriate follow-up [55].

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### Neurologic/Spinal Cord-Related Conditions

Delayed or missed diagnoses of neurologic conditions may result in serious morbidity and mortality. Headaches are a common presenting condition in acute and primary care, and an estimated 5% of all patients admitted to emergency departments have neurologic symptoms [34]. Acute headache with neurologic symptoms may be misdiagnosed as stroke [35]. In addition, missed spinal fracture diagnoses are one of the leading causes of malpractice claims against radiologists [48].

One of the most common neurologic conditions is headache; however, it has been estimated that 50% of migraine patients remain undiagnosed or misdiagnosed, and only a small number (8% to 10%) of individuals with migraine take migraine-specific medications such as triptans or ergotamines [65; 66]. Patients suffering from daily migraines may be misdiagnosed with chronic sinusitis or rhinitis and repeatedly and unsuccessfully treated with broad-spectrum antibiotics [67; 68]. The diagnosis of migraine is based solely on a constellation of signs and symptoms, and a comprehensive medical and neurological examination is required to exclude secondary headache [69]. Useful evidence-based clinical guidelines for migraine screening have been developed and are summarized in the mnemonic POUND: pulsatile headache; one-day duration (4 to 72 hours); unilateral location; nausea or vomiting; and disabling intensity [70]. Competence of the clinician and effective communication with the patient play a crucial role in the diagnosis of migraine.

### Cardiac-Related Issues

The clinical presentation of chest pain has many possible etiologies, ranging from benign (e.g., panic/anxiety, pneumonia, peptic ulcer, gastroesophageal reflux disease, and pericarditis) to life-threatening (e.g., pulmonary embolism, acute coronary syndrome [ACS], aortic dissection, and pneumothorax). In many cases, it is best to rule out the more urgently threatening possibilities before testing for other causes.

Of the potentially life-threatening causes of chest pain, ACS is the most prevalent. Although a large percentage of individuals with suspected ACS will be seen initially in emergency departments, patients in any healthcare setting, regardless of other diagnoses, may abruptly develop chest pain suspicious for ACS. When a patient presents with clinical signs suspicious for myocardial infarction, immediate medical intervention is directed at confirming a diagnosis and stratifying the person's risk for adverse events such as cardiac arrest and severe/significant damage to the myocardium [41]. It is important to note that while some patients will present with classic ACS-related chest pain (tightness, sensation of pressure, heaviness, crushing, vise-like, aching pain in the substernal or upper left chest), many patients, particularly women and older patients, will present with "atypical" ACS-related chest pain [45; 46]. Words commonly used to describe "atypical" chest pain associated with ACS include numbness, tingling, burning, stabbing, or pricking. Atypical chest pain location includes any area other than substernal or left sided, such as the back, area between shoulder blades, upper abdomen, shoulders, elbows, axillae, and ears [43; 44; 45; 46]. Aside from atypical clinical presentation, other possible causes of missed ACS diagnosis include failure of interpretation of the history, failure to correctly interpret the electrocardiogram, failure to perform an electrocardiogram when necessary, and lack of proper use of cardiac enzyme test [47].

### Obstetric/Gynecologic Conditions

A study describing the implementation of mandatory day-of-surgery human chorionic gonadotropin (hCG) pregnancy testing in women undergoing elective orthopedic surgery found that it was an effective method of identifying unrecognized pregnancies [36]. Although the American Society of Anesthesiologists has concluded that the evidence is inadequate to recommend routine pre-anesthesia pregnancy testing, they do state that, "pregnancy testing may be offered to female patients of childbearing age and for whom the result would alter the patient's management" [37]. It is important that testing be completed with informed consent, in order to protect the patient's autonomy and right to privacy, and that the findings of testing or decline to test are recorded in the patient's record [38].

Ectopic pregnancy, or the implantation and growth of fetus and placenta outside the uterine cavity, is the leading cause of pregnancy-related deaths in the first trimester, accounting for 9% to 15% of all maternal deaths in early pregnancy [39; 40]. A woman's reproductive future also may be compromised by ectopic pregnancy. Ectopic pregnancy may present with symptoms similar to other conditions, and the differential diagnoses may include appendicitis, salpingitis, spontaneous abortion, ovarian cyst, ovarian torsion, urinary tract infections, degenerating uterine fibroids, and normal pregnancy. Early detection can ensure that treatment is begun prior to tubal rupture, reducing the risk of major complications and future infertility. Missed diagnoses are associated with intra-abdominal hemorrhage, need for laparotomy, blood transfusion, and death [42].

### Gastroenterology-Related Conditions

Gasteroenterologic conditions may present with nonspecific complaints (e.g., abdominal pain, nausea) common to a variety of illnesses, complicating and delaying diagnosis. In one study of patients with pancreatic cancer, more than 30% were initially misdiagnosed, most commonly with gall bladder disease [71]. Diagnosis and screening for GI disorders may be complicated by a lack of definitive test (e.g., irritable bowel syndrome) or by limits on screening recommendations (e.g., colorectal cancer). However, delayed diagnosis can lead to worsening conditions and poorer prognosis.

In general, gastrointestinal syndromes/symptoms may be classified into three general diagnostic categories: organic, motility, or functional disorders [72; 73]. Functional GI disorders are idiopathic disorders of gut-brain interaction and, unlike organic and motility disorders, diagnosis involves identification of symptom clusters. As such, misdiagnosis is more common.

Another important consideration is GI symptom-specific anxiety, an important perpetuating factor that describes threatening interpretation and out-of-proportion behavioral response to GI sensations. This anxiety to real GI symptoms and the frequency of psychiatric comorbidity can lead to functional GI syndromes being dismissed as psychological or psychosomatic in nature.

## OTHER CONSIDERATIONS FOR PATIENT SAFETY

The most important issue to improving patient safety is being aware of the particular safety hazards that may exist for various patient populations and on particular specialty units. In addition, education of the patient and the family should be a priority.

Infants and young children are not developmentally or cognitively able to participate in care and decision making, thus putting them at higher risk, especially for medication errors. In addition, when a medication error occurs in this population, infants and young children are at higher risk because of their physical immaturity and increased sensitivity to the effects of drugs. The family or guardian of a pediatric patient should be encouraged to ask questions, especially if something seems wrong. In addition, a meta-analysis found that computerized provider order entry with clinical decision support reduced pediatric medication errors by 36% to 87% [51]. As such, the adoption of electronic support systems may help to reduce or eliminate these errors.

An estimated 30% of individuals 65 years of age or older who are living in the community fall each year [52]. Older patients may have poor vision, as a result of cataracts, glaucoma, and/or macular degeneration, and cardiovascular problems, which might result in syncope or postural hypotension. These conditions may affect patients' balance and stability. Bladder dysfunction, such as nocturia, may cause an elderly patient to have to ambulate more during the night in an unfamiliar environment, thereby increasing the risk of a fall. Lower extremity dysfunctions, such as arthritis, muscle weakness, or peripheral neuropathy, may make it more difficult to ambulate at any time. In addition to being at greater risk for falls, the elderly are also more prone to medication errors as their ability to understand instructions or to recognize an unfamiliar medication may be affected by dementia or other cognitive disorders. Interventions that can help prevent falls in the elderly include exercise programs, tai chi, vision improvement (e.g., first cataract surgery), and multifactorial assessment and intervention [52].

There are also unique factors that increase the risk of medical errors on specialty units. For instance, in critical care units, patients may be suffering from environmental psychosis, which could inhibit participation in their care. This is also true of lethargic and comatose patients. These patients are at particular risk because they cannot participate in the identification process. On psychiatric wards, patients may be suicidal or depressed, which may cause them to act out or attempt to harm themselves or others. Patients may also experience orthostatic side effects due to certain psychiatric medications, which may increase the incidence of falls. Obstetric patients are at higher risk for falls because they may have decreased sensation and mobility due to administration of epidural anesthesia, and they may also suffer from excessive blood loss, which could lead to postural hypotension [49]. Again, the key is identifying the unique needs of the particular population.

With regard to education, a number of organizations have developed guidelines to facilitate the role of patients as their own safety advocates. These guidelines are not intended to shift the burden of monitoring medical error to patients. Rather, they encourage patients to share responsibility for their own safety. As healthcare professionals, we should ensure that all of our patients are familiar with these guidelines. The Agency for Healthcare Research and Quality has developed a "Patient Fact Sheet" that outlines 20 tips for patients to help prevent medical errors [53]. Although some of these suggestions may seem extreme, many patients now desire to have a more active role in their care. Some of these items have become routine or are currently required, such as consultations by pharmacists when a patient picks up a prescribed medication.

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### USE OF AN INTERPRETER

As a result of the evolving racial and immigration demographics in the United States, interaction with patients for whom English is not a native language is inevitable. Because patient education is such a vital aspect of preventing medical errors, it is each practitioner's responsibility to ensure that information and instructions are explained in such a way that allows for patient understanding. When there is an obvious disconnect in the communication process between the practitioner and patient due to the patient's lack of proficiency in the English language, an interpreter is required.

Interpreters are more than passive agents who translate and transmit information back and forth from party to party. They should be professionally trained in ethics, accuracy, completeness, and impartiality. Furthermore, it is the interpreter's role to negotiate cultural differences and promote culturally responsive communication and practice. When they are enlisted and treated as part of the interdisciplinary clinical team, they serve as cultural brokers, who ultimately enhance the clinical encounter. In any case in which information regarding diagnostic procedures, treatment options, or medication/treatment measures is being provided, the use of an interpreter should be considered.

## CONCLUSION

Although the United States has one of the top 40 healthcare systems in the world, it is apparent that the numbers of medical errors are at unacceptably high levels. The consequences of medical errors are often more severe than the consequences of mistakes in other industries. They may lead to death or to serious and long-term disability, which underscores the need for aggressive action in this area. As a starting point, we should become an active part of the solution. This will only happen if all healthcare professionals voice their concerns when they identify problems in a system or process. In addition, we should actively participate in the root cause analysis process, understanding that the goal is not to assign blame, but rather to identify how we can improve the process to provide the best quality care to our patients. Medical errors are costly, not only because patients may lose their lives or livelihoods, but also because patients lose trust in the system and colleagues lose faith in each other. To preserve the integrity of our system, we must correct this problem, and the solution begins with each of us.

**Customer Information/Answer Sheet insert located between pages 88–89.**

## COURSE TEST - #91333 MEDICAL ERROR PREVENTION AND ROOT CAUSE ANALYSIS

*This is an open book test. Please record your responses on the Answer Sheet.*
*A passing grade of at least 70% must be achieved in order to receive credit for this course.*

***This 2 contact hour activity must be completed by August 31, 2022.***

1. **The Institute of Medicine's (IOM) Committee on Quality of Healthcare in America defines error as the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim.**
   A) *True*
   B) *False*

2. **Patient rape is an example of a sentinel event subject to review by the Joint Commission.**
   A) *True*
   B) *False*

3. **A "thorough" root cause analysis is one in which the participants identify risk points and their potential contributions to this type of event.**
   A) *True*
   B) *False*

4. **A credible root cause analysis must be based upon a survey of everyone employed at the healthcare institution.**
   A) *True*
   B) *False*

5. **A wrong-site surgical procedure that did not result in the death of the patient must be reported to the risk manager within three business days according to Florida law.**
   A) *True*
   B) *False*

6. **The Joint Commission prepares and distributes Sentinel Event Alerts in order to recommend ways in which the healthcare facility can terminate employees whose actions result in a sentinel event.**
   A) *True*
   B) *False*

7. **Infant abduction is among the most common sentinel events reported to the Joint Commission.**
   A) *True*
   B) *False*

8. **The most common root cause documented for patient suicide was shortcomings in assessment, most commonly psychiatric assessment.**
   A) *True*
   B) *False*

9. **A medication error may occur when ordered by a physician, administered by a nurse, or dispensed by a pharmacist.**
   A) *True*
   B) *False*

10. **Approximately 32% of patients with cancer are initially misdiagnosed.**
    A) *True*
    B) *False*

Be sure to transfer your answers to the Answer Sheet insert located between pages 88–89.
***PLEASE NOTE: Your postmark or facsimile date will be used as your test completion date.***

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# Domestic Violence: The Florida Requirement

**This course fulfills the Florida requirement for 2 hours of Domestic Violence education every third renewal period.**

***Have you already completed your Domestic Violence requirement? You can skip this course and still receive 26 hours of continuing education.***

***Audience***
This course is designed for all Florida healthcare professionals required to complete domestic violence education.

***Course Objective***
The purpose of this course is to enable healthcare professionals in all practice settings to define domestic violence and identify those who are affected by domestic violence in the United States. This course describes how a victim can be accurately diagnosed and identifies the community resources available in the state of Florida for domestic violence victims.

***Learning Objectives***
*Upon completion of this course, you should be able to:*

1. Define domestic violence and its impact on health care.
2. Cite the general prevalence of domestic violence on a national and state level and identify state laws pertaining to the issue.
3. Describe how to screen and assess individuals who may be victims or perpetrators of domestic violence, including the importance of conducting a culturally sensitive assessment.
4. Identify community resources presently available for domestic violence victims and their perpetrators throughout Florida concerning legal aid, shelter, victim and batterer counseling, and child protection services.

***Faculty***
**Marjorie Conner Allen, BSN, JD**, received her Bachelor of Science in Nursing degree from the University of Florida, Gainesville, in 1984. She began her nursing career at Shands Teaching Hospital and Clinics at the University of Florida, Gainesville. While practicing nursing at Shands, she gave continuing education seminars regarding the nursing implications for dealing with adolescents with terminal illness. In 1988, Ms. Allen moved to Atlanta, Georgia where she worked at Egleston Children's Hospital at Emory University in the bone marrow transplant unit. In the fall of 1989, she began law school at Florida State University. (A complete biography appears at the end of this course.)

**Alice Yick Flanagan, PhD, MSW**, received her Master's in Social Work from Columbia University, School of Social Work. She has clinical experience in mental health in correctional settings, psychiatric hospitals, and community health centers. In 1997, she received her PhD from UCLA, School of Public Policy and Social Research. Dr. Yick Flanagan completed a year-long post-doctoral fellowship at Hunter College, School of Social Work in 1999. In that year she taught the course Research Methods and Violence Against Women to Masters degree students, as well as conducting qualitative research studies on death and dying in Chinese American families. (A complete biography appears at the end of this course.)

***Faculty Disclosure***
Contributing faculty, Marjorie Conner Allen, BSN, JD, has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

Contributing faculty, Alice Yick Flanagan, PhD, MSW, has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

***Division Planner***
Jane C. Norman, RN, MSN, CNE, PhD

***Division Planner Disclosure***
The division planner has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

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### *Designations of Credit*

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This activity was planned by and for the healthcare team, and learners will receive 2 Interprofessional Continuing Education (IPCE) credits for learning and change.

AACN Synergy CERP Category B.

### *Individual State Nursing Approvals*

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### *Special Approvals*

This course fulfills the Florida requirement for 2 hours of Domestic Violence education every third renewal period.

### *About the Sponsor*

The purpose of NetCE is to provide challenging curricula to assist healthcare professionals to raise their levels of expertise while fulfilling their continuing education requirements, thereby improving the quality of healthcare.

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### *Disclosure Statement*

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- Return your Customer Information/Answer Sheet and payment to NetCE by mail or fax, or complete online at **www.NetCE.com/FL21**.
- A full Works Cited list is available online at www.NetCE.com.

Sections marked with this symbol include evidence-based practice recommendations. The level of evidence and/or strength of recommendation, as provided by the evidence-based source, are also included so you may determine the validity or relevance of the information. These sections may be used in conjunction with the study questions and course material for better application to your daily practice.

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## INTRODUCTION

Domestic violence continues to be a prevalent problem in the United States today. Because of the number of individuals affected, it is likely that most healthcare professionals will encounter patients in their practice who are victims. Accordingly, it is essential that healthcare professionals are taught to recognize and accurately interpret behaviors associated with domestic violence. It is incumbent upon the healthcare professional to establish and implement protocols for early identification of domestic violence victims and their abusers. In order to prevent domestic violence and promote the well-being of their patients, healthcare professionals in all settings should take the initiative to properly assess all women for abuse during each visit and, for those women who are or may be victims, to offer education, counseling, and referral information.

Victims of domestic violence suffer emotional, psychologic, and physical abuse, all of which can result in both acute and chronic signs and symptoms of physical and mental disease, illness, and injury. Frequently, the injuries sustained require abused victims to seek care from healthcare professionals immediately after their victimization. Subsequently, physicians and nurses are often the first healthcare providers that victims encounter and are in a critical position to identify domestic violence victims in a variety of clinical practice settings where victims receive care. Accordingly, each healthcare professional should educate himself or herself to enhance awareness of the presence of abuse victims in his or her particular practice or clinical setting.

Specifically, healthcare professionals should be aware of the signs and symptoms associated with domestic violence. In addition, when family violence cases are identified, there should be a plan of action that includes providing information on, and referral to, local community resources related to legal aid, sheltering, victim counseling, batterer counseling, advocacy groups, and child protection.

## DEFINING DOMESTIC VIOLENCE

Domestic violence, which is sometimes also referred to as spousal abuse, battering, or intimate partner violence (IPV), refers to the victimization of an individual with whom the abuser has or has had an intimate or romantic relationship. Researchers in the field of domestic violence have not agreed on a uniform definition of what constitutes violence or an abusive relationship. The Centers for Disease Control and Prevention (CDC) defines IPV as, "violence or aggression that occurs in a close relationship" [1]. According to the Florida Department of Children and Families, domestic violence is "a pattern of behaviors that adults or adolescents use against their intimate partners or former partners to establish power and control. It may include physical abuse, sexual abuse, emotional abuse, and economic abuse. It may also include threats, isolation, pet abuse, using children, and a variety of other behaviors used to maintain fear, intimidation, and power over one's partner" [2]. Florida law defines domestic violence as "any assault, aggravated assault, battery, aggravated battery, sexual assault, sexual battery, stalking, aggravated stalking, kidnapping, false imprisonment, or any criminal offense resulting in physical injury or death of one family or household member by another family or household member" [3]. Family or household members, according to Florida definition, must "be currently residing or have in the past resided together in the same single dwelling unit" [3]. Domestic violence knows no boundaries. It occurs in intimate relationships regardless of race, religion, culture, or socioeconomic status [2].

Whatever the definition, it is important for healthcare professionals to understand that domestic violence, in the form of emotional and psychologic abuse, sexual abuse, and physical violence, is prevalent in our society. Because of the similar nature of the definitions, this course will use the terms "domestic violence" and "IPV" interchangeably.

## NATIONAL AND STATE STATISTICS AND LEGISLATION

Domestic violence is one of the most serious public health problems in the United States [4]. More than 36.4% of women and 33.6% of men have a lifetime history of IPV [4]. In Florida, the weighted lifetime prevalence of IPV (including rape, physical violence, and/or stalking) is 37.3% among women and 30.9% among men [5]. Although many of these incidents are relatively minor and consist of pushing, grabbing, shoving, slapping, and hitting, IPV resulted in approximately 1,300 deaths in the United States in 2017, with 162 deaths reported in Florida [7; 8]. One of the difficulties in addressing the problem is that abuse is prevalent in all demographics, regardless of age, ethnicity, race, religious denomination, education, or socioeconomic status [2].

Victims of abuse often suffer severe physical injuries and will likely seek care at a hospital or clinic. The health and economic consequences of domestic violence are significant. Statistics vary from report to report, and due to the lack of studies on the national cost of domestic violence, the U.S. Congress funded the CDC to conduct a study to determine the cost of domestic violence on the healthcare system [9]. The 2003 CDC report, which relied on data from the National Violence Against Women Survey conducted in 1995, estimated the costs of IPV by measuring how many female victims were nonfatally injured; how many women used medical and mental healthcare services; and how many

women lost time from paid work and household chores. The estimated total annual cost of IPV against women in the 1995 survey was more than $5.8 billion [9]. When updated to 2017 dollars, the amount was more than $9.3 billion annually. The costs associated with IPV at this time would be considerably more, but no further studies have been conducted [10]. It should be noted that the costs of any one victimization may continue for years; therefore, these statistics most likely underestimate the actual cost of IPV [9].

The national rate of nonfatal domestic violence against women declined 72% between 1993 and 2011 [11]. The rate of overall violent crime fell by nearly 60% in this same time period [11]. Studies reveal that several factors may have contributed to the reduction in violence, including a decline in the marriage rate and decrease of domesticity, better access to federally funded domestic violence shelters, improvements in women's economic status, and demographic trends, such as the aging of the population [13; 14]. Of note, declines in the economy and stress associated with financial hardship and unemployment are significant contributors to IPV in the United States. Following the economic downturn in late 2008, there was a significant increase in the use of the National Domestic Violence Hotline in 2009, with more than half of victims reporting a change in household financial situation in the last year [15].

## FLORIDA

In response to troubling domestic violence statistics, Governor Lawton Chiles appointed a Task Force on Domestic Violence on September 28, 1993, to investigate the problems associated with domestic violence in Florida and to compile recommendations as to how the problems should be approached and ultimately resolved. On January 31, 1994, the Task Force issued its first report on domestic violence. This report recommended standards to accurately measure the extent of domestic violence and strategies for increasing public awareness and education. It identified programs and resources that are available to victims in Florida, made legislative and budgetary suggestions for needed changes, provided a methodology for implementing these changes, and identified areas of domestic violence that require further study.

As a result of this report, Florida enacted legislation during the 1995 session implementing various suggestions of the Task Force. Specifically, the Legislature amended Section 455.222 of the Florida Statutes to require that all physicians, osteopaths, nurses, dentists, dental hygienists, midwives, psychologists, and psychotherapists obtain, as part of their biennial continuing education requirements, a one-hour continuing education course on domestic violence [17]. In June of 2006, Governor Jeb Bush signed into law House Bill 699. The bill, which went into effect July 1, 2006, changed the domestic violence continuing education requirement from one hour every renewal period to two hours every third renewal period.

In 1997, at the request of the Governor's Task Force, a workgroup was established by the Florida Department of Law Enforcement (FDLE) to evaluate the feasibility of tracking incidents of domestic violence in the state [18]. This resulted in the creation of the Domestic Violence Data Resource Center (DVDRC). The original mission of the DVDRC was to collect information related to domestic violence and to report and maintain the information in a statewide tracking system [19]. Domestic Violence Fatality Review Teams were established to examine those cases of domestic violence that resulted in a fatality and identify potential changes in policy or procedure that might prevent future deaths. The teams were comprised of representatives from law enforcement, the courts, social services, state attorneys, domestic violence centers, and others who may come into contact with domestic violence victims and perpetrators [20]. In 2000, the creation of Florida Statute 741.316 required the FDLE to annually publish a report based on the data gathered by the Fatality Review Teams [19]. Due to budgetary constraints, responsibility of compiling this data transferred to the Department of Children and Families in 2008 [21].

As part of Governor Jeb Bush's initiative, the "Family Protection Act" was signed into law in 2001. The act requires a 5-day mandatory jail term for any crime of domestic battery in which the perpetrator deliberately injures the victim. The law also makes a second battery crime a felony offense, treating offenders as serious criminals. Additional legislation, signed into law in 2002, includes Senate Bills 716 and 1974. Senate Bill 716 protects domestic violence victims by including dating relationships of six months in the definition of domestic violence laws. Senate Bill 1974 requires judges to inform victims of their rights, including the right to appear, be notified, seek restitution, and make a victim-impact statement. Governor Bush also created the Violence Free Florida campaign to increase public awareness of domestic violence issues [22].

In 2003, Governor Bush signed House Bill 1099, which transferred funding authority of the Florida Domestic Violence Trust Fund from the Department of Children and Families to the Florida Coalition Against Domestic Violence. According to the Domestic Violence in Florida 2010–2011 Annual Report to the Legislature, this has strengthened domestic violence services provided by streamlining the process of allocating funds [23].

In 2007, the Domestic Violence Leave Act was signed into law by Governor Charlie Crist [21]. This law requires employers with 50 or more employees to provide guaranteed leave for domestic violence issues.

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In 2017, the FDLE reported 106,979 domestic violence offenses [6]. In general, domestic violence rates have been declining since 1998. An estimated 20.2% of domestic violence incidents involved spouses and 28.4% involved cohabitants; 11.5% of the victims were parents of the offenders. Domestic violence offenses resulted in the death of 162 victims in Florida in 2017, a number that has been decreasing since 2014 [6]. Domestic violence accounted for more than 15% of the state's murders in 2017 [6].

In their 2018 Annual Report, Fatality Review Teams summarized 32 cases of domestic violence fatalities and near fatalities [49]. The most significant findings included the following observations [49]:

- The perpetrators were predominantly male (90%) with female victims (84%) and had prior criminal histories, generally (55%) and for domestic violence specifically (48%).
- In 32% of fatalities, the perpetrators had a known "do not contact" order filed against them, and 32% of perpetrators had a known permanent injunction for protection against them filed by someone other than the victim.
- Substance abuse histories by the perpetrator was identified in 62% of the cases and diagnosed mental health disorders in 30%.
- In most cases, neither the decedent nor perpetrator sought help from the various intervention programs available to them.

To obtain a copy of the Executive Summary of the 2018 Florida Domestic Violence Fatality Review Team Annual Report, please visit https://www.fcadv.org/sites/default/files/FACES%20OF%20FATALITY%20VIII%20web.pdf.

## IDENTIFYING GROUPS AT RISK FOR DOMESTIC VIOLENCE

Healthcare professionals are in a critical position to identify domestic violence victims in a variety of clinical practice settings. Nurses are often the first healthcare provider a victim of domestic violence will encounter in a healthcare setting and should therefore be prepared to provide care and support for these victims. Although women are most often the victims, domestic violence extends to others in the household as well. For example, domestic violence includes abused men, children abused by their parents or parents abused by their children, elder abuse, and abuse among siblings [3].

Many victims of abuse sustain injuries that lead them to present to hospital emergency departments. Research has found that 49.6% of women seen in emergency departments reported a history of abuse and 44% of women who were ultimately killed by their abuser had sought help in an emergency department in the two years prior to their death [25; 50]. Another study of 993 police-identified female victims of IPV found that only 28% of the women were identified in the emergency department as being victims of IPV [26]. These alarming statistics demonstrate that healthcare professionals who work in acute care, such as hospital emergency rooms, should maintain a high index of suspicion for battering of the patients that they see. Healthcare professionals who work in these settings should work with hospital administrators to establish and institute assessment mechanisms to accurately detect these victims.

For every victim of abuse, there is also a perpetrator. Like their victims, perpetrators of domestic violence come from all socioeconomic backgrounds, races, religions, and walks of life [27]. Accordingly, healthcare professionals should likewise be aware that seemingly supportive family members may, in fact, be abusers.

### PREGNANT WOMEN

Because a gynecologist or obstetrician is frequently a woman's primary care physician, the American College of Obstetricians and Gynecologists (ACOG) recommends that all women be routinely assessed for signs of IPV (i.e., physical and psychologic abuse, reproductive coercion, and progressive isolation), including during prenatal visits, and providers should offer support and referral information for those being abused [28]. According to the ACOG, IPV affects as many as 324,000 pregnant women each year [25]. A meta-analysis of 92 independent studies found that the average reported prevalence of emotional abuse during pregnancy was 28.4%, physical abuse was 13.8%, and sexual abuse was 8% [51]. As with all domestic violence statistics, these estimates are presumed to be lower than the actual incidence as a result of under-reporting and lack of data on women whose pregnancies ended in fetal or maternal death. This makes IPV more prevalent among pregnant women than some of the health conditions included in prenatal screenings, including pre-eclampsia and gestational diabetes [25]. Because 96% of pregnant women receive prenatal care, this is an optimal time to assess for domestic violence and develop trusting relationships with the women. Possible factors that may predispose pregnant women to IPV include being unmarried, lower socioeconomic status, young maternal age, unintended pregnancy, delayed prenatal care, lack of social support, and use of tobacco, alcohol, or illegal drugs [25; 51].

The overarching problem of violence against pregnant women cannot be ignored, especially as both mother and fetus are at risk. At this particularly vulnerable time in a woman's life, an organized clinical construct leading to immediate diagnosis and medical intervention will ensure that therapeutic opportunities are available to the pregnant woman and will reduce the potential negative outcomes [29].

Healthcare professionals should also be aware of the possible psychologic consequences of abuse during pregnancy. There is a higher risk of stress, depression, and addiction to alcohol and drugs in abused women. These conditions may result in damage to the fetus from tobacco, drugs, and alcohol and a loss of interest on the part of the mother in her or her baby's health [16; 30]. Possible direct injuries to the fetus may result from maternal trauma [25].

Control of reproductive or sexual health is also a recognized trend in IPV. This type of abuse includes trying to impregnate or become pregnant against a partner's wishes, refusal to use birth control (e.g., condoms, oral contraceptives), or stopping a partner from using birth control [4].

## CHILDREN

Children exposed to family violence are at high risk for abuse and for emotional damage that may affect them as they grow older. The Department of Justice estimates that of the 76 million children in the United States, 46 million will be exposed to some type of violence during their childhood [52]. Results of the National Survey of Children's Exposure to Violence indicated that 11% of children were exposed to IPV at home within the last year, and as many as 26% of children were exposed to at least one form of family violence during their lifetimes [31]. Of those children exposed to IPV, 90% were direct eyewitnesses of the violence; the remaining children were exposed by either hearing the violence or seeing or being told about injuries [31]. Of note, according to Florida criminal law, witnessing domestic violence is defined as "violence in the presence of a child if an offender is convicted of a primary offense of domestic violence, and that offense was committed in the presence of a child under age 16 who is a family or household member with the victim or perpetrator" [32].

A number of studies indicate that child witnesses are at increased risk for post-traumatic stress disorder, impaired development, aggressive behavior, anxiety, difficulties with peers, substance abuse, and academic problems than the average child [33; 54; 55]. Children exposed to violence may also be more prone to dating violence (as a perpetrator or a victim), and the ability to effectively cope with partnerships and parenting later in life may be affected, continuing the cycle of violence into the next generation [34; 56].

In addition to witnessing violence, various studies have shown that these children may also become direct victims of violence, and children who both witness and experience violence are at the greatest risk for adverse psychosocial outcomes [53]. Research indicates that between 30% and 60% of husbands who batter their wives also batter their children [35]. Moreover, victims of abuse will often turn on their children; statistics demonstrate that 85% of domestic violence victims abuse or neglect their children. The 2017 Crime in Florida report found that more than 16% of domestic homicide victims were children killed by a parent [6]. Teenage children are also victimized. According to the U.S. Department of Justice, between 1980 and 2008, 17.5% of all homicides against female adolescents 12 to 17 years of age were committed by an intimate partner [36]. Among young women (18 to 24 years of age), the rate is 42.9%. Abused teens often do not report the abuse. Individuals 12 to 19 years of age report only 35.7% of crimes against them, compared with 54% in older age groups [37]. Accordingly, healthcare professionals who see young children and adolescents in their practice (e.g., pediatricians, family physicians, school nurses, pediatric nurse practitioners, community health nurses) should have the tools necessary to detect these "silent victims" of domestic violence and to intervene quickly to protect young children and adolescents from further abuse. Without such critical intervention, the cycle of violence will never end.

## ELDERLY

Abused and neglected elders, who may be mistreated by their spouses, partners, children, or other relatives, are among the most isolated of all victims of family violence. In a national study conducted by the National Institute of Justice in 2010, 4.6% of participants (community dwelling adults 60 years of age or older) were victims of emotional abuse in the past year, 1.6% physical abuse, 0.6% sexual abuse, 5.1% potential neglect, and 5.2% current financial abuse by a family member [38]. The estimated annual incidence of all elder abuse types is 2% to 10%, but it is believed to be severely under-measured. According to one study, only 1 in 14 cases of elder abuse are reported to the authorities [39].

The prevalence rate of elder abuse in institutional settings is not clear. However, in a 2019 review of nine studies, 64% of elder care facility staff disclosed to having perpetrated abuse against an elderly resident in the past year [40]. In a random sample survey, 24.3% of respondents reported at least one incident of elder physical abuse perpetrated by a nursing home staff member [57].

As healthcare professionals in Florida, which leads the nation in percentage of older residents, it is important to understand that the needs of older Floridians will increase as will the numbers of elder victims of domestic violence. Because elder abuse can occur in family homes, nursing homes, board and care facilities, and even medical facilities, healthcare professionals should remain keenly aware of the potential for abuse. When abuse occurs between elder partners, it is primarily manifested in one of two ways: either as a long-standing pattern of marital violence or as abuse originating in old age. In the latter case, abuse may be precipitated by issues related to advanced age, including the stress that accompanies disability and changing family relationships [39].

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It is important to understand that the domestic violence dynamic involves not only a victim but a perpetrator as well. For example, an adult son or daughter who lives in the parents' home and depends on the parents for financial support may be in a position to inflict abuse. This abuse may not always manifest itself as violence, but can lead to an environment in which the elder parent is controlled and isolated. The elder may be hesitant to seek help because the abuser's absence from the home may leave the elder without a caregiver [39]. Because these elderly victims are often isolated, dependent, infirm, or mentally impaired, it is easy for the abuse to remain undetected. Healthcare professionals in all settings should remain aware of the potential for abuse and keep a watchful eye on this particularly vulnerable group.

The U.S. Preventive Services Task Force concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening all elderly or vulnerable adults (physically or mentally dysfunctional) for abuse and neglect. (https://annals.org/aim/fullarticle/1558517/screening-intimate-partner-violence-abuse-elderly-vulnerable-adults-u-s. Last accessed July 26, 2019.)

**Strength of Recommendation**: I (Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.)

## MEN

Statistics confirm that domestic violence is predominantly perpetrated by men against women; however, there is evidence to suggest that women also exhibit violent behavior against their male partners [4]. Studies demonstrate approximately 5% of murdered men are killed by intimate partners [36]. It is persuasively argued that the impact on the health of female victims of domestic violence is generally much more severe than the impact on the health of male victims [42]. Approximately 512,770 women were raped and/or physically assaulted by an intimate partner in 2008, compared to 101,050 men [58]. In addition, 1 in 4 women has been physically assaulted, raped, and/or stalked by an intimate partner, compared with 1 out of every 10 men [1]. Rape, non-contact unwanted sexual experiences, and stalking against men are primarily perpetrated by other men, while other forms of violence against men were perpetrated mostly by women [5]. Male victims of IPV experienced 3 victimizations per 1,000 boys and men 12 years of age or older in 1994, and this rate decreased by 64%, to 1.1 per 1,000, in 2010 [11]. Of all homicides committed against men between 1980 and 2008, 7.1% were committed by an intimate partner [36]. Although women are more often victims of IPV, healthcare professionals should always keep in mind that men can also be victimized and assess accordingly.

## LESBIAN, GAY, BISEXUAL, AND TRANSGENDER VICTIMS

Domestic violence exists in lesbian, gay, bisexual, and transgender (LGBT) communities, and the rates are thought to mirror those of heterosexual women—approximately 25% [43]. However, women living with female intimate partners experience less IPV than women living with men [6]. Conversely, men living with male intimate partners experience more IPV than do men who live with female intimate partners [6]. In addition, 78% of IPV homicide victims reported in 2017 were transgender women or cisgender men [24]. This supports other statistics indicating that IPV is perpetrated primarily by men. A form of abuse specific to the gay community is for an abuser to threaten or to proceed with "outing" a partner to others [41; 43].

Transgender individuals appear to be at particular risk for violence. According to a large national report, transgender victims of IPV were 1.9 times more likely to experience physical violence and 3.9 times more likely to experience discrimination than other members of the LGBT community [24].

In 2017, an annual national report recorded 52 incidences of hate violence-related homicides of LGBT+ people, the highest incident number recorded in its 20-year history [24]. This increasing prevalence of anti-LGBT+ violence can exacerbate IPV in LGBT+ communities. For example, a person who loses their job because of anti-trans bias may be more financially reliant on an unhealthy relationship. An abusive partner may also use the violence that an LGBT+ person experiences from their family as a way of isolating that person further [24].

Because of the stigma of being LGBT, victims may be reticent to report abuse and afraid that their sexual orientation or biologic sex will be revealed. In one study, the three major barriers to seeking help were a limited understanding of the problem of LGBT IPV, stigma, and systemic inequities [41]. Many in this community feel that support services (e.g., shelters, support groups, crisis hotlines) are not available to them due to homophobia of the service providers. Unfortunately, this results in the victim feeling isolated and unsupported. Healthcare professionals should strive to be sensitive and supportive when working with homosexual patients.

## CHARACTERISTICS OF PERPETRATORS OF DOMESTIC VIOLENCE

Abuser characteristics have been studied far less frequently than victim characteristics. Some studies suggest a correlation between the occurrence of abuse and the consumption of alcohol. A man who abuses alcohol is also likely to abuse his mate, although the abuser may not necessarily be inebriated at the time the abuse is inflicted [44]. Domestic violence assessment questionnaires should include questions that explore social drinking habits of both victims and their mates.

Other studies demonstrate that abusive mates are generally possessive and jealous. Another characteristic related to the abuser's dependency and jealousy is extreme suspiciousness. This characteristic may be so extreme as to border on paranoia [12]. Domestic violence victims frequently report that abusers are extremely controlling of the everyday activities of the family. This domination is generally all encompassing and often includes maintaining complete control of finances and activities of the victim (e.g., work, school, social interactions) [12].

In addition, abusers often suffer from low self-esteem and their sense of self and identity is directly connected to their partner [12]. Extreme dependence is common in both abusers and those being abused. Due to low self-esteem and self-worth, emotional dependence often occurs in both partners, but even more so in the abuser. Emotional dependence in the victim stems from both physical and psychologic abuse, which results in a negative self-image and lack of self-worth. Financial dependence is also very common, as the abuser often withholds or controls financial resources to maintain power over the victim [27].

## SCREENING FOR DOMESTIC VIOLENCE AND ABUSE

There is no universal guideline for identifying and responding to domestic violence, but it is universally accepted that a plan for screening, assessing, and referring patients of suspected abuse should be in place at every healthcare facility. Guidelines should review appropriate interview techniques for a given setting and should also include the utilization of assessment tools. Furthermore, protocols within each facility or healthcare setting should include referral, documentation, and follow-up. This section relies heavily on the guidelines outlined in the Family Violence Prevention Fund's *National Consensus Guidelines on Identifying and Responding to Domestic Violence Victimization in Health Care Settings*; however, protocols should be customized based on individual practice settings and resources available [35]. The CDC has provided a compilation of assessment tools for healthcare workers to assist in recognizing and accurately interpreting behaviors associated with domestic violence and abuse, which may be accessed at https://www.cdc.gov/violenceprevention/pdf/ipv/ipvandsvscreening.pdf [45].

The U.S. Preventive Services Task Force recommends that clinicians screen women of childbearing age for intimate partner violence, such as domestic violence, and provide or refer women who screen positive to intervention services. This recommendation applies to women who do not have signs or symptoms of abuse.

(https://annals.org/aim/fullarticle/1558517/screening-intimate-partner-violence-abuse-elderly-vulnerable-adults-u-s. Last accessed July 26, 2019.)

**Strength of Recommendation**: B (There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.)

Several barriers to screening for domestic violence have been noted, including a lack of knowledge and training, time constraints, lack of privacy for asking appropriate questions, and the sensitive nature of the subject [35]. Although awareness and assessment for IPV has increased among healthcare providers, many are still hesitant to inquire about abuse [46]. At a minimum, those exhibiting signs of domestic violence should be screened. Although victims of IPV may not display typical signs and symptoms when they present to healthcare providers, there are certain cues that may be attributed to abuse. The obvious cues are physical. Injuries range from bruises, cuts, black eyes, concussions, broken bones, and miscarriages to permanent injuries such as damage to joints, partial loss of hearing or vision, and scars from burns, bites, or knife wounds. Typical injury patterns include contusions or minor lacerations to the head, face, neck, breast, or abdomen and musculoskeletal injuries. These are often distinguishable from accidental injuries, which are more likely to involve the extremities of the body. Abuse victims are also more likely to have multiple injuries than accident victims. When this pattern of injuries is seen, particularly in combination with evidence of old injury, physical abuse should be suspected [44].

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| ASSESSMENT OF IMMEDIATE SAFETY FOR DOMESTIC VIOLENCE VICTIMS |
|---|
| Are you in immediate danger? |
| Is your partner at the health facility now? |
| Do you want to (or have to) go home with your partner? |
| Do you have somewhere safe to go? |
| Have there been threats or direct abuse of the children (if s/he has children)? |
| Are you afraid your life may be in danger? |
| Has the violence gotten worse or is it getting scarier? Is it happening more often? |
| Has your partner used weapons, alcohol or drugs? |
| Has your partner ever held you or your children against your will? |
| Does your partner ever watch you closely, follow you or stalk you? |
| Has your partner ever threatened to kill you, him/herself or your children? |
| *Source: [35]* *Table 1* |

In addition to physical signs and symptoms, domestic violence victims also exhibit psychologic cues that resemble an agitated depression. As a result of prolonged stress, various psychosomatic symptoms that generally lack an organic basis often manifest. For example, complaints of backaches, headaches, and digestive problems are common. Often, there are reports of fatigue, restlessness, insomnia, or loss of appetite. Great amounts of anxiety, guilt, and depression or dysphoria are also typical. Women who experienced IPV are also more likely to report asthma, irritable bowel syndrome, and diabetes [4]. Healthcare professionals should look beyond the typical symptoms of a domestic violence victim and work within their respective practice settings to develop appropriate assessment mechanisms to detect victims who exhibit less obvious symptoms.

The unique relationship dynamics of the abuser and abused are not easily detected under the best of circumstances. They may be especially difficult to uncover in circumstances in which the parties are suspicious and frightened, as might be expected when a victim presents to the emergency department. The key to detection, however, is to establish a proper assessment tool that can be utilized in the particular setting and to maintain a keen awareness for the cues described in this course. Screening for IPV should be carried out at the entry points of contact between victims and medical care (e.g., primary care, emergency services, obstetric and gynecologic services, psychiatric services, and pediatric care) [35].

The key to an initial assessment is to obtain an adequate history. Establishing that a patient's injuries are secondary to abuse is the first task. Clearly, there will be times when a victim is injured so severely that treatment of these injuries becomes the first priority. After such treatment is rendered, however, it is important that healthcare professionals not ignore the reasons that brought the victim to the emergency department [35].

## ASSESSING DOMESTIC VIOLENCE AND ABUSE

Healthcare providers have reported that even if routine screening and inquiry results in a positive identification of IPV, the next steps of assessing and referring are often difficult, and many feel that they are not adequately prepared [46]. According to the Family Violence Prevention Fund, the goals of the assessment are to create a supportive environment, gather information about health problems associated with the abuse, and assess the immediate and long-term health and safety needs for the patient to develop an intervention [35].

Assessment of domestic violence victims should occur immediately after disclosure of abuse and at any follow-up appointments. Assessing immediate safety is priority. Having a list of questions readily available and well-practiced can help alleviate the uncertainty of how to begin to the assessment (***Table 1***). If the patient is in immediate danger, referral to an advocate, support system, hotline, or shelter is indicated [35].

If the patient is not in immediate danger, the assessment may continue with a focus on the impact of IPV on the patient's mental and physical health and the pattern of history and current abuse [35]. These responses will help formulate an appropriate intervention.

### CULTURALLY SENSITIVE ASSESSMENT

During the assessment process, a practitioner should be open and sensitive to the patient's worldview, cultural belief systems and how he/she views the illness [47]. This may reduce the tendency to over-pathologize or minimize health concerns of ethnic minority patients.

Pachter proposed a dynamic model that involves several tiers and transactions [48]. The first component of Pachter's model calls for the practitioner to take responsibility for cultural awareness and knowledge. The professional should be willing to acknowledge that he/she does not possess enough or adequate knowledge in health beliefs and practices among the different ethnic and cultural groups he/she comes in contact with. Reading and becoming familiar with medical anthropology is a good first step.

The second component emphasizes the need for specifically tailored assessment [48]. Pachter advocates the notion that there is tremendous diversity within groups. For example, one cannot automatically assume that a Cuban immigrant adheres to traditional beliefs. Often, there are many variables, such as level of acculturation, age at immigration, educational level, and socioeconomic status, that influence health ideologies. Finally, the third component involves a negotiation process between the patient and the professional [48]. The negotiation consists of a dialogue that involves a genuine respect of beliefs. It is important to remember that these beliefs may affect symptoms or appropriate interventions in the case of domestic violence.

Culturally sensitive assessment involves a dynamic framework whereby the practitioner engages in a continual process of questioning. By incorporating cultural sensitivity into the assessment of individuals with a history of being victims or perpetrators of domestic violence, it may be possible to intervene and offer treatment more effectively.

## INTERVENTIONS FOR DOMESTIC VIOLENCE AND ABUSE

After the assessment is complete, the patient may or may not want immediate assistance or referral. It is important for healthcare providers to assure patients in a nonjudgmental manner that the decision of what they would like in terms of assistance is their choice and that the provider will help regardless of the decisions they are currently ready to make [35].

If the patient would like to immediately implement a plan of action, information for referral to a local domestic violence shelter to assist the victim and the victim's family should be readily available. The acute situation should be referred immediately to local law enforcement officials. Other resources in an acute situation include crisis hotlines and rape relief centers. After a victim is introduced into the system, counseling and follow-up are generally available by individual counselors who specialize in the care of battered women and their spouses and children. These may include social workers, psychologists, psychiatrists, other mental health workers, and community mental health services. The goals are to make the resources accessible and safe and to enhance support for those who are unsure of their options [35].

In Florida, a 24-hour domestic violence hotline is available for toll-free counseling and information. The number is 800-500-1119. The counselors answering the toll-free line may refer the victim to her or his local domestic violence center. A list of Florida certified domestic violence centers organized by county and city may also be found on the Florida Coalition Against Domestic Violence website at https://www.fcadv.org/local-center-services. As of 2018, Florida had 72 certified domestic violence centers that provide information and referral services, counseling and case management services, a 24-hour hotline, temporary emergency shelter for more than 24 hours, educational services for community awareness relative to domestic violence, assessment and appropriate referral of resident children, and training for law enforcement personnel.

## DOCUMENTATION AND FOLLOW-UP

It is imperative that healthcare professionals document all findings and recommendations regarding domestic violence in the victim's medical record, including a patient's denial of abuse, if applicable. If domestic violence is disclosed, documentation should include relevant history, results of the physical examination, findings of laboratory and other diagnostic procedures, and results of the assessment, intervention, and referral. The medical record can be an invaluable document in establishing the credibility of the victim's story when seeking legal aid [35].

Healthcare professionals should offer a follow-up appointment if disclosure of past or current abuse is present. Reassurance that assistance is available to the patient at any time is critical in helping to break the cycle of abuse [35].

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## FACULTY BIOGRAPHIES

**Marjorie Conner Allen, BSN, JD**, received her Bachelor of Science in Nursing degree from the University of Florida, Gainesville, in 1984. She began her nursing career at Shands Teaching Hospital and Clinics at the University of Florida, Gainesville. While practicing nursing at Shands, she gave continuing education seminars regarding the nursing implications for dealing with adolescents with terminal illness. In 1988, Ms. Allen moved to Atlanta, Georgia where she worked at Egleston Children's Hospital at Emory University in the bone marrow transplant unit. In the fall of 1989, she began law school at Florida State University. After graduating from law school in 1992, Ms. Allen took a two-year job as law clerk to the Honorable William Terrell Hodges, United States District Judge for the Middle District of Florida. After completing her clerkship, Ms. Allen began her employment with the law firm of Smith, Hulsey & Busey in Jacksonville, Florida where she has worked in the litigation department defending hospitals and nurses in medical malpractice actions. Ms. Allen resides in Jacksonville and is currently in-house counsel to the Mayo Clinic Jacksonville.

**Alice Yick Flanagan, PhD, MSW**, received her Master's in Social Work from Columbia University, School of Social Work. She has clinical experience in mental health in correctional settings, psychiatric hospitals, and community health centers. In 1997, she received her PhD from UCLA, School of Public Policy and Social Research. Dr. Yick Flanagan completed a year-long post-doctoral fellowship at Hunter College, School of Social Work in 1999. In that year she taught the course Research Methods and Violence Against Women to Masters degree students, as well as conducting qualitative research studies on death and dying in Chinese American families.

Previously acting as a faculty member at Capella University and Northcentral University, Dr. Yick Flanagan is currently a contributing faculty member at Walden University, School of Social Work, and a dissertation chair at Grand Canyon University, College of Doctoral Studies, working with Industrial Organizational Psychology doctoral students. She also serves as a consultant/subject matter expert for the New York City Board of Education and publishing companies for online curriculum development, developing practice MCAT questions in the area of psychology and sociology. Her research focus is on the area of culture and mental health in ethnic minority communities.

**Customer Information/Answer Sheet insert located between pages 88–89.**

## COURSE TEST - #97922 DOMESTIC VIOLENCE: THE FLORIDA REQUIREMENT

*This is an open book test. Please record your responses on the Answer Sheet.*
*A passing grade of at least 70% must be achieved in order to receive credit for this course.*

***This 2 contact hour activity must be completed by July 31, 2022.***

1. **Most healthcare professionals will encounter patients in their practice who are victims of domestic violence.**
   A) *True*
   B) *False*

2. **The Florida Department of Children and Families' definition of domestic violence may include pet abuse, physical abuse, and/or emotional abuse.**
   A) *True*
   B) *False*

3. **Florida law defines domestic violence exclusively as spouse abuse or battering.**
   A) *True*
   B) *False*

4. **House Bill 1099 strengthened domestic violence services by streamlining the process of allocating funds.**
   A) *True*
   B) *False*

5. **Domestic violence resulted in 162 deaths in Florida in 2017.**
   A) *True*
   B) *False*

6. **The majority of children exposed to intimate partner violence are direct eyewitnesses.**
   A) *True*
   B) *False*

7. **Domestic violence injury patterns are more likely than accidental injuries to involve the extremities of the body.**
   A) *True*
   B) *False*

8. **In addition to physical signs and symptoms, domestic violence victims may also exhibit psychologic cues that resemble an agitated depression.**
   A) *True*
   B) *False*

9. **Assessment of domestic violence victims should occur immediately after disclosure of abuse and at any follow-up appointments.**
   A) *True*
   B) *False*

10. **Florida does not presently have a toll-free domestic violence hotline, although this was a recommendation of the Governor's Task Force on Domestic Violence.**
    A) *True*
    B) *False*

Be sure to transfer your answers to the Answer Sheet insert located between pages 88–89.
***PLEASE NOTE: Your postmark or facsimile date will be used as your test completion date.***

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# Laws and Rules for Florida Nurses

**This course fulfills the Florida requirement for 2 hours of education on Laws and Rules.**

***Audience***
This course is designed for all nurses licensed in Florida.

***Course Objective***
The purpose of this course is to provide basic knowledge of the laws and rules governing the practice of nursing in Florida in order to increase compliance and improve patient care. Florida nurses are legally obligated to be aware of standards that govern professional accountability. Information contained in this course is not intended to be used in lieu of lawful guidelines, but as a learning tool that increases the understanding of some regulations as they apply to nurses who are licensed within the state of Florida.

***Learning Objectives***
*Upon completion of this course, you should be able to:*

1. Describe the legislative purpose for the Nurse Practice Act.
2. Identify specific laws and rules related to the practice of nursing and nursing assisting.
3. Outline the pertinent levels of nursing practice in the State and the general scope of practice of each.
4. Discuss the general requirements for continuing licensure in the State.
5. Differentiate between ethical and legal practice.
6. Discuss the process for discipline related to nursing practice.
7. Create a professional plan for career maintenance and development within the limits of the law.

***Faculty***
**Jane C. Norman, RN, MSN, CNE, PhD**, received her undergraduate education at the University of Tennessee, Knoxville campus. There she completed a double major in Sociology and English. She completed an Associate of Science in Nursing at the University of Tennessee, Nashville campus and began her nursing career at Vanderbilt University Medical Center. Jane received her Masters in Medical-Surgical Nursing from Vanderbilt University. In 1978, she took her first faculty position and served as program director for an associate degree program. In 1982, she received her PhD in Higher Education Administration from Peabody College of Vanderbilt University. In 1988, Dr. Norman took a position at Tennessee State University. There she has achieved tenure and full professor status. She is a member of Sigma Theta Tau National Nursing Honors Society. In 2005, she began her current position as Director of the Masters of Science in Nursing Program.

***Faculty Disclosure***
Contributing faculty, Jane C. Norman, RN, MSN, CNE, PhD, has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

***Division Planner***
Sharon Cannon, RN, EdD, ANEF

***Division Planner Disclosure***
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***Accreditations & Approvals***

In support of improving patient care, NetCE is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

***Designations of Credit***
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***Special Approvals***
This course fulfills the Florida requirement for 2 hours of education on Laws and Rules.

***About the Sponsor***
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## INTRODUCTION

Nursing practice acts have a long history in the United States, with the first standards being enacted in the early 1900s. In Florida, a period of major growth and expansion during this period resulted in an increase in the number of hospitals and training schools, which spurred the formation of professional nurses' associations and an interest in establishing standards for the delivery of nursing care [1]. The first practice act passed the Florida Legislature and was signed into law on June 7, 1913 [1].

The Florida Nurse Practice Act was legislated to safeguard the public, and the purpose of the Act is to ensure that minimum safety requirements are met by every nurse practicing in the state. The Nurse Practice Act, Chapter 464 of the Florida Statutes, includes laws governing scope of practice, licensure and certification, and violations and penalties [3]. Chapter 464 established the Florida Board of Nursing as an authority to adopt rules, develop standards for nursing programs, and discipline nurses who violate regulations [2]. Nurses who fall below Florida's required minimum competency or who present a danger to patients, coworkers, or others are prohibited from working in the state.

In addition to Chapter 464, nurses in Florida are regulated by Chapter 456, which includes general provisions for all health professions, and Title 64B9 of the Florida Administrative Code. Together, these laws and rules form the basis for the legal practice of nursing and the regulation of nursing by the state of Florida.

This course fulfills the education requirement on the laws and rules that govern the practice of nursing in Florida for all levels of nursing, including registered nurses (RNs), licensed practical nurses (LPNs), and advanced practice registered nurses (APRNs) [3]. While this course will provide an overview of the pertinent sections of the laws and rules, all nurses are encouraged to review them in their entirety in order to ensure compliance.

## STANDARDS OF PRACTICE

The basic standards of competent practice directly impact how all nurses in Florida provide care. Not only must a nurse possess the knowledge of lawful and current care standards, but the knowledge must be demonstrated through consistent practice and intervention to prevent unauthorized, inappropriate, erroneous, illegal, contraindicated, or intentional nonperformance of care.

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The Nurse Practice Act governs the practice of RNs, LPNs, and APRNs. LPNs are those persons licensed to practice practical nursing, while RNs and APRNs are licensed to practice professional nursing, with various levels of specialization [3]. Both professional and practical nurses are responsible and accountable for making decisions that are based upon their educational preparation and experience in nursing.

According to the Nurse Practice Act, the practice of practical nursing means [3]:

> The performance of selected acts, including the administration of treatments and medications, in the care of the ill, injured, or infirm; the promotion of wellness, maintenance of health, and prevention of illness of others under the direction of a registered nurse, a licensed physician, a licensed osteopathic physician, a licensed podiatric physician, or a licensed dentist; and the teaching of general principles of health and wellness to the public and to students other than nursing students. A practical nurse is responsible and accountable for making decisions that are based upon the individual's educational preparation and experience in nursing.

The practice of professional nursing is defined by the Act as "the performance of those acts requiring substantial specialized knowledge, judgment, and nursing skill based upon applied principles of psychological, biological, physical, and social sciences" [3]. The Florida Statutes further define the scope of practice of professional nursing as [3]:

- The observation, assessment, nursing diagnosis, planning, intervention, and evaluation of care; health teaching and counseling of the ill, injured, or infirm; and the promotion of wellness, maintenance of health, and prevention of illness of others
- The administration of medications and treatments as prescribed or authorized by a duly licensed practitioner authorized by the laws of this state to prescribe such medications and treatments
- The supervision and teaching of other personnel in the theory and performance of any of the above acts

### ADVANCED PRACTICE REGISTERED NURSES

In addition to the practice of professional nursing, APRNs are certified in advanced or specialized nursing practice. This umbrella term includes certified nurse midwives, certified nurse practitioners, certified registered nurse anesthetists, clinical nurse specialists, and psychiatric nurses [3]. In accordance with the Act, APRNs may perform acts of nursing diagnosis and treatment of alterations of the health status as well as medical diagnosis and treatment, prescription, and operation as authorized within the framework of an established supervisory protocol [3]. Specifically, within the established framework, an APRN may [3]:

- Prescribe, dispense, administer, or order any drug; however, an APRN may prescribe or dispense a controlled substance only if she or he has graduated from a program leading to a Master's or doctoral degree in a clinical nursing specialty area with training in specialized practitioner skills
- Initiate appropriate therapies for certain conditions
- Perform additional functions as may be determined by rule
- Order diagnostic tests and physical and occupational therapy

All APRNs are required to obtain and maintain malpractice insurance or demonstrate proof of financial responsibility prior to licensure, with some exceptions [10]. Proof of compliance with this rule or exemption must be provided to the Board office within 60 days of certification and at each biennial renewal.

Rule 64B9-4.011 states, "APRNs whose protocols permit them to dispense medications…must register with the Board of Nursing by submitting a completed Dispensing Application for Advanced Practice Registered Nurse (APRN), form number DH-MQA 1185" [10]. The APRN dispensing practitioner must comply with all applicable state and federal laws and regulations.

## CONTINUING LICENSURE IN FLORIDA

The Florida Board of Nursing is responsible for adopting rules establishing the procedure for the biennial renewal of nursing licenses. All Florida nurses are required to renew their licenses and complete mandated continuing education every two years. The Act stipulates that up to 30 hours of continuing education may be required each biennium [3]. Initial licenses that were issued for less than 24 months are required to complete one hour for each month for which the license was valid. As part of this requirement, all licensees must complete an approved two-hour course on the prevention of medical errors and a two-hour course on the laws and rules that govern the practice of nursing in Florida. Starting in 2019, licensees must also complete a two-hour course on human trafficking every renewal period. Beginning with 2018 renewals, a two-hour course on recognition of impairment in the workplace must be completed every other biennium. Every third renewal (or every six years), licensees must successfully complete two hours of continuing education on domestic violence in addition to the 24-hour requirement.

A one-hour course on HIV/AIDS must be completed prior to a licensee's first renewal. In addition to these requirements, beginning in 2017, all APRNs must complete at least three hours of continuing education on the safe and effective prescription of controlled substances for each biennial renewal.

Completion of all mandated continuing education must be reported to the Board. Failure to document compliance with the continuing education requirements or furnishing false or misleading information regarding compliance is grounds for disciplinary action.

A nurse may maintain his or her license in inactive status if there is no intent to practice nursing in the upcoming biennium. However, this requires that the licensee apply for inactive status and renew the license as inactive every two years; completion of continuing education is not required for these renewals. A license to practice nursing that is not renewed at the end of the biennium shall automatically revert to delinquent status [10].

In accordance with Rule 64B9-1.013 of the Florida Administrative Code, all licensed nurses must maintain on file with the Board of Nursing the current address at which any notice required by law may be served [10]. If a nurse moves, even out of state, he or she must notify the Board in writing of the new address within 60 days. In addition, all licensed nurses must alert the Board to their current place of practice. Place of practice is defined as one of the following [10]:

- Acute care facility
- Long-term care facility
- Rehabilitation facility
- Clinic
- Physician's office
- Home health care agency
- Educational institution
- Office of independent nursing practice
- Correctional facility
- Mental health facility
- Occupational health facility
- Managed health care organization or insurance company
- Community health facility
- Other

If a nurse wishes to activate an inactive license, he or she may do so by applying to the Department and paying a reactivation fee. As part of the application process, the licensee must disclose convictions or findings of guilt and/or disciplinary action(s) in or out of state [10]. In addition, the nurse must provide proof of completion of all continuing education for all biennial licensure periods for which the individual was inactive.

Completion of a Board-approved nursing refresher course is required to activate a license that has been inactive for more than two consecutive biennial licensure cycles if the licensee has not been practicing nursing in any jurisdiction for the two years immediately preceding the application for reactivation [10]. The refresher course must include at least 80 hours of classroom instruction and 96 hours of clinical experience in medical/surgical nursing and any specialty area of practice of the licensee.

## ETHICAL AND LEGAL ISSUES IN NURSING PRACTICE

In addition to their legal obligations, nurses have ethical obligations to their patients. The practice of nursing is primarily one of caring, and the ethical theories for nursing are often referred to as "the ethics of caring." Nurses are expected to address both ethical and legal issues in their practice, which can be complex. As medical advancements and new technology progress, these must be incorporated into established ethical standards. The American Nurses Association has established the Code of Ethics for Nurses, which is intended to act as "a guide for nurses to use in ethical analysis and decision-making" [5]. The full text of this Code is available at https://www.nursingworld.org/practice-policy/nursing-excellence/ethics/code-of-ethics-for-nurses. Major ethical issues that may arise in the practice of nursing are related to the provision of patient-centered care, confidentiality, advocacy, delegation, self-care, and supporting colleagues and the profession.

There are also a variety of legal issues that affect the provision of nursing care and maintenance of a nursing license. It is important to note that, although possibly related, the laws governing nursing practice are different from the ethical framework(s) that nurses use to guide decision making. Laws pertaining to documentation, licensure, and standards of care have been established to ensure that nurses practice within a defined scope of practice and are aware of the boundaries of independent nursing action and responsibilities. These laws also act to hold nurses accountable for maintaining an acceptable standard of patient care. However, perhaps the greatest concern for nurses is the threat of negligence or malpractice claims.

According to tort law, four elements must be established for a ruling of malpractice [6]:

- Duty: The nurse owed a duty to meet a particular standard of care.
- Breach of duty: The nurse failed to perform the owed duty.

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- Causation: There is a causal connection between the nurse's failure and the patient's injury.
- Damages: An injury occurred for which monetary compensation is adequate relief.

These elements must be shown by a "preponderance of the evidence," defined as more than 50% probability, a lower standard than the "beyond a reasonable doubt" used in criminal law [7; 8]. Malpractice cases are decided on the basis of what a "jury is likely to think is fact" rather than actual fact [9].

## DISCIPLINARY ACTIONS

The Board of Nursing was created to assure protection of the public from nurses who do not meet minimum requirements for safe practice or who pose a danger to the public [3]. Violations of the laws established by the Board to ensure safe nursing practice are punishable by disciplinary action. These penalties are in addition to the results of any legal or civil proceedings that may be brought by the State or by patients or affected parties.

Acts requiring disciplinary or legal action are outlined in sections 464.016, 464.017, and 464.018 of the Nurse Practice Act [3]. According to section 464.016, the following acts are considered felonies in the third degree [3]:

- Practicing advanced or specialized, professional, or practical nursing unless holding an active license or certificate to do so
- Using or attempting to use a license or certificate that has been suspended or revoked
- Knowingly employing unlicensed persons in the practice of nursing
- Obtaining or attempting to obtain a license or certificate by misleading statements or knowing misrepresentation

In addition, the following acts constitute misdemeanors in the first degree [3]:

- Using the name or title "Nurse," "Registered Nurse," "Licensed Practical Nurse," "Clinical Nurse Specialist," "Certified Registered Nurse Anesthetist," "Certified Nurse Practitioner," "Certified Nurse Midwife," "Advanced Practice Registered Nurse," or any other name or title that implies that a person was licensed or certified as same, unless such person is duly licensed or certified
- Knowingly concealing information relating to violations of this part

These actions are punishable by law according to sections 775.082, 775.083, and 775.084 of the Statutes, Constitution, and Laws of Florida [3].

Several actions are also considered grounds for denial of a license or disciplinary action. According to section 464.018, this includes [3]:

- Procuring, attempting to procure, or renewing a license to practice nursing by bribery, by knowing misrepresentations, or through an error of the Department or the Board
- Having a license to practice nursing revoked, suspended, or otherwise acted against, including the denial of licensure, by the licensing authority of another state, territory, or country
- Being convicted or found guilty of, or entering a plea of *nolo contendere* to, regardless of adjudication, a crime in any jurisdiction that directly relates to the practice of nursing or to the ability to practice nursing
- Being convicted of or found guilty of, or entering a plea of guilty or *nolo contendere* (no contest) to, regardless of adjudication, any of the following offenses:
  - A forcible felony
  - Theft, robbery, and related crimes
  - Fraudulent practices
  - Lewdness and indecent exposure
  - Assault, battery, and culpable negligence
  - Child abuse, abandonment, and neglect
  - Abuse, neglect, and exploitation
  - For an applicant for a multistate license or for a multistate license-holder, a felony offense under Florida law or federal criminal law
- Having been found guilty of, regardless of adjudication, or entered a plea of no contest or guilty to, any offense prohibited under Section 435.04 or similar statute of another jurisdiction; or having committed an act which constitutes domestic violence
- Making or filing a false report or record, intentionally or negligently failing to file a report or record required by state or federal law, or willfully impeding or obstructing such filing or inducing another person to do so
- False, misleading, or deceptive advertising
- Unprofessional conduct
- Engaging or attempting to engage in the possession, sale, or distribution of controlled substances for any other than legitimate purposes
- Being unable to practice nursing with reasonable skill and safety to patients by reason of illness or use of alcohol, drugs, narcotics, or chemicals or any other type of material or as a result of any mental or physical condition

- Failing to report to the Department any person who the licensee knows is in violation of this part or of the rules of the Department or the Board
- Knowingly violating any provision of this part, a rule of the Board or the Department, or a lawful order of the Board or Department previously entered in a disciplinary proceeding or failing to comply with a lawfully issued subpoena of the Department
- Failing to meet minimal standards of acceptable and prevailing nursing practice, including engaging in acts for which the licensee is not qualified by training or experience

For a full list of punishable acts, please refer to Chapter 464.018 of the Florida statutes.

Sexual misconduct is considered a breach of mutual trust and can irreparably damage the nurse-patient relationship. According to section 464.017, "Sexual misconduct in the practice of nursing means violation of the nurse-patient relationship through which the nurse uses said relationship to induce or attempt to induce the patient to engage, or to engage or attempt to engage the patient, in sexual activity outside the scope of the practice or the scope of generally accepted examination or treatment of the patient" [3]. Sexual misconduct in the practice of nursing is prohibited and is grounds for disciplinary action.

Disciplinary actions encompass a wide range of possible punishments, and the action chosen will depend on the individual circumstances (e.g., the severity of the violation, the number of past offenses). The Board may take the following actions in response to violations listed above [4]:

- Refusal to certify, or to certify with restrictions, an application for a license
- Suspension or permanent revocation of a license
- Restriction of practice or license
- Imposition of an administrative fine not to exceed $10,000 for each count or separate offense
- Issuance of a reprimand or letter of concern
- Placement of the licensee on probation for a period of time and subject to such conditions as the Board may specify
- Corrective action
- Imposition of an administrative fine for violations regarding patient rights
- Refund of fees billed and collected from the patient or a third party on behalf of the patient
- Requirement that the practitioner undergo remedial education

Nurses who have been found guilty on three separate occasions of violations relating to the use of drugs or narcotics or involving the diversion of drugs or narcotics from patients to personal use or sale are not eligible for reinstatement of licensure [3].

In the annual report of fiscal year 2017–2018, more than 550 nurses licensed in Florida had received disciplinary actions. The most common orders are suspension of the nursing license (36%), limitations/obligations of a nursing license (13%), and voluntary surrender of a nursing license (11%) [11]. In most cases, nurses are also responsible for paying any costs associated with their order (e.g., investigation, court costs).

Certain offences may be resolved by mediation. Rule 64B9-8.012 states that mediation is an acceptable resolution for the first instance of the following violations [10]:

- Issuance of a worthless bank check to the Department or the Board for initial licensure or renewal of license, provided the licensee does not practice on a delinquent license
- Failure to report address changes, provided the failure does not constitute failure to comply with an order of the Board
- Failure to pay fines and investigative costs by the time ordered
- Failure to timely submit documentation of completion of continuing education imposed by Board order
- Failure to update a practitioner profile within 15 days

## EXCEPTIONS

In addition to the limitations listed in this course, it is important to note that there are exceptions to the Nurse Practice Act. The law expressly states that the Act does not prohibit [3]:

- The care of the sick by friends or members of the family without compensation, the incidental care of the sick by domestic servants, or the incidental care of noninstitutionalized persons by a surrogate family
- Assistance by anyone in the case of an emergency
- The practice of nursing by students enrolled in approved schools of nursing

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- The practice of nursing by graduates of prelicensure nursing education programs, pending the result of the first licensing examination for which they are eligible following graduation, provided they practice under direct supervision of a registered professional nurse
- The rendering of services by nursing assistants acting under the direct supervision of a registered professional nurse
- Any nurse practicing in accordance with the practices and principles of the body known as the Church of Christ Scientist
- The practice of any legally qualified nurse or licensed attendant of another state who is employed by the U.S. Government, or any bureau, division, or agency thereof, while in the discharge of official duties
- Any nurse currently licensed in another state or territory of the United States from performing nursing services in this state for a period of 60 days after furnishing to the employer satisfactory evidence of current licensure in another state or territory and having submitted proper application and fees to the Board for licensure prior to employment. If the nurse licensed in another state or territory is relocating to this state pursuant to his or her military-connected spouse's official military orders, this period shall be 120 days after furnishing to the employer satisfactory evidence of current licensure in another state or territory and having submitted proper application and fees to the Board for licensure prior to employment. The Board may extend this time for administrative purposes when necessary.
- The rendering of nursing services on a fee-for-service basis or the reimbursement for nursing services directly to a nurse rendering such services by any government program, commercial insurance company, hospital or medical services plan, or any other third-party payor
- The establishment of an independent practice by one or more nurses for the purpose of rendering to patients nursingservices within the scope of the nursing license
- The furnishing of hemodialysis treatments in a patient's home, using an assistant chosen by the patient, provided that the assistant is properly trained (as defined by the Board by rule) and has immediate telephonic access to a registered nurse who is licensed pursuant to this part and who has dialysis training and experience
- The practice of nursing by any legally qualified nurse of another state whose employment requires the nurse to accompany and care for a patient temporarily residing in this state for not more than 30 consecutive days, provided the patient is not in an inpatient setting, the Board is notified prior to arrival of the patient and nurse, the nurse has the standing physician orders and current medical status of the patient available, and prearrangements with the appropriate licensed healthcare providers in this state have been made in case the patient needs placement in an inpatient setting
- The practice of nursing by individuals enrolled in board-approved remedial courses

## CONCLUSION

It is the responsibility of the Florida Board of Nursing to enforce the laws and rules regulating the practice of nursing as the law is currently stated—not how individuals may wish the law to be. However, as nurses are affected by these rules and regulations, they have the responsibility to keep informed of regulatory changes and provide public comment regarding regulations. Board meetings are held every two months, generally during the first week of every even month, and are open to the public. The full board meetings include disciplinary cases, application review, committee reports, rule discussions, and other necessary Board actions. For more information, please contact the Board at 850-488-0595 or https://floridasnursing.gov/.

**Customer Information/Answer Sheet insert located between pages 88–89.**

## COURSE TEST - #31252 LAWS AND RULES FOR FLORIDA NURSES

*This is an open book test. Please record your responses on the Answer Sheet.*
*A passing grade of at least 70% must be achieved in order to receive credit for this course.*

***This 2 contact hour activity must be completed by October 31, 2022.***

1. **The purpose of the Nurse Practice Act is to encourage the growth and expansion of hospitals and training schools.**
   A) *True*
   B) *False*

2. **The Nurse Practice Act is Chapter 464 of the Florida Statutes.**
   A) *True*
   B) *False*

3. **The Nurse Practice Act governs the practice of registered nurses, licensed practical nurses, and advanced practice registered nurses.**
   A) *True*
   B) *False*

4. **According to the Nurse Practice Act, the practice of practical nursing may be conducted under the direction of a registered nurse, licensed dentist, or licensed physician.**
   A) *True*
   B) *False*

5. **Ordering diagnostic tests and physical and occupational therapy is a part of the scope of practice for licensed practical nurses.**
   A) *True*
   B) *False*

6. **At least 40 hours of continuing education must be completed every biennium in order to maintain a nursing license in Florida.**
   A) *True*
   B) *False*

7. **Apology is one of the elements that must be established for a ruling of malpractice.**
   A) *True*
   B) *False*

8. **Using the name or title "Registered Nurse" without being duly licensed or certified is considered a misdemeanor in the first degree under the Nurse Practice Act.**
   A) *True*
   B) *False*

9. **Nurses who have been found guilty on three separate occasions of violations relating to the use of drugs or narcotics involving the diversion of drugs or narcotics from patients to personal use or sale are not eligible for reinstatement of licensure.**
   A) *True*
   B) *False*

10. **Board meetings are held annually.**
    A) *True*
    B) *False*

Be sure to transfer your answers to the Answer Sheet insert located between pages 88–89.
***PLEASE NOTE: Your postmark or facsimile date will be used as your test completion date.***

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# Recognizing Impairment in the Workplace: The Florida Requirement

**This course fulfills the Florida requirement for 2 hours of education on Recognizing Impairment in the Workplace.**

***Have you already completed your Impairment in the Workplace requirement? You can skip this course and still receive 26 hours of continuing education.***

***Audience***
This course is designed for nurses in Florida who may intervene to prevent or identify impairment in the workplace.

***Course Objective***
The purpose of this course is to provide nurses with an appreciation of the impact of impairment on the provision of nursing care and on patient health as well as the skills to identify and report instances of workplace impairment.

***Learning Objectives***
*Upon completion of this course, you should be able to:*

1. Outline the epidemiology and scope of impairment in the healthcare workplace.
2. Discuss unique risk factors for substance abuse in nurses.
3. Identify the signs of impairment in the nursing workplace.
4. Analyze the process and legal obligations involved in reporting an instance of impairment in the workplace.
5. Describe the treatment programs available for nurses who have been impaired in the workplace.

***Faculty***
**Nancy Campbell, RN, BSN, PHN**, received her Bachelor of Science in Nursing degree from California State University, Bakersfield in 1987. She has nursing experience in a variety of clinical settings, including medical/surgical, community health, and preschool health. She was a nurse case manager for a community program supporting teen parents and a public health nurse focusing on communicable disease management. Her primary focus and passion is on direct patient care and patient education. She is presently employed as a registered nurse for the Head Start program in Tulare County, California.

***Faculty Disclosure***
Contributing faculty, Nancy Campbell, RN, BSN, PHN, has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

***Division Planner***
Jane C. Norman, RN, MSN, CNE, PhD

***Division Planner Disclosure***
The division planner has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

***Accreditations & Approvals***
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***Designations of Credit***
NetCE designates this continuing education activity for 2 ANCC contact hours.

AACN Synergy CERP Category B.

***Individual State Nursing Approvals***
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***Special Approvals***
This course fulfills the Florida requirement for 2 hours of education on Recognizing Impairment in the Workplace.

***About the Sponsor***
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## INTRODUCTION

Impairment of a healthcare professional can place everyone in a workplace at risk for injury. First and foremost is the risk to patients, who trust healthcare professionals to provide safe, reliable, and effective care. The ethical duty to not harm patients is a cornerstone of nursing, yet impaired healthcare workers injure patients daily. Another concern is the potential for impaired nurses to harm other professionals in the workplace, either directly or indirectly. Direct harm falls on a spectrum ranging from serious, injury-causing accidents to excessive absenteeism, which puts additional strain on staff. Presenteeism (i.e., reporting for work while impaired) places colleagues in the difficult position of having to work harder as a result of another's impairment, working in a potentially dangerous environment, and facing the dilemma of reporting a coworker, colleague, or friend.

Reporting impairment can be a difficult ethical situation for healthcare professionals, who often cover for impaired colleagues out of friendship or loyalty and who fear that reporting may ruin the nurse's career or their own. The truth is that the circumstances causing impairment have already eroded a nurse's professional abilities to some degree, and in most states, including Florida, good-faith reporters (i.e., those with sincere and honest intentions) are protected from retaliation by whistleblower laws. Conversely, not reporting a known impaired nurse is a violation of the Nurse Practice Act that can lead to disciplinary action by the Florida Board of Nursing.

Injury to patients and coworkers is increasingly likely when a worker is impaired, but impairment also gravely affects the individual nurse, whose health, safety, career, and social and financial standing are at risk if interventions are not undertaken. The American Nurses Association (ANA) definition of impairment describes a broad array of conditions that can interfere with workplace functioning, including mental or physical illness, fatigue, substance abuse, and other personal circumstances that adversely affect job performance [2]. Though fatigue and certain personal circumstances may be more easily resolved, these types of impairment still pose a danger. Fatigue, acute physical illness, and personal issues (e.g., stress, relationship problems) are generally dealt with in a different manner than impairment related to chemical dependence, other psychologic disorders, and chronic physical conditions. It should be remembered that alcohol and/or substance abuse is a type of medical and psychologic disorder, and helping the nurse obtain treatment so she or he can get healthy and return to work is the ultimate goal of reporting and intervention. Nearly all states, including Florida, now offer nurses found to be impaired at work an alternative to criminal prosecution, the chance to retain their license, and a return to nursing if they agree to enter and participate in an intervention program.

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This course presents information on recognizing the signs and symptoms of emotional-, mental health-, and substance-related workplace impairment. Strategies for intervention and reporting (e.g., how and to whom impairment should be reported) are also outlined, particularly within the context of the Florida Nurse Practice Act. Treatment of impairment, including intervention programs, employer initiatives for impaired nurses, and returning to work, will be discussed. In the state of Florida, the Intervention Project for Nurses (IPN) is the Department of Health's contracted program to address nurse impairment; this program will be discussed in detail.

## SCOPE OF THE PROBLEM

Historically, the rate of alcohol and drug dependency among healthcare professionals was thought to be much higher than in the general public, due to job stress and easy access to pharmaceutical drugs. However, the rate among nurses and physicians is now estimated to be only slightly higher than or equal to the rate found in the general public (10% to 15%) [3; 4; 5; 6; 9]. The ANA has reported that approximately 15% of all nurses abuse substances to the point at which interference with vocational practice can be expected [13]. Based on these data, up to 300,000 of the 3 million nurses in the United States have alcohol and/or drug use disorders, and job performance may be affected in more than 200,000 nurses [6]. Nurses make up the greatest proportion of healthcare workers in the country; therefore, substance-related impairment among nurses is a major healthcare problem, despite similar rates of abuse and dependency among other healthcare professionals [9].

One study found that while the rate of drug dependence was similar among female nurses and women in the general population, the rate of prescription drug abuse was much higher (more than double) among nurses; use of street-type drugs (e.g., cocaine, cannabis) was found to be lower in nurses than in the general population [5]. Reasons cited for the higher rates of prescription drug abuse included easier access, familiarity with dosages and effects, and comfort experimenting with drugs commonly prescribed to patients [6]. This phenomenon, referred to as "pharmacologic optimism," is based on the ingrained belief that pharmaceutical drugs cause profound healing with few to no negative effects, an idea that is established early in some nurses [9]. Aside from alcohol, which is the most commonly abused substance among nurses, one study identified the classes of drugs most often abused, in order of frequency, as amphetamines, opioids, sedatives, tranquilizers, and inhalants. In this study, abuse was defined as prescription drug use without a script, using greater than the prescribed dosage, or using a drug for indications other than those prescribed [9]. In many instances of abuse, drugs were obtained through diversion. Drugs are diverted in several different ways [6; 11]:

- A physician writes a prescription for the nurse in the absence of a true indication.
- The nurse steals scripts and falsifies prescriptions for him- or herself.
- A whole dose of an injectable drug ordered for a patient is used by the nurse and replaced with saline, or the nurse retains the correct (drug-filled) syringe and replaces it with another filled with saline.
- Partial doses of medications are administered to patients while the nurse saves or uses the remainder.
- A nurse applies a skin patch to him- or herself before transferring it to the patient.
- A nurse removes syringes or ampules from a sharps waste container to scavenge any remaining drugs.
- The nurse has a colleague who, without actually witnessing the disposal, cosigns a record indicating waste while the nurse actually retains or takes the drug dose.
- The nurse obtains medications for patients who have not asked for them or who refused them.
- The nurse signs out medications for a patient who has been transferred.

All of these examples of diversion techniques have been documented, including cases in which patients have been infected with hepatitis C when a nurse used a syringe of opioid narcotic intended for them before replacing the missing contents with saline and injecting the patient [11]. One study found that 65% of nurses addicted to a pharmaceutical drug were diverting medication from their workplace [19]. Most addicted nurses in this study admitted to treating patients while impaired.

## UNIQUE RISK FACTORS

In addition to the common risk factors for substance abuse in all individuals, several unique risk factors have been identified for nurses, including [9; 15]:

- Positive attitudes toward drugs and drug use (i.e., "pharmacologic optimism")
- Relaxed physician prescribing practices in the facility
- Lack of pharmaceutical controls in a facility
- Little or no education regarding substance use disorders
- Enabling by peers and managers
- Role strain

The prevalence of substance abuse varies by nurse specialty. Critical care, psychiatric, emergency room, and oncology nurses have been found to have the highest rates of substance abuse, but alcohol abuse (five or more drinks per occasion) in particular is a significant problem among oncology nurses [9; 19]. Another study found that binge drinking was more common among all nurses than in the general population 35 years of age or older [10].

Gender is another factor for substance abuse in nursing professions. Male nurses are more likely to abuse substances and are over-represented in treatment programs [9]. However, the majority of RNs (90.9%) and LPNs (92.4%) in the United States are women; therefore, the vast majority of nurses with substance use disorders are women [9; 12]. Studies have shown that men's addiction runs a more acute course, with less pronounced physical and mental effects; men also tend to seek help sooner for the actual addiction. In contrast, women's addiction tends to be prolonged, with a greater mental and physical toll. Women typically seek help for the manifestations of addiction, such as depression, anxiety, and insomnia, which can delay treatment for the root cause [9].

## IDENTIFYING IMPAIRMENT IN THE WORKPLACE

It is important that nurses have the ability to recognize signs and symptoms of impaired practice and be able to differentiate a pattern of impairment from isolated incidents that may be caused by job stress. Studies have shown that most nurses are not able to accurately identify impairment in the workplace because they have little education on signs and symptoms of impairment in a professional setting and among other professionals [3; 17; 18]. This is compounded by the fact that some individuals, particularly experienced healthcare providers, may be able to function at a high level while under chemical influence. Failure to identify impairment or a belief that reporting is unnecessary because an individual is able to function normally despite alcohol/drug abuse may result in a failure to document and report suspected impairment, inadvertently enabling the substance abuse [3]. On the other hand, nurses who have the knowledge and confidence to identify impairment are empowered to confront colleagues and report their peers according to employer protocol.

### DEFINITION OF IMPAIRMENT

According to the IPN, "impairment is a condition that results from the use of mind/mood-altering substances, distorted thought processes found in the psychologically impaired, or a physical condition that prevents the nurse from providing safe patient care. Impairment is characterized by the inability to carry out the professional duties and responsibilities in a reasonable manner consistent with nursing standards" [21].

It should be remembered that impaired practice is not strictly related to substance abuse disorders. Common mental health disorders, such as depression and anxiety, have the potential to interfere with nurses' ability to provide adequate patient care [24]. In a meta-analysis of research related to the impact of mental disorders on the work performance of nurses and other healthcare professionals, strong evidence was found to support a relationship between mental disorders and general errors, medication errors, near errors, impaired patient safety, and decreased patient satisfaction [26]. This is a particular concern given the fact that nurses are at greater risk for certain mental health issues (e.g., depression) than the general public [24].

Physical disability may also impede nurses' performance, and steps should be taken to create disability inclusive workplaces [27]. Some nurses may be hesitant to disclose disabilities or known limitations for fear of losing their jobs [28]. Physical limitations are not grounds for dismissal, and failure to disclose poses a greater safety risk than working with healthcare professionals with known disabilities.

### SIGNS OF IMPAIRMENT

Signs of impairment related to substance abuse among healthcare professionals fall into three general categories: job performance issues, emotional and mental status, and workplace drug diversion [7]. Impairment specifically related to substance abuse may present differently in nurses than in the general public. Signs of impairment related to job performance include [7; 8; 22]:

- An excessive number of mistakes at work (e.g., frequent medication errors, errors of judgment in patient care)
- "Job shrinkage" (i.e., the nurse progressively performs the minimal amount of work necessary)
- Increased difficulty meeting deadlines or adhering to schedules
- Frequent or unexplained disappearances
- Implausible and/or elaborate excuses for unusual behavior
- Dishonesty over trivial matters
- Illegible or sloppy charting
- Tremors or shaking
- Extended breaks or lunch hours
- Excessive absence due to alleged illness, particularly following scheduled days off
- Last-minute requests for time off
- Absence without notice
- Smell of alcohol or cannabis
- Excessive use of breath mints, chewing gum, mouthwash, or perfume

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Signs of changes in emotional and mental status include [7; 8; 22]:

- Inappropriate or uncharacteristic responses to criticism (e.g., crying, uncontrolled anger, snapping at or arguing with colleagues)
- Emotional lability (e.g., becoming uncommonly gregarious or quiet, withdrawn, or irritable; has recurrent mood swings and is unpredictable)
- Reduced alertness (e.g., forgetfulness, preoccupation, appearing dazed and confused, slow reaction time)
- Increasing isolation from coworkers (e.g., avoiding informal staff gatherings, eating or taking breaks alone, requesting transfer to another shift)
- Increased and uncharacteristic problem with authority
- Change in dress and/or appearance

Signs that a healthcare professional is diverting drugs for personal use include [7; 8; 22]:

- Volunteering to work with patients who receive regular or large amounts of pain medication
- Consistently volunteering to be the medication administrator
- Often signing out more controlled drugs than coworkers
- Failing to obtain co-signatures
- Frequently reporting medication spills or other waste
- Reports reflecting excessive use of pain medications on patients
- Discrepancies in end-of-shift medication counts
- Evidence of tampering with vials, other drug containers, or medication counts
- Waiting until alone to open the narcotics box or cabinet, or disappearing after opening it
- An increase in patients' complaints of unrelieved pain
- Defensiveness when questioned about medication errors
- Consistently coming to work early and staying late

Nurse supervisors and managers should maintain an active role in identifying impairment in the workplace by refusing to allow personal manipulation by another nurse or to fear confronting a nurse if patient safety is in jeopardy. It is important to reduce or change a nurse's role or patient assignment and not accept excuses for or ignore poor performance [16]. Several tools have been developed to assess nurses' job performance and fitness for work [24; 25]. These measures may be completed by supervisors or individual nurses (i.e., self-report). One such tool is the Common Risky Behaviors Checklist, which assesses five dimensions: absence/tardiness, cognitive impairment, unprofessional communication/boundaries, physical impairment, and drug diversion. A copy of the checklist is available online at https://www.ncsbn.org/ChrisONeil_Checklist.pdf.

## REPORTING COLLEAGUES AND MANDATORY REPORTING LAW

Florida law requires that a Board-licensed nurse make a good faith report of another individual's known workplace impairment, whether the situation is acute or there is growing suspicion. But, reporting a colleague is a decision with which many nurses struggle [3]. Experienced, older nurses are more likely to report impairment because they have likely witnessed the negative effects in coworkers at some point; younger and less experienced nurses are less likely to report. Many professionals choose to ignore the problem because they think someone else will or is already handling the situation [1; 3]. One study identified several factors that contribute to failure to report by coworkers, including feeling like a "tattle-tale," fear of revenge or retaliation, fear the colleague might react in a violent manner, not wanting to be responsible for jeopardizing a colleague's job, not being confident enough in one's own observations or instincts to confront a colleague, not being an expert in chemical dependence, and believing the intervention would be better dealt with by an expert [3]. Although these concerns may be valid, nursing is a profession that holds patient safety and healing as the highest duty—and not one of these concerns seems related to protecting patients. Furthermore, few of the reasons for non-reporting show any regard for helping a coworker to heal. Nursing is about action, and there is no excuse for failing to act.

## FLORIDA LAW

Reporting known impairment in Florida is mandatory, not optional. Failure to report an impaired individual who is providing health care can lead to disciplinary action by the Board of Nursing. The Florida Statutes Chapter 464.018 Disciplinary Actions defines nursing impairment and describes the conditions and actions an impaired nurse will face. The section states that the following constitutes grounds for disciplinary action or denial of a license [14]:

> Being unable to practice nursing with reasonable skill and safety to patients by reason of illness or use of alcohol, drugs, narcotics, or chemicals or any other type of material or as a result of any mental or physical condition. In enforcing this paragraph, the department shall have, upon a finding of the State Surgeon General or the State Surgeon General's designee that probable cause exists to believe that the licensee is unable to practice nursing because of the reasons stated in this paragraph, the authority to issue an order to compel a licensee to submit to a mental or physical examination by physicians designated by the department. If the nurse refuses to comply with such order, the department's order directing such examination may be enforced by filing a petition for enforcement in the circuit court where the nurse resides or does business. The nurse against whom the petition is filed shall not be named or identified by initials in any public court records or documents, and the proceedings shall be closed to the public…A nurse affected by this paragraph shall at reasonable intervals be afforded an opportunity to demonstrate that she or he can resume the competent practice of nursing with reasonable skill and safety to patients.

The Florida Statutes Chapter 464.018 Disciplinary Actions also contains the mandatory reporting law. The following act constitutes grounds for denial of a license or disciplinary action [14]:

> Failing to report to the department any person who the nurse knows is in violation of this part or of the rules of the department or the board. However, a person who the licensee knows is unable to practice nursing with reasonable skill and safety to patients by reason of illness or use of alcohol, drugs, narcotics, chemicals, or any other type of material, or as a result of a mental or physical condition, may be reported to a consultant operating an impaired practitioner program...rather than to the department.

## HOW TO REPORT AN IMPAIRED NURSE

Nurses should be familiar with their organization's policies and procedures for reporting employee substance abuse or other impairment and those regarding assistance programs [16]. When aware of the resources available to an impaired nurse, including the process, programs, and benefits of employee assistance programs or alternative-to-discipline programs, nurses are better prepared and more likely to report impairment. In 1983, the Florida legislature established the IPN as a contact point for nursing impairment reporting, as a treatment and rehabilitation facilitator, and as a monitoring program for impaired nurses within the state [20]. Florida nurses are required to report suspected impaired practice to the IPN and/or the Florida Department of Health [21]. Reporting to either of these entities fulfills the mandatory reporting obligation. With the knowledge that recovery, nonpunitive rehabilitation, and returning to work are the goals of such programs, nurses should feel confident that their colleagues will receive the help they need to overcome their impairment [3]. In the long-term, the report will be beneficial to the impaired nurse, and in the short-term, patients are being protected from harm.

Before making a report, documenting changes in the suspected nurses' behavior and work performance is recommended [16]. The signs and symptoms listed in the previous section of this course are a good starting point. Taking note of specific actions or behaviors will help when making the report and/or confronting a colleague or supervisee.

In the past, professional organizations recommended confronting the impaired individual directly, but this strategy was found to be unrealistic and is no longer endorsed [2; 3; 16; 22]. The ANA Code of Ethics no longer recommends confronting colleagues as the initial course of action before notifying a supervisor [3]. The 2015 ANA Code of Ethics states that "the nurse's duty is to take action to protect patients and to ensure that the impaired individual receives assistance. This process begins with consulting supervisory personnel, followed by approaching the individual in a clear and supportive manner and by helping the individual access appropriate resources" [2]. The Code further states that "nurses must follow policies of the employing organization, guidelines outlined by the profession, and relevant laws to assist colleagues whose job performance may be adversely affected by mental or physical illness, fatigue, substance abuse, or personal circumstances" [2]. The Florida Nurse Practice Act clearly states that the IPN or the Department of Health must be notified, but does not specify how an intervention must proceed [21].

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Some sources suggest that the best outcomes are achieved when a professional interventionist or personnel trained in intervention confronts the individual [22]. Many facilities have employee assistance or human resources personnel who are trained to intervene. The IPN offers intervention training [23].

The ANA Code of Ethics also provides the following additional advice regarding intervening in cases of suspected workplace impairment [2]:

- The nurse should extend compassion and caring to colleagues throughout the processes of identification, remediation, and recovery.
- Care must also be taken in identifying impairment in one's own practice and in seeking immediate assistance.
- In instances of impaired practice, nurses within all professional relationships should advocate for appropriate assistance, treatment, and access to fair institutional and legal processes. Advocacy includes supporting the return to practice of individuals who have sought assistance and, after recovery, are ready to resume professional duties.
- If impaired practice poses a threat or danger to patients, self, or others, regardless of whether the individual has sought help, a nurse must report the practice to persons authorized to address the problem.
- Nurses who report those whose job performance creates risk should be protected from retaliation or other negative consequences.
- If workplace policies for the protection of impaired nurses do not exist or are inappropriate—that is, they deny the nurse who is reported access to due legal process or they demand resignation—nurses may obtain guidance from professional associations, state peer assistance programs, employee assistance programs, or similar resources.

## TREATMENT PROGRAMS

When a nurse is reported to either the IPN or the Department of Health, the referral triggers a consultation with the reporter and/or the employer of the impaired nurse [1]. This is followed by an intervention and evaluation. The intervention typically occurs one to three days after a report (whereas a standard disciplinary process typically takes 9 to 12 months to remove a nurse from practice) [1]. If a nurse self-reports to the IPN, the intake and evaluation process begins immediately. In Florida, the IPN is charged with accepting reports, evaluating referrals, determining the proper course of action, monitoring the nurse's progress in treatment, and case managing all individuals returning to work [23]. The IPN program objectives are to [23]:

- Ensure public health and safety through a program that provides close monitoring of nurses who are unsafe to practice due to the use of drugs, including alcohol, and/or psychiatric, psychologic, or physical condition
- Require the nurse to withdraw from practice immediately, and until such time that the IPN is assured that he/she is able to safely return to the practice of nursing
- Facilitate early intervention, thereby decreasing the time between the nurse's acknowledgment of the problem and his/her entry into a recovery program
- Provide a program for affected nurses to be rehabilitated in a therapeutic, non-punitive, and confidential process
- Provide an opportunity for retention of nurses within the nursing profession
- Provide a cost-effective alternative to the traditional disciplinary process
- Develop a statewide resource network for referring nurses to appropriate services
- Provide confidential consultations for nurse managers

Although the IPN assesses referrals to the program to decide the best course of action for the individual, the program does not actually provide treatment for addiction or other diseases/disorders. Rather, the IPN directs individuals to approved treatment programs and providers [1]. Additional services provided by the IPN include advocacy for participants; tracking meeting attendance and discussing recovery progress with group facilitators; comprehensive monitoring of nurses following discharge from treatment; providing random drug screening of participants and detecting relapse; and reporting compliance issues to the proper authority [1; 23]. If at any time during the process the nurse refuses to participate in the program or fails to comply with program guidelines, including after returning to work, she or he is referred to the Department of Health for discipline, which entails investigation, hearings, and disciplinary action.

### RETURNING TO WORK

Following completion of approved treatment, the IPN determines if nurses in the program are ready to return to practice based on several criteria, including the individual's stability in recovery, cognitive functioning, decision-making/problem-solving ability, use of good judgment, ability to deal with stressful situations, and development of a support system [1]. A signed advocacy contract and completed relapse prevention workbook must also be submitted. Stability in recovery is crucial and is indicated by advocacy contract compliance, consistently negative random urine drug screens, regular attendance at support and monitoring groups, and favorable monitoring reports [1]. Progress reports are generated by treatment providers, nurse support group facilitators, and by the nurses in recovery (i.e., self-reports).

The support system for nurses returning to work includes a weekly support group for ongoing self-care and relapse prevention. A coworker is also established as a workplace monitor to provide feedback to the IPN on the nurse's job performance [1]. If a nurse was referred to the IPN due to pharmaceutical use or diversion, it is recommended that the nurse be assigned a labor exchange colleague assigned to handle patient medication duties. Other restrictions for these individuals may include no overtime or floating; no multiple employers; and no agency, hospice, or home care employment [1].

The Florida Board of Nursing allows nurses two opportunities to return to work after referral for diversion of drugs or narcotics [14]. A nurse will not have their license reinstated after a third violation of drug diversion for sale or personal use.

## PROMOTING SAFETY IN THE WORKPLACE AND PROVIDING ASSISTANCE

Employers should have clear policies and procedures for fostering and maintaining a drug- and alcohol-free workplace and ensuring that nurses are fit to practice. When system deficiencies are found to exist, these should be remedied. Employees benefit from a sense that policies are enforced equally and without exception; otherwise, uncertainty will exist as to whether poor behavior is overlooked or ignored if an employee is well liked or has perceived seniority. The National Council of State Boards of Nursing (NCSBN) recommends several employer policies to promote safety, including drug testing before employment, testing when there is suspicion of drug use, and conducting regular fitness-to-practice evaluations [9].

All employees should be familiar with and abide by their facility's policies, guidelines, and procedures. The NCSBN recommends that nurses be familiar with procedures (internal and external) related to how to document concerns, how and when to report impairment, return to practice after treatment, and relapse management [9]. Nurses should also be provided with information about employee assistance programs (if applicable), including a clear understanding of the confidentiality of such programs.

**Customer Information/Answer Sheet insert located between pages 88–89.**

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## COURSE TEST - #31111 RECOGNIZING IMPAIRMENT IN THE WORKPLACE: THE FLORIDA REQUIREMENT

*This is an open book test. Please record your responses on the Answer Sheet.*
*A passing grade of at least 70% must be achieved in order to receive credit for this course.*

***This 2 contact hour activity must be completed by October 31, 2022.***

1. **The rate of alcohol and drug dependency among nurses and physicians is estimated to be slightly higher than or equal to the rate found in the general public (10% to 15%).**
   A) *True*
   B) *False*

2. **Use of street-type drugs (e.g., cocaine, cannabis) is higher in nurses than in the general population.**
   A) *True*
   B) *False*

3. **A positive attitude toward drugs and drug use (i.e., "pharmacologic optimism") is a unique risk factor for substance use in nurses.**
   A) *True*
   B) *False*

4. **Male nurses are more likely than female nurses to abuse substances and are over-represented in treatment programs.**
   A) *True*
   B) *False*

5. **Impaired nursing practice is defined as isolated incidents that may be caused by job stress.**
   A) *True*
   B) *False*

6. **Frequently reporting medication spills or other waste may be a sign that a healthcare professional is diverting drugs for personal use.**
   A) *True*
   B) *False*

7. **Experienced, older nurses are more likely to report impairment because they have likely witnessed the negative effects in coworkers at some point.**
   A) *True*
   B) *False*

8. **Reporting suspected impaired practice to Florida's Intervention Project for Nurses does not fulfill the mandatory reporting obligation.**
   A) *True*
   B) *False*

9. **The American Nurses Association Code of Ethics recommends confronting potentially impaired colleagues as the initial course of action, before notifying a supervisor.**
   A) *True*
   B) *False*

10. **When a nurse is reported for suspected impairment at work, intervention typically occurs within one to three days.**
    A) *True*
    B) *False*

Be sure to transfer your answers to the Answer Sheet insert located between pages 88–89.
***PLEASE NOTE: Your postmark or facsimile date will be used as your test completion date.***

# Recognizing and Reporting Human Trafficking in Florida

**This course fulfills the Florida requirement for 2 hours of education on Human Trafficking.**

***Audience***

This course is designed for all health and mental health professionals in Florida who may identify and intervene in cases of human trafficking and exploitation.

***Course Objective***

The purpose of this course is to provide physicians, nurses, and other healthcare professionals an in-depth, practical review of human trafficking, including the definition and scope of the problem, the means of identification and assessment of individuals who may be victims, guidance on reporting of cases, and interventions and resources available to victims.

***Learning Objectives***

*Upon completion of this course, you should be able to:*

1. Define human trafficking.
2. Identify the forms of human trafficking.
3. Identify economic, political, social, and cultural factors that contribute to human trafficking.
4. Analyze the trafficking experience, including how traffickers recruit and the financial implications of trafficking.
5. Explain the psychologic, health, and social consequences of human trafficking.
6. Utilize interviewing strategies to assess and identify victims and promote the ethical treatment of trafficking victims
7. Describe the appropriate steps for reporting suspected cases of trafficking.
8. Describe various interventions and resources for human trafficking victims.

***Faculty***

**Alice Yick Flanagan, PhD, MSW**, received her Master's in Social Work from Columbia University, School of Social Work. She has clinical experience in mental health in correctional settings, psychiatric hospitals, and community health centers. In 1997, she received her PhD from UCLA, School of Public Policy and Social Research. Dr. Yick Flanagan completed a year-long post-doctoral fellowship at Hunter College, School of Social Work in 1999. In that year she taught the course Research Methods and Violence Against Women to Masters degree students, as well as conducting qualitative research studies on death and dying in Chinese American families. (A complete biography appears at the end of this course.)

***Faculty Disclosure***

Contributing faculty, Alice Yick Flanagan, PhD, MSW, has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

***Division Planner***

Jane C. Norman, RN, MSN, CNE, PhD

***Division Planner Disclosure***

The division planner has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

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NetCE designates this continuing education activity for 2 ANCC contact hours.

This activity was planned by and for the healthcare team, and learners will receive 2 Interprofessional Continuing Education (IPCE) credits for learning and change.

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***Special Approvals***
This course meets the Florida requirement for Human Trafficking education.

***About the Sponsor***
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Sections marked with this symbol include evidence-based practice recommendations. The level of evidence and/or strength of recommendation, as provided by the evidence-based source, are also included so you may determine the validity or relevance of the information. These sections may be used in conjunction with the study questions and course material for better application to your daily practice.

## INTRODUCTION

Although human trafficking has always existed, it has begun to receive increased attention as a result of awareness and outreach efforts. All social problems compete for attention, and various groups will make compelling claims about social problems using persuasive rhetoric and dramatic statistics [1]. More than just a human rights issue, it has garnered attention from feminists, religious conservatives, labor activists, immigration specialists, and the mental health professions [2]. Furthermore, attention will be drawn from the media, politicians, organizations, and public, all of whom will respond to the gravity of the condition. It is through this process of claims-making and counter claims-making that "conditions" that may not necessarily have initially attracted attention can develop into a recognized social problem [1]. How the problem is described or constructed will influence public opinion, which will then ultimately facilitate action from governmental agencies, social service organizations, and international agencies [3; 4; 5].

This course will provide a basic overview of human trafficking (e.g., the scope, definitions and frameworks, contributing factors, different forms). The course will attempt to provide practitioners a glimpse of the lives of human trafficking victims, including physical, psychologic, social, and sexual abuse that human trafficking victims experience and the types of control tactics perpetrators use. Specific interventions and responses will be covered, including mental health, social services, educational, prevention, and legal efforts. Finally, for practitioners who do work with human trafficking victims, the emotional toil that it takes upon practitioners as well as the importance of self-care will be discussed. The course will end by offering an array of resources. Practitioners will be encouraged to view films and documentaries about human trafficking, as this is one way to "enter the lives" of human trafficking victims and better understand the dynamics of the complex world of human trafficking.

## SCOPE OF HUMAN TRAFFICKING

As the issue of human trafficking is so complex, it is difficult to determine the scope of the problem. Many scholars and researchers believe that published estimates are just educated guesses. On a global level, the International Labour Organization has estimated that there are 40.3 million human trafficking victims [6]. The estimates for the United States are not totally clear, but there were approximately 78,000 human trafficking victims reported to the U.S. State Department in 2016; only an estimated 0.2% are rescued [7]. According to Polaris, which founded and runs the National Human Trafficking Hotline, there have been a total of 40,200 cases of human trafficking reported since 2007 [7].

Weitzer's content analysis of websites and publications about human trafficking found that human trafficking is portrayed as an epidemic, growing at alarming rates, with some government reports estimating 40,000 to 50,000 individuals trafficked in the United States each year [8]. Weitzer argues that many of the reports have overestimated the scope of the problem and points out that the estimates fluctuate drastically year to year [9]. Sex trafficking tends to be portrayed more frequently due to its sensationalism. In a study of 50 human trafficking campaigns in Spain between 2004 and 2017, 40 (80%) depicted sex trafficking and exploitation involving women [10]. The U.S. Department of Justice reported 1,045 convictions for human trafficking-related crimes in 2017, including forced labor and sex trafficking of adults and minors. This was an increase of more than 78% over the number reported in 2015 [6]. In 2016, the International Labour Organization stated that there were 4.8 million victims of sex trafficking, and 15.4 million in forced marriages. The majority (62%) of those trafficked are in Asia and Pacific regions [11]. In 2017, it is estimated that there are 24.9 million people around the world who are in forced labor [11].

Florida ranks third in the United States in terms of destinations for trafficked persons [12]. In 2018, the National Human Trafficking Hotline received 1,885 contacts (e.g., phone calls, texts, e-mails) and 767 human trafficking cases reported in Florida. The most common type was sex trafficking (68%), followed by labor trafficking (16.5%) and combined sex/labor trafficking (7.5%) [12]. The majority of victims were female (69%) and adult (55.8%).

## DEFINITIONS OF HUMAN TRAFFICKING

The United Nations defines human trafficking as [13]:

> The recruitment, transportation, transfer, harbouring or receipt of persons, by means of threat or use of force or other forms of coercion, of abduction, of fraud, of deception, of the abuse of power or of a position of vulnerability, or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purpose of exploitation. Exploitation shall include, at a minimum, the exploitation or the prostitution or other forms of sexual exploitation, forced labour or services, slavery or practices similar to slavery, servitude, or the removal of organs.

In essence, this definition involves three elements: the transport of the person, the force or coercion of the victim, and the abuse and exploitation [14]. The United Nations Office on Drugs and Crime divides the definition of human trafficking into three sections: the act, means, and purpose [15]. The act, or what is done, generally refers to activities such as recruitment, transportation, transfer, harboring, or receipt of persons. The means of trafficking consists of threats or use of force, coercion, abduction, fraud, deception, abuse of power or vulnerability, or giving payments or benefits to a person in control of the victim. Finally, these acts are carried out for the purpose of exploitation, which includes prostitution, sexual exploitation, forced labor, slavery or forced servitude, and the removal of organs [15]. It is important to remember that human trafficking is not human smuggling. Human smuggling involves an individual being brought into a country through illegal means and is voluntary. The individual has provided some remuneration to another individual or party to accomplish this goal [16].

**interactive activity**

Watch the 12-minute video clip The Top 10 Facts About the "S" Word at https://www.youtube.com/watch?v=TJlDBKZmRrE.

This video provides a snapshot of modern slavery, including the economics of slavery and the various types of slavery worldwide.

The Trafficking Victims Protection Act (TVPA) defines human trafficking to include both sex trafficking and labor trafficking [17]. Sex trafficking is the recruitment, harboring, transportation, provision, obtaining, patronizing, or soliciting of a person for the purposes of a commercial sex act, in which the commercial sex act is induced by force, fraud, or coercion, or in which the person induced to perform such an act has not attained 18 years of age. Labor trafficking is the recruitment, harboring, transportation, provision, or obtaining of a person for labor or services, through the use of force, fraud, or coercion for the purposes of subjection to involuntary servitude, peonage, debt bondage, or slavery. A victim need not be physically transported from one location to another for the crime to fall within this definition.

In many cases, women and children are considered the typical victims of human trafficking. Hart posits that women are more vulnerable to trafficking due to the lack of social safety nets in many developing countries [18]. Coupled with women's subordinate social statuses in many cultures, this leads to the "feminization of poverty." Although the social conditions may make women and children more vulnerable to human trafficking, the reality is that men are also victims of human trafficking.

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Overall, the definition of human trafficking is ambiguous because of the many intersections with other issues (e.g., sexual abuse, domestic violence, forced marriage, forced labor) [19]. It occurs both domestically and internationally, but is primarily a hidden problem. This makes research efforts, the prosecution of perpetrators, and policy and community efforts to protect victims even more challenging [19].

## FORMS OF TRAFFICKING

### SEX TRAFFICKING

The TVPA of 2000 is a U.S. federal statute passed by Congress to address the issue of human trafficking and offers protection for human trafficking victims [17]. This statute defines sex trafficking as, "the recruitment, harboring, transportation, provision, or obtaining of a person for the purpose of a commercial sex act" [17]. A commercial sex act is, "any sex act on account of which anything of value is given to or received by any person" [17]. In other words, it usually involves the illegal transport of humans into another country to be exploited in a sexual manner for financial gains [20]. However, it does not always involve the transport of victims from one region to another; such cases are referred to as "internal trafficking" [21]. Victims of sex trafficking could be forced into prostitution, stripping, pornography, escort services, and other sexual services [22]. Victims may be adult women or men or children, although there is a higher prevalence of women and girls. The term "domestic minor sex trafficking" has become a popular term used to connote the buying, selling, and/or trading of children younger than 18 years of age for sexual services within the country, not internationally [22; 23]. An element of force, fraud, or coercion is not necessary, as the victims are children and inherently vulnerable [23]. In the United States, the children most vulnerable to domestic minor sex trafficking are those who are homeless, abused, runaways, and/or in child protective services [22].

Although highly controversial, it is said that sex trafficking victims differ from prostitutes in that sex trafficking victims are forced to involuntarily perform sexual services and are often not paid for their "work." Sex trafficking involves the use of force and coercion and can encompass other forms of criminal sexual activities, including forced erotic dancing, "mail-order brides," and pornography [21]. On the other hand, individuals involved in prostitution make a decision to provide sex services for a fee. The decision to enter prostitution does not eliminate the possibility of being a victim of trafficking if one is held against his/her will through physical and/or psychologic abuse [24]. It is also important to remember that this does not necessarily mean prostitution is a choice these individuals would have made if other options were available or that they have a choice in selecting their sexual partners and/or sexual activities [25].

interactive activity

Visit the PBS Frontline website (https://www.pbs.org/wgbh/pages/frontline/slaves/map) and read the transcripts of interviews with a sex trafficker and five Eastern European female victims who were deceived into sexual slavery.

### BONDED LABOR/FORCED LABOR

The United Nations has defined debt bondage as [26]:

> The status or condition arising from a pledge by a debtor of his personal services or of those of a person under his control as security for a debt, if the value of those services as reasonably assessed is not applied towards the liquidation of the debt or the length and nature of those services are not respectively limited and defined.

Essentially, because the individual does not have money as collateral for the debt owed, the individual pledges his/her labor or, in some cases, the labor of a child or another individual for an unspecified amount of time [27]. These individuals may be transported or trafficked into another country for the purpose of forced labor.

In many cases of bonded labor, the initial loan may be welcomed by the individual. However, the victims do not realize that with the low wages, unspoken high interest rates and other continually accruing fees, and the perpetrator's manipulation of the "accounts," laborers can never repay the loans. Some estimate that half of all persons in forced labor are bonded laborers. The majority of bonded labor cases occur in India, Bangladesh, and Pakistan [28]. Some families find themselves in a cycle of poverty as the debt cannot be paid off and is passed down from generation to generation [27]. Bonded labor can involve laborers in brick kilns, mines, stone quarries, looming factories, agricultural farms, and other manufacturing factories [27]. In the United States, individuals may be trafficked to work long hours in garment factories, restaurants, and other manufacturing sectors. Frequently, the employer/captor will take away victims' identifications, monitor their movements, socially isolate them, and/or threaten deportation if they do not comply [29]. Migrant workers are at high risk of forced labor [24].

In the United States, forced labor is predominantly found in five sectors [29]:

- Prostitution and sex industry (46%)
- Domestic servitude (27%)
- Agriculture (10%)
- Sweatshops and factories (5%)
- Restaurant and hotel work (4%)

It is speculated that most of the forced labor occurs in California, Florida, New York, and Texas, all major routes for international travel [29].

Domestic servitude refers to a category of domestic workers (usually female) who work as servants, housekeepers, maids, and/or caregivers, often in private homes. In some cases, young women are lured with the promise of a good education and work, and when they arrive in the United States, they are exploited economically, physically, and/or sexually. Their passports or identification papers are taken away, and they are told they have to pay off the debt incurred for their travel, processing fees, and any other bogus expenses. Because they do not speak English, they find they have no other recourse but to endure exploitive working conditions [30]. Unfortunately, as in many sectors of forced labor, there are no regulations to monitor the conditions under which domestic servants operate [29].

interactive activity

Watch the 20-minute documentary *A Global Alliance Against Forced Labour*, produced by the International Labour Organization (ILO) at https://www.netce.com/courseoverview.php?courseid=1851.

## CHILD LABOR

Child labor can be viewed as a specific form of bonded labor or forced labor. However, not all child laborers have been trafficked. Child labor is defined by International Labour Organization (ILO) as economic labor performed by a child younger than 15 years of age or hazardous labor done by a child 18 years of age or younger. Child labor is deeply rooted in poverty and the infrastructure and political stability of the country as well as market forces [31]. The ILO estimates that there are 152 million child laborers in the world [32]. Between 2000 and 2016 there was a nearly 38% decrease in the number of children in child labor. The reduction was greater for girls (43%) than for boys (34%). The largest numbers of child laborers are found in Asia and the Pacific region; however, there is evidence that the number of child laborers in Africa is increasing [32].

The definition of child labor is controversial because the definitions for "work" and "childhood" are ambiguous and often culturally defined [33]. On a conceptual level, work may be beneficial for the socialization and educational processes of children [33; 34]. So, it is important to differentiate between child work and child labor. Child work has been defined as activities that are supervised by an adult and that promote the development and growth of the child, while child labor does not benefit the child [31]. Many definitions of child labor create a dichotomy whereby child work is considered not harmful while child labor has negative emotional, intellectual, and social consequences [35]. Work that is exploitive for children has been defined as working long hours at a young age, work that is poorly compensated, and work that produces physical, social, and psychologic stress that will hamper development, access to education, and self-esteem [36]. The ILO adds that child labor is work that interferes, deprives, and interrupts schooling and places children in the position of trying to balance school and long work hours [34].

It is important to remember that child labor occurs in the United States. Runaway and homeless youths are at greatest risk, often lured by promises of work and housing [37]. The Polaris Project found that the top three forms of child labor trafficking in the United States were begging, peddling, and traveling sales crews [37].

## CHILD CONSCRIPTION

In some cases of trafficking, children are kidnapped and trafficked to serve as soldiers. Other times, children are coerced by a narrative indicating they will be serving a higher purpose and avenge the deaths of family and friends; this is known as comradeship [38]. Some children are actively recruited and may be promised a small salary to "voluntarily" join. In a study of 132 cases of child conscription in Columbia, 18% of the children were motivated by perceived economic rewards [39]. Many children lack educational opportunities or hope for a better future, perceiving soldiering as the only option [38]. Conscripted girls often cite educational opportunities as a motive [38]. In Nepal, former female soldiers also indicated they were driven to volunteer in the armed groups by a fear that if they stayed with their families they would be married away as children or raped [38].

It is estimated that at any one time 250,000 to 300,000 children younger than 18 years of age are currently serving as child soldiers [40; 41]. Traffickers prefer to recruit children to serve as soldiers because they are inexpensive and more easily molded and shaped to comply and obey without question [42]. They are also more likely to kill fearlessly and recklessly. Child soldiers are treated as adults, without any regard to how the physical and psychologic rigors of war will affect them psychologically and developmentally. In Uganda, where children are kidnapped or recruited as child soldiers relatively often, the Lord's Resistance Army has been known to initiate new child soldiers in brutal ritualized killings of others so as to terrorize them into submission and annihilate any moral conscience they may have about killing [42]. In Afghanistan, children have been recruited by the Taliban and have served as suicide bombers [28].

It can be difficult to comprehend the atrocities that these children witness and experience. Bayer, Klasen, and Adam conducted a study involving 169 former Ugandan and Congolese child soldiers who were an average of 15.3 years of age [43]. Almost all (92.9%) reported having witnessed a

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shooting, 89% witnessed someone wounded, and 84% witnessed someone seriously beaten. A total of 54.4% reported having killed someone, and 27.8% reported that they were forced to engage in sexual activity [43]. In another study, the researchers found that the experience of conscription among children produced significant emotional and psychologic traumas and a host of cognitive and behavioral problems [24]. In this study of 19 child soldiers, 18 had volunteered to join the army and one had been abducted. Although most of the children volunteered into the army, their participation became involuntary. Some tried to run away or disobey, which resulted in beatings and imprisonment. If captured, they were told to commit suicide [24]. The reintegration of child soldiers is not easy. Many are stigmatized when they return to their home villages, as their families and friends fear that these former child soldiers may be violent [41; 44].

interactive activity

Listen to a National Public Radio interview with Ishmael Beah, a former child soldier, at https://www.npr.org/templates/story/story.php?storyId=7519542.

## FACTORS THAT CONTRIBUTE TO HUMAN TRAFFICKING

### GLOBALIZATION

Human trafficking has been called one of the "darkest sides of globalization" [45]. Globalization is the term used to describe the interconnectedness of countries and nations, which facilitates easy communication, exchange of ideas, and flow of goods, capital, and services [45]. Crimes such as human trafficking are affected by globalization just as legitimate businesses are [46]. Furthermore, the ideals of Western capitalism may reinforce human trafficking as a business or industry, with its emphasis on the free market and the flow of goods and services across international borders [46].

Globalization has also created the need for cheaper labor [28; 47]. A study involving 160 countries examined the effects of globalization and human trafficking trends [48]. Researchers found a positive relationship between globalization and trafficking for forced labor, prostitution, and debt bondage.

### POVERTY

Poverty and incessant economic stressors caused by civil wars, natural disasters, and collapses of government systems all contribute to human trafficking [18; 23; 49]. Families entrenched in deep poverty may feel they have no other recourse but to sell a child or may be more easily lured with promises of money and a better future [49; 50; 51]. In one study, the odds of being trafficked were nine times greater for those who felt extremely hopeless about upward mobility compared with those with lower levels of hopelessness [49].

### SOCIAL AND FAMILIAL DISORGANIZATION

Community factors (such as high social disorganization characterized by violence, unemployment, and high crime) contribute to higher risk of trafficking [23]. In addition, families marked by instability (e.g., domestic violence, child abuse, continual unemployment) are also at higher risk of having a member trafficked [23].

### CORRUPTION

Human trafficking cannot occur without the existence of corruption within existing infrastructures. Public officials, police officers, and local leaders in many developing countries have been known to take bribes to provide protection to parties involved in various aspects of human trafficking [45; 48; 52].

### DIGITAL TECHNOLOGY

The rampant use of digital technology, such as the Internet, greatly facilitates sex trafficking. The relative anonymity of online contact can empower traffickers to recruit or sell victims. Graphic images of women and children engaged in sexual acts can be easily disseminated over the Internet [53]. Traffickers may employ the Internet for advertising, marketing to those interested in making pornography [53]. In addition, social media sites such as Facebook, Craigslist, and Instagram have been used as a means of facilitating trafficking (e.g., by connecting and grooming potential victims) [54; 55; 56]. Newsgroups offer opportunities for those interested in locating women and children for sexual exploitation.

In a qualitative study, smartphones were found to be integral in the business of trafficking [54]. Researchers indicated the phones were used "to maintain contact with each other, in order to facilitate the business 'transactions' and stay in touch with transnational 'partners' and other traffickers who remained in the country of origin" [54; 55].

### RACIALIZED SEXUAL STEREOTYPES

Race and ethnicity have been inextricably linked to sexual violence and victimization. Myths regarding sexuality in certain cultures or racial fetishization may affect trafficking patterns. For example, there is an over-representation of Asian women on American Internet pornography sites in part due to popular myths sexualizing, eroticizing, and exoticizing Asian women. This has translated into trafficking, as traffickers respond to the demand for young Asian women and girls in part fueled by these stereotypes of exotic, docile, submissive, and eager-to-please Asian women [30]. These stereotypes devalue and dehumanize people, which is the underlying core of human trafficking. This contributes to the acceptability of the exploitation of individuals, particularly members of marginalized groups [57].

These racial stereotypes go beyond simply framing the victims in a particular manner [58]. They raise implicit questions regarding how the powers of state are depicted. In other words, the patriarchal attitudes of certain countries lead to "bad" or "backward" cultural practices or ways of being that then cause trafficking—setting up is a dichotomy of the "West" and "others" [58].

### CULTURE

Although many are careful in linking cultural factors to the etiology of human trafficking for fear of imposing judgment on a particular culture, many maintain that cultural ideologies that tolerate sexual trafficking, bonded labor, and child labor may be a stronger factor than poverty in predicting trafficking rates [30; 36]. For example, some cultures emphasize collectivism and prioritizing the needs of the family and group first before the needs of the individual. Some children may feel they have to sacrifice themselves for their family when traffickers promise money [30]. Traffickers also know that they can threaten to hurt victims' families to keep them from escaping [30].

Furthermore, in many cultures, boys are more highly valued than girls, and as a result, girls are considered more dispensable [30]. Sons are considered the family's social security, staying with the family while daughters marry into other families. Therefore, girls may be more likely to be sold into slavery than boys.

Child labor is also inextricably tied to cultural factors. In India, for example, child labor is common because it is believed that children in the lower levels of caste system (i.e., the "untouchables") should be socialized early to understand their positions in society [36]. It has been observed that when traditional cultural and societal norms about women's roles were relaxed in some European countries and more women entered the labor force, child labor decreased [36]. Ultimately, it is difficult to unravel the effects of poverty and culture because the pressures of poverty can lead families to use tradition as a justification to sacrifice young men, women, and children [36].

Ultimately, the conversation about human trafficking is complex, and to attempt to isolate the causes is beyond challenging. Multiple factors have been suggested as possibly predicting human trafficking, including macroeconomic factors (e.g., gross domestic product per capita), unemployment rates, female inequality, cultural oppression, and lack of protection of women's rights [59; 60]. In one study, ease of land access to the destination country appeared to be a powerful predictor in terms of the number of individuals trafficked [59].

## THE TRAFFICKING EXPERIENCE

Five stages of the trafficking experience have been identified [61; 62; 63]:

- Pre-departure stage: The period before the victim becomes involved in the trafficking situation. This may include recruitment and preparing for travel.
- Travel and transit stage: The time after recruitment during which the victim "agrees" or is coerced into the trafficked situation. This phase also includes the journey whereby the trafficker(s) brings the victim(s) to their work destination. It is important to remember that this stage can be very dangerous and can involve numerous transit points.
- Destination stage: This is the period during which the victim arrives at the intended destination. This stage is marked by exploitation, abuse, victimization, and coercion. One way to control the victims is to continually inflate their debt so they have to constantly work to pay it off. Another is to confine and isolate victims.
- Detention, deportation, and criminal evidence stage: If a victim is arrested by the police or immigration authorities, victims are held in legal proceedings and they often fear deportation, and/or retaliation from the trafficker(s).
- Integration and re-integration stage: During this stage, government and nongovernment agencies provide services to victims that involve a long process of attempting to reintegrate the victim back into his/her community.

### TRAFFICKERS: AN OVERVIEW

Much attention has been focusing on victims of trafficking; however, it is important to also understand the perpetrators.

#### Methods of Recruitment

It has been suggested human traffickers employ five general strategies to recruit and traffic victims [64; 65; 66; 67]:

- Kidnapping: Traffickers may kidnap their victims. They may lure them with food or treats or take them by force. Victims with few if any social ties are highly vulnerable, as no one will miss them or report their disappearance.
- Targeting poor families: Traffickers may convince families to sell their children (often daughters). Because many families in developing countries live in abject poverty, traffickers will stress to victims' families how the money will help them to survive. Other traffickers may tell families that selling their daughter will provide her with more promising opportunities.

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- Developing a false romantic relationship with victim: A tactic often used with young girls, perpetrators pose as boyfriends by romancing victims, buying gifts, and proclaiming their love. Victims have a difficult time believing that their boyfriends would hurt or deceive them, making them easy targets for trafficking.
- Fake storefronts: Some employment, modeling, or marriage agencies are fronts for illegal trafficking operations. A potential victim might be lured with the promise of employment, a lucrative modeling contract, or an arranged marriage in the United States. After victims have been lured in, traffickers come to assess their "product." Perpetrators may be family members or friends.
- Legal storefronts: Some legal businesses in the tourism, entertainment, and leisure industries integrate trafficking activities into their business structure.
- Recruiting local prostitutes: Traffickers might purchase prostitutes working in local night clubs from brothel owners or simply lure prostitutes by promising them a more affluent future. Women working as prostitutes may later recruit younger victims.

**The Financial Profits**

Unfortunately, human trafficking can be a lucrative business. According to the ILO, profits from forced labor, trafficking, and modern slavery are estimated to be $150 billion annually [68]. The majority of this total is attributable to commercial sexual exploitation ($99 billion) followed by construction/manufacturing/mining ($34 billion), agriculture ($9 billion), and domestic work ($8 billion) [68].

The receiving country and location of trafficking will affect the profits. For example, if a girl is kidnapped from a village in Nepal and taken to India, she can be sold in India for $1,000 [64]. If she is then trafficked to the United States, she could be sold for $20,000.

Interestingly, the "cost" of a slave has not risen over time. According to Bales, the cost of obtaining a slave to work in the agriculture sector in 2007 was about $100; in 1850, this same slave would cost the equivalent of $40,000 in 2007 currency [69]. In one study, it was approximated that in the United States, a trafficker can make an average of about $300,000 per victim lifetime, which would total $32 billion annually [70]. Income in larger cities (e.g., Atlanta, San Diego, Washington, DC) may be even greater.

## CONSEQUENCES OF HUMAN TRAFFICKING: IMPACT ON VICTIMS

The social realities of victims of human trafficking are difficult to comprehend, and some may wonder why victims remained silent and complied with their traffickers. The Silence Compliance Model was created to explore the factors that promote victims' seeming willingness to comply to their traffickers' demands [71]. This model has three categories: coercion, collusion, and contrition. Victims are coerced, brutalized, and threatened, and basic necessities of life are withheld from them. Methods of psychologic coercion include isolation, induced exhaustion, threats, degradation, and monopolizing perception [72]. This serves to silence victims and create a sense of helplessness. By isolating and controlling victims' movements and limiting their exposure to the outside world, traffickers have complete monopoly of their attention and perception of reality [72]. Victims are then forced to collude with the traffickers as a result of their relative isolation, fear, false sense of belonging, and complete dependence on the trafficker. Finally, victims feel contrite, ashamed, stigmatized, and remorseful of the things they have been made to do [71].

### PSYCHOLOGIC AND MENTAL HEALTH CONSEQUENCES

Victims of trafficking experience a host of psychologic, mental health, and emotional distress. Depression, suicidal ideation, substance use, and anxiety are typically cited mental health problems [23]. Post-traumatic stress disorder (PTSD) is also common given the trauma many victims experience, including physical and/or sexual violence and abuse; victims forced into prostitution experience continual, daily sexual assault [73]. In a study of 192 European women who were trafficked but who managed to escape, the overwhelming majority (95%) disclosed that they experienced physical and sexual violence during the time of their trafficked experience [74]. More than 90% reported sexual abuse, and 76% reported physical abuse.

Trafficked victims experience fear from the start of their capture through the transit phase and after they arrive at their destination. During the transit stage, many victims experience dangerous border crossings, risky types of transports, injury, beatings, and sexual assault [61]. Upon arrival to their destination, many trafficking victims have been socially isolated, held in confinement, and deprived of food [75]. All sense of security is stripped from them—their personal possessions, identity papers, passports, visas, and other documents [61; 75]. The continual fear for their personal safety and their families' safety and the perpetual threats of deportation ultimately breed a sense of loss of control and learned helplessness. It is not surprising that depression, anxiety, and PTSD are common symptoms experienced by trafficked victims.

In a study of 164 survivors of human trafficking who returned to Nepal, the authors examined the extent to which they experienced PTSD, depression, and anxiety [76]. All of the survivors experienced some level of these disorders, but the survivors who were trafficked for sex experienced higher levels of depression and PTSD compared to those who were not trafficked for sex. In a study with Moldovan survivors of human trafficking, researchers found that six months after their return, 54% had diagnosable mental health issue. Specifically, 35.8% met the diagnostic criteria for PTSD, 12.5% met the criteria for major depression, and 5.8% were diagnosed with an anxiety disorder [77].

There is also some evidence that trafficked victims may experience complex PTSD, a type of PTSD that involves an acute change of the victims' sense of self, their relationship with others, and their relationship with God or higher being [78]. These persons direct anger inwardly (toward themselves) in addition to toward their perpetrators, which results in a loss of faith in themselves and the world [63; 75; 78]. Perhaps due to self-directed anger and shame, some will engage in risky sexual behaviors, self-harm, and substance abuse. Some victims also have difficulty managing and expressing how they are feeling, while others experience dissociation [75].

Substance abuse is also common among victims. In interviews, trafficked women discussed how traffickers forced them to use substances like drugs and/or alcohol so they could work longer hours, take on more clients, and/or perform sexual acts that they could not normally [61]. Other victims used substances as a means to cope with their situations. Trafficked individuals who are gender and/or sexual minorities report shame, confusion, and sexual identity issues if forced into heterosexual relationships [63].

Children forced into labor experience grueling hours and are frequently beaten by their captors. According to Clawson and Goldblatt, underage victims of domestic sex trafficking fluctuate through a range of emotions from despair, shame, guilt, hopelessness, anxiety, and fear [79]. Depending upon the level of trauma, some engage in self-destructive behaviors like self-mutilation or suicide attempts. For some, their ambivalence toward the perpetrators may be confusing. On the one hand, they want to escape the abuse, yet simultaneously, they may have a sort of traumatic bond with the perpetrators [79].

Children forced into conscription will also experience a host of psychologic symptoms. In a study comparing former Nepalese child soldiers and children who were never conscripted, former child soldiers experienced higher levels of depression, anxiety, PTSD, psychologic difficulties, and functional impairments [80]. In another study of former children soldiers from the Congo and Uganda, one-third met the criteria for PTSD [43]. The researchers found there was a relationship between greater levels of PTSD symptoms and higher levels of feelings of revenge and lower levels of openness to reconciliation [43]. In-depth narrative interviews of former child soldiers from northern Uganda found that the children spoke of the violence and atrocities they witnessed without any emotion, as if they had removed themselves from their experiences [81]. This speaks to how the victims have to numb themselves psychologically in order to cope. The researchers also found that the children who lost their mothers were more traumatized by this experience than the violence they witnessed as soldiers.

Some have argued that the diagnostic criteria of PTSD may not be easily applied to those from different cultures. As a result, it is important to assess for other psychiatric disorders, such as depression. Japan, for example, never used the PTSD diagnosis prior to 1995, despite the fact that they have a large and intricate mental health system [82]. Ultimately, PTSD cannot be universally applied to every culture and for every humanitarian crisis; therefore, if a human trafficking victim does not necessarily fall within the Diagnostic and Statistical Manual of Mental Disorders criteria for PTSD, one cannot necessarily conclude that they have not experienced trauma or are not traumatized [82].

## SOCIAL CONSEQUENCES

When rescued and attempting to reintegrate into their communities, victims of human trafficking often experience stigma, ostracism, and marginalization [80; 83]. For example, in Nepal, community members perceived returning child soldiers who had performed acts such as carrying dead bodies or coed sleeping as in violation of Hindu cultural norms [80]. One documentary following former child soldiers living in a refugee camp in northern Uganda found that preconceived notions and myths about children soldiers often led to ridicule and ostracism after they were liberated from the army and returned home.

However, girls who were recruited as soldiers, who were forced to have sex, or who return with children appear to be the most marginalized group [84]. In a qualitative study of former girl soldiers in Sierra Leone, researchers found that, compared to returning boy soldiers, girls were perceived to have violated gender norms and values about sexuality. Although psychologically and developmentally they were still children, the community perceived and treated them as "damaged" or "unclean" women. Their communities were not able to integrate them back in despite the victimization they experienced. These girls lacked voice and experienced shame, marginalization, poverty, and powerlessness upon their return [84]. In a study of former child soldiers in Uganda, the children reported having difficulty finding jobs or getting married when they returned home. Girls who had been raped were stigmatized and made to feel unwelcome in their communities. Others stated that their community perceived them as murderers [44].

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## HEALTH CONSEQUENCES

In studies of trafficked women, headaches, fatigue, dizziness, back pain, pelvic pain, stomach pain, sexually transmitted infections (STIs), unwanted pregnancies, and gynecologic infections were common, generally the result of continual physical, psychologic, and sexual abuse [23; 74]. Victims of labor trafficking also experience health issues related to the type of work, workplace conditions, malnutrition, and violence [85]. It is important to remember that some of these somatic complaints, such as headaches, fatigue, and gastrointestinal problems, may be underlying symptoms of anxiety, depression, and stress [74]. Some cultural groups might not use the terms "depression," "sad," or "anxious," but may use metaphors and somatic symptoms to describe their pain, all of which are embedded within cultural ideologies. The most common culture-based idioms of distress are somatic symptoms. Some groups tend not to psychologize emotional problems; instead, they experience psychologic conflicts as bodily sensations (e.g., headaches, bodily aches, gastrointestinal problems, and dizziness).

Using an in-depth, direct interview survey designed to explore each stage of the trafficking experience, a multi-country European study identified a range of aversive health, sexual, and reproductive consequences common among women and adolescent victims of human trafficking [61]:

- Pre-departure stage: All victims reported having had limited knowledge of the health implications of having sex with strangers, and only 1 in 25 felt well-informed regarding the risks of acquiring HIV or other STIs.
- Travel and transit stage: Half of those interviewed reported having been confined, beaten, and/or raped during the journey.
- Destination stage: A large majority reported having been "intentionally hurt" (as evidenced by contusions, lacerations, loss of consciousness, and signs of head trauma); subjected to solitary confinement and deprived of human contact and adequate food and nutrition; subject to a variety of physical ailments, including headache, fever, undiagnosed pelvic pain, urinary tract infection, STIs, rash/scabies, and oral/dental health issues. All had experienced repeated sexual abuse or coercion, and 1 in 4 reported at least one unintended pregnancy (often involving negative outcomes of abortions performed in unsafe and unhealthy conditions).

In the context of forced prostitution among trafficked victims, safeguards against infection (e.g., regular condom use), early diagnosis, and adequate antimicrobial treatment are inconsistently employed or absent entirely [61]. Consequently, in addition to unwanted pregnancy, the risk for pelvic inflammatory disease and subsequent infertility is relatively high. Moreover, the relationship between forced prostitution and HIV infection is stronger when sexual violence is involved. Women who are forced into prostitution are 11 times more likely to become HIV-infected than women who entered prostitution voluntarily [86]. Sexual violence may increase the transmission risk as a result of open abrasions and injuries to the vagina. Furthermore, sexual violence can negatively impact self-esteem, which could then deter victims from advocating more strongly for condom use [86].

The British Association for Sexual Health and HIV has identified trafficked women/commercial sex workers as a group vulnerable to sexual violence. Inquiries about such vulnerabilities will help to identify those in need of additional support and help to facilitate appropriate referrals to mental health services, general practitioners, and support agencies. Access to interpreter and advocacy services may be helpful.

(https://www.bashhguidelines.org/media/1079/4450.pdf. Last accessed August 15, 2019.)

**Level of Evidence**: Expert Opinion/Consensus Statement

Among child victims of human trafficking, healthy growth and development is especially problematic. Malnourishment and poor hygiene often lead to delayed bone growth, poorly formed teeth, and early dental caries [87]. The intense nature of child labor also has severe negative physical and health consequences. Children working in unsafe conditions without protection, such as in mines or mills, can lead to respiratory problems such as asthma and bronchitis [88]. A study of adult and child laborers on tobacco farms in Kazakhstan found that the workers were unaware that exposure to tobacco and pesticides could affect their health. Protective garments were also rare, with many children not even having gloves [89].

Under normal circumstances, young children are still developing physically; however, such adverse conditions can halt their development. The lungs of adolescent boys typically experience the most rapid growth around 13 to 17 years of age; working in conditions characterized by excessive toxic dust or unclean air makes them more vulnerable to developing silicosis and fibrosis [88]. In the United States, young children participating in agricultural work are at risk of the major traumas associated with farm work, such as injuries caused by tractors or falling from heights, in addition to those injuries associated with repetitive stress and exposure to toxins. Children have thinner layers of epidermis, which make them more vulnerable to the toxicity of pesticides, and this can ultimately increase their risks for certain cancers

[88]. Children working in gold mines do intensive digging, lifting, and transporting and mix mercury with the crushed ore, often with their bare hands. Mercury toxicity can lead to neurologic symptoms such as loss of vision, tremors, and memory loss [89].

## IDENTIFICATION AND ASSESSMENT

Healthcare providers are often the most likely to encounter a victim of human trafficking under circumstances that provide an opportunity to intervene. Yet, many providers lack the training and confidence to identify and assist victims. In a survey of 110 emergency department physicians, nurses, and physician assistants, the majority (76%) reported having a knowledge of human trafficking, but only 13% felt equipped to identify a trafficking victim and only 22% were confident in their ability to provide satisfactory care for such patients [90]. Less than 3% had ever received any training on this topic. In a separate survey of healthcare and social service providers, only 37% had ever received training on identification of trafficking victims [91].

Because human trafficking and exploitation are, by nature, covert processes, the identification and rescue of the victim can be difficult. Traffickers move victims from one area to another to reduce the risk of identification, and one of the main problems with the assessment of such individuals is that practitioners may only have a one-time encounter with the victim [92].

### POTENTIAL RED FLAGS

Bruises, scars, and other signs of physical abuse may be missed on examination, as victims are often beaten in areas hidden by clothing (e.g., the lower back) so as not to affect the victim's outer appearance. Physical trauma symptoms may be present, commonly on the torso, breast, and/or genital areas [70]. Burns, broken bones, pelvic pain, and/or STIs (particularly in children) may also be red flags [93]. However, more common physical injuries are also typical with other circumstances, making physical exam of limited value. The entire clinical picture should be considered.

It may also be helpful to assess for tattoos and/or other modifications (e.g., branding, piercings). Some perpetrators use tattoos to identify victims or to signify "ownership" [56].

With regard to episodic clinical encounters, recommendations for providing safe assessments in a culturally sensitive manner are lacking. The Department of Health and Human Services Administration for Children and Families maintains a useful website that addresses practical issues of human trafficking for allied professional groups, known as the Rescue and Restore Campaign [87]. Included are diagnostic and interviewing tips to help healthcare providers recognize, intervene, and refer trafficking victims. Emergency and primary care providers should be cognizant of clues that a patient may be the victim of trafficking and prepared to engage in greater depth of inquiry with special attention to the following indicators [87; 93; 94; 95]:

- Does someone, other than family, who behaves in a controlling manner, accompany the patient? Traffickers attempt to guard and control most every aspect of the victim's life, while maintaining isolation from family, friends, and other common forms of human interaction.
- Are there inconsistencies in answers to basic questions (e.g., name, age, address)?
- Does the patient speak English? If not, has he or she recently been brought to this country, and from where? Many victims of human trafficking have recently been trafficked from other countries. As discussed, common sending countries/regions include Eastern Europe, Asia, Latin America, Africa, India, and Russia.
- If the patient is accompanied by someone other than a family member, who does the talking, and why? Attempt to interview and examine the patient separately and alone, using an interpreter if necessary. Probe in a sensitive manner for detailed information on the situation and relationship.
- Does the patient show signs of psychosocial stress (e.g., appears withdrawn, submissive, fearful, anxious, depressed)? Can the individual account for this?
- Are there visible signs of physical abuse (e.g., bruises, lacerations, scars)? How does the individual explain these?
- Does the patient lack a passport or other immigration and identification documentation (e.g., driver's license, social security number, visa)? If so, what explanation is given? To control victims' movements, traffickers often take away passports and any legal identification documents.
- What is the patient's home and work situation? Basic questions about what they eat, where they live and sleep, who else lives with them, and what work they do can be revealing. For example, "Can you leave your work or job situation if you wish?" or "When you are not working, can you come and go as you please?"
- Is the explanation given for the clinical visit consistent with the patient's presentation and clinical findings?
- Does the victim appear fearful when asked questions about citizenship, country of origin, immigration status, or residence? This may indicate a fear of deportation.

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- If the victim is a minor, is s/he in school? Living with parents or relatives? If not, what reasons are given for these circumstances?

## SCREENING QUESTIONS

Examples of questions to screen for human trafficking include [96; 97; 98]:

- Can you tell me about your living situation?
- Has anyone ever threatened you with violence if you attempted to leave?
- Does anyone force/require you to have sexual intercourse for your work?
- Has anyone ever threatened your family if you attempted to leave?
- Does anyone make you feel scared at work?
- Are you free to come and go as you wish?
- Does your home have bars on windows, blocked windows/doors, or security cameras?
- How many hours do you work?
- Have you ever worked without receiving payment you thought you would get?
- Do you owe your employer money?
- Do you have to ask permission to eat, sleep, use the bathroom, or go to the doctor?

The Polaris Project has developed a flow chart for the assessment of potential trafficking victims, available at https://www.traffickingresourcecenter.org/sites/default/files/Assessment%20Tool%20-%20Medical%20Professionals.pdf. If a person is thought to be a victim, one should follow workplace protocols and/or contact the National Human Trafficking Resource Center at (888) 373- 7888 for next steps.

## INTERVIEWING TRAFFICKED VICTIMS: BEST PRACTICE GUIDELINES

Service providers should repeatedly weigh the risks and benefits of various actions when interviewing human trafficking victims [65; 99; 100]. The following interviewing recommendations were published by the World Health Organization to encourage service providers to continually and ethically promote human trafficking victims' safety during every phase of the interviewing process [93; 101]:

- Each victim and trafficking situation should be treated as unique; there are no standard templates of experiences. Listen carefully to the victim's story. Each story told is unique, and each patient will voice distinctive concerns. Believe each story, no matter how incredible it may seem. As rapport and trust build (perhaps very slowly), accounts may become more extensive.
- Always be safe and assume the victim is at risk of physical, psychologic, social, and legal harm.
- Evaluate the risks and benefits of interviewing before starting the interviewing process. The interviewing process should not invoke more distress. In other words, the interviewing process should not end up re-traumatizing the victim.
- Provide referrals for services where necessary; however, it is necessary to be realistic and not make promises that cannot be kept. Trust is vital because it has been severed on so many levels for trafficking victims.
- Victims' readiness to change will not be based on what societal defines as "ready" or social expectations. Some victims will eagerly grasp new opportunities, while others may be fearful of potential traffickers' threat and be less receptive to help.
- Determine the need for interpreters and if other service providers should be present during the interviewing phase. Ensure that everyone involved is adequately prepared in their knowledge about human trafficking, how perpetrators control their victims, and how to ask questions in a culturally sensitive manner. Keep in mind that often times, traffickers will offer to help with the interpreting. Using interpreters from the same community of the victim should be avoided to prevent breaches in confidentiality.
- All involved should be prepared for an emergency plan. For example, is there a set plan for a victim who indicates he/she is suicidal or in danger of being hurt?
- Always be sure to obtain informed consent. Remember the informed consent process is going to be unfamiliar to many victims. In addition, self-determination and autonomy have been compromised by continual threats and being forced to commit dehumanizing acts. Avoid using legal and technical jargon.

It is important to use a trauma-informed approach when assessing and caring for potential victims, which requires that practitioners understand the impact of trauma on all areas of an individual's life [102]. Physical, emotional, and psychologic safety is at the heart of trauma-informed care. Providers should assume that human trafficking victims are describing their reality to the best of their ability, given the trauma they have experienced. Responses and behaviors (e.g., being guarded, defensive, belligerent) may be coping mechanisms [102].

## REPORTING

If screening and assessment findings indicate that an individual may be a victim of human trafficking, one should contact the National Human Trafficking Hotline at 1-888-373-7888. A text telephone (TTY) option for people who are deaf, hard of hearing, or speech impaired can be accessed by dialing 711. Reporting by text is available by texting the National Human Trafficking Hotline at 233733. Online chat is also accessible at https://humantraffickinghotline.org.

The National Human Trafficking Hotline collects information about the location of the trafficking case and the name of the suspected trafficker. The hotline will also request non-personally identifying information, such as the city and state of the reporter and how he or she learned of the hotline; reporting can be done anonymously. Reporters and/or victims are only asked to provide information they feel comfortable sharing, and the hotline does not share information with external agencies unless permission is given or when required by law. Hotline calls are managed by anti-trafficking hotline advocates, who are specifically trained. After receiving a report of suspected human trafficking, the National Human Trafficking Hotline will assess each case individually to determine if a case should be reported to a local, state, or federal investigative and/or service agency equipped to investigate the tip and/or respond to the needs of the potential victim.

Under the child abuse laws, practitioners who are mandated reporters and who are suspicious that a minor is being abused should immediately report the abuse. Persons in Florida who know, or have reasonable cause to suspect, that a child is abused, neglected, or abandoned must immediately report such knowledge or suspicion to the Florida Abuse Hotline of the Department of Children and Families at 1-800-96-ABUSE.

## INTERVENTIONS AND RESOURCES

### EDUCATION AND PREVENTION

Education is believed to be a key ingredient in the prevention of human trafficking. Raising awareness through advertisements, campaigns, and other creative vehicles regarding recruitment threats, the various deception techniques employed, the different forms of human trafficking, and the consequences of human trafficking can decrease the incidence [64; 103]. Because the general public often believes human trafficking is a problem that only occurs in developing countries, there is a clear need for public education about trafficking and safety for young children and women in and outside the United States [22]. The Campaign to Rescue and Restore Victims of Human Trafficking provides brochures and posters about human trafficking, which are available to be ordered (at no cost) from https://www.acf.hhs.gov/archive/otip/resource/about-rescue-restore [87]. Posting these brochures or posters increases the possibility that a trafficked victim will self-report [100].

Education about human trafficking has become a higher international priority. Innovative and creative approaches are being implemented to disseminate information about human trafficking, particularly how perpetrators recruit high-risk groups (e.g., youths with disabilities, runaways) [67]. For example, groups have used street plays to educate communities about child labor dangers in India [104].

**interactive activity**

Watch a video produced by the ILO exploring the use of street plays to educate communities about child labor in India at https://www.netce.com/courseoverview.php?courseid=1851.

Although the topic of human trafficking has become more common in public discourse, service providers and law enforcement authorities remain under-educated about human trafficking. They are not sure what to look for, what to ask, and what to do if they do identify individuals who are victims of human trafficking [103]. Law enforcement officials require training to identify and assess potential victims at various borders and ports of entry. If a minor is accompanied by an adult who is not the child's parent or legal guardian, this should raise a red flag [103]. Furthermore, to work effectively to identify human trafficking victims, there is a need for service providers to navigate and collaborate with a complex host of government, social service, mental health, and nongovernment legal entities [103].

### MENTAL HEALTH AND SOCIAL SERVICES

Care and services provided to victims can be organized into three distinct categories: immediate and concrete services at the time of rescue; services related to recovery; and long-term services pertaining to reintegration [105]. When trafficking victims are rescued, a great deal of counseling services and practical, day-to-day assistance will be required. Housing, transportation, food, clothing, medical care, dental care, financial assistance, educational training, reunification (for those who wish to return to their homeland), and legal aid are some of the concrete services needed [71]. Practitioners should connect, coordinate, and case manage these services as much as possible. During this stage, it is also important to understand victims' needs, their strengths, and their risks and vulnerabilities [75].

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Safety planning is also crucial in the immediate rescue stage. Traffickers may be continuing to try to locate some victims; placing victims in safe houses may be necessary [63]. The National Human Trafficking Hotline encourages that safety planning be based on the unique needs and circumstances of the individual.

During the recovery and reintegration stages, as discussed, human trafficking victims experience an array of mental health and psychologic issues. Mental health counseling is vital, but it is important to remember that the concept of counseling or talk therapy may be foreign to victims from non-Western cultures [65]. The expression of emotions may be in opposition to cultural values of emotional restraint, which can be intensified by feelings of shame and guilt resulting from experiences with sexual and physical assault. Beyond the paramount importance of the practitioner gaining the patient's trust, practitioners may educate patients about the counseling process and explore their patients' expectations about counseling, healing, and recovery [106]. As noted, victims' symptoms may not only be a manifestation of the trauma but also coping mechanisms to cope with self-blame, shame, and trauma [56].

Given differing cultural beliefs about healing, it is crucial that practitioners be open to alternative treatment and explore with patients the use of traditional healing methods [65]. There are many indigenous healing interventions victims may be using, including cultural rituals, faith healing, therapeutic touch, herbal remedies, and spiritual practices [107]. These interventions are multi-layered, taking into account the physical, psychologic, communal, and spiritual [107]. These healing methods are historically rooted in specific cultures, and therefore, practitioners should become familiar with traditional healing methods and how they can be integrated with Western counseling techniques [106]. For example, given many cultural groups' beliefs that unmarried girls are defiled if raped, a cultural cleansing ritual may be needed as a first step to help a community accept a returning victim who was sexually assaulted during her trafficking experience [30]. After this ritual is performed, it is possible that both the patient and her family may be more open to counseling and other services.

Other trauma interventions that might be beneficial include cognitive-behavioral therapies, eye movement and desensitization reprocessing therapies, mindfulness techniques, and expressive therapies [56; 63].

Physicians, social workers, nurses, therapists, and counselors must be familiar with legal, case management, educational, job and life skills training, and housing services in the community. Human trafficking victims are not only unfamiliar with navigating the social service system, but many are also not proficient in English. Therefore, practitioners will serve as coordinators and advocates, linking necessary services. In one study, the majority of agencies had to rely on collaboration in order to refer clients [108]. Social workers and practitioners relied on word-of-mouth and community meetings to learn about services in order to better meet the needs of human trafficking victims. Furthermore, because many community organizations and agencies are not familiar with human trafficking, practitioners must take a primary role in educating colleagues about the complex dynamics of human trafficking.

It is important to remember that the evidence supporting interventions and therapies for victims of human trafficking is in its infancy [105]. Most efficacy studies of therapies and interventions do not involve experimental designs, which makes it difficult to draw definitive conclusions regarding efficacy. Future work is needed to develop and evaluate interventions that address the multilayered and complex needs of human trafficking survivors.

**interactive activity**

For more information on how to identify and assist victims, watch the information video *Look Beneath the Surface*, produced by Rescue & Restore Victims of Human Trafficking public awareness campaign, an initiative of the U.S. Department of Health and Human Services, at https://www.youtube.com/watch?v=bqyzW84I3Dc.

## ADVOCACY

Physicians, social workers, nurses, allied health professionals, counselors, and psychologists will find themselves in multiple roles when working with victims of human trafficking. Advocacy is one of these roles and involves the practitioner being an agent for change. This consists of engaging in activities that alter the social conditions at the individual, family, community, and institutional levels [109]. One way to advocate on behalf of human trafficking victims is by signing petitions or joining credible organizations concerned with changing the circumstances that lead to human trafficking. Many organizations have petitions established on their websites for individuals to persuade policymakers, legislators, and government officials to advocate for the protection of human trafficking victims, create greater awareness of the problem, and prosecute traffickers, including:

- https://www.freetheslaves.net
- https://polarisproject.org
- https://www.stopthetraffik.org

## LAWS AND POLICIES

### Justice for Victims of Trafficking Act

In 2015, the Justice for Victims of Trafficking Act (JVTA) became law, allowing survivors formal input in federal anti-trafficking policy and providing incentives for states to enact laws to prevent the prosecution of child victims for crimes committed as a direct result of being subjected to trafficking. The JVTA provides additional bases of criminal liability for those who patronize or solicit trafficking victims for commercial sex and creates a new offense prohibiting the advertising of sex trafficking activity. It also clarifies that traffickers in child sex trafficking cases who had a reasonable opportunity to observe the victim can no longer claim ignorance about a victim's age as a defense [24]. Some provisions of this law are scheduled to expire in 2019 and 2020 [110].

### Victims of Trafficking and Violence Protection Act

A wide range of laws have been established to protect human trafficking victims and to prosecute perpetrators. A general knowledge of these laws is helpful when caring for victims and seeking appropriate social services. The TVPA was enacted in 2000 and reauthorized in 2003, 2005, 2008, 2013, and 2018 by the Trafficking Victims Protection Reauthorization Acts [24]. It emphasizes the three Ps: prevention, protection, and prosecution [111]. The prevention component consists of training and awareness; the protection dimension gives trafficked victims the ability to receive services using federal funds like other refugees; and the prosecution component focuses on laws and policies for the prosecution of traffickers.

Because victims of trafficking are often viewed as criminals, this law states that victims of severe trafficking should not be penalized for any illegal behaviors or acts they engaged in as a result of being trafficked, including entering the United States with false documents or no documentation or working without appropriate paperwork [64]. This law also allows T Nonimmigrant Status (T visas) to be granted to victims of trafficking so they may remain in the United States with the purpose of collaborating with the federal authorities to prosecute the perpetrators. During this time, victims are offered a range of benefits and services, including access to the Witness Protection Program [64]. After three years, victims can apply for permanent resident status [16].

One of the criticisms of the Act is that it places the burden of demonstrating innocence and coercion on the victim [112]. The Act also fails to recognize the complex dynamics of human trafficking. For example, it focuses more on sex trafficking versus other forms [113]. Many victims have been abused and terrorized by the perpetrators, who they must now provide information and evidence against to stay in the country. Victims are continually fearful that they will be deported [112].

Victims who are of minor age are eligible for Unaccompanied Refugee Minors programs, the Children's Health Insurance program, and Temporary Assistance to Needy Families [103]. Furthermore, victims between 16 and 24 years of age are eligible for work permits and can apply for the Job Corps program [103]. However, it is important to remember that the key to this law is that the victim must have experienced a "severe form" of trafficking and the victim must be willing to assist in the apprehension and prosecution of the perpetrator to receive services [114].

### Preventing Sex Trafficking and Strengthening Families Act

The Preventing Sex Trafficking and Strengthening Families Act was signed into law in 2014. In accordance with this law, child welfare agencies are required to monitor and report the number of child sex trafficking victims. Cases of suspected or known child sex trafficking must also be reported to law enforcement [37].

### Trafficking Victims Protection Reauthorization Act

The Trafficking Victims Protection Reauthorization Act was introduced and signed into law in 2013. It allocated $5 million in 2009, $7 million in 2010, $7 million in 2011, and $8 million annually through 2017 to provide services to victims and to prevent human trafficking [22; 115; 116]. It amends the TVPA and assists foreign governments to implement programs to prevent human trafficking. Victims of human trafficking in other countries are also eligible for assistance through organizations that have grants from the U.S. government [115]. Greater monitoring of trafficking trends through databases will also be implemented. The Act also declares that it is not a defense that a defendant is not criminally liable or is subject to reduced criminal liability due to acceptance of the illicit conduct in the foreign jurisdiction.

### The Prosecutorial Remedies and Other Tools to End the Exploitation of Children Today Act

The Prosecutorial Remedies and Other Tools to End the Exploitation of Children Today Act was enacted in 2003. This law maintains that all sexual activity with minors, within or outside the United States, is illegal. American citizens who engage in sex with minors in any country and who are caught will be prosecuted in the United States [64].

As of 2017, all 50 states have enacted criminal anti-trafficking laws. In addition, every state has a law on labor trafficking, and all have passed criminal statutes for sex trafficking [117].

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**SOAR to Health and Wellness Act**

The SOAR (Stop, Observe, Ask, and Respond) to Health and Wellness Act was signed into law in 2018. It directs the Department of Health and Human Services to develop a program to train healthcare providers and practitioners to identify possible human trafficking victims, to work with law enforcement agencies, and to refer victims to services [7].

**Florida House Bill 369**

In 2015, The Florida Legislature passed House Bill 369, which mandates the display of a human trafficking public awareness sign in a wide range of locations, including [118]:

- Every public rest area, turnpike service plaza, weigh station, primary airport, passenger rail station, and welcome center in the state
- Emergency rooms at general acute care hospitals
- Strip clubs or other adult entertainment establishments
- A business or establishment that offers massage or bodywork services for compensation that is not owned by a healthcare professional

The sign must contain text, in both English and Spanish, regarding the steps to take if you or someone you know is the victim of trafficking, exploitation, and/or forced labor.

## RESOURCES

For more information and to become involved in advocacy movements, please utilize the following resources. In some cases, the tools provided may be valuable for patient and/or peer training. In particular, the National Human Trafficking Hotline provides free, downloadable awareness materials for victims, first responders, and healthcare and mental health professionals, including a flyer available in 20 languages.

**Alliance for Children in Trafficking**
https://www.napnappartners.org/provider-public-resources

**Coalition to Abolish Slavery & Trafficking**
https://castla.org

**Coalition Against Trafficking in Women**
http://www.catwinternational.org

**Futures Without Violence**
https://www.futureswithoutviolence.org

**HEAL Trafficking**
https://healtrafficking.org

**Human Rights Watch**
https://www.hrw.org

**International Justice Mission**
https://www.ijm.org

**International Labour Organization**
https://www.ilo.org

**Office of Refugee Resettlement**
https://www.acf.hhs.gov/orr

**National Human Trafficking Hotline**
https://humantraffickinghotline.org

**Polaris Project**
https://polarisproject.org

**Salvation Army**
https://www.salvationarmyusa.org

**Sex Workers Project**
http://sexworkersproject.org

**United Nations Office on Drugs and Crime**
**Human Trafficking Knowledge Portal**
https://sherloc.unodc.org/cld/en/v3/htms/index.html

**U.S. Department of Health and Human Services**
**Administration for Children and Families**
https://www.acf.hhs.gov

**U.S. Department of Health and Human Services**
**Administration for Children and Families**
**SOAR to Health and Wellness Training**
https://www.acf.hhs.gov/otip/training/soar-to-health-and-wellness-training

**Services Available to Victims of Human Trafficking:**
**A Resource Guide for Social Service Providers**
https://www.acf.hhs.gov/otip/resource/services-available-to-victims-of-human-trafficking

**U.S. Department of Justice**
**Bureau of Justice Assistance**
https://www.bja.gov

**U.S. Department of Justice**
**Office for Victims of Crime**
https://ojp.gov/ovc

**U.S. Department of Labor**
**Bureau of International Labor Affairs**
https://www.dol.gov/agencies/ilab

**U.S. Department of State, Office to Monitor**
**and Combat Trafficking in Persons**
https://www.state.gov/bureaus-offices/under-secretary-for-civilian-security-democracy-and-human-rights/office-to-monitor-and-combat-trafficking-in-persons

## CONCLUSION

Human trafficking is a severe human rights violation. Because the roots of human trafficking are multifaceted, no one solution exists to eliminate this problem. Unfortunately, as the problem grows, practitioners will be confronted with the issue in their patient populations. Practitioners should be committed to the collaboration amongst disciplines to address poverty, racism, discrimination, and oppression in order to reduce the vulnerable positions of human trafficking victims and their families. Because of the social justice component in the codes of ethics of professionals such as physicians, nurses, social workers, psychologists, and counselors, all practitioners can play a key role in the individual, community, and systemic levels to help address this gross abuse of power. One way to begin is to educate oneself and one's respective disciplines about the global nature of human trafficking and the complex dynamics of the problem.

interactive activity

To view an excerpt of California Senator Kamala Harris's keynote address at Examining the Roots of Human Trafficking and Exploitation, the 2014–2015 UCLA School of Law Symposium, visit http://www.netce.com/coursecontent.php?courseid=1851.

## FACULTY BIOGRAPHY

**Alice Yick Flanagan, PhD, MSW**, received her Master's in Social Work from Columbia University, School of Social Work. She has clinical experience in mental health in correctional settings, psychiatric hospitals, and community health centers. In 1997, she received her PhD from UCLA, School of Public Policy and Social Research. Dr. Yick Flanagan completed a year-long post-doctoral fellowship at Hunter College, School of Social Work in 1999. In that year she taught the course Research Methods and Violence Against Women to Masters degree students, as well as conducting qualitative research studies on death and dying in Chinese American families.

Previously acting as a faculty member at Capella University and Northcentral University, Dr. Yick Flanagan is currently a contributing faculty member at Walden University, School of Social Work, and a dissertation chair at Grand Canyon University, College of Doctoral Studies, working with Industrial Organizational Psychology doctoral students. She also serves as a consultant/subject matter expert for the New York City Board of Education and publishing companies for online curriculum development, developing practice MCAT questions in the area of psychology and sociology. Her research focus is on the area of culture and mental health in ethnic minority communities.

**Customer Information/Answer Sheet insert located between pages 88–89.**

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## COURSE TEST - #97110 RECOGNIZING AND REPORTING HUMAN TRAFFICKING IN FLORIDA

*This is an open book test. Please record your responses on the Answer Sheet.*
*A passing grade of at least 70% must be achieved in order to receive credit for this course.*

***This 2 contact hour activity must be completed by August 31, 2022.***

1. **The United Nations Office on Drugs and Crime divides the definition of human trafficking into three sections: the act, means, and purpose.**
   A) *True*
   B) *False*

2. **Domestic servitude refers to a category of domestic workers (usually female) who work as servants, housekeepers, maids, and/or caregivers, often in private homes.**
   A) *True*
   B) *False*

3. **Digital technology, such as the Internet, greatly inhibits sex trafficking.**
   A) *True*
   B) *False*

4. **Myths that certain races or ethnicities are more erotic and exotic do not affect sex trafficking patterns.**
   A) *True*
   B) *False*

5. **Developing a false romantic relationship with a victim is a method of recruitment used by human traffickers.**
   A) *True*
   B) *False*

6. **Post-traumatic stress disorder is uncommon among human trafficking victims.**
   A) *True*
   B) *False*

7. **Child laborers who work in agricultural fields might be more susceptible to certain cancers due to their rapid growth.**
   A) *True*
   B) *False*

8. **When interviewing a victim of human trafficking, it is important to assess if an interpreter is needed and ensure the interpreter is knowledgeable about the dynamics of human trafficking.**
   A) *True*
   B) *False*

9. **If a practitioner suspects an individual is a victim of human trafficking, he/she should contact the National Human Trafficking Hotline.**
   A) *True*
   B) *False*

10. **One of the criticisms of the Trafficking Victims Protection Act of 2000 is that it places the burden of demonstrating innocence and coercion on the victim.**
    A) *True*
    B) *False*

Be sure to transfer your answers to the Answer Sheet insert located between pages 88–89.
***PLEASE NOTE: Your postmark or facsimile date will be used as your test completion date.***

# Fibromyalgia

***Audience***
This course is designed for nurses, physicians, physician assistants, and other healthcare professionals involved in the diagnosis, treatment, and care of patients with fibromyalgia.

***Course Objective***
The purpose of this course is to provide healthcare professionals with the information necessary to diagnose and treat fibromyalgia according to evidence-based or guideline-endorsed recommendations in order to improve patient quality of life.

***Learning Objectives***
*Upon completion of this course, you should be able to:*

1. Outline the diagnostic criteria established for fibromyalgia, and discuss potential difficulties in establishing a diagnosis.
2. Identify appropriate treatment modalities for patients with fibromyalgia and patient education and follow-up needs.

***Faculty***
**Lori L. Alexander, MTPW, ELS, MWC**, is President of Editorial Rx, Inc., which provides medical writing and editing services on a wide variety of clinical topics and in a range of media. A medical writer and editor for more than 30 years, Ms. Alexander has written for both professional and lay audiences, with a focus on continuing education materials, medical meeting coverage, and educational resources for patients. She is the Editor Emeritus of the American Medical Writers Association (AMWA) Journal, the peer-review journal representing the largest association of medical communicators in the United States. Ms. Alexander earned a Master's degree in technical and professional writing, with a concentration in medical writing, at Northeastern University, Boston. She has also earned certification as a life sciences editor and as a medical writer.

**John M. Leonard, MD**, Professor of Medicine Emeritus, Vanderbilt University School of Medicine, completed his post-graduate clinical training at the Yale and Vanderbilt University Medical Centers before joining the Vanderbilt faculty in 1974. He is a clinician-educator and for many years served as director of residency training and student educational programs for the Vanderbilt University Department of Medicine. Over a career span of 40 years, Dr. Leonard conducted an active practice of general internal medicine and an inpatient consulting practice of infectious diseases.

***Faculty Disclosure***
Contributing faculty, Lori L. Alexander, MTPW, ELS, MWC, has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

Contributing faculty, John M. Leonard, MD, has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

***Division Planner***
Jane C. Norman, RN, MSN, CNE, PhD

***Division Planner Disclosure***
The division planner has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

***Accreditations & Approvals***
In support of improving patient care, NetCE is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

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## INTRODUCTION

Fibromyalgia is a complex rheumatic disorder characterized by chronic widespread musculoskeletal pain and focal tenderness (tender points), often accompanied by fatigue, other somatic complaints, and disturbances of affect and cognition [1]. The definition of the syndrome has been expanded to include the presence of fatigue, stiffness, and nonrestorative sleep; however, individuals with fibromyalgia usually have a broad range of additional symptoms and comorbidities [1; 2; 3]. The onset of fibromyalgia is insidious, symptoms wax and wane in intensity, and the course is variable [3; 4].

Acceptance of fibromyalgia as a discrete clinical entity (not associated with an apparent organic disease) has been slow [3; 5; 6; 7; 8]. In fact, at one time, there was a 40% bias of a person with fibromyalgia being labeled "neurotic" [3]. Despite increasing support for the validity of the syndrome, consensus is lacking about its cause, diagnosis, and optimal treatment [6; 8; 9].

Fibromyalgia has a substantial negative effect on physical, psychologic, and social well-being, and the syndrome is associated with a significant burden in terms of both disability and healthcare costs. Fibromyalgia has been found to have a greater negative impact on quality of life than many other diseases, including osteoarthritis, chronic obstructive pulmonary disease, and permanent ostomies [9]. Activities of daily living and work within the home are often substantially limited. In a large survey of women 31 to 78 years of age, more than 25% had difficulty taking care of personal needs and bathing and more than 60% had difficulty doing light housework, going up/down one flight of stairs, walking one-half mile, or lifting/carrying 10 pounds [10]. The average survey respondent was assessed as having less functional ability than a typical woman in her 80s [10]. Approximately 20% to 50% of individuals with fibromyalgia are able to work few or no days; 36% are absent from work two or more days each month; 31% have lost employment; and 26% to 55% receive disability or Social Security payments [5].

The economic burden is also high. According to studies of large U.S. claims databases, the healthcare costs of fibromyalgia are two to three times higher (compared with controls) as a result of more visits to the physician's office or emergency department and a higher number of prescription medications [11; 12]. Healthcare utilization and costs are high in the year preceding as well as following the initial diagnosis of fibromyalgia [12].

## EPIDEMIOLOGY

According to prevalence and population estimates, fibromyalgia affects approximately 5 million people in the United States [13]. Determining the true prevalence is difficult because of the problems associated with defining its diagnosis according to the available criteria [5; 13]. The prevalence is estimated to be 2% to 8% of the population and increases with age [14; 15].

As with autoimmune diseases, the prevalence of fibromyalgia is higher among women than men, although data are conflicting. A female-to-male ratio of 6:1 to 9:1 has been reported in some studies [5; 12; 16]. However, estimates that use newer, symptom-based diagnostic criteria show a female-to-male ratio of 2:1 [14; 15].

The prevalence of fibromyalgia is 5% to 6% among patients seen in family or general medicine practice settings and among 15% to 20% of patients seen by rheumatologists [8]. As such, the syndrome is among the 100 most common diagnoses made in the family medicine setting, as well as one of the most common diagnoses in office-based rheumatology practice [8; 17]. Fibromyalgia is usually diagnosed between the ages of 20 and 55 years, but the prevalence increases with age, peaking at 70 to 79 years of age (at approximately 7% for women and 1% for men) [5].

The prevalence of fibromyalgia according to race/ethnicity in older studies has been inconclusive, as studies have either included a predominantly white population or have not specified the race/ethnicity of the subjects [13]. In general, the prevalence is similar among racial and ethnic groups [18]. There is no evidence of a higher prevalence of fibromyalgia in industrialized countries and cultures. Among a cohort of 266 individuals with systemic lupus, black race had a negative association with fibromyalgia, and the prevalence has been low among Hispanic and Mexican individuals as well [19; 20].

## PATHOGENESIS

Several etiologies for fibromyalgia have been postulated and explored; the syndrome has been thought to be an inflammatory condition, an autoimmune disease, an unexplained medical syndrome, or a psychiatric condition [3; 7; 8; 21; 22]. However, research has provided little or no evidence to support these bases, and the pathogenesis of the syndrome continues to be poorly understood [8; 9; 23].

Pioneering sleep studies in the 1970s demonstrated that people with fibromyalgia had abnormal sleep physiology, suggesting a central pathology [24]. Since then, substantial evidence has supported a mechanism of central sensitization, or the amplification of pain in the spinal cord through spontaneous nerve activity, expanded receptive fields, and augmented stimulus responses [4; 5; 6; 9]. Studies have also shown that, compared with healthy individuals, people with fibromyalgia experience pain differently and have physiologically lower pain thresholds [6]. Research has also indicated significant dysregulation of the hypothalamic-pituitary-adrenal axis is found in fibromyalgia [9]. In addition, there may be abnormalities of descending inhibitory pathways, neurotransmitters, or neurohumoral responses; low levels of serotonin and norepinephrine metabolites have been found in the cerebrospinal fluid of individuals with fibromyalgia [5; 6; 9].

Genetics is thought to be a factor in the susceptibility of fibromyalgia. Family clustering has been reported, and the risk for fibromyalgia is eight times higher for first-degree relatives of individuals with the syndrome [25]. Abnormalities in the serotonin transporter gene and the catecholamine-*O*-methyltransferase gene have been identified [5; 9; 26]. These abnormalities affect the metabolism or transport of serotonin and norepinephrine, which decrease the sensitivity of pain-processing systems through the descending central nervous system pain pathways [5].

## POTENTIAL ENVIRONMENTAL RISK FACTORS

As with autoimmune diseases, several environmental risk factors have been thought to act as triggers for the development of fibromyalgia. Because research on the etiology of fibromyalgia is lacking, individuals' perceptions of triggers have been the source of some of the available information [27]. Perhaps as a result, data on the frequency of environmental triggers are conflicting, with some studies showing that half of all cases have a distinct physical or emotional trigger and other studies indicating that three-quarters of cases or more had no triggering event [9; 27; 28].

Psychiatric conditions have long been associated with fibromyalgia, and research suggests that such conditions may precede fibromyalgia and act as a trigger for the disease [6; 8]. In one study, when individuals were asked what they perceived to be a trigger for fibromyalgia, 73% attributed the development of the disease to emotional trauma or chronic stress; 24% noted emotional/physical abuse as an adult or child as a perceived trigger [27].

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Injury/trauma and physical illness may also be triggers. Approximately one-third of individuals who attributed fibromyalgia to an environmental trigger noted physical injury (including those from a motor vehicle accident) as the perceived trigger [27]. Acute illness was perceived as a trigger in 27% of individuals in the same survey [27]. Viral infections have been associated with the development of fibromyalgia, and hepatitis C, Epstein-Barr virus, human immunodeficiency virus (HIV), parvovirus, and Lyme disease are thought to be viral triggers, but no causality has been established [6; 9; 28]. Other pain conditions, hyperprolactinemia, and autoimmune diseases have also been reported to be factors [9; 28].

## ASSOCIATION WITH AUTOIMMUNE DISEASES

Several autoimmune diseases have been found in conjunction with fibromyalgia. In a retrospective study of 2,595 cases of fibromyalgia in a nationwide claims database, the likelihood of systemic lupus or rheumatoid arthritis was two to seven times greater than that for controls [29]. Other studies have confirmed an association between fibromyalgia and systemic lupus and rheumatoid arthritis, with reported rates of up to 65% and 57%, respectively [23]. High rates of Sjögren syndrome (up to 50%), and thyroiditis (up to 31%) have also been reported among individuals with fibromyalgia [3; 9; 30]. A small study has suggested that Hashimoto disease and/or subclinical hypothyroidism may be a predisposition to fibromyalgia; signs and symptoms of fibromyalgia were found in nearly one-third of individuals [30].

## CLINICAL MANIFESTATIONS

Chronic, widespread musculoskeletal pain (on both sides of the body for at least three months) is the defining feature of fibromyalgia [1]. This pain is often associated with muscle tenderness (to palpation) adjacent to areas of tendon insertion [3; 31]. In addition, a constellation of other symptoms are common and vary across patients. Most patients complain of stiffness (especially in the morning), fatigue, sleep abnormalities, and difficulties of cognition, such as mental torpor, maintaining attention, and performing tasks that require rapid thought [1; 2; 3; 27; 31; 32; 33; 34].

The likelihood of depression is high among individuals with fibromyalgia [34]. Major depression has been identified in 20% to 62% of individuals with the syndrome [27; 28; 31; 34; 35]. Factors associated with major depression have included younger age, female gender, being unmarried, number of chronic conditions, and limitations in activities [34].

Cognitive dysfunction (often referred to as "fibrofog") affects approximately 40% of individuals [5]. The primary effect is on memory (working, episodic, and semantic), especially when tasks are complex and the individual's attention is divided [36]. Although memory impairment is not as common as many other symptoms, patients have considered them to be among the most troublesome, which is not surprising given that the impairment is equivalent to about 20 years of aging [27; 32; 36]. Attentional control/function is also commonly impaired in individuals with fibromyalgia [36; 37; 38]. Studies have indicated that cognitive dysfunction cannot be attributed solely to symptoms such as depression, anxiety, and sleep problems, but it does seem to be related to the level of pain [36; 37; 38].

## DIAGNOSTIC EVALUATION

Fibromyalgia cannot be diagnosed on the basis of laboratory tests, imaging studies, or pathologic results. As a result, the diagnosis relies on a carefully taken history and comprehensive physical examination. The American Pain Society guideline recommends that the physical examination include a complete joint examination, manual muscle strength testing, and a neurologic examination [4]. The ACR established diagnostic criteria for fibromyalgia in 1990, but the classification system, designed for use in clinical research rather than clinical practice, has many limitations [1; 2; 3; 39].

The lack of objective testing has led to substantial delays in the diagnosis of fibromyalgia, with a diagnosis confirmed only after many visits to healthcare professionals, referrals, diagnostic tests, and several possible diagnoses [5]. Nearly half of individuals with the disease consulted three to six healthcare providers before the diagnosis was made, and 25% saw more than six providers before diagnosis [27]. Physicians also acknowledge diagnostic delay, noting that an accurate diagnosis of a chronic pain disorder (including fibromyalgia) often is not made until after two to three years and consultations with 8 to 13 healthcare professionals [5].

A self-administered questionnaire developed in 2010 may aid in detecting fibromyalgia. The tool, Fibromyalgia Rapid Screening Tool (FiRST), was developed by a group of rheumatologists and pain experts and consists of six questions that can be answered with a yes/no response [40]. A score of five "yes" responses gave the highest rate of correct identification of fibromyalgia patients (87.9%), with a sensitivity of 90.5% and a specificity of 85.7% [40]. FiRST is meant to be used as an initial screening tool, with established diagnostic criteria used to subsequently confirm the diagnosis [40].

| COMMON SYMPTOMS OF FIBROMYALGIA | |
|---|---|
| **Symptom** | **Reported Prevalence** |
| Stiffness | 76% to 91% |
| Fatigue | 24% to 90% |
| Sleep abnormalities | 76% |
| Headaches | 47% to 75% |
| Dry mouth | 18% to 71% |
| Low back pain | 67% |
| Paresthesias | 44% to 67% |
| Restless legs syndrome | 32% to 64% |
| Depression | 20% to 62% |
| Irritable bowel syndrome | 36% to 60% |
| Anxiety | 30% to 56% |
| Raynaud phenomenon | 9% to 53% |
| Muscle spasms | 46% |
| Balance problems | 45% |
| Cognitive dysfunction (impaired memory and/or concentration) | 40% |
| Bloating | 40% |
| Sinus problems | 37% |
| Tooth disorders | 32% |
| Jaw pain | 29% |
| Bladder problems | 26% |
| *Source: [1; 3; 5; 22; 27; 28; 31; 32; 33; 34; 35]* | *Table 1* |

| INSTRUMENTS FOR ASSESSMENT OF FIBROMYALGIA-RELATED SYMPTOMS | |
|---|---|
| **Symptom** | **Assessment Tool** |
| Pain | Visual analog scale<br>Brief Pain Inventory<br>Short Form–McGill Pain Questionnaire<br>Daily pain diary |
| Fatigue | Visual analog scale<br>Multidimensional Assessment of Fatigue Instrument<br>Multidimensional Fatigue Inventory<br>Fatigue Severity Scale |
| Sleep | Visual analog scale<br>Medical Outcomes Study Sleep Scale<br>Pittsburgh Sleep Quality Index<br>Sleep Assessment Questionnaire |
| Depression/anxiety | Beck Depression Inventory<br>Patient Health Questionnaire<br>Beck Anxiety Inventory<br>Hospital Anxiety and Depression Scale |
| Quality of life/functional assessment | Fibromyalgia Impact Questionnaire<br>Short Form–36 Health Survey |
| *Source: [9; 22; 41]* | *Table 2* |

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The current challenge in diagnosing fibromyalgia stems from many factors, including a wide range and variation in symptoms, a complex differential diagnosis, and difficulty with the established diagnostic criteria.

## RANGE AND VARIATION IN SYMPTOMS

There is a wide range of symptoms and comorbidities associated with fibromyalgia, and they occur in a variety of combinations and differ in terms of severity. After the three primary manifestations (fatigue, stiffness, and sleep abnormalities), the most common symptoms are headaches (usually migraine), dry mouth, low back pain, and paresthesias (***Table 1***) [1; 3; 27; 31; 32; 33; 34]. In an online survey conducted by the National Fibromyalgia Association (NFA), 19 symptoms, affecting virtually all body systems, were noted by at least 25% of the respondents [27]. Nearly all individuals with fibromyalgia are polysymptomatic [27].

Most individuals with fibromyalgia describe pain as arising from muscles and joints and also have tender skin [3]. Pain is typically axial in distribution, and pain/stiffness usually occurs in the morning and evening [3]. Patients may note a feeling of swelling in the soft tissues, primarily around the joints, but there is no objective evidence of swelling [3; 28]. The American Pain Society recommends using self-reports as the primary source for pain assessment, focusing on such details as [4]:

- Type and quality of pain
- Source
- Location
- Duration
- Time course
- Pain affect
- Effects on quality of life

Several pain assessment tools may be useful in the setting of fibromyalgia (***Table 2***) [9; 22; 41].

Healthcare professionals should also ask about factors that may exacerbate musculoskeletal symptoms, as these symptoms are modulated in approximately 60% to 79% of individuals [1]. Emotional distress has been the most commonly reported exacerbating factor (83%), followed by changes in the weather (80%), sleeping problems (79%), and strenuous activity (70%) [27]. Many other factors are perceived to worsen symptoms, including fatigue, physical inactivity, mental stress, soft-tissue injuries, travel in a car or plane, and work-related conflict [3; 27].

Patient assessment must include evaluation of the severity of symptoms most often associated with fibromyalgia, as well as overall quality of life and functional assessment [4; 9; 22]. Most assessment tools used have been validated in other settings and are not fibromyalgia-specific. Healthcare professionals should ask patients about how their symptoms affect their ability to work, as physical limitations and cognitive dysfunction may result in an inability to maintain normal employment [3; 4]. A daily pain diary may also be useful in documenting how pain influences activities of daily living and quality of life [9].

In relating their history, individuals will often focus on the symptoms that are of most concern or that are most troublesome. According to the NFA survey, the most troublesome symptoms were (in descending order): morning stiffness, fatigue, nonrestorative sleep, pain, forgetfulness, poor concentration, difficulty falling asleep, muscle spasms, anxiety, and depression [27]. In another study, 100 individuals with fibromyalgia ranked symptoms slightly differently, but the top five symptoms were similar: pain or physical discomfort, joint pain/aching, fatigue or lack of energy, poor sleep, and cognitive dysfunction [32].

Because of the predominance of fibromyalgia among women, there are few data on the clinical profile for men with the syndrome. The available research points to differences in the clinical presentation according to gender. Women tend to report more symptoms, to describe more symptoms as major problems, and to report greater life interference from pain [8; 18; 42]. Men have noted significantly lower health perceptions and more physical limitations [42]. With regard to specific symptoms, fatigue and sleep disorders are more common among women, with some studies showing a threefold higher rate [8]. "Pain all over" is also more frequently reported by women than men [8]. The most powerful discriminator between women and men with fibromyalgia is the number of tender points [8].

### Comorbidities

Given the broad range of symptoms and conditions found in association with fibromyalgia, it is difficult to differentiate true comorbidities from manifestations of the syndrome itself [43]. For example, irritable bowel syndrome and restless legs syndrome are traditionally thought of as comorbidities but may be part of the overall clinical syndrome [1; 8; 43]. This is true for many autoimmune diseases but particularly for fibromyalgia, which has been described as overlapping with virtually every other unexplained syndrome [7]. In a study in which current and lifetime comorbidities associated with fibromyalgia, rheumatoid arthritis, and systemic lupus were evaluated, fibromyalgia was associated with significantly higher rates of depression and psychiatric conditions, gastrointestinal problems, and severe allergies (***Table 3***) [43].

| COMORBIDITIES ASSOCIATED WITH FIBROMYALGIA | | |
|---|---|---|
| **Comorbidity** | **Prevalence** | |
| | **Lifetime** | **Current** |
| Any gastrointestinal problem | 72% | 34% |
| Any psychiatric problem | 68% | 39% |
| Depression | 68% | 39% |
| Hypertension | 49% | 35% |
| Any genitourinary problem | 48% | 5% |
| Severe allergies | 41% | 21% |
| Any endocrine problem | 40% | 28% |
| Any lung problem | 37% | 19% |
| *Source: [43]* | | *Table 3* |

| DIFFERENTIAL DIAGNOSIS OF FIBROMYALGIA | | |
|---|---|---|
| **Diagnoses to Consider** | **Shared Manifestations** | **Distinguishing Features** |
| Myofascial pain syndrome | Painful, tender areas in the muscles, commonly affecting the axial muscles | Pain arising from trigger points in individual muscles during examination |
| Chronic fatigue syndrome | Chronic pain and fatigue | Low-grade fever, enlargement of lymph glands, continuous subclinical inflammatory process, and acute onset of illness |
| Rheumatoid arthritis | Joint pain/stiffness | Involvement of hands and feet, positive rheumatoid factor (in 80% to 90% of cases), radiographic evidence of joint erosion |
| Systemic lupus erythematosus | Involvement of multiple systems, joint pain | Malar rash, positive antinuclear antibody test |
| Hypothyroidism | Profound fatigue, muscle weakness, mental slowing | Weight gain, hair loss, increased TSH level |
| Polymyalgia rheumatica | Pain/stiffness in sacrohumeral and pelvic girdle | Increased ESR (in 80% to 90% of cases), age older than 65 years, treatment with glucocorticoids resolves symptoms |
| Spondyloarthropathy | Pain in neck, mid-thoracic, anterior chest wall, or lumbar regions | Pain localized to specific spinal areas, radiographic evidence of sacroiliitis, or radiographic changes in vertebral bodies |
| Polyarticular osteoarthritis | Pain in multiple joints | Radiographic evidence of joint degeneration |
| Polymyositis or other myopathies | Muscle weakness | Proximal, symmetrical muscles affected, increased serum levels of muscle enzymes, abnormal findings on EMG testing and on evaluation of biopsy samples |
| Neuropathic pain syndromes | Tingling, numbness | Burning, shooting pain |
| EMG = electromyography; ESR = erythrocyte sedimentation rate; TSH = thyroid-stimulating hormone. | | |
| *Source: [3; 8; 28]* | | *Table 4* |

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| AMERICAN COLLEGE OF RHEUMATOLOGY DIAGNOSTIC CRITERIA FOR FIBROMYALGIA | |
|---|---|
| **Criteria** | |
| A patient satisfies diagnostic criteria for fibromyalgia if the following 3 conditions are met:<br>• WPI ≥7 and SSS score ≥5 or WPI 4–6 and SSS score ≥9.<br>• Generalized pain is present, defined as pain in at least 4 of 5 regions (left upper, right upper, left lower, right lower, axial)<br>• Symptoms have been generally present at a similar level for at least three months. | |
| **Ascertainment** | |
| WPI | Note the number areas in which the patient has had pain over the last week. In how many of the following areas has the patient had pain? Score will be between 0 and 19.<br>• Shoulder girdle, left<br>• Shoulder girdle, right<br>• Upper arm, left<br>• Upper arm, right<br>• Lower arm, left<br>• Lower arm, right<br>• Hip (buttock, trochanter), left<br>• Hip (buttock, trochanter), right<br>• Upper leg, left<br>• Upper leg, right<br>• Lower leg, left<br>• Lower leg, right<br>• Jaw, left<br>• Jaw, right<br>• Chest<br>• Abdomen<br>• Upper back<br>• Lower back<br>• Neck |
| SSS score | For the symptoms of fatigue, waking unrefreshed, and cognitive dysfunction, indicate the level of severity over the past week using the following scale:<br>0 = No problem<br>1 = Slight or mild problems, generally mild or intermittent<br>2 = Moderate, considerable problems, often present and/or at a moderate level<br>3 = Severe: pervasive, continuous, life-disturbing problems<br>Considering somatic symptoms[a] in general, indicate whether the patient has:<br>0 = No symptoms<br>1 = Few symptoms<br>2 = A moderate number of symptoms<br>3 = A great deal of symptoms<br>The final score will be between 0 and 12. |
| [a]Somatic symptoms that might be considered: muscle pain, irritable bowel syndrome, fatigue/tiredness, thinking or remembering problem, muscle weakness, headache, pain/cramps in the abdomen, numbness/tingling, dizziness, insomnia, depression, constipation, pain in the upper abdomen, nausea, nervousness, chest pain, blurred vision, fever, diarrhea, dry mouth, itching, wheezing, Raynaud phenomenon, hives/welts, ringing in ears, vomiting, heartburn, oral ulcers, loss of/change in taste, seizures, dry eyes, shortness of breath, loss of appetite, rash, sun sensitivity, hearing difficulties, easy bruising, hair loss, frequent urination, painful urination, and bladder spasms. | |
| *Source: [221; 222]* | *Table 5* |

### COMPLEX DIFFERENTIAL DIAGNOSIS

The multitude of symptoms and comorbidities associated with fibromyalgia add to the complexity of making a differential diagnosis. Many other conditions can mimic widespread pain, and these conditions must be considered in the differential diagnosis (***Table 4***). Although objective testing cannot confirm a diagnosis of fibromyalgia, it can play an important role in ruling out other possible diagnoses. A CBC, ESR, muscle enzymes, liver function studies, and thyroid function tests can help identify other conditions [4]. However, given the high rate of conditions that occur concurrently with fibromyalgia, clinicians must remember that finding another diagnosis does not automatically rule out a diagnosis of fibromyalgia [3]. Differentiating fibromyalgia from other rheumatic diseases and conditions involving widespread pain is especially difficult. Individuals who have widespread pain and fibromyalgia are typically more symptomatic, dysfunctional, and depressed than people who have widespread pain without fibromyalgia [3].

### DIFFICULTY WITH DIAGNOSTIC CRITERIA

The ACR designed the classification criteria for fibromyalgia for epidemiologic classification but noted that the criteria would also be useful for diagnosis [1]. However, the criteria are used by only about half of rheumatologists in routine practice and are seldom used in the primary care setting [3]. The classification system consists of two criteria: a history of widespread pain and pain in 11 of 18 tender point sites on digital palpation [1]. It has a sensitivity of 88%, a specificity of 81%, and an accuracy of 85%, but several important problems have been identified.

A primary problem with the criteria is the focus on the tender point evaluation, which has been difficult for clinicians, especially primary care providers, to perform correctly [2; 3]. Perhaps equally as problematic is that widespread pain as the only criterion for diagnosis does not seem sufficient, given the broad range of symptoms associated with the syndrome [3]. A third major problem is the lack of a severity scale, which means that an individual with fibromyalgia may not satisfy the diagnostic criteria for the syndrome if symptoms or pain at tender points improve [3]. As a result of these drawbacks, the diagnosis of fibromyalgia often has been symptom-based, and researchers have sought ways to modify the criteria or use alternative approaches [2; 3; 39].

In one study to assess alternative approaches, survey criteria consisting of a Regional Pain Scale score of at least 8 and a fatigue score of at least 6 was found to be concordant with the ACR criteria in 72% of cases [39]. Clinical diagnosis (the clinician's impression irrespective of the ACR criteria) was concordant with the ACR criteria in 75% of cases. The authors concluded that all diagnostic methods have utility [39]. In another study, an effort to modify the criteria to include the three most common symptoms—morning stiffness, sleep disturbances, and fatigue—yielded a sensitivity of 81%, a specificity of 61%, and an accuracy of 72% [3].

To address the problems inherent in its classification system, the ACR published updated diagnostic criteria for fibromyalgia in 2016 [2]. The ACR used a symptom severity scale and the Regional Pain Scale (renamed the Widespread Pain Index) to construct a new case definition of fibromyalgia: a Widespread Pain Index (WPI) score of 7 or greater and a symptom severity score (SSS) of 5 or more OR a WPI score of 4–6 and a SSS of 9 or greater [2]. The WPI has been found to correlate well with findings of the tender point examination, eliminating the need for that examination [2]. The symptoms evaluated by the SSS are fatigue, cognitive dysfunction, and waking unrefreshed (***Table 5***) [2; 44]. In addition, the new criteria minimizes misclassification of regional pain disorders and eliminates the confusing recommendation regarding diagnostic exclusion [44]. Another advantage is that the criteria can demonstrate change in the individual's health status and allows for fibromyalgia to be seen as part of a continuum [2].

## TREATMENT

As with all chronic illnesses, the goal of treatment in fibromyalgia is to reduce symptoms, improve function, and engage the patient's involvement in self-care [22]. Studies have shown that treatment is most effective when it includes the combination of patient education, nonpharmacotherapy approaches (including exercise), and selective pharmacotherapy for persistent symptoms or comorbidities [4; 8; 45; 46; 47; 48].

Treatment guidelines for fibromyalgia have been established by the American Pain Society and EULAR, and subsequent systematic reviews and meta-analyses have provided further findings to support both pharmacologic and nonpharmacologic treatment [4; 46; 49]. Familiarity of guidelines and recommended treatments, especially among primary care providers, is low, and adherence is suboptimal [5; 50]. For example, a substantial number of people with fibromyalgia take pain medications that lack evidence for effectiveness or that are less effective than alternative options [27; 50].

In addition, the practice guidelines for fibromyalgia have many limitations, the most important of which is that their evidence base predates the FDA approval of three drugs for the treatment of the condition. The treatment guidelines may also lack clinical utility because of the crucial need to customize treatment of fibromyalgia according to the unique combination of symptoms in an individual patient. A pooled analysis showed that pain reduction alone does not make people with fibromyalgia feel better; instead, improvements

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in fatigue, physical functioning, mood, and impact on daily living are important factors in feeling better [51]. These factors must therefore be considered when developing a treatment plan, and optimum treatment will depend on the level of various symptom involvement for the patient [5; 41]. Effective treatment of fibromyalgia may also necessitate guideline-based treatment for comorbidities (e.g., irritable bowel syndrome and restless legs syndrome) [41].

The approach most often used for initial management of fibromyalgia includes patient education and reassurance; an exercise program that combines stretching, aerobic conditioning, and strength training; and selective, low-dose monotherapy aimed at relieving symptoms that do not respond to nonpharmacologic measures.

## NONPHARMACOLOGIC TREATMENT

Nonpharmacologic measures are important components of an effective fibromyalgia treatment plan. Strong evidence has been documented for exercise (aerobic and/or muscle-strength training), cognitive-behavioral therapy, and patient education, and the combination of the three components is recommended as the initial management approach [28; 45; 46; 48].

### Patient Education

The goal of patient education is to effect a change in the patient's perception of his or her role in managing and coping with symptoms [28]. Patients benefit from an explanation of the disease and reassurance regarding symptoms and prognosis; other topics for discussion are treatment options, sleep hygiene, the importance of conditioning and exercise, and the role of pharmacotherapy for comorbidities such as mood and sleep disorders. There is good evidence that patient education is an essential component of effective treatment [4; 45; 46; 48]. Even a single multidisciplinary educational program was associated with significant improvements in pain, fatigue, morning tiredness, stiffness, anxiety, and depression [45]. Education in a variety of formats has been found to be useful, including lectures, written materials, group discussions, demonstrations, and web-based programs [45; 52]. Healthcare professionals should encourage their patients to take advantage of many reliable online educational resources.

Language, cultural competency, and health literacy are significant issues, given the growing percentages of racial/ethnic populations. According to U.S. Census Bureau data from 2015, more than 40 million Americans are foreign-born, 62 million Americans (21% of the population) speak a language other than English at home, and more than 25 million (8.5% of the population) report that they speak English less than "very well" [84]. Clinicians should ask their patients what language they prefer for their medical care information, as some individuals prefer their native language even though they have said they can understand and discuss symptoms in English [85].

Most important, perhaps, is the fact that clinical consequences are more likely with ad hoc interpreters than with professional interpreters [86]. A systematic review of the literature showed that the use of professional interpreters facilitates a broader understanding and leads to better clinical care than the use of ad hoc interpreters, and many studies have demonstrated that the lack of an interpreter for patients with limited English proficiency compromises the quality of care. The use of professional interpreters improves communication (errors and comprehension), utilization, clinical outcomes, and patient satisfaction with care [87; 88].

### Exercise

Exercise not only helps to alleviate many fibromyalgia symptoms but also helps to reverse the effects of deconditioning and improve physical fitness [8; 47; 53; 54; 55; 56]. In a study of 207 women who were actively treated with medication for confirmed fibromyalgia, progressive walking, simple strength-training exercises, and stretching activities led to several improvements, including higher scores for functional status, reduced fatigue, better mental health, reduced depression, and greater self-efficacy [53]. The benefits of exercise are enhanced when combined with targeted self-management education [28; 53].

A meta-analysis showed that supervised aerobic exercise training has beneficial effects on physical capacity and symptoms related to fibromyalgia and that strength training may also have benefits on some fibromyalgia symptoms [54]. Another meta-analysis published in 2010 showed that aerobic exercise has a significant positive effect on a variety of disease-related symptoms, with reductions in pain, fatigue, depressed mood, and limitations of health-related quality of life, as well as improved physical fitness [56]. A 2013 Cochrane review found low-quality evidence that resistance training (moderate-to-high intensity) improves functioning, muscle strength, pain, and tenderness in women with fibromyalgia [57]. Other low-quality evidence suggests that aerobic exercise is superior to resistance training for improving pain, but resistance training is superior to flexibility exercise training in women with fibromyalgia for improvements in pain and multidimensional function. Moderate-to-high resistance training is safe for women with fibromyalgia [57].

Both the American Pain Society and EULAR recommend exercise programs as part of treatment for fibromyalgia [46; 58]. The American Pain Society recommends beginning with low levels of exercise and working gradually to a goal of moderately intense aerobic exercise at least two to three times per week [58]. However, fewer than one-third of NFA survey respondents said they engaged in aerobic exercise; more respondents said they participated in "gentle walking" (64%) and stretching (62%), and fewer noted use of physical therapy (24%) or strength training (18%) [27]. Aquatic physical therapy has also been recommended for relief of fibromyalgia-related stiffness [59].

A 2018 report provides evidence that a mind-body treatment approach, specifically a tai chi program, is of equal or greater benefit than standard care aerobic exercise alone [60]. In this blinded, prospective study, 226 adults with fibromyalgia (widespread pain index ≥7 and severity score ≥5) were randomly assigned either to supervised aerobic exercise (24 weeks, twice weekly) or to one of four classic Yang-style tai chi interventions (12 or 24 weeks, once or twice a week). Participants were followed for 52 weeks; the primary outcome was change in the fibromyalgia impact questionnaire scores at 24 weeks compared with baseline. The results showed that improvement in symptom scores was greater for subjects in each of the tai chi groups than for those receiving aerobic exercise. A clinically significant difference was only observed when comparing the highest-intensity tai chi program (twice weekly for 24 weeks) with aerobic exercise. Benefit with respect to secondary outcomes (assessment scores for anxiety, depression, coping strategies, functional limitations, sleep, and quality of life) also favored the tai chi interventions. At 52 weeks the combined tai chi groups continued to show more improvement in primary and most secondary outcomes than the aerobic exercise group.

EULAR notes that exercises should be tailored to the individual patient, and modifications should be made according to the severity of symptoms [46]. For example, a sedentary individual with moderate-to-severe fibromyalgia should begin with breathing, posture, and relaxation training, move to flexibility exercises, then to strength and balance exercise, and finally, to aerobic exercise [55].

### Cognitive-Behavioral Therapy

The goal of cognitive-behavioral therapy is to move patients toward more adaptive beliefs about their ability to cope with symptoms, which in turn increases self-management [47]. Cognitive-behavioral therapy is designed to help individuals improve the way they think about fibromyalgia and cope with the overall effects of its symptoms [8]. It is most effective when it focuses on a specific outcome, especially one that is the subject of the patient's maladaptive thoughts and expectations [8; 47].

A systematic review of 23 studies showed that of 30 psychologic treatments for fibromyalgia, cognitive-behavioral therapy was associated with the greatest effect sizes, especially for short-term reduction in pain [61]. In addition to short-term and long-term reductions in pain, cognitive-behavioral therapy has been associated with reductions in sleep disturbances and depression and improvements in functional status [8; 46; 47; 58; 61]. Benefit is typically achieved in 10 to 20 sessions [28]. Despite recommendations for cognitive-behavioral therapy, it may be underutilized. According to the NFA survey, only 8% of respondents had used this strategy [27].

Cognitive-behavioral therapy has been significantly beneficial in many individuals with psychiatric illnesses, such as depression and anxiety disorders, and so may be most useful for individuals with fibromyalgia who have these symptoms [47]. The individuals most likely to respond are probably those who have greater emotional distress, fewer coping skills, or less social support [28; 47].

### Other Approaches

Relaxation techniques are often part of cognitive-behavioral therapy for fibromyalgia, and their effectiveness is generally accepted, even though direct evidence is lacking [47]. Relaxation/meditation was practiced by 47% of the NFA survey respondents [27]. Mindfulness-based stress reduction therapy has also been evaluated; however, only weak evidence exists for benefit in fibromyalgia [62].

The EULAR guidelines include a recommendation (level IIb) for heated pool treatment, with or without exercise, on the basis of studies showing improvement in pain and function [46]. A subsequent meta-analysis of 10 randomized controlled trials demonstrated moderate evidence that hydrotherapy has short-term beneficial effects on pain and health-related quality of life [63].

The lack of fully effective treatments has led patients—and sometimes their healthcare providers—to explore other options to help manage symptoms. Some of these options have no or weak evidence of effectiveness, and the approaches most commonly used by patients are often not recommended practices. For example, the three interventions used most often by the NFA survey respondents were resting (86%); distraction, such as reading or watching television (80%); and heat modalities, such as warm water or hot packs (74%) [27]. The issue is not that these methods are not helpful, rather that the use rates for these approaches are much higher than for many evidence-based recommended strategies [27].

Among the other approaches patients often try are complementary and alternative medicine; between 40% and 90% of individuals with fibromyalgia have tried at least one such method [27; 50; 64]. However, evidence indicates that most of these methods are ineffective. There is limited evidence to support spinal manipulation [65]. Evidence is also lacking on the effectiveness of herbal, nutritional, and dietary supplements (including St. John's wort, ginseng, valerian, melatonin, and botanical oil) for the symptomatic treatment of fibromyalgia [47; 65; 66]. Despite this, approximately 43% to 68% of people with fibromyalgia use such supplements, although they give low ratings for their effectiveness [27; 50]. Given the high rate of individuals with fibromyalgia who seek symptomatic relief from complementary and alternative methods, the American Pain Society guidelines recommend that clinicians ask their patients about their use of such practices and educate them about their effectiveness and possible negative interactions [4].

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Methods with greater evidence of benefit include acupuncture and massage therapy. A 2013 Cochrane review found low-to-moderate level evidence that acupuncture (particularly electro-acupuncture) is effective for the treatment of fibromyalgia symptoms compared with no treatment or standard therapy [67]. Acupuncture in general may relieve pain and stiffness, and electro-acupuncture may improve overall well-being, fatigue, and sleep quality. A 2014 meta-analysis of nine randomized controlled trials found that massage therapy (for at least five weeks) has beneficial immediate effects on improving pain, anxiety, and depression in fibromyalgia patients [68]. However, no follow-up data are available to show long-term benefit. Long-term data are similarly unavailable for qigong, a somewhat popular Chinese medical exercise, but low-quality evidence exists for the short-term improvement of pain, quality of life, and sleep quality and very low-quality evidence exists for improvement of fatigue [69]. Increased psychologic well-being is often reported by qigong practitioners.

## PHARMACOLOGIC TREATMENT

No single drug has been found to manage all fibromyalgia symptoms, and a combination approach is often used [27; 41]. Antidepressants were the first medications used to treat fibromyalgia; drugs in this class include tricyclic antidepressants, selective serotonin reuptake inhibitors (SSRIs), and serotonin-norepinephrine reuptake inhibitors (SNRIs) [26; 41]. In general, antidepressants reduce pain through a direct effect rather than an indirect effect mediated by an effect on depression [41]. Other drugs that have been shown to be effective include anticonvulsant drugs, some analgesics/muscle relaxants, and nonbenzodiazepines (***Table 6***) [5; 26; 28; 41; 49; 58; 70].

### Antidepressants

Both the American Pain Society and EULAR found strong evidence (level I) for the use of a tricyclic antidepressant (amitriptyline) for the treatment of fibromyalgia [4; 46]. The American Pain Society recommends using amitriptyline for the initial treatment of fibromyalgia, whereas EULAR notes that any of a number of antidepressants should be "considered" [4; 46]. According to a 2009 meta-analysis, there is strong evidence for an association between treatment with antidepressant medications and reductions in pain, depression, fatigue, sleep disturbances, depressed mood, and a better health-related quality of life for people with fibromyalgia [75]. Treatment with an antidepressant does not completely eliminate pain, but tricyclic antidepressants have been found to be more effective for pain relief than either SSRIs or SNRIs [4; 75]. Amitriptyline was the fifth leading "ever used" drug in the NFA survey (reported by 55% of respondents), with 42% of those using the drug saying it was helpful [27]. In addition, use of prescription antidepressants was the third-highest ranked intervention overall in the survey [27].

Two of the three drugs approved by the FDA are SNRIs: duloxetine and milnacipran [5]. Duloxetine was approved on the basis of two trials. In the first study, duloxetine led to a clinically significant treatment response (at least a 30% reduction in pain severity on the Brief Pain Inventory) in more than half of the study participants [76]. Two doses were evaluated: 60 mg once daily and 60 mg twice daily; both doses were associated with significantly higher response rates than that for the placebo group [76]. Duloxetine also significantly improved function and quality of life. Similar results were achieved with the same doses of the drug in the other study [77]. Neither study showed improvement in sleep; however, duloxetine did not interfere with sleep [41; 49; 76; 77]. The drug was also well tolerated, and nausea was the most common side effect. Given the similarity in response with the two doses of duloxetine, the approval is based on the once-daily dose. A 2014 Cochrane review indicated that there is a lack of efficacy data, but that 60–120 mg daily doses were associated with a greater improvement in mental symptoms than in somatic physical pain [78].

Two studies of milnacipran demonstrated the effectiveness of the drug in achieving a composite endpoint of improvement in scores for pain (30% improvement on a visual analog scale), patient global assessment ("very much" or "much" improved), and physical component of the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) (six points) [79; 80]. The studies also evaluated the effect of the drug on pain only (improvement in pain and patient global assessment but not SF-36). Two doses were used: 50 mg twice daily and 100 mg twice daily. In both studies, milnacipran was associated with significant improvements in pain, fatigue, patient global assessment, and physical function [79; 80]. Further follow-up has shown the efficacy to be maintained for 12 months [41]. The drug was well tolerated; the most common side effects were mild-to-moderate nausea and headache, both of which resolved with continued use of the medication [79; 80]. The FDA approved milnacipran at both doses.

A systematic review to compare the effectiveness of the three antidepressants demonstrated several differences [81]:

- Amitriptyline was superior to both duloxetine and milnacipran in reducing pain, sleep disturbances, fatigue, and limitations of health-related quality of life.
- Duloxetine was superior to milnacipran in reducing pain, sleep disturbances, and limitations of health-related quality of life.
- Milnacipran was superior to duloxetine in reducing fatigue.
- No differences in tolerability were found among the three drugs.

| PHARMACOLOGIC TREATMENTS USED IN FIBROMYALGIA | | | |
|---|---|---|---|
| **Drug** | **Dose** | **Common Adverse Events** | **Comments** |
| **Antidepressants** | | | |
| Amitriptyline | 25–50 mg PO at bedtime | Nausea, vomiting, dry mouth, dizziness, drowsiness, headache | Recommended by American Pain Society and EULAR |
| Duloxetine | 60 mg PO daily | Nausea, dry mouth, constipation, drowsiness, decreased appetite | Approved by FDA for fibromyalgia in 2008 |
| Milnacipran | 50–100 mg PO twice daily | Nausea, headache, constipation, dizziness, hot flush, dry mouth | Approved by FDA for fibromyalgia in 2009 |
| **Anticonvulsants** | | | |
| Pregabalin | 300–450 mg PO daily | Diarrhea, dizziness, blurred vision, dry mouth, vomiting | Approved by FDA for fibromyalgia in 2010 |
| Gabapentin | 1,200–2,400 mg PO daily | Viral infections (in children), dizziness, somnolence, ataxia | Limited data on effectiveness |
| **Analgesics/Muscle Relaxants** | | | |
| Cyclobenzaprine | 10–30 mg PO at bedtime | Drowsiness, xerostomia, dizziness | Recommended by American Pain Society |
| NSAIDs | — | — | No evidence to support use, but may be of benefit in treating comorbidities |
| Glucocorticoids | — | — | No evidence to support use, but may be of benefit in treating comorbidities |
| **Opioids** | | | |
| Low-dose (tramadol) | 200–300 mg PO daily | Hot flush, dizziness, headache, constipation, nausea | Recommended by American Pain Society and EULAR |
| Potent | — | — | Not recommended; should be used only if all other approaches have been exhausted |
| **Sedative Hypnotics** | | | |
| Zolpidem | 5–10 mg PO at bedtime | Headache, somnolence, dizziness | Improves sleep; no effect on pain |
| Benzodiazepines and sedatives | — | — | Evidence of effectiveness is lacking |

*Source: [5; 26; 28; 41; 49; 58; 70; 71; 72; 73; 74]* *Table 6*

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### Anticonvulsants

The third FDA-approved drug for the treatment of fibromyalgia is pregabalin, an anticonvulsant agent. Several studies have shown pregabalin to significantly improve pain, patient global assessment, fatigue, and health-related quality of life, as well as sleep disturbances [41; 72; 82]. The effect of the drug has lasted for as long as six months [41]. The drug was well tolerated, with the common side effects being dizziness and sedation, which tended to resolve with time of treatment [41].

According to the Scottish Intercollegiate Guidelines Network, pregabalin (titrated up to at least 300 mg daily) is recommended for the treatment of patients with fibromyalgia.

(https://www.sign.ac.uk/assets/sign136.pdf. Last accessed July 23, 2020.)

**Level of Evidence**: A (At least one high-quality meta-analysis, systematic review, or randomized controlled trial directly applicable to the target population)

Anticonvulsants have been evaluated in several trials, and the American Pain Society found level II evidence for this class of drug, whereas the later EULAR guidelines note level I evidence for pregabalin specifically [4; 46; 49]. Another anticonvulsant drug, gabapentin, has also demonstrated efficacy with respect to pain, patient global assessment, function, and sleep [41; 70; 72]. Gabapentin has not been approved by the FDA to treat fibromyalgia, and the drug is not specifically noted in treatment guidelines [4; 46]. Approximately one-third of the respondents in the NFA survey said they had "ever used" gabapentin, and 46% who had used it considered the drug helpful [27]. The side effect profile of gabapentin is similar to that of pregabalin, but the pharmacokinetic and pharmacodynamic profile is not as favorable [41]. An overview of systematic reviews of anticonvulsants showed that both drugs had a modest effect on pain reduction, and it was not possible to conclude if one drug was better than the other [72]. The long-term safety and efficacy of both drugs is also unknown, and many patients are expected to discontinue therapy due to a high incidence of adverse effects. The overview found no evidence of clinical benefit with any other anticonvulsant, including carbamazepine [72].

### Analgesics

With a primary symptom of pain, fibromyalgia has often been treated with analgesics. According to the NFA survey, acetaminophen, ibuprofen, and naproxen were the top three ever-used medications (94%, 87%, and 66%, respectively) [27]. Slightly more than one-third to about one-half of the survey respondents said that these medications were helpful [27]. In another study, nearly 30% of 434 women with fibromyalgia reported taking NSAIDs [50]. However, with no inflammatory mechanism, fibromyalgia is not expected to respond to NSAIDs, and there is no evidence to support the use of NSAIDs or glucocorticoids as a treatment modality [4; 46]. NSAIDs may be of benefit in relieving pain associated with comorbidities, such as osteoarthritis, rheumatoid arthritis, or systemic lupus, which may account for their high rate of use in the NFA survey [27; 41].

Strong evidence has also been documented for cyclobenzaprine, which has both muscle relaxant and tricyclic antidepressant properties [26; 58; 83]. A systematic review of five randomized controlled trials showed that individuals treated with cyclobenzaprine for fibromyalgia were three times as likely to report overall improvement and to note reductions in symptoms, especially sleep disturbances, than controls [83]. Among the NFA survey respondents, 64% had ever used cyclobenzaprine and 58% of these patients considered the drug to be helpful [27].

Neither the American Pain Society nor EULAR recommend the use of potent opioids for the treatment of fibromyalgia, noting that they should be used only if all other pharmacologic and nonpharmacologic options have been exhausted [4; 46]. The American Pain Society found moderate evidence (level II, III) and EULAR documented level I evidence for tramadol, a mild opioid [4; 46]. The drug is recommended in both guidelines and may be used alone or as an adjunctive measure [41; 46; 58]. The dose of tramadol should be increased slowly over time and should be tapered gradually when discontinued [4]. Caution should be used when prescribing tramadol because of the risk of dependence and abuse [46].

### Sedative Hypnotics

Benzodiazepines and sedatives are not recommended for the treatment of fibromyalgia symptoms [28]. Zolpidem, a short-acting nonbenzodiazepine sedative, has been used to improve sleep in people with fibromyalgia, but because zolpidem does not relieve pain, it is useful only as an adjunct medication, and it has not been included in treatment guidelines for fibromyalgia [4; 41; 46]. Approximately 41% of the NFA survey respondents said they had ever used the drug, and 64% of these individuals considered it helpful [27]. In general, prescription sleep medication was the intervention that respondents considered the most effective of all interventions [27].

## FOLLOW-UP

Individuals with fibromyalgia should be followed up routinely to assess response to treatment. Follow-up visits also offer an opportunity for healthcare professionals to encourage their patients to comply with pharmacologic and nonpharmacologic treatment. Reinforcement for the need to exercise is especially important, as 68% to 83% of people with fibromyalgia have been found to not engage in aerobic exercise [27; 55]. Rates of exercise among the general population are below optimum, and people with fibromyalgia need added encouragement because of many symptoms that may be perceived as barriers (e.g., fatigue, pain).

One approach to enhance adherence to an exercise program is to begin pharmacologic treatment targeting the most distressing or severe symptoms and then provide education about exercise as symptoms begin to improve [28; 55]. It is especially important to address sleep disturbances and fatigue. In contrast to recommendations for the general population, increasing lifestyle activity is not effective as exercise for individuals with fibromyalgia; instead, clinicians should encourage their patients with fibromyalgia to conserve their energy in daily life in order to have the ability to comply with prescribed exercises [55].

The authors of one review of nonpharmacologic treatment suggest that clinicians use the acronym ExPRESS to follow principles of nonpharmacologic pain management [47]:

- **Ex**: Exercise
- **P**: Psychiatric (i.e., addressing psychiatric comorbidities to help improve pain and disability)
- **R**: Regain function (helping patients pace activities to avoid doing too much on days they feel well)
- **E**: Education (referral to reliable resources)
- **S**: Sleep hygiene
- **S**: Stress management (such as cognitive-behavioral therapy and relaxation techniques)

## PROGNOSIS

Fibromyalgia symptoms will persist in most individuals, but the majority still report that they feel better overall than at the time of diagnosis [8; 28]. Better outcomes have been associated with greater self-efficacy, help-seeking behavior, increased level of exercise, and pacing of activities [28].

**Customer Information/Answer Sheet insert located between pages 88–89.**

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## COURSE TEST - #94300 FIBROMYALGIA

*This is an open book test. Please record your responses on the Answer Sheet.*
*A passing grade of at least 70% must be achieved in order to receive credit for this course.*

***This 3 contact hour activity must be completed by July 31, 2023.***

1. **The prevalence of fibromyalgia increases with age, peaking at 70 to 79 years of age.**
   A) *True*
   B) *False*

2. **The risk for fibromyalgia is eight times higher for first-degree relatives of individuals with the syndrome.**
   A) *True*
   B) *False*

3. **Psychiatric conditions may precede fibromyalgia and act as a trigger for the disease.**
   A) *True*
   B) *False*

4. **The three primary manifestations of fibromyalgia are stiffness, paresthesias, and anxiety.**
   A) *True*
   B) *False*

5. **The American Pain Society recommends the Brief Pain Inventory as the primary source for pain assessment in patients with fibromyalgia.**
   A) *True*
   B) *False*

6. **The presence of weight gain and hair loss distinguishes hypothyroidism from fibromyalgia.**
   A) *True*
   B) *False*

7. **According to a systematic review of antidepressants for treatment of fibromyalgia, amitriptyline was better tolerated than both duloxetine and milnacipran.**
   A) *True*
   B) *False*

8. **Studies have shown pregabalin to significantly improve pain, patient global assessment, fatigue, health-related quality of life, and sleep disturbances in patients with fibromyalgia.**
   A) *True*
   B) *False*

9. **Individuals treated with cyclobenzaprine for fibromyalgia were three times as likely to report overall improvement and to note reductions in symptoms.**
   A) *True*
   B) *False*

10. **Bed rest is a recommended nonpharmacologic approach to managing fibromyalgia.**
    A) *True*
    B) *False*

Be sure to transfer your answers to the Answer Sheet insert located between pages 88–89.
***PLEASE NOTE: Your postmark or facsimile date will be used as your test completion date.***

# Pathophysiology: The Renal System

***Audience***

This course is designed for nurses working in critical care and general and specialty medical-surgical units in which patients with multiple organ system problems are found.

***Course Objective***

As health care becomes more complex, it is essential that the theoretical concepts of the basis of illness (pathophysiology) be well understood. The purpose of this course is to reinforce the scientific rationales for the interventions nurses perform and the decisions nurses make as patients move through the ever-changing struggle with their renal illness.

***Learning Objectives***

*Upon completion of this course, you should be able to:*

1. Identify the key structures in the renal system.
2. Describe the functions of the renal system.
3. Evaluate the impact of renal function on blood pressure.
4. Discuss the pathophysiologic and environmental influences and effects on the renal system.
5. Outline the role of subjective data in completing a full nursing assessment of the renal system.
6. Describe objective data compiled during a nursing assessment of the renal system.
7. Identify imaging and biopsy studies used in the identification and classification of renal diseases.
8. Outline the nursing diagnoses, planning, and management of conditions related to renal dysfunction.
9. Evaluate the presentation and management of chronic and acute kidney disease and neurogenic bladder.
10. Discuss clinical manifestations of infectious diseases of the renal system.
11. Review signs and symptoms of renal neoplasms and related nursing actions.
12. Review the clinical presentation and management of nephrolithiasis and urolithiasis.
13. Describe the common causes, appearances, and treatment of traumatic disorders of the renal system.
14. Describe key concepts related to caring for patients who receive dialysis.
15. Analyze the process of renal transplantation and nursing management of transplant recipients.
16. Outline key considerations for patients with renal dysfunction at the end of life.

***Faculty***

**Jane C. Norman, RN, MSN, CNE, PhD**, received her undergraduate education at the University of Tennessee, Knoxville campus. There she completed a double major in Sociology and English. She completed an Associate of Science in Nursing at the University of Tennessee, Nashville campus and began her nursing career at Vanderbilt University Medical Center. Jane received her Masters in Medical-Surgical Nursing from Vanderbilt University. In 1978, she took her first faculty position and served as program director for an associate degree program. In 1982, she received her PhD in Higher Education Administration from Peabody College of Vanderbilt University. In 1988, Dr. Norman took a position at Tennessee State University. There she has achieved tenure and full professor status. She is a member of Sigma Theta Tau National Nursing Honors Society. In 2005, she began her current position as Director of the Masters of Science in Nursing Program.

***Faculty Disclosure***

Contributing faculty, Jane C. Norman, RN, MSN, CNE, PhD, has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

***Division Planner***

Sharon Cannon, RN, EdD, ANEF

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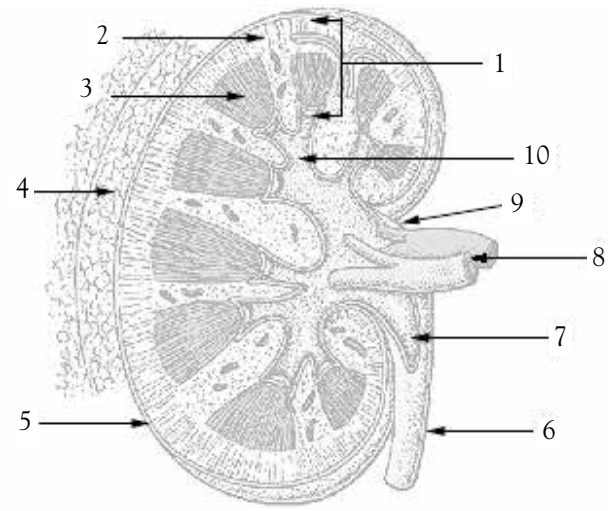
## INTRODUCTION

Each kidney is smaller than a person's fist, but in a single day, the two organs process approximately 22% to 25% of cardiac output, or 1,100 mL/minute [1]. As part of their function, the kidneys filter essential substances, such as sodium and potassium ions, from the blood and selectively reabsorb substances needed to maintain the normal composition of body fluids. Substances that are not needed, or are in excess of normal, pass into the urine. In regulating the volume and composition of body fluids, the kidneys perform excretory and endocrine functions.

This course is designed to broaden nurses' understanding of the pathophysiology of renal function and illness by exploring causes, alterations and physiologic adaptations, manifestations, and resolution of disease states. Pathophysiologic symptoms and signs are described in relation to the patient's clinical presentation, so nurses can monitor physical changes and relate them directly to the illness process. Appropriate diagnostic tests and treatments for each problem are included, along with nursing responsibilities for patient teaching.

**ANATOMY OF THE KIDNEY**

1. Parenchyma
2. Cortex
3. Medulla
4. Perirenal fat
5. Capsule
6. Ureter
7. Pelvis of kidney
8. Renal vessels
9. Hilum
10. Calyx




*Source: National Cancer Institute* *Image 1*

## STRUCTURAL AND FUNCTIONAL INTER-RELATIONSHIPS

The urinary system consists of two kidneys, which produced urine; two ureters, which carry urine to the urinary bladder, where it is temporarily stored; and the urethra, which transports urine to the outside of the body.

### STRUCTURE OF THE KIDNEYS

An adult typically has two kidneys, which are reddish-brown and bean-shaped (***Image 1***). Although their size can vary, the length of the average kidney is about 11 cm, the thickness about 2.5 cm, and the width is about 5 cm. The average weight of a single kidney is 15 g. The kidney's lateral border is convex, whereas the medial border is concave and indented in a depression called the renal hilus. All related structures enter or leave the kidney at the hilus [2; 3].

The kidneys lie in the retroperitoneal space of the posterior abdominal cavity. Thus, they can be exposed without opening the peritoneal cavity. One kidney lies on either side of the vertebral column. Layers of muscle surround the posterior surfaces of the kidneys, and abdominal organs surround their anterior surfaces. The peritoneal membrane covers most of the anterior surface of each kidney.

The kidneys are protected and supported by renal fascia and layers of perirenal fat. Posteriorly, the psoas, quadratus lumborum, and transverse abdominis muscles provide support. The position of the kidneys is not fixed but varies somewhat with an individual's position. When a patient is in the supine position, the kidneys lie between the 12th thoracic and 3rd lumbar vertebrae. When the patient is standing, the kidneys may be descended to the top of the iliac crest. For a patient in Trendelenburg position, the kidneys ascend to the 10th intercostal space [4; 5].

The left kidney, which lies near the tail of the pancreas and the splenic flexure of the colon, is normally slightly longer and narrower than the right kidney. The right kidney is lower in the abdomen than the left because of the presence of the liver in the right upper quadrant. The superior pole of the right kidney lies beneath the liver in an area referred to as the renal bed. The right kidney's anterior surface is adjacent to the hepatic flexure of the colon, the duodenum, and the liver. The lower portion of each kidney descends beneath the lower portion of the rib cage [2; 6].

Each kidney is surrounded by three layers of tissue. The fibrous renal capsule (the innermost layer) covers the surface of the kidney. The adipose capsule, a mass of perirenal fat, surrounds the renal capsule. The third layer, the renal fascia, surrounds and encloses the kidney and anchors the kidney to the posterior abdominal wall [2; 6].

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There are essentially three general regions of each kidney: the cortex, the medulla, and the pelvis. These structures are located inside the renal capsule. Two of them—the cortex and the medulla—are often referred to collectively as the renal parenchyma. The cortex is directly beneath the renal capsule. This highly vascularized area of tissue is very sensitive to changes in blood flow. The medulla, located deep in the cortex, consists of 8 to 18 triangular renal pyramids. The renal pyramids are composed of collecting ducts that drain urine into the calyces. The cortex covers the base of the pyramids, and the tips (or papillae) project toward the renal pelvis. Cortical tissue known as renal columns dips into the medulla to separate the pyramids, and blood vessels that supply the cortex and medulla pass through these columns. Urine flows from the papillae into a minor calyx, and several of the funnel-shaped minor calyces emerge to form a major calyx. The major calyces join to form the renal pelvis, which is the expanded upper end of the ureter. At times, a catheter is positioned in the renal pelvis and must be irrigated with 4–6 mL of fluid (as ordered) to maintain catheter patency [7].

**The Nephron**

The nephron is the functional unit of the kidney and is primarily responsible for most of the mechanisms that provide internal homeostasis. Each kidney contains approximately 1.25 million nephrons, and each nephron in turn is composed of a vascular and tubular system that allows for the formation of urine. The nephrons are located in the renal parenchyma. Most nephrons are in the cortex (referred to as cortical nephrons), but juxtamedullary nephrons begin in the cortex and extend deep into the medulla [7].

The vascular system of the nephron consists of the glomerulus and the Bowman capsule, both located in the cortex of the kidney. The glomerulus is composed of a knot of capillaries. The Bowman (or glomerular) capsule surrounds the glomerulus. The glomerulus derives its blood flow from the renal artery of the abdominal aorta. Each renal artery branches into segmental arteries and increasingly smaller arteriole, arcuate (or arciform), and interlobular (or cortical radial) arteries, which supply progressively smaller areas of renal parenchyma. The smallest branch, the afferent arteriole, feeds blood to the glomerulus. After passing through the capillaries in the glomerulus, the blood exits the glomerulus, not through a venule but via the efferent arteriole. From the efferent arteriole, the blood enters the peritubular capillaries of the cortical nephron or the vasa recta of the juxtamedullary nephron. This plexus of capillaries surrounds the proximal tubule, the Henle loop, and the distal tubule. Finally, blood enters the venous system from either the peritubular capillaries or the vasa recta and returns to the general circulation through a series of renal venules and veins that drain all portions of the kidney. The renal vein of each kidney returns blood into the inferior vena cava [7].

The tubular system of the nephron begins with the Bowman capsule, which is invaginated around each glomerular tuft to form a sac. The Bowman capsule narrows into the proximal convoluted tubule, which changes directions many times until it straightens into the descending limb of the Henle loop and angles downward toward the pelvis of the kidney. The proximal convoluted tubule is largely responsible for the conservation of fluids and electrolytes. The loops of tubular tissue are much longer in juxtamedullary nephrons than in cortical nephrons and are contained within the pyramids of the medulla. The ascending limb of the Henle loop then becomes the distal convoluted tubule. The distal convoluted tubules of several nephrons enter a collecting duct with a pyramid of the medulla; these ducts are responsible for the drainage of formed urine from the nephrons. Pyramids then are drained into the calyceal system of the renal pelvis through the tips of the papillae [1; 8].

**The Ureters**

Urine drips from the collecting tubules into the minor calyces and then the major calyces which, in turn, join the renal pelvis. From the renal pelvis, ureters transport urine to the urinary bladder. Each kidney typically has a single ureter responsible for emptying the urine formed by that kidney. Although the ureter's size varies, an average ureter is around 30 cm (almost 1 foot) long. The ureter's diameter ranges from 2–8 mm at various points in its structure. The ureters descend between the parietal peritoneum and the abdominal wall to the pelvic cavity, where they enter the bladder on its posterior inferior surface. Before opening into the bladder, the ureters travel obliquely through the bladder wall. As a result, pressure in the bladder can compress the ureters and help prevent urine from flowing back into the ureters, especially during bladder emptying [9].

Each ureter is composed of both longitudinal and circular muscular fibers. The interweaving of these fibers is responsible for the peristalsis of urine into the urinary bladder. The narrow points of the ureter are at the junction of the ureter and the renal pelvis (the ureteropelvic junction), the point at which the ureters cross over the iliac vessels, and the point of ureteral enter into the bladder (the ureterovesical junction) [9].

Blood is supplied to the upper portion of the ureters from the renal artery and either the internal spermatic or ovarian artery. The lower portion of the ureters is supplied by branches of the common iliac, hypogastric, and vesical arteries [9].

Multiple sources in a complex distribution provide the nerve supply to the ureters. The ureteric nerves are broadly grouped as superior ureteric, middle ureteric, and inferior ureteric, which supply the upper third, middle third, and lower third of the ureter, respectively. The nerve plexuses that supply the various portions of ureteric nerves have both abdominal (celiac, renal, and mesenteric) and pelvic (gonadal and iliac) origins. Nerve fibers are both sympathetic and parasympathetic [9].

## RENAL CIRCULATION

The important relation between the kidneys and the blood vascular system becomes apparent when considering the large size of the renal arteries that supply the kidneys. At rest, these vessels carry about 20% of the total cardiac output to the kidneys, or approximately 600 mL of blood per minute through each kidney. Little of this blood supplies the nutritive needs of the kidneys; the large blood flow is related to the fact that the kidneys can maintain homeostasis of the blood only if a large amount of the blood passes through them [10].

The vascular supply to the kidney consists of several microcirculations:

- Glomerular capillaries, where plasma filtration occurs
- Peritubular capillaries, which encircle the proximal and distal convoluted tubules, where water, electrolytes, glucose, amino acids, and protein are reabsorbed and some substances are secreted
- Medullary circulation (vasa recta), which aids in the concentration of urine

## STRUCTURE OF THE URINARY BLADDER

The urinary bladder is a muscular sac capable of significant distention that is used to store formed urine. The bladder rests on the floor of the pelvic cavity and is retroperitoneal. Its anterior surface lies just behind the pubic symphysis. In male individuals, the bladder is in front of the rectum, whereas in female individuals it lies just anterior to the uterus and the superior portion of the vagina [11; 12].

The major anatomic areas of the bladder are the fundus, apex, neck, and trigone. The fundus is the upper portion of the bladder, and the apex is the bottom portion of the bladder closest to the pelvic floor. The bladder neck is the most inferior portion of the bladder and contains the internal sphincter. It is composed of a group of thickened fibers of the detrusor muscle that evolves into the smooth muscle of the urethra. The trigone is an area of the posterior wall of the bladder defined by the urethra and the two urethral slits, where the ureters enter the bladder. This area of muscle is responsible for separating the upper urinary tract from the lower urinary tract during normal micturition [11; 12].

As the bladder fills with urine, its internal pressure increases somewhat initially and then remains fairly constant up to a volume of about 300–400 mL. Beyond this point, the pressure rises rapidly. The bladder can hold 600–800 mL of urine, but it is generally emptied before it reaches this capacity [12].

The nerve supply to the bladder is both sensory and motor. Sympathetic, parasympathetic, and somatic nerves carry sensations to the central nervous system. Sympathetic fibers arise from T9 through L2, and parasympathetic and somatic nerves arise from S2 through S4. The motor nerves of the bladder involve parasympathetic supply to the detrusor muscle and sympathetic supply to the trigone. The pudendal nerves, which are under voluntary control, supply the external sphincter and the muscles of the pelvic floor [12].

## STRUCTURE OF THE URETHRA

The urethra is a muscular tube lined with mucous membranes that exits from the inferior surface of the urinary bladder and carries urine to the exterior of the body. At the junction of the urethra and bladder, the smooth muscle of the bladder surrounds the urethra and acts as a sphincter (the internal urethral sphincter) that keeps the urethra closed. During micturition, a contraction of the bladder opens the sphincter [11; 12].

The male urethra is about 21 cm long and about 8–9 mm in diameter. The urethra descending from the base of the bladder to the pelvic floor is surrounded by the prostate gland; this is referred to as the prostatic urethra. The portion of the urethra that extends through the pelvic floor is referred to as the membrane urethra, and the cavernous urethra traverses the length of the penis. In female individuals, the urethra is about 4-cm long and about 8 mm in diameter. Because of the proximity of the anus and vagina to the urethra, microorganisms found in those regions may more easily migrate into the bladder in women [11; 12].

## REGULATORY FUNCTIONS OF THE KIDNEYS

The kidneys and urinary system sustain homeostasis of body fluids and their composition. A variety of mechanisms maintain this fluid and electrolyte balance, and the end result is the production of urine. Urine represents the work of the kidneys and results in the removal of nitrogenous waste products as well as the regulations of fluid, electrolyte, and acid-base balances. In addition, the kidneys produce hormones and substances that influence other metabolic and chemical processes [10].

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**Formation of Urine**

The basic function of the nephron is to cleanse the blood of unwanted substances as it passes through the kidney. This results in the formation of urine and is accomplished through three specific processes that occur in the nephron: glomerular filtration, tubular reabsorption, and tubular secretion. Each process occurs dynamically in the kidneys' continuous efforts to maintain internal equilibrium [10].

***Glomerular Filtration***

Glomerular filtration is the ultrafiltration of blood whereby fluid, electrolytes, and certain nonelectrolytes are filtered but plasma proteins remain. Glomerular filtration occurs within the glomerulus, across the glomerular capillary membrane. This capillary membrane has anatomic and physical properties that allow the passage of small molecular particles under certain conditions. Small pores within the lining of the capillary loops of the glomerulus (called the basement membrane) allow the passage of fluid and certain particles [10].

In order for glomerular filtration to occur, there must be adequate fluid volume (blood volume or plasma) in the intravascular space, as well as adequate hydrostatic pressure to overcome the forces that oppose glomerular filtration. The pumping of the heart and vascular resistance provide the hydrostatic pressure. The vascular tone, or blood flow, within the kidney is under two types of control: extrinsic factors (e.g., sympathetic nerve fibers from the celiac and renal nerve plexuses) and intrinsic control (i.e., autoregulation of renal blood flow). Each has a definite purpose [10].

The sympathetic nervous system provides extrinsic control of renal blood flow when an emergency situation exists. Normal renal blood flow is 1,200 mL/min, but this flow may be decreased to 200 mL/min when blood is needed to supply the heart, brain, or skeletal muscle. This is a strong vasoconstrictor response to the release of epinephrine and norepinephrine by the sympathetic nervous system [10].

Autoregulation of blood flow maintains a constancy of glomerular filtration through the kidney's unique ability to regulate the resistance of the afferent and efferent arterioles to the flow of blood. Because of this autoregulation, arterial blood pressure can vary widely—80–180 mm Hg—while renal blood flow and glomerular filtration remain basically unchanged [10].

The product of this process is glomerular filtrate. Glomerular filtrate is composed of water, sodium, potassium, calcium, magnesium, chloride, bicarbonate, phosphate, and other anions; glucose; urea; creatinine; and uric and amino acids. In healthy individuals, filtrate does not contain protein, because the glomerular membrane is almost completely impermeable to all plasma proteins.

As long as the various mechanisms that regulate renal blood flow maintain adequate hydrostatic pressure, glomerular filtrate will form. However, forces that oppose the formation of glomerular filtrate—plasma oncotic pressure and tubular filtrate pressure—must be overcome. Understanding plasma oncotic pressure is essential to appreciating the shift of body fluids and the formation of edema. Plasma oncotic pressure (also known as colloid osmotic pressure) is the pulling force of the proteins in the plasma that attempts to hold water in the vascular space and prevent its movement into the surrounding tissue. In the kidney, the plasma oncotic pressure attempts to keep water from being pushed onto the Bowman capsule. The typical glomerular filtration rate (GFR) is 130 mL/min/1.73 $m^2$. Thus, roughly 187,000 mL of glomerular filtrate is formed in 24 hours. For all practical purposes, glomerular filtrate is the same as plasma except it has no significant amount of plasma proteins. If all of the components found in glomerular filtrate were excreted in the urine, death would occur. Therefore, much of the filtrate is returned to the blood via tubular reabsorption [11; 12].

***Tubular Reabsorption***

In tubular reabsorption (the initial refinement process), water and specific electrolytes and nonelectrolytes from the tubular filtrate are reabsorbed into the plasma of the peritubular capillaries or vasa recta. Tubular reabsorption occurs throughout the tubular system of the nephron, but much of it occurs within the proximal convoluted tubule [13].

The tubules have a limited capacity for reabsorption of some substances. For example, the threshold for reabsorption of glucose may be limited when the blood level of glucose is exceedingly high or when renal tubular surfaces are altered through injury. Reabsorption is primarily accomplished through passive and active transport mechanisms of diffusion. In passive transport, the development of a pressure gradient causes the movement of molecules or particles. In this case, simple diffusion occurs (i.e., molecules move from an area of greater to lesser concentration or greater to lesser pressure). With some substances, however, expenditure of energy may be necessary to move the molecules. Active transport occurs through this expenditure of energy. Active transport is required when there is not a pressure gradient but a substance must be moved to another area [13].

Normally, reabsorption from the tubular filtrates into the blood is sufficient to maintain normal serum levels of the various electrolytes. However, reabsorption of some nonelectrolytes (i.e., urea, creatinine, and uric acid) is not readily accomplished. The individual benefits from this because these substances are removed or cleared from the body [13].

Reabsorption of water is accomplished by osmosis, the movement of water across a semipermeable membrane from an area of lesser concentration of solute to one of greater concentration. Water is reabsorbed primarily in the proximal convoluted tubule. If greater water reabsorption is needed to maintain balance, however, the permeability of the distal tubule and collecting duct may be increased [13].

The reabsorption of water is reflected in the kidney's ability to concentrate or dilute the urine as necessary. The supraoptic and paraventricular nuclei of the hypothalamic area sense the plasma osmolality—defined by the concentration of particles (electrolytes and nonelectrolytes) in the plasma. When plasma osmolality is out of the normal range (280–295 mOsm/L), the osmoreceptors detect this abnormality and trigger responses to return the osmolality to normal [14].

Only slight alterations in the osmolality of the blood are required to trigger appropriate regulatory mechanisms. A combined response by the neuroendocrine system and the kidneys will ensure that serum osmolality is returned to the normal range by the release of antidiuretic hormone (ADH) from its storage area in the posterior pituitary. ADH alters the permeability of the distal convoluted tubules and collecting ducts so more or less water can be reabsorbed, as needed. Then, ADH secretion and the reabsorption of the water in the tubules increase. When ADH secretion decreases, more water is excreted by the kidneys. Maintenance of intravascular volume is always the primary goal of the homeostatic mechanism. Thus, functioning kidneys concentrate or dilute urine to maintain normal serum osmolality [14].

### *Tubular Secretion*

The third process in urine formation is tubular secretion, the process by which ions in the tubular cells are secreted into the lumen of the tubule to be excreted in the end product (urine). Tubular secretion of potassium and hydrogen regulates the serum potassium level and serves as the kidneys' acid-base balancing mechanism [13; 14].

The kidneys regulate acids and bases in conjunction with other regulatory mechanisms (i.e., the blood buffers and the lungs). The kidneys are responsible for the secretion of the fixed acids of normal metabolism, whereas the lungs excrete the volatile acids. The blood buffers provide moment-to-moment regulation. Fixed acids arise primarily from the metabolism of protein. The kidneys regulate their excretion by conserving bicarbonate, excreting sodium in exchange for the secretion of hydrogen, and secreting ammonia [13; 14].

Thus, the processes of filtration, reabsorption, and secretion create urine. Urine is composed primarily of water, sodium, potassium, chloride, urea, creatinine, and uric acid. The volume of urine is normally about 1,500 mL per 24 hours, but it depends on the amount of solute that must be excreted [13; 14].

### Blood Pressure Control

The kidneys regulate blood pressure through the maintenance of fluid volume and the release of the hormone renin, which stimulates powerful vasoconstrictive responses. Fluid volume in the extracellular compartment, and specifically the plasma, is controlled by the kidneys' ability to concentrate or dilute urine in response to the serum osmolality. Thus, hypertonic plasma stimulates the release of ADH, the reabsorption of water, the expansion of intravascular volume, the decrease of urine output, and the elevation of blood pressure. This primary mechanism of volume expansion is partially responsible for the regulation of blood pressure [15; 16].

The renin-angiotensin system is the other kidney-controlled hormonal mechanism that can trigger blood pressure elevation in certain situations. This mechanism is activated when there is a low serum sodium level, decreased cardiac output, or ischemia to the kidneys. Any of these situations can stimulate the release of renin from the juxtaglomerular cells of the afferent arteriole of the glomerulus. It is believed that the macula densa of the distal convoluted tubule is sensitive to both the sodium content and the volume of the tubular filtrate, and that this sensing mechanism stimulates the release of renin [15; 16].

When renin is released from the juxtaglomerular cells, it acts on angiotensinogen, a glycoprotein made in the liver and normally found in plasma, converting it to angiotensin I. Another converting enzyme in the pulmonary capillary bed acts on angiotensin I to change it to angiotensin II, a powerful vasoconstrictor that elevates blood pressure through peripheral vasoconstriction. Angiotensin II also triggers the release of aldosterone (a mineralocorticoid that helps control sodium utilization) by the adrenal cortex. With the release of aldosterone, the distal convoluted tubule of the nephron reabsorbs sodium. Water reabsorption follows sodium reabsorption, increasing plasma volume. Thus, angiotensin II has two main effects that help to elevate blood pressure: peripheral vasoconstriction and plasma volume expansion. When ADH production increases, aldosterone production usually does as well [15; 16].

When cardiac output is severely decreased because of loss of circulating blood volume, vasoconstriction in the kidneys will severely limit intrarenal blood flow in order to maintain flow to more vital organs (i.e., the heart and brain). This is an excellent example of the kidneys' role in the preservation of the whole body, because if renal vasoconstriction is not abated, death of the renal parenchyma results [16].

Substances have been identified that may be useful in helping overcome severe renal vasoconstriction. These prostaglandins are believed to have vasodilation capabilities. Part of their antihypertensive effect is through the inhibition of norepinephrine and angiotensin II [16].

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**Miscellaneous Hormonal and Metabolic Controls**

Several other metabolic and hormonal functions of the kidneys have been identified, including the production of erythropoietin, the production of 1,25-dihyddroxycholecalciferol, and the metabolism of insulin. Erythropoietin is a glycoprotein produced in the kidneys that influences red blood cell production. The sites of erythropoietin production and storage in the kidney have not been identified, but the effects of bilateral nephrectomy and the subsequent decrease in erythropoiesis have been observed. Erythropoietin seems to increase both the rate of production and the rate of release of new red blood cells from the bone marrow and the spleen [16; 17].

EVIDENCE-BASED PRACTICE RECOMMENDATION

The Department of Veterans Affairs Guideline Panel recommends against offering erythropoiesis-stimulating agents to patients with chronic kidney disease for the purpose of achieving a hemoglobin target greater than 11.5 g/dL due to the increased risk of stroke and hypertension.

(https://www.healthquality.va.gov/guidelines/CD/ckd/VADoDCKDCPG2014.pdf. Last accessed August 14, 2020.)

**Strength of Recommendation**: Strong

The kidneys also produce 1,25-dihyddroxychlorcalciferol, the active component of vitamin D. Without this substance, calcium cannot be absorbed properly from the intestines [16; 17].

The kidneys play a role in insulin metabolism and excretion. Failure to excrete insulin results in an increased availability of insulin, which has important consequences for the management and control of diabetes. Most patients with diabetes have a decreased need for insulin as renal failure progresses. The reliability of urine testing to calculate insulin needs is limited, as the renal threshold changes constantly with decreasing renal function [16; 17].

### PROCESS OF MICTURITION

Micturition, also called urination or voiding, is a complex physical process under a variety of neural controls. For most healthy persons older than 5 years of age, urination is under voluntary control and can be interrupted or initiated upon cerebral command, as long as motor and sensory nerve pathways are intact. Micturition normally is a painless function that occurs five to six times per day and possibly once at night. The average person voids a total of about 1,500 mL of urine per 24 hours. This amount is affected by fluid intake, the ingestion of foods high in water content, diuretics, sweating, temperature, vomiting, and diarrhea [14; 18].

Adults usually perceive an initial desire to empty the urinary bladder when about 150 mL of urine has accumulated. However, the bladder can distend to a much larger capacity, and it often does before there is a feeling of bladder fullness. Because urine accumulates gradually in the bladder, the slow distention of the muscular sac accommodates larger and larger quantities of urine. The capacity of the urinary bladder has been calculated at 450 mL, but much larger amounts may accumulate if there is obstruction to outflow [14; 18].

Micturition involves a number of responses that occur almost simultaneously. Initially, there is the felt need to void and an assessment of the environment. The individual must determine that the environment is appropriate to the release of urine or urination will be prevented [14; 18].

After the person has determined that conditions are satisfactory, a series of nerve impulses are activated to allow the release of urine. First, the muscles of the pelvic floor are relaxed, which opens the urethral opening and allows the descent of the urinary bladder. Next, the trigone contracts, which ensures closure of the ureterovesical junction and prevents the reflux of urine into the ureters. Trigonal contraction also causes contraction of the bladder neck, which makes the bladder more funnel shaped. Finally, the detrusor muscle of the bladder, which is continuous with the urethral lining, contracts. Detrusor contraction increases the pressure within the bladder and results in bladder emptying [14; 18].

The cerebral control mechanism can interrupt the voiding processes at any point. When the bladder is empty, the detrusor muscle relaxes, the bladder neck closes, and the trigone and perineal muscles resume their normal tone [18].

## PATHOPHYSIOLOGIC INFLUENCES AND EFFECTS

Alterations in urine formation and excretion have profound effects on homeostasis. Failure to maintain the chemical balance of the fluids in the various compartments will result in death unless balance is restored. Alterations in urine formation and excretion may cause changes in the clearance of rates of substances, changes in the amount and composition of the urine and the pattern of its excretion, elevated blood pressure, decreased maturation of red blood cells, and changes in the excretion of metabolic waste products. Pathophysiologic changes commonly seen in urinary dysfunction include hydronephrosis (enlargement of the kidney), atrophic kidney, alterations in fluid volume, electrolyte imbalances, and accumulation of toxins [4; 19; 20].

## ENLARGEMENT OF THE KIDNEYS AND RELATED STRUCTURES

Enlargement of one or both kidneys is most commonly related to the invasion and multiplication of neoplastic cells. If a mass becomes very large, it can put pressure on abdominal nerves or displace other abdominal organs and cause discomfort or pain [1; 15].

The kidneys may also become enlarged because of a blockage of the ureters, and occasionally the urethra, by either a stone, tumor, or enlargement of the prostate; this enlargement due to a build-up of urine is referred to as hydronephrosis. In these instances, urine backs up into the renal pelvis. The ureters and urethra also may enlarge in diameter as they fill with urine that cannot be voided. If enervation is interrupted, the bladder also can become overdistended with urine [1; 15].

## ATROPHY OF THE KIDNEY

In most chronic diseases of the kidneys, the kidneys eventually atrophy because of the destruction of the renal parenchyma. In some instances, the cortex is most affected, whereas in others, the medulla is most affected. The kidneys may decrease to less than one-fifth of their normal size [1; 15].

## ALTERATIONS IN FLUID VOLUME

A major goal of renal function is the maintenance of fluid volume necessary to support metabolic and perfusion processes. As such, the inability to control fluid volume may have a variety of sequelae. For example, loss of the ability of the kidneys to concentrate urine may be the earliest sign of renal pathology. Conversely, continuous loss of dilute urine may result in volume depletion and low blood pressure. Hypovolemia (i.e., inadequate circulating blood volume) will eventually alter renal function, because adequate blood volume is required to establish a pressure gradient so glomerular filtration can occur [8; 10].

Although the kidneys have the capacity for some autoregulation of blood flow, they will deprive the renal parenchyma of necessary blood volume if the demands are greater elsewhere. This capacity to severely limit renal blood flow is observed in severe shock or stress states. Fluid deficits can also occur with decreased fluid intake or excessive water losses, as with diarrhea, vomiting, or rapid dehydration [8; 10].

Failure of the kidneys to excrete water and maintain normal fluid volume has serious consequences for the overall functioning of the body. Hypervolemia (i.e., an increase in circulating and total body water) manifests as elevation of blood pressure, increased cardiac workload, and the development of fluid in the interstitial spaces and alveoli of the lungs or other body tissues. As such, it puts severe strain on the cardiovascular system. The associated hypertension can cause long-term problems related to ventricular hypertrophy and increased peripheral vascular resistance. More immediate changes due to fluid shifts, particularly into the lungs, can impair adequate gas diffusion and even cause severe hypoxia [1; 15].

Ischemia of renal tissue results in the liberation of renin and the stimulation of the renin-angiotensin-aldosterone system (RAAS). The release of renin is triggered to increase renal blood flow in response to hormonal mechanisms, but it is also associated with increased volume retention and volume expansion. Particularly, this can happen when kidney tissue damage that affects the normal formation of urine, but aldosterone and ADH are being produced normally. Therefore, overhydration is more common as the patient reaches end-stage renal disease (ESRD) [1; 15].

## ELECTROLYTE IMBALANCES

As discussed, the kidneys maintain the normal osmolality of body fluids and, in conjunction with various endocrine mechanisms, control the appropriate balance of electrolytes in body fluids. Excesses and deficits of various electrolytes result in serious problems in the maintenance of normal nerve transmission and muscle conduction. Sodium, potassium, calcium, and magnesium are the major cations under the regulation of the kidneys. Some major anions (e.g., chloride, bicarbonate), as well as other anions such as sulfates, phosphates, and proteinate, are also under renal direction [21; 22].

Of the various electrolytes, potassium—the primary intracellular cation—has the most potential for causing harm if disrupted. Hyperkalemia is the most frequently encountered imbalance in chronic renal failure, and failure of the kidneys to excrete potassium will disturb the conduction system of the heart and, if untreated, can terminate myocardial contraction. The kidney tubules also may fail to conserve potassium correctly and thus excrete large amounts. Hypokalemia may result in altered cardiac muscular contractions and alter the medullary interstitium of the kidney, impairing renal function [21; 22].

Sodium excesses (hypernatremia) can occur in patients with renal disease when urine volume drops to very low levels. In these cases, sodium and water retention, edema, and pump failure occur, even in patients with restricted salt intake. Because sodium conservation occurs primarily in the renal medulla, deterioration in this area produces excessive sodium loss (hyponatremia), which leads to decreased extracellular fluid. As circulating blood volume decreases, the GFR decreases and the renal function is further compromised [21; 22].

Imbalances of calcium and phosphorus are related to the reciprocal relationship between electrolytes and the effect of parathyroid hormone, which regulates serum calcium levels. When the GFR decreases to around 30 mL/min/1.73 $m^2$, the renal excretion of phosphate also decreases. With increases in serum phosphate level (hypophosphatemia), the body attempts to lower the level through binding phos-

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phate with calcium. The resultant calcium phosphate may then precipitate in various tissues. This response causes the calcium level (non-protein-bound or ionized) to decrease, potentially leading to hypocalcemia. In response to the low calcium level, parathyroid hormone is released and stimulates the release of calcium from stores in bone in an attempt to increase the circulating calcium level. In renal insufficiency, this is compounded by the kidney's inability to produce 1,25-dihydroxychole-calciferol, which is necessary for the intestinal absorption and utilization of calcium in the diet. This further contributes to the development of hypocalcemia [21; 22].

The ongoing process of hypophosphatemia and hypocalcemia with subsequent production of parathyroid hormone results in secondary hyperparathyroidism. Untreated, this leads to serious bone pathology known as renal osteodystrophy [22].

When urine output is low and a normal magnesium intake continues, hypomagnesaemia can occur. It may also be aggravated by the administration of magnesium-containing laxatives or antacids [22].

## METABOLIC ACIDOSIS

The kidneys are responsible for excreting the acids produced by the metabolism of amino acids. The excretion of hydrogen ions by the kidneys is accomplished by the conservation of bicarbonate, the secretion of ammonia, and the excretion of hydrogen in exchange for sodium. The kidneys work with blood buffers and the pulmonary system to maintain a normal blood pH of 7.35–7.45. Blood buffers maintain this narrow range of acceptability; they almost instantaneously convert acids for either pulmonary excretion as carbon dioxide or for renal excretion through the conservation of bicarbonate or the exchange of sodium or potassium for hydrogen [23; 24].

Without the renal regulation of hydrogen ion excretion, a diminished amount of bicarbonate is available to buffer the fixed acids. In addition, the ability to excrete hydrogen as ammonia or with phosphoric acid is limited. Thus, unless the pulmonary reserve compensates, the pH will fall and metabolic acidosis will result [23; 24].

## IMPAIRMENT OF GAS EXCHANGE

Several factors related to renal impairment cause impaired gas exchange. The problems of fluid overload cause pulmonary edema, ventricular hypertrophy, and hypertension, which can lead to impaired gas exchange in the lungs and at the cellular level. Potassium imbalances can cause cardiac arrhythmias, which also can lead to impaired gas exchange. The lungs of a patient with metabolic acidosis have to work hard to correct the acidosis; if they are not able to do so, gas exchange is impaired. Anemia may result from a decrease in erythropoietin produced by the kidney, and this deficiency makes gas exchange more difficult. Furthermore, patients may encounter bleeding problems as a result of decreased aggregation ability from a defect in platelet factor III [12; 13; 24].

## IMPAIRMENT OF IMMUNE RESPONSE

Patients with impaired renal function are at increased risk for infection as a result of impaired immune responses. These patients may also experience delayed hypersensitivity to antigens.

## ACCUMULATION OF UREMIC TOXIN

The kidneys remove nitrogenous waste products resulting from protein metabolism. The kidneys must continually filter and excrete creatinine and urea nitrogen, whether it is from endogenous protein sources (such as the metabolism of the amine creatinine in skeletal muscle) or from primarily exogenous sources (such as dietary protein) [14; 18].

Azotemia is the accumulation of uremic toxins (urea, uric acid, and creatinine) in the blood. Uremia refers to azotemia with clinical symptoms. The accumulation of uremic toxins can result in neurologic complications, gastrointestinal bleeding, and skin changes resulting from urochrome pigments deposited in the skin. This pigmentation, combined with anemia, results in the pale yellow-gray skin color characteristic of patients with renal failure. Pruritus, also common, is thought to be the result of a buildup of the urochrome pigments in the skin as well as the crust of urate crystals that accumulates on the skin (called uremic frost). Increased parathyroid hormone production is also a possible cause of pruritus [14; 18].

The accumulation of uremic toxins also causes neurologic changes that range from fatigue, decreased ability to concentrate, irritability, and insomnia to depression, peripheral neuropathy, and retinopathy. Coma, convulsions, and death can occur in the absence of treatment [14; 18].

## ALTERATIONS IN NUTRITION-RELATED FUNCTIONS

Uremic toxins and gastrointestinal bleeding cause nutrition-related problems. The gastrointestinal tract becomes inflamed and irritated with the accumulation of uremic toxins. This results in loss of appetite, nausea, vomiting, and diarrhea—problems that further complicate fluid and electrolyte imbalances. This inflammation, compounded by altered platelet function, causes gastrointestinal bleeding common in patients with impaired kidney function. The buildup of ammonia in the body results in characteristic uremic fetor—a urine-like odor of the patient's breath accompanied by a bad taste in the mouth (described by some as metallic) that alters the appeal of food. Associated pancreatitis may also impair digestion [25].

### ALTERATIONS IN URINE OUTPUT

Urine output may greatly increase in certain situations, such as in the diuretic phase of acute renal failure. However, decreased urine output is the more common alteration. This may be temporary, as with the oliguria phase of acute renal failure, benign prostatic hyperplasia, or kidney stone obstruction of the urethra, or it may be a long-term sequela of acute tubular necrosis or chronic renal failure. Alterations in the pattern of urination result from the underlying pathologic conditions. Patients who are unable to completely void, at such times as following renal procedures or surgery, should be checked for residual volume of urine. Short-term catheterization may be used to completely empty the bladder. If the amount retained was in the range of 75–100 mL, an indwelling catheter should be placed [1; 26].

## RELATED SYSTEM INFLUENCES AND EFFECTS

Because the kidneys and urinary system perform multiple functions inter-related with various body systems, impairment of renal function can affect other body systems to varying extents.

### INTEGUMENTARY SYSTEM

Dry, pale, yellow-grey skin is characteristic of renal failure. Nails and hair are also brittle and dry. Increased parathyroid hormone secretion, uremic frost, and urochrome pigments cause pruritus, which may result in scratches and bleeding. This break in skin integrity increases patients' susceptibility to infection. Edema from sodium and water retention, as well as poor nutritional status, can also make the skin increasingly susceptible to breakdown. Pressure ulcers may form within hours if patients are not frequently repositioned [1; 26].

### CARDIOVASCULAR SYSTEM

The cardiovascular complications that may occur after a loss of renal function and the resulting uremia include pericarditis, accelerated atherosclerosis, fluid overload, anemia, and the potential for potassium abnormality-related arrhythmias [1; 26].

Uremic pericarditis is fairly common for patients with ESRD. Although this condition usually develops within 12 months of the initiation of dialysis, a later onset has also been observed. This inflammatory response is believed to be related to nitrogenous waste products not removed by dialysis. Fluid accumulates within the pericardial sac (pericardial effusion). With increased membrane irritability and platelet aggregation problems, the effusion may be serosanguineous. Massive pericardial effusions (greater than 2,000 mL) may accumulate over a period of days to weeks, seriously altering cardiovascular hemodynamics. Cardiac tamponade (compression of the heart from excessive fluid in the pericardial sac) will result in death unless medical intervention, surgical intervention, or both relieve the fluid accumulation [1; 26].

Accelerated atherosclerotic processes have been observed in patients with chronic renal failure. An increased incidence of death from coronary artery disease seems to be associated with the effects of chronic essential hypertension, ventricular hypertrophy, and possible alterations in lipid metabolism associated with urea. In addition, diffuse atherosclerotic processes that include cerebral, aortic, and peripheral vessels are not uncommon [1; 26].

Uncontrolled hypertension, either from volume or hormonal response, greatly increases peripheral vascular resistance in small blood vessels throughout the body. The loss of elasticity of the arterioles in the kidney as well as other organs, such as the retina of the eye and the small vessel circulation of the brain, will seriously affect the long-term functioning of these organs [1; 26].

### RESPIRATORY SYSTEM

As noted, the inter-relation of the renal and respiratory systems is important in maintaining an acid-base balance. Although this balance is partially restored by diet and lifestyle changes, these measures can accomplish only so much. Dialysis can assist, but the lungs must contribute to control this narrow range of imbalance minute to minute. Patients with obstructive lung disease have carbon dioxide retention with respiratory acidosis. Thus, when renal and respiratory diseases exist simultaneously, the ability to combat metabolic acidosis is severely impaired. Gas exchange is further hampered by pulmonary edema and anemia states [1; 26].

### NEUROLOGIC SYSTEM

The neurologic manifestations of uremia include uremic encephalopathy and peripheral neuropathy associated with azotemia and metabolic acidosis. Uremic encephalopathy (characterized by altered mentation/intellectual processes, tremors, and myoclonus) is associated with the onset of uremic manifestations. Asterixis (a flapping tremor of the hands) is an early manifestation caused by increased irritability of the central nervous system from elevated serum ammonia levels. This symptom is important, because tonic-clonic seizures may develop if the encephalopathic process is not corrected [1; 26].

Peripheral neuropathies are common in patients with ESRD who require chronic dialysis. These neuropathies are neither clearly understood nor easily treated. Their improvement with dialysis is uncertain, and leg weakness and difficulty with ambulation and maintenance of comfort remain problems. Renal transplantation is potentially the best hope for relief of these symptoms [1; 26].

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### MUSCULOSKELETAL SYSTEM

Musculoskeletal manifestations of renal failure are collectively referred to as renal osteodystrophy. A variety of problems, including osteomalacia, osteoporosis, and osteitis fibrosa cystica, may result from the chronic release of parathyroid hormone, which results in elevated phosphorous and decreased calcium levels in the serum. Bone pain, increased fracture risk, and metastatic calcifications result from this imbalance [1; 26].

### HEMATOPOIETIC SYSTEM

Hematologic effects of uremia include chronic anemia and disorder of platelet aggregation. Each of these alterations can have a variety of effects on patients. Patients with renal failure have a chronic normochromic, normocytic anemia. Hematocrit values fall to 20% to 30%, and hemoglobin values drop to 7–8 g/dL. Chronic fatigue is the most common symptom, but patients respond differently and some adjust reasonably well. For patients with coronary artery disease, decreased circulating red blood cells may exacerbate angina or increase the risk of arrhythmias, particularly if hypoxia occurs [1; 26].

In general, platelet dysfunction is usually a problem with platelet aggregation—the platelet count is normal, and there is no alteration in the ability to produce platelets. In the uremic environment, however, the platelets do not promote the clotting mechanism as well. The results of other clotting tests (prothrombin time and partial thromboplastin time) are normal, but bleeding time may be prolonged. Impaired platelet function in the uremic environment is believed to be responsible for the frequent and easily induced bleeding into the skin and mucous membranes of the patient with either acute or chronic renal failure. Mucous membrane irritation, particularly of the gastrointestinal tract, along with the frequent presence of occult blood, indicates that a uremic environment persists in spite of dialysis therapy [1; 26].

### GASTROINTESTINAL SYSTEM

Uremia profoundly affects the gastrointestinal system. Anorexia, nausea, and vomiting are generally the most bothersome symptoms. Inability to eat or to retain food results in weight loss and breakdown of muscle and fat. Uncorrected, profound debilitation results, because the patient is less able to combat infections and mount appropriate immune responses [1; 26].

The effects of uremia may be observed throughout the gastrointestinal system. As described, the patient may develop uremic fetor. Hypogeusia may manifest as both loss of acuity and loss of ability to discriminate tastes. Thus, with significant changes in the ability to taste foods, eating is less pleasurable [1; 26].

Parotitis, gastritis, pancreatitis, and colitis may occur at varying stages in the development of uremia. The parotid glands may become infected and inflamed. Irritation of the gastric and intestinal mucosa is often accompanied by vague discomfort, nausea, vomiting, belching, and diarrhea. Bleeding from the gastrointestinal lining is common because platelet abnormalities alter the clotting mechanism. The bleeding generally is occult, but gross bleeding with severe gastritis may also occur [1; 26].

### REPRODUCTIVE SYSTEM

The loss of renal function and the development of uremia also affect the reproductive systems of men and women. Both experience a loss of libido, and men frequently become impotent. Fertility is affected as well. Men have lower testosterone levels and a decrease in sperm formation, whereas women ovulate and menstruate less often, if at all. Successfully carrying a pregnancy to term is rare [1; 26].

## PSYCHOSOCIAL/LIFESTYLE INFLUENCES AND EFFECTS

The renal system both influences and is influenced by a variety of psychosocial factors, including sex, lifestyle, pharmacotherapy, and identity issues.

### SEX

Sex influences the structure of the urinary system in an important way. Because the urethra is shorter in women, they are more prone to cystitis (bladder infection) than men. Stress urinary incontinence is not uncommon in women who have experienced relaxation of the pelvic muscles as a result of pregnancy [27; 28].

### DIETARY HABITS AND MEDICATIONS

Dietary habits can also affect the function of the kidneys and urinary system. For example, a high-salt diet can contribute to the development of hypertension, which can lead to or exasperate renal disease. For people with diagnosed renal dysfunction, salt and protein restrictions may limit the pleasure of eating. Individuals can avoid certain foods and beverages in their own homes with some discipline, but visiting friends or dining in restaurants presents difficulties that may not be controlled so easily. People who must strictly limit fluid intake may experience questioning or stigma. Participation and sharing are social expectations, and some people prefer to avoid these situations rather than not do what is expected [27; 28].

Among medications that may have a toxic effect on the kidneys are a number of common antibiotics (e.g., penicillin, neomycin, kanamycin, amphotericin). Probably the most nephrotoxic category of antibiotics is the aminoglycosides (e.g., gentamicin, vancomycin, tobramycin). Other nephrotoxic drugs include sulfonamides, salicylates, thiazides, and furosemide [29; 30].

### ECONOMIC FACTORS

The costs of renal dialysis and transplantation are high. Moreover, a loss of income may result if the patient is a wage earner [31].

### OCCUPATION AND AVOCATION

Certain occupations and hobbies are associated with exposure to nephrotoxic chemicals. Carbon tetrachloride, used in dry-cleaning and various industrial processes, is nephrotoxic, as are methyl alcohol, phenols, and ethylene glycol. Severe metals used in the fabrication of jewelry and some electronic components are nephrotoxic, including gold, lead, copper, uranium, arsenic, mercury, and cadmium [31]. Commercially available hair dyes often contain paraphenylenediamine, a chemical linked to acute renal failure [32].

The development of renal disease may severely influence the patient's occupational performance. Jobs that require travel, flexible hours, or physical energy may prove difficult to maintain. The need to change careers or develop new skills, in addition to coping with physical illness, may be an enormous challenge or impossible for patients with renal disease [31].

### ROLES AND RELATIONSHIPS

For patients with serious kidney dysfunction, as in ESRD, the psychosocial effects are numerous. Lifestyle, family life, and work commitments usually are interrupted, often in substantial ways. Patients often must make major adjustment in various roles. Stress accompanies the effort to maintain the existing lifestyle in the face of vast uncertainty about the future, and patients and their families (especially spouses and children). Powerlessness, helplessness, and hopelessness are part of the experiences of patients with renal failure [31].

### SEXUAL EXPRESSION AND REPRODUCTION

Disorders of the urinary system may profoundly affect the expression of sexuality. Procedures such as urinary diversion may require the placement of an ostomy bag, and patients with such appliances may be reluctant to participate in sexual activity. They and their partners may find it necessary to alter their sexual behaviors to accommodate a catheter or a dialysis fistula. Patients and their sexual partners may have to discuss and experiment with alternate positions for sexual intercourse, and intercourse may be somewhat unpleasant or even uncomfortable or painful [31].

Patients' reproductive ability may also be altered. For example, certain surgical procedures (such as radical cystectomy) may cause impotence. Because hormone levels are not regulated in the presence of chronic renal failure, many female patients have amenorrhea and are unlikely to become pregnant. In men with renal failure, low testosterone levels and oligospermia significantly reduce the ability to fertilize an ovum. Active prevention of pregnancy in women receiving dialysis is indicated for a number of reasons. For one, pregnancy increases the circulating blood volume. In addition, the low hemoglobin values of most patients with chronic renal failure are inadequate to support a healthy fetus. Attempting to conceive while on dialysis can be harmful to both mother and fetus. If the renal problem is genetically transmitted, as in polycystic kidney disease, reproduction may also be discouraged [31].

### BODY IMAGE AND SELF-CONCEPT

Because elimination is essentially culturally prescribed, it is intimately linked to our view of ourselves and to our self-concept. A person faced with the problem of disposing of a plastic bag full of urine or who finds that engaging in certain activities means that urine is likely to leak may feel unclean and out of control of basic body functions. The person may also worry about personal odors [31].

To conceal urinary diversion appliances or drainage tubes, patients may find their choice of clothing limited to nonrestrictive and comfortable styles. Not being able to wear a preferred style of clothing may provoke anxiety in some people. Being unclothed and seen in the nude may also cause great discomfort to the patient concerned about body changes [31].

Patients who have undergone renal transplantation may have concerns about having another person's organ in his or her own body. The knowledge that a donor has sacrificed a healthy kidney for the patient's benefit may become a burden of guilt. This guilt may be increased if the donor kidney is ultimately rejected [31].

## NURSING ASSESSMENT: ESTABLISHING THE DATA BASE

The nursing process when caring for patients with problems of the kidneys and urinary tract encompasses a wide range of assessments and interventions.

### SUBJECTIVE DATA

Assessment of a patient's normal pattern of urination and discussion of changes in the pattern involves questioning the patient about the urinary volume, timing, characteristics, micturition control, and appearance of urine. Patients often experience anxiety discussing this aspect of their lives. Urination is typically private, and language referring to the process frequently involves colloquial expressions or terminology unique to a particular family or group. Thus, clear communication about the exact nature of the problem may be difficult. In addition, the proximity of the urethra to the organs of sexual functioning may cause further embarrassment or anxiety during assessment. Taking a calm, confident approach to the interview and examination may make the patient more comfortable [33; 34].

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It is important for nurses to question the patient about any changes in micturition. What color is the urine? Is there pain with urination? Does the patient have frequency, urgency, or hesitancy with voiding? Are there problems with incontinence? Does the patient void excessive amounts? Only a little? At night? These questions will elicit information about various alterations in micturition and the characteristics of the underlying problem [33; 34].

Changes in the urine's appearance may be the presenting problem. Hematuria can be a serious sign, as it may be indicative of cancer. However, it also may be related to anticoagulant therapy, excessive exercise, infection, or trauma. If the urine is excessively alkaline, patients may describe it as being bright red or coffee-colored. If the urine is excessively acidic, blood can give the urine a cloudy or smoky appearance. In most cases, however, cloudy urine is the result of pus in the urine (pyuria). In severe pyuria, urine is also malodorous. Almost colorless urine usually results from excessive fluid intake, chronic renal disease, diabetes insipidus, or diabetes mellitus. Dark yellow-orange urine suggests dehydration or ingestion of medications or foods that discolor the urine. It is important to know when the change in urine color began and if it is constant, intermittent, or triggered by specific events [27; 28].

Pain is not always present with chronic disorders of the kidneys and urinary tract; it is more common in acute conditions. If present, the patient's history should illicit descriptions of the character, location, distribution, onset, duration, and frequency of the discomfort [27; 28]. Is it related to voiding? What brings it on? What relieves it?

Pain from within the kidney is typically described as a dull ache in the flank area (between the ribs and the ileum) and extending into the lower abdomen or the umbilical area. In most cases, the pain is always present and not interrupted with position changes. Renal and ureteral colic causes severe, excruciating pain of sudden onset. The pain, located in the flank area and radiating to the groin, is accompanied by nausea, vomiting, and paralytic ileus [27; 28].

Feeling the constant need to void when catheterized is due to the pressure of the catheter in the urethra and spasms of the bladder. Bladder pain in the suprapubic area is usually the result of bladder spasms, which can be contractions of the detrusors muscle responsible for normal micturition. Urgency and burning on urination are also common in patients with cystitis or urethritis. Cystitis may produce burning both during and after urination, whereas urethritis usually causes burning during urination only. Strangury often accompanies severe urinary tract infection [27; 28].

Some patients with symptoms of burning on urination may actually have a vaginal infection, so these patients should be assessed for signs of vaginal discharge. Has the patient noted any vaginal or perineal itching or dyspareunia (pain with sexual intercourse)? Pain at the urethral orifice or meatus results from irritation or trauma of the bladder neck or urethra. Renal and perineal fullness and pain suggest prostatitis. Metastasis of prostatic cancer to the pelvis can cause leg and back pain [27].

Questions regarding micturition frequency, dribbling, hesitancy, and incontinence are important. How many times per day does the patient void? Is there trouble initiating the stream or difficulty holding the urine? Does the patient get up at night to void? How many times? When did this begin?

Stress incontinence is a common problem for women. As noted, weakness can develop in the bladder-urethral sphincter mechanism through the stretching of pelvic muscles during childbirth or the pressure of the uterus on the bladder during pregnancy. In the elderly, relaxation of pelvic musculature also contributes to the incontinence. Frequent catheterizations and the use of forceps during delivery increase the chances for development of stress incontinence. When questioned, women may state that they have to wear sanitary pads or adult diapers [27].

Nurses should also determine if the patient maintains an adequate fluid intake (1,500–2,000 mL per day). If the patient has an excessive intake of milk and vitamin D, this could lead to hypercalciuria. Proteinuria, hematuria, or both can be a normal finding in people who exercise excessively. Immobility because of disability, fracture, thrombophlebitis, or surgery can predispose patients to the development of renal calculi [25; 35].

Obtaining a medication history is essential, because many drugs can damage the kidney. Has the patient taken any prescription drugs recently? What over-the-counter medications does the patient routinely take? It is also important to determine if the patient has had any toxic exposures on their job or in their lives [36].

The patient's health history may be significant [28]. Has the patient ever had problems that could lead to nephropathy, such as frequent streptococcal infections, recurrent urinary tract infections, renal calculi, hyperuremia (as occurs in gout), or hypercalcemia (as occurs in hyperparathyroidism, sarcoidosis, or metastatic bone disease)? Has the patient ever had an indwelling catheter, cystoscopy, or x-rays of the renal system? Is there a history of trauma?

Family history of congenital disorders should also be determined, including polycystic kidney disease and congenital malformations of the urinary tract. A strong family history of diseases such as diabetes or hypertension is also significant because these diseases tend to cause renal problems [37].

Because of common autonomic and sensory nervous system innervation between the gastrointestinal and urinary tracts, as well as the anatomic proximity of the organs of the two systems, gastrointestinal symptoms often accompany renal system conditions. Some of these symptoms are nausea, vomiting, diarrhea, abdominal pain, gastrointestinal hemorrhage, and paralytic ileus. Conversely, urinary symptoms may accompany gastrointestinal conditions [27; 28].

## OBJECTIVE DATA

### Physical Assessment

Objective data are obtained in the physical assessment of the patient through inspection, auscultation, percussion, and palpation. Objective data are also obtained through a variety of diagnostic studies.

#### *Inspection*

The first stage of data collection is inspection of the patient. Examination of the skin is important; patients with uremia have a characteristic ashen, yellow skin coloring, and uremic frost maybe visible. The eyes of these patients are often sunken and give the patient a wasted appearance exaggerated by muscle wasting and edema. The edema associated with renal failure is generalized rather than dependent. Bruises are common [38].

The skin also provides clues to renal involvement in patients not yet diagnosed as having urinary system problems. In a hypernatremia state, the skin is dry and flushed, and the body temperature is elevated. Examination of the mucous membranes of the nose and mouth is important. With hypernatremia, the mucous membranes are dry and sticky, and the tongue is rough and dry. Skin turgor provides insight regarding the patient's hydration status [38]. Tetany, including carpopedal spasms, occurs with hypocalcemia. Nurses should observe for other signs of various electrolyte imbalances.

Respirations should be observed. Rapid respirations suggest metabolic acidosis, infection, or fluid overload. Shallow respirations and shortness of breath may be signs of hypokalemia. Shortness of breath may also suggest pulmonary edema, congestive heart failure, or both [38].

Inspection of the abdomen may reveal some important findings. Scars may indicate a history of surgical procedures or trauma. There may be urinary or fecal diversions or cutaneous fistulas. The abdominal contour may be altered if the bladder is descended or the kidneys are enlarged, as with polycystic kidney disease. With significant bladder distention, the umbilicus may be displaced [38].

If possible, urine should be inspected for blood, color, cloudiness, and precipitates. If any discharge is present at the urinary meatus, a specimen of that discharge should be obtained before the patient gives a urine sample [38].

#### *Auscultations*

Auscultations of the lungs may provide evidence of rales or rhonchi related to fluid overload. Cardiac irregularities and faint heart sounds may be heard with potassium imbalance. Friction rubs, as well as S3 and S4 sounds, also may be heard during auscultation of the heart and lungs. The abdomen should be auscultated for renal bruits. When listening over each costovertebral angle (CVA), a bruit over one or both renal arteries suggests the possibility of renal artery stenosis.

#### *Percussion*

Percussion of the urinary bladder will elicit a dull sound if the suprapubic region of the bladder is distended. Bladder distention may extend to the level of the umbilicus or higher. When bladder tone is diminished because of chronic distention, bladder fullness may be detectable only by percussion [38].

A variation of the normal percussion technique can detect discomfort or pain over the kidney. Tenderness over the CVA suggests infection in the kidney or perinephric space [38].

#### *Palpation*

Palpation of normal-sized kidneys is difficult except in individuals who are quite thin or have poorly developed muscles. The right kidney is more readily palpable because it is normally lower in the abdomen and slightly more anterior than the left kidney [38].

As such, deep palpation is necessary to identify the kidney. In this method, the lower pole of the right kidney may be palpated when the patient takes a deep breath. In another method of kidney palpation, called capturing, hand placement is the same, but the right hand exerts greater pressure. The patient is asked to exhale and then to stop breathing. If the kidney has been captured, it will be felt as the pressure of the fingers is released. The patient will feel this procedure, but it should not be painful [38].

If abdominal masses are present and are thought to be enlarged kidneys, perform only gentle and light palpation. If the masses are polycystic kidneys, palpation may aggravate bleeding. Examiners in doubt about the nature of the mass should eliminate this aspect of the examination [38].

## DIAGNOSTIC STUDIES

### Laboratory Tests

The laboratory tests most often used to assess kidney function include serum creatinine, blood urea nitrogen (BUN), and creatinine clearance [38].

#### *Serum Creatinine*

Serum creatinine measurements primarily reflect the ability of the kidneys to excrete creatinine—the waste product of the breakdown of phosphocreatine during skeletal muscle metabolism. The normal serum creatinine level is 0.6–1.5 mg/dL, but it varies with sex and individual muscle mass

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characteristics. Serial changes in serum creatinine levels are significant in evaluating and interpreting renal function, because this substance is excreted entirely by the kidneys and is therefore directly proportional to excretory function. Unlike the BUN level, the serum creatinine level normally remains constant and is not influenced by other variables, such as dehydration, malnutrition, or hepatic function. Only renal disorders will cause an abnormal elevation in creatinine. Therefore, serum creatinine levels are more accurate than BUN levels in assessing renal function [38].

***Blood Urea Nitrogen (BUN)***

The BUN level is a general indicator of renal ability to excrete urea nitrogen, and the normal BUN level is 6–20 mg/dL. Urea nitrogen is synthesized by the liver using protein sources for the conversion, so hepatic function is also a factor. Because dietary proteins form the primary source of urea nitrogen, a diet high in protein will increase BUN levels, especially in the presence of renal disease. The metabolism of hemoglobin also results in the production of urea nitrogen [38].

Nearly all primary renal diseases cause BUN levels to rise, as do certain medications (e.g., steroids, tetracycline, tobramycin, gentamicin, certain chemotherapeutic drugs). Hydration changes also alter the BUN level. In dehydration, decreased renal blood flow leads to decreased excretion of urea nitrogen and increased serum BUN levels. The BUN level also may rise when excessive amounts of protein are available for hepatic catabolism or when there is gastrointestinal bleeding. Because urea synthesis relies on a functioning liver, the BUN level may be normal in hepatorenal syndrome or any time there is combined liver and kidney disease. In these cases, the BUN level is normal not because the renal excretory function is good, but because hepatic function is poor and BUN formation is therefore decreased [38].

***Uric Acid***

Uric acid is a nitrogenous product derived from urine metabolism. Purines are produced by the metabolism of cellular nucleic acids and complex dietary proteins. Elevated serum uric acid levels may indicate renal dysfunction or a defect in purine metabolism. The normal serum uric acid level is 2.1–7.5 mg/dL in men and 2.0–6.6 mg/dL in women [38].

***Creatinine Clearance Test***

The best test to measure overall renal function is the creatinine clearance test, a mathematical calculation that compares the amount of creatinine filtered in a 24-hour urine collection with the amount of creatinine that remains in the serum. Because almost all creatinine is excreted and other variables do not influence muscle metabolism and renal excretion, creatinine clearance is regarded as the best indicator of renal function. Although a 24-hour collection is preferred, a 12-hour or shorter collection may be acceptable in some situations [38].

The normal creatinine clearance value for men is 107–141 mL/min; for women, it is 87–132 mL/min. For practical purposes, a rate of 100 mL/min may be considered normal to allow comparison for the clearance to a percentage value. For example, a creatinine clearance value of 100 mL/min suggests that 100% is normal. A creatinine clearance value of 50 mL/min suggests that 50% renal function is lost and 50% remains. After the initial calculation, subsequent increases of the serum creatinine level imply that renal function is deteriorating; in other words, the kidneys are clearing less creatinine, and the serum level is increasing. Subsequent creatinine clearance calculations would result in decreasing values, because less creatinine would be measured in the urine as more accumulate in the serum. The trend is what is significant. The serum level will not increase until at least 50% of renal function has been lost [38].

Dialysis or transplantation is generally not indicated until the creatinine clearance value is less than 5 mL/min. Occasionally, however, symptoms may dictate that dialysis be started before the levels get that low [38].

***Routine Urinalysis***

Routine urinalysis assesses the nature of urine produced, including:

- Measurement of color, pH, and specific gravity
- Determination of the presence of glucose, protein, blood, and ketones
- A microscopic examination of the urine sediment for cells, cysts, bacteria, and crystals

Abnormal findings require further delineation and confirmation.

Specific gravity, a measure of the concentration of particles in the urine, reflects the ability of the kidney tubules to concentrate or dilute urine. The normal specific gravity is 1.016–1.022, but it can range from 1.001–1.040. The specific gravity increases in patients with:

- Dehydration, because the kidneys absorb all available free water, making the excreted urine concentrated
- Pituitary tumor that causes the release of excessive amounts of ADH, resulting in excessive water absorption
- Decrease in renal blood flow, as in hypotension, heart failure, or renal artery stenosis
- Glycosuria and proteinuria, because of the increased number of particles in the urine

In contrast, urine specific gravity decreases in patients with:

- Overhydration
- Diabetes insipidus, which is characterized by inadequate secretion of ADH and resultant decreases in water reabsorption

- Renal failure
- Pyelonephritis
- Acute tubular necrosis
- Interstitial nephritis

In patients with chronic renal failure, the specific gravity is usually stable at about 1.010 despite changes in the intake because the kidney can no longer respond to changes.

The normal protein content of urine is less than 8 mg/dL. The first voided morning specimen is preferred to detect the presence of protein in the urine, because orthostatic and transient proteinuria generally can be ruled out. However, stress and exposure to cold weather over time also can contribute to transient proteinuria. Higher-than-average protein levels found on routine analysis (albuminuria) should be evaluated further for total protein by the 24-hour collection. Proteins other than albumin may be identified and require investigation by other methods, such as urine electrophoresis [38].

Normally, there are no ketones in the urine. Ketonuria occurs when there is incomplete metabolism of fats. This condition may be observed in diabetic ketoacidosis, dehydration, starvation, or excessive aspirin consumption. Patients who follow a diet high in protein and low in carbohydrates will also form ketones [38].

Normal urine contains only small amounts of glucose—usually less than 15 mg/dL. Glycosuria occurs when the renal threshold for reabsorption of glucose is exceeded. The renal tubule cells are able to reabsorb glucose up to a serum blood glucose level of about 180 mg/dL. When the renal tubules are impaired, glycosuria will occur at lower serum glucose levels. Aging, pregnancy, and diabetes of several years duration will increase the renal threshold for glucose [38].

Any disruption in the blood-urine barrier, whether at the glomerular or tubular level, will cause hematuria. More than two or three red blood cells found in the sediment of urine is considered abnormal. Hemolysis of red blood cells that results in hemoglobinuria may occur in various hemolytic anemias and following some blood transfusion reactions [38].

Bilirubinuria should be suspected when the color of the urine is dark gold or brown. Normally, there is no detectable bilirubin in the urine, and its presence indicates liver dysfunction or an obstruction of the flow of bile in the biliary tract [38].

As noted, the presence of white blood cells in urine (pyuria) indicates an infection of the urinary tract. However, four or five white blood cells per high power field are not significant [38].

Epithelial cells that line the urethra and vagina are commonly found in the urine. However, the presence of renal cells suggests a pathologic condition in the kidney [38].

Casts are abnormal elements formed in and molded to the lumen of the tubules. Mucoproteins and various other cells (e.g., red blood cells, white blood cells, epithelial cells) form the cast. White blood cell casts suggest kidney infection, whereas red blood cell casts suggest damage to glomerular capillaries or ruptured tubular walls. Hyaline casts, composed of various types of protein, are the most common and may be found in people with high fever or who exercise strenuously. This finding indicates the mildest form of tubular damage. As casts degenerate, they may become granular or waxy [38].

Crystals found in the urine sediment indicate that the patient may have or is at risk of forming a renal calculus. Urate crystals occur with gout, while phosphate and calcium oxalate crystals occur in patients with hyperparathyroidism or malabsorptive states. The type of crystal found varies with urine pH. Urate crystals are found in acidic urine, and calcium oxalate crystals occur in alkaline urine [38].

Few if any bacteria are normally present in urine, and large numbers of bacteria suggest infection in the urinary tract. Normal urine contains less than 1,000 colony-forming units/mL; a count greater than 10,000 colony-forming units/mL indicates an infection. However, these cutpoints have been disputed. Some experts use a value of 100,000 colony-forming units/mL as indicating infection, but others assert that infections will be missed using this criterion [38].

Urinary osmolality reflects the ability of the kidneys to concentrate or dilute urine to maintain osmotic balance. Urine osmolality is interpreted in comparison with plasma osmolality. For example, if plasma osmolality is elevated, the kidneys should reabsorb water and excrete more concentrated and smaller volumes of urine. In contrast, if plasma osmolality is low, the kidneys should excrete a less concentrated and larger volume of urine. This maintains the proper osmotic balance among cells, tissue, and plasma. The ratio of urine osmolality to plasma osmolality should be greater than 1:1. Urine osmolality is typically 300–1,090 mOsm/kg, depending upon sex and physical activity. Variations in urinary osmolality also depend on the amount of solute to be excreted [38].

### *Other Tests*

Hemoglobin and hematocrit values of patients with chronic renal failure are low (hemoglobin of 7–8 g/day and hematocrit of 20% to 30%) because of decreased erythropoietin production. White blood cell counts are elevated in the presence of renal infection [38].

Serum potassium and phosphorus levels are elevated with acute renal failure and uremia. Hyperkalemia and metabolic acidosis are especially common in patients with acute renal failure. Elevated phosphorus levels also occur with chronic renal failure. Serum calcium is deceased in renal failure [38].

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## IMAGING STUDIES

### Ultrasonography

Ultrasonography of the kidney can locate renal cysts, differentiate renal cysts from solid renal tumors, demonstrate renal or pelvic calculi, and guide a percutaneously inserted needle for cyst aspiration or removal of a biopsy specimen [38]. In addition, ultrasonography may be used to document the size of the kidneys. Chronic kidney disease characteristically results in smaller-than-average kidneys, whereas acute kidney injury is characterized by normal or even enlarged kidneys. Asymmetry may be a result of unilateral renal artery stenosis [27; 28].

### X-Ray

An abdominal flat-plate x-ray of the abdomen is called a kidney, ureter, and bladder (KUB) or plain film. The KUB will generally determine the presence of two kidneys, as well as provide a general outline of the kidneys, and may also identify tumors, malformations, and calculi. The study is contraindicated during pregnancy [38].

### Computed Tomography

The use of unenhanced computed tomography (CT) imaging is now the standard diagnostic tool to evaluate renal colic. It offers the advantage over intravenous (IV) urography of avoiding contrast and enabling diagnosis of other abdominal abnormalities that can cause pain. Multi-dose CT scan can readily diagnose radiolucent stones, which may not be seen on IV urography, as well as small stones, even in the distal ureter. With the exception of some indinavir stones, almost all renal and ureteral stones can be detected on helical CT scan. In the detection of urolithiasis, unenhanced CT has a sensitivity ranging between 96% and 100% and specificity ranging between 92% and 100% [40].

Stones in the distal ureter can be difficult to differentiate from pelvic calcifications. In these cases, the urologist will look for other signs of obstruction indicating the presence of a stone, including ureteral dilation, inflammatory changes in the perinephric fat, hydronephrosis, and a soft tissue rim surrounding the calcification within the ureter. The soft tissue rim around a stone represents irritation and edema in the ureteral wall [40].

### Cystoscopy

A cystoscopy is a procedure in which a cystoscope is inserted into the bladder via the urethra to visualize directly into the internal bladder wall and the contents of the bladder. A cystoscopy is indicated to identify the origin of hematuria as well as to diagnose and remove tumors, stones, or any other foreign material. The application of electrical current to the lesion (fulguration) to remove bladder tumors may be carried out during the cystoscopy examination. A cystoscopy also can be used to implant radium seeds into a tumor, place catheters in the ureters to drain the renal pelvis, or coagulate bleeding areas [38].

A cystoscopy is performed under general or local anesthesia. During the procedure, the patient is supine, with the legs and feet supported in a lithotomy position. Strict aseptic technique is essential during the examination. The cystoscope is available in a variety of sizes from 12 to 26 F. Its wide-angle lens allows viewing of the interior bladder surfaces. A panendoscope will be used to examine the urethra visually, because its lens is more directly in line with the instrument. Retrograde pyelography allows visualization of the bladder, ureters, and renal pelvis, and is used for persons suspected of having an obstruction from a tumor, stone, blood clot, or stricture (narrowing) in the kidney or ureters. It involves the direct injection of dye into each ureter through the cystoscope, and also may be performed during the procedure. The test evaluates the lower portion of the ureter to which urine flow is obstructed. It is indicated if obstruction is suspected in the ureters or the renal pelvis. Because the dye is not directly injected into the bloodstream, this procedure avoids the risk of reaction to the contrast media [38].

#### *Nursing Implications*

Patients should be told that the cystoscope is inserted into the bladder in the same manner as a catheter. Because it is rigid and not flexible, as a catheter would be, the procedure may cause mild- to-moderate discomfort. Give enemas as ordered to clear the bowel. Keep the patient NPO if general anesthesia is planned. A liquid breakfast may be given if local anesthesia is to be used. Administer preprocedure sedatives as ordered to help reduce anxiety as well as bladder spasms [28].

Postprocedure, record careful measurements of urinary output. Vital signs should be measured at least every four hours and any elevation of temperature reported immediately. Urinary instrumentation is a major cause of nosocomial urinary tract infections, but prompt detection and treatment may prevent complications such as sepsis and acute renal failure. Hematuria is a common postprocedure finding, but it will gradually decrease over 24 to 48 hours. Carefully note and monitor the presence of large blood clots, as they may result in obstruction of the urinary drainage system. To avoid these problems, a catheter that permits irrigation and drainage may have been inserted during the cystoscopy [28].

Perforation of the bladder or ureters is possible during cystoscopy. The symptom of abdominal pain should alert the nurse to such an occurrence. The patient may also experience back pain, bladder spasms, urinary frequency, and burning on urination. Warm sitz baths and mild analgesics may be ordered and given. In some cases, belladonna/opium suppositories are given to relieve bladder spasms. Encourage fluids. Occasionally, antibiotics are ordered one day before and three days after the procedure to reduce the incidence of bacteremia [28].

### Intravenous Urography

Although IV urography was once the standard in urologic imaging, it has essentially been replaced by CT and magnetic resonance imaging (MRI). With the ability of new scanners to perform axial, sagittal, and coronal reconstruction of the upper urinary tract system, essentially all of the data and information obtained by traditional IV urography can be realized with CT imaging. In addition, some parenchymal defects, cysts, and tumors can be better delineated with CT than with IV urography [39].

IV urography may be indicated to assess the renal collecting systems and ureters, including investigation of the level of ureteral obstruction and demonstration of intraoperative opacification of the collecting system during extracorporeal shock wave lithotripsy. It may also be used to demonstrate renal function during emergent evaluation of unstable patients. Finally, it can demonstrate renal and ureteral anatomy after interventions such as transureteroureterostomy and urinary diversion [39].

### Percutaneous Nephrostomy

Percutaneous nephrostomy (PCN) provides a less invasive means to drain the renal collecting system in cases where obstruction of the kidney and ureter has resulted in hydronephrosis. Most often used for patients with kidney stones or bladder or pelvic tumor obstructions, PCN may be used to divert urine from the renal collecting system to allow leaks and fistulas to heal. The procedure is often performed after attempts at placing a ureteral stent through retrograde cystoscopy have proven unsuccessful. Providing drainage for that kidney is an urgent necessity, and PCN provides an exact method of accomplishing this task [39].

The approach is extremely important for PCN, and the procedure is performed under ultrasound or fluoroscopic guidance. In some cases, a small amount of IV iodinated contrast is administered at the start of the procedure to opacify the collecting system. The patient is placed in the prone position with both arms above his or her head or one arm up and the other at the noninvolved side. The entry site is prepped and draped and infiltrated with local anesthetic. A small puncture is made with a scalpel, and a posterior lateral approach is made with a needle and directed toward a lower calyx of the kidney. If the tip of the needle has entered a dilated part of the collecting system, urine will flow back from the needle when the stylet is removed. A specimen should be collected and sent to the laboratory for microscopic and bacterial studies. Obviously, infected urine will be cloudy and turbid [39].

Hemorrhage is the major risk of PCN, but the risk can be reduced substantially with use of a very small needle. Nephrostomies are performed frequently in interventional radiology departments and are a major part of the treatment for patients with malignant obstructions, renal stones, and other kidney problems.

### Retrograde Pyelography

Retrograde pyelograms are performed to visualize the ureters and intrarenal collecting system by the retrograde injection of contrast media. Any contrast media that can be used for excretory urography is also acceptable for retrograde pyelography. It is important that measures are taken to attempt to sterilize the urine before retrograde pyelography, because there is a risk of introducing bacteria into the upper urinary tract or the bloodstream. Although many studies are able to document the presence or absence of dilation of the ureter, retrograde pyelography has the unique ability to document the patency of the ureter distal to the level of obstruction and to help better define the extent of the ureteral abnormality [39].

Retrograde pyelograms are usually performed with the patient in the dorsal lithotomy position. An abdominal plain radiograph (i.e., scout film) is obtained to ensure that the patient is in the appropriate position to evaluate the entire ureter and intrarenal collecting system. Next, the ureteral orifice is identified via cystoscopy, and contrast may be injected through either a non-obstructing or obstructing catheter [39].

Non-obstructing catheters include whistle tip, spiral tip, or open-ended catheters. These catheters allow passage of the device into the ureter and up to the collecting system, over a guidewire if necessary. Contrast can then be introduced directly into the upper collecting system and the ureters visualized as the catheter is withdrawn.

Obstructing ureteral catheters include bulb-tip, cone-tip, and wedge-tip catheters. These catheters are inserted into the ureteral orifice and then pulled back to effectively obstruct the ureter. Contrast is then injected to visualize the ureter and intrarenal collecting system. Depending on the indication for the study, it may be useful to dilute the contrast material with sterile fluid. This prevents subtle filling defects in the collecting system or ureter from being obscured. Care should be taken to evacuate air bubbles from the syringe and catheter before injection, as such artifacts could be mistaken for stones or tumors.

Historically, when a retrograde pyelogram consisted of a series of radiographs taken at intervals, it was important to document various stages of filling and emptying of the ureter and collecting systems. Because of peristalsis, viewing the entire ureter is often not possible with a single static exposure or view. With modern equipment, including tables incorporating fluoroscopy, it is possible to evaluate the ureter during peristalsis in real time, thus reducing the need for static-image documentation. Occasionally, still images may be saved for future comparison. In general, however, urologists interpret retrograde pyelograms in real time as they are performed [39].

Indications for retrograde pyelogram include the evaluation of congenital ureteral obstruction, evaluation of acquired ureteral obstruction, elucidation of filling defects and deformities of the ureters or intrarenal collecting systems, opaci-

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fication or distention of the collecting system to facilitate percutaneous access (in conjunction with ureteroscopy or stent placement), evaluation of hematuria, surveillance of transitional cell carcinoma, and evaluation of traumatic or iatrogenic injury to the ureter or collecting system.

Retrograde pyelography may be difficult in cases in which there is diffuse inflammation or neoplastic changes of the bladder, especially when bleeding is present. In these cases, identification of the ureteral orifices may be facilitated by the IV injection of indigotindisulfonate sodium (indigo carmine) or methylene blue. Changes associated with bladder outlet obstruction may result in angulation of the intramural ureters, which may make cannulation with an obstructing catheter difficult. Attempts to cannulate may result in trauma to the ureteral orifice and extravasation of contrast material into the bladder wall. The potential for damage to the intramural ureter should be weighed against the potential information obtained by the retrograde pyelogram [39].

**Loopography**

Loopography is a diagnostic procedure performed in patients who have undergone urinary diversion. Historically, the term loopogram has been associated with ileal conduit diversion, but it may also be used in reference to any bowel segment serving as a urinary conduit. Because an ileal conduit urinary diversion usually has freely refluxing uretero-intestinal anastomoses, the ureters and upper collecting systems may be visualized. In other forms of diversion, the uretero-intestinal anastomoses may be purposely non-refluxing [40].

The patient is positioned supine and an abdominal plain radiograph is obtained before introduction of contrast material. A commonly employed technique is to insert a small-gauge catheter into the stoma of the loop, advancing it just proximal to the abdominal wall fascia. The balloon on such a catheter can then be inflated to 5–10 mL with sterile water. By gently introducing contrast through the catheter, the loop can be distended, usually producing bilateral reflux into the upper tracts. Oblique films should be obtained in order to evaluate the entire length of the loop. Because of the angle at which many loops are constructed, a traditional anteroposterior view will often show a foreshortened loop and could miss a substantial pathology. A drain film should also be obtained, as this may demonstrate whether there is obstruction of the conduit [40].

Indications for a loopogram include evaluation of infection, hematuria, renal insufficiency, or pain after urinary diversion. It can be used for surveillance of upper urinary tract obstruction or urothelial neoplasia, or it may be used to evaluate the integrity of the intestinal segment or reservoir [40].

**Retrograde Urethrography**

A retrograde urethrogram is a study performed to evaluate the anterior and posterior urethra, usually in male patients. It may be particularly beneficial in demonstrating the total length of a urethral stricture that cannot be negotiated by cystoscopy and the anatomy of the urethra distal to a stricture that may not be assessable by voiding cystourethrography. This procedure is performed in the radiology department or in the operating room before performing visual internal urethrotomy or formal urethroplasty [40].

A plain film radiograph is obtained before injection of contrast, and the patient is usually positioned slightly obliquely to allow evaluation of the full length of urethra, with the penis placed on slight tension. A small catheter may be inserted into the fossa navicularis with the balloon inflated to 2 mL with sterile water. Contrast is then introduced via a catheter-tipped syringe. Alternatively, a penile clamp may be used to occlude the urethra around the catheter. Indications for a retrograde urethrogram include evaluation of urethral stricture disease (including location and length of a stricture), assessment for foreign bodies, evaluation of penile or urethral penetrating trauma, and evaluation of traumatic gross hematuria [40].

**Voiding Cystourethrogram**

A voiding cystourethrogram is performed to evaluate the anatomy and physiology of the bladder and urethra. The study provides valuable information regarding the posterior urethra in pediatric patients and has long been used to demonstrate vesicoureteral reflux.

Voiding cystourethrogram may be performed with the patient supine or in a semi-upright position using a table capable of bringing the patient into the full upright position. A preliminary plain pelvic radiograph is obtained. In children, a tube (8 French or smaller) is used to fill the bladder to the appropriate volume, as determined by the radiologist's needs and patient comfort. In the adult population, a standard catheter may be placed and the bladder filled to 200–400 mL. The catheter is then removed and a film is obtained. During voiding, anteroposterior and oblique films are obtained. The bladder neck and urethra may be evaluated by fluoroscopy during voiding. Bilateral oblique views may demonstrate low-grade reflux, which is not able to be appreciated on the anteroposterior film. In addition, oblique films will demonstrate bladder or urethral diverticula, which are not always visible in the straight anteroposterior projection. Post-voiding films should also be performed [40].

Indications for a voiding cystourethrogram include evaluation of the urethra, possible reflux, and structural and functional bladder outlet obstruction. There are certain limitations with a voiding cystourethrogram. Using a catheter may be traumatic in children and difficult in some patients with anatomic abnormalities of the urethra or bladder neck. Filling of the bladder may stimulate bladder spasms at low volumes, and some patients may be unable to hold adequate volumes for investigation. Bladder filling in patients with spinal cord injuries higher than T6 may precipitate autonomic dysreflexia [40].

### RENAL BIOPSY

Renal biopsies are extremely helpful to pinpoint an exact diagnosis in a patient experiencing kidney disease. Lupus-like syndromes and types of tubular interstitial disorders may be diagnosed accurately by examination of kidney tissue. Cellular changes, atrophy, and neutrophil infiltration all may be seen by the pathologist, and these factors aid the nephrologist in treatment planning and prognosis. Renal biopsies are also performed to aid in tracking rejection after a kidney transplant. Some smaller hospitals send their renal specimens out to a laboratory that specializes in analysis of renal tissue because the care and examination of renal specimens are quite involved. The renal biopsy itself, however, may be performed in general interventional radiology departments.

Patients are positioned prone for kidney biopsies. Specimens are collected by means of long sampling needles. The procedure is usually safe, but some caveats apply, as in sampling for lupus [41]. Some referring physicians prefer to admit their patients overnight, just to be sure that any excessive bleeding may be noted.

Long needles may also reach tumors of the adrenal gland. Due to the adrenal's location on the superior pole of the kidney, the technique for positioning is almost exactly the same. The physician isolates the solid tumor by CT scan or ultrasound guidance and obtains a sample for analysis. Caution should be practiced with adrenal biopsies because the possibility always exists that the mass is a pheochromocytoma. This tumor consists of cells that secrete adrenaline and other catecholamines and can cause paroxysms of hypertension, tachycardia, headache, nausea, diaphoresis, and a multitude of similar symptoms [42]. Care is always taken not to stimulate a pheochromocytoma, so piercing it with a needle should be avoided.

## NURSING DIAGNOSES, PLANNING, AND IMPLEMENTATION

Assessment of patients with renal dysfunction involves obtaining the history, conducting a physical examination, and reviewing the results of diagnostic studies. The major nursing diagnoses are alterations in comfort, fluid retention, and impairment of gas exchange, nutrition, and urinary elimination. Various nursing interventions may be implemented to address these diagnoses.

### ALTERATIONS IN COMFORT

#### Pain

Patients with renal or ureteral calculi commonly experience excruciating pain. Renal abscesses and infections of the urinary tract, including cystitis and urethritis, produce moderate pain [33; 34].

The pain experienced by patients with renal or ureteral calculi typically requires opioid analgesics for relief. Morphine may be given intravenously to provide immediate pain relief, and subsequent doses may be given subcutaneously until the stone is passed or removed. Non-narcotic analgesics, urinary antiseptics, antibiotics, and increased fluid intake may be prescribed to control the discomfort associated with related infectious processes.

Analgesia may also be required to address the pain associated with the hypocalcemia of renal failure or metastasized renal cancer. Patients with polycystic kidney disease should avoid aspirin and aspirin-containing compounds because of the potential for bleeding with the cysts [33; 34; 43].

Pain associated with surgical incisions will require opioid analgesia during the initial 24 to 48 hours, and extensive surgical incisions may be quite uncomfortable for a longer period. Combination belladonna/opium suppositories may relieve the pain of bladder spasms following prostate surgery, bladder surgery, or kidney transplant surgery [33; 34; 43].

Nursing interventions related to comfort are considered successful if the patient is resting, moving, or sleeping comfortably. Facial expressions and body movements should be relaxed and without tension.

#### Pruritus

Mild or severe generalized itching accompanies ESRD and the development of uremia. The production and elimination of urate crystals by the skin and the increased production of parathyroid hormone are believed to be the causes of intense pruritus. Dry skin or perspiration and other moisture can worsen the pruritus [33; 34].

In patients with ESRD and uremia, pruritus is often not relieved with the initiation of dialysis. Interventions that may provide comfort include avoiding agents known to dry the skin (e.g., soaps, lotions that contain alcohol). Bathing without soap will remove the uremic frost that compounds itching; bath water will be yellow from the urochrome pigments. Oil-based lotions and soaps containing lanolin or a high fat content should be encouraged. In addition, patients may be prescribed phosphate-binding agents; control of the phosphorous-calcium balance will moderate the production of parathyroid hormone [27; 28]. Keeping the patient's fingernails short can help avoid lacerations.

Aluminum hydroxide antacids promote phosphate excretion, but they prevent the absorption of iron and should be used with caution, especially in those with anemia. Vitamin D and calcium supplementation should be given to correct the calcium deficit after hypophosphatemia has been corrected. Possible signs of hypocalcemia are sore feet, muscle weakness, joint pain, generalized bone aching, and spontaneous fractures. Diphenhydramine hydrochloride (Benadryl) and trimeprazine tartrate (Temaril) may provide relief from the

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itching. Because it is excreted by the kidney, the dose of diphenhydramine hydrochloride may be reduced to avoid toxicity. Ultraviolet light treatments (phototherapy or photochemotherapy) three times per week may control severe pruritus by promoting more rapid turnover of epithelial skin cells. Parathyroidectomy may be required if excessive parathyroid hormone production and pruritus cannot be controlled with more conservative measures [27; 28]. Relief from pruritus is considered successful if the patient does not constantly scratch or ask to be scratched and if skin is free of excoriation from frequent scratching [33; 34].

## POTENTIAL FOR INFECTION

Patients with renal calculi (stones in the kidneys, ureters, or bladder) may develop infections, as the stones are a continuing nidus of bacterial growth. Indwelling urinary catheters, stents, ureteral tubes, and nephrostomy tubes also increase the risk for infection. Urinary stasis associated with a neurogenic bladder increases the risk of ascending urinary tract infections, which can become systemic bacteremia. Any urinary instrumentation required for diagnosis or treatment (e.g., cystoscopy) may introduce pathogens, potentially leading to infection. In patients with uremia from either acute renal failure or ESRD, altered immune processes further contribute to the potential for infection [33; 34].

Infections increase the workload of the kidneys, and the prevention of infection is a priority. It is important to maintain sterile technique during dressing changes and at sites where catheters have been inserted into the circulatory or urinary system. Intermittent catheterization is preferable to the placement of a continuous indwelling urinary catheter. If continuous urinary catheter drainage is necessary, however, the continuity of the system should not be disrupted. The tubing and bag should remain below the level of the bladder to ensure that urine does not ascend into the upper urinary tract. Vascular access routes for hemodialysis and catheters for peritoneal dialysis should all be cared for carefully [27; 28].

Handwashing is an essential element of aseptic technique and care of patients with catheters. In addition, healthcare staff should be educated and trained in proper techniques of catheter insertion and care.

## ALTERATION IN FLUID VOLUME

### Fluid Volume Deficit

Loss of fluid volume as a result of diuretics, infection, hemorrhage, or fluid shift to the interstitial space (as with nephritic syndrome) may result in a fluid volume deficit. Patients undergoing dialysis also may have too much fluid removed during the treatments and experience a fluid volume deficit (hypovolemia) [33; 34]. For patients with normal renal function, this may contribute to decreased renal perfusion and the development of prerenal azotemia.

Oral or IV fluid replacement will be necessary if the patient becomes fluid-depleted from diuretic therapy, surgical drainage loss, or dialysis. Blood or plasma expanders also may be given to restore intravascular volume. Careful assessment of intake and output, weight, and vital signs is essential to monitor fluid volume status. In addition, the patient's dry weight (i.e., weight after dialysis without evidence of edema and normal blood pressure) may need to be re-evaluated [27; 28].

Normalized blood pressure levels and body weight are used to verify successful interventions for stabilization of fluid volume. The patient should demonstrate knowledge of his/her fluid allowance, ability to calculate fluid intake and loss, and correlation of weight changes with physical well-being. For example, the patient who suddenly becomes short of breath should suspect that his/her dry weight has been exceeded and blood pressure is elevated. Other signs that fluid volume has corrected include absence of cerebral manifestations (e.g., syncope, light-headedness) with changes in posture, resolution of nausea or thirst, minimization of peripheral edema, and elimination of rales or lung congestion [33; 34].

### Fluid Volume Excess

Excess in circulating fluid volume, or hypervolemia, occurs when a patient is oliguric because of renal failure. This problem may occur acutely with sudden loss of renal function or develop as ESRD progresses. Furthermore, after renal transplant surgery, large volumes of IV fluid are infused at the same rate that urine is produced. This amount often exceeds 4,000 mL/hour the first day [33; 34]. Excesses in fluid volume contribute to cardiopulmonary decompensation and must be corrected.

Fluid volume excess may be avoided in patients receiving dialysis if they understand the need to control intake. These patients should restrict fluid intake to the amount of urinary output in 24 hours plus 600 mL. If there is no urine output, fluid should be limited to no more than 1,000 mL and perhaps to no more than 500 mL per day. Intravenous infusions should be administered with micro-drip tubing to avoid excessive fluid administration. Medications administered piggyback are generally dissolved in the smallest possible volume of fluid [27; 28].

Providing a glass with lines marking the appropriate amount of fluid will help patients control fluid intake. Fluid restriction may be prescribed as a guideline; however, patients eventually will need to assume responsibility for control of thirst and fluid intake and may impose their own fluid restriction. Intake and output, weight, and blood pressure should be monitored to assess the patient's fluid status. Clinical manifestations of fluid excess include edema, hypertension, and shortness of breath at rest or with exertion [27; 28].

## POTENTIAL FOR NUTRITIONAL DEFICIT

Patients with acute or chronic renal failure will have altered nutritional status. Nausea, vomiting, and anorexia are common effects of azotemia. Hypogeusia is also a common problem for patients with ESRD. Dietary modifications (e.g., low-salt, low-potassium diets) prescribed for patients with renal failure complicate efforts to maintain a good nutritional status. The loss of protein via peritoneal dialysis and loss of water-soluble vitamins via dialysis further complicate the issue. Patients with altered renal function who are acutely and critically ill from sepsis or other systemic disease will also experience nutritional deficits [25].

Patients with altered renal function generally require modified or restricted diets. Patients with hypertension should be given a diet of no added salt (generally <4 g sodium per day). If severe hypertension or heart failure is present, dietary sodium intake may be restricted to 2 g/day [25].

Patients who are losing excessive protein (e.g., patients with proteinuria secondary to nephritic syndrome, patients on peritoneal dialysis) require a high-protein diet (1.2–1.3 g/kg body weight/day). In contrast, patients with ESRD who are becoming uremic or are undergoing chronic hemodialysis generally require a protein-restricted diet (0.6–0.8 g/kg/day). Protein in foods should be of high biologic value (i.e., contain a high proportion of essential amino acids). Adequate protein and calories should be provided so the patient's muscle mass is not catabolized [25].

When patients stop excreting urine, potassium intake should be restricted to avoid fatal cardiac arrhythmias. Clinical manifestations of hyperkalemia are chiefly cardiac, although neuromuscular complications can also occur [44; 45]. Electrocardiogram (ECG) changes associated with hyperkalemia include peaked T waves (often the first ECG finding), ST-segment depression, widening of the QRS and PR intervals, and loss of the P wave [44]. A late ECG sign is the appearance of a sine-wave pattern, which usually indicates impending ventricular fibrillation and asystole [44; 46].

Although cardiac manifestations are obviously the most dangerous sequelae of hyperkalemia, neuromuscular complications, including paresthesias and fasciculations in the extremities, may be seen. Peripheral paralysis can occur, but paralysis of the respiratory muscles is rare [44].

Treatment of acute hyperkalemia with life-threatening symptoms (generally seen with potassium levels ≥7 mEq/L) is accomplished by the administration of IV calcium [44; 46; 47]. The usual recommended dose is 10 mL of a 10% calcium solution, such as calcium chloride [48]. The ECG should be monitored while calcium is administered, and calcium should be administered only when ECG changes, such as a widening QRS, have occurred [46; 47]. Calcium does not correct the underlying hyperkalemia; it only counters the adverse neuromuscular effects [46]. Calcium infusion should always be followed by specific therapy aimed at lowering the plasma potassium level [45].

The administration of IV glucose and insulin is the quickest way to treat acute hyperkalemia that has not yet resulted in life-threatening sequelae [45; 46; 47]. This results in a shift of extracellular potassium into the cell [46]. Care should be taken in patients with diabetes and hyperkalemia, as glucose infusion that is not accompanied by a matching infusion of insulin can result in increased hyperkalemia due to extracellular hyperosmolarity [44].

When the individual is able to safely take medication orally and life-threatening sequelae have not developed, treatment with sodium polystyrene sulfate (Kayexalate) in sorbitol solution may be used [48]. This may be the treatment of choice in outpatients who are stable but have potassium levels in the 5.5–6.9 mEq/L range. In patients unable to tolerate oral administration, polystyrene sulfate may be given rectally [47; 48]. Studies have raised the possibility of colonic complications from administration of polystyrene sulfate in sorbitol suspension, and there are no controlled studies of safety and efficacy for this use [49]. Due to this concern, concomitant use of sorbitol is no longer recommended [48]. Another strategy to avoid the use of polystyrene sulfate and associated adverse gastrointestinal events (e.g., ischemic colitis, bleeding, perforation, necrosis) would be the use of a loop or thiazide diuretic [50].

The most common cause of chronic hyperkalemia is renal failure; therefore, the most common management of chronic hyperkalemia is dialysis [45]. However, before resorting to dialysis, a combination of medications may be used to increase excretion of potassium, including sodium polystyrene sulfonate, furosemide, and/or IV calcium [51].

## IMPAIRMENT OF GAS EXCHANGE

Renal dysfunction can lead to impairment of oxygen-carbon dioxide exchange and inadequate oxygenation. If kidneys fail to excrete hydrogen ions and regenerate adequate bicarbonate, the lungs compensate for the increased load of metabolic acids by increasing the rate and depth of breathing (i.e., Kussmaul respirations). Respiratory fatigue from continued compensation may lead to decreased oxygenation, especially if infection or cardiac problems are present.

Flank incisions or thoracoabdominal approaches for renal or urologic surgery also may limit respiratory movements. Hypoventilation following these surgical interventions may precipitate atelectasis or hypostatic pneumonia. Chronic anemia also impairs gas exchange and results in increased cardiac workload (evident as an increased heart rate) [21; 22; 28].

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For patients with metabolic acidosis from acute or chronic renal failure, oxygen-carbon dioxide exchange may be improved with the administration of sodium bicarbonate or with the institution of dialysis. The major risk associated with IV administration of sodium bicarbonate is that it may further expand extracellular fluid volume and worsen problems of hypervolemia, if they are present. Because the correction of acidosis can lead to calcium deficits, it is important to observe for signs of tetany. Dialysate contains acetate, which converts to bicarbonate when absorbed. Thus, dialysis will provide for the replacement of depleted bicarbonate stores [27; 28].

### ALTERATION IN URINARY ELIMINATION PATTERN

Patients with acute or chronic renal failure may experience a variety of changes in the pattern and amount of urine produced.

#### Alteration Related to Retention

Retention of urine typically occurs due to obstruction to its outflow. It may result from bladder neck obstruction, as with prostatic hypertrophy, obstruction above the bladder, or neurogenic bladders [27]. The resulting bladder distention may lead to hydroureter or hydronephrosis.

#### Alteration Related to Polyuria, Oliguria, or Anuria

Decreased renal concentrating ability, as occurs with progressive renal insufficiency, results in polyuria. Oliguria or anuria may occur acutely, with sudden loss of renal function. Patients who progress to ESRD often notice that virtually all urine production ceases after the initiation of dialysis [28].

A variety of interventions may be undertaken for patients with incontinence, neurogenic bladder, or urinary diversion. Incontinent men may elect to wear an external catheter (also called a condom catheter), which is preferable to continuous internal catheter drainage. The major drawback of this catheter is that the penis may become excoriated and painful if the area is not kept clean. Even with good hygiene, skin breakdown can occur. A satisfactory external catheter does not exist for women [27; 28].

The patient with altered urinary elimination patterns should not have bladder distention or incontinence and should be able to manage the alteration in urine flow without difficulty [27; 28].

### ALTERATION IN TISSUE PERFUSION

Severe blood loss, dehydration, or a shift of fluid may cause a decrease in renal tissue perfusion. This alteration in hemodynamics can result in prerenal azotemia. Uremic states also result in a decreased life span of red blood cells and an increased number of immature red blood cells [27; 28]. If uncorrected, acute renal failure may result. Patients with chronic renal failure have decreased production of erythropoietin. Because the decrease is gradual, the situation is not life-threatening unless the value suddenly drops further.

Nursing interventions for patients with impaired tissue perfusion include careful monitoring of the patient's vital signs and urinary output. Fluid volume or blood replacement should occur at the prescribed rate, and the nurse should promptly report any inability to administer the fluid as prescribed. If severe hemorrhage is causing the lack of renal tissue perfusion, emergency surgery may be required [27; 28].

For patients with renal failure, severe hemorrhage or fluid volume loss may significantly affect cardiac and cerebral tissue perfusion. Patients with ESRD have reduced available hemoglobin. Although patients experience chronic fatigue, vital processes are not typically impaired. If further hemoglobin loss occurs, however, cardiac dysrhythmias, angina, and hypotension may develop [27; 28].

Chest pain or arrhythmias indicate alterations in perfusion. Adequate tissue perfusion may be verified through measurements of blood pressure and pulse in the patient's normal range. The patient should demonstrate orientation to person, place, and time [27; 28]. Nonacute correction of impaired tissue perfusion may be achieved through the administration of iron supplements, folic acid, anabolic steroids, and judicious administration of blood transfusions [36; 52].

## SPECIFIC DISORDERS OF THE KIDNEYS AND URINARY SYSTEM

Specific disorders of the kidneys and urinary system include life-threatening illnesses with long-term implications. Renal disease can generally be categorized as chronic or acute, although a variety of underlying causes are contributory.

### CHRONIC KIDNEY DISEASE

Chronic kidney disease is defined as a reduction in kidney function or kidney damage that has been present for at least three months [53; 54; 55; 56]. However, chronic kidney disease should not be viewed in simple mathematic terms. It is an ongoing process of renal injury that causes compensatory hyperfiltration in less-affected glomeruli, which eventually leads to the destruction of those glomeruli as well [53]. Left untreated, this ongoing destruction results in a steady decline in renal function, which eventually affects not just the renal system but almost every organ system in the body [53; 54].

ESRD refers to disease that requires either dialysis or transplantation services. In the United States, 98% of all patients receiving dialysis or transplantation have a GFR <15 mL/min/1.73 $m^2$ [57]. Therefore, the terms ESRD and kidney failure are often used interchangeably. Although ESRD is generally associated with a GFR less than 15 mL/min/1.73 $m^2$, it is more importantly an administrative term, as patients receiving dialysis or transplantation services are covered by the Medicare ESRD program [58]. In some cases, ESRD is also used rather loosely to refer to patients who are experiencing progressive chronic kidney disease and are expected to begin dialysis in a matter of days or weeks.

The two leading causes of ESRD are diabetes (44% of new patients) and hypertension (29% of new cases) [59]. New cases of ESRD with diabetes or hypertension listed as the primary cause had been rising rapidly since 1980, but each has declined from 2010 to 2013 [60; 61]. Other less common causes of ESRD include glomerulonephritis, interstitial nephritis, autosomal dominant polycystic kidney disease (the leading genetic cause), and collagen vascular disease. Due to the prevalence of kidney transplantation, post-transplantation kidney disease has become the fourth largest cause of ESRD in the United States; however, these patients are reported within their original disease category for epidemiologic purposes [62]. New cases of diabetic ESRD are expectedly higher with increasing age in all racial groups, but generally stable or only slightly higher among younger individuals [63]. Statistically, non-whites are four times more likely to require dialysis. Compared with white patients, the prevalence of ESRD per million is 9.5 times greater in Native Hawaiians/Pacific Islanders, 3.7 times greater in African Americans, 1.5 times greater in American Indians/Alaska Natives, and 1.3 times greater in Asian Americans [63]. The cost of treating ESRD was $35.4 billion in 2016 [63].

The pathophysiology of chronic kidney disease is dependent on the underlying cause, the most common of which are the disease processes of diabetes and hypertension. Diabetic nephropathy has various proposed hypotheses for mechanisms of kidney damage, though it is most often and broadly attributed to hyperglycemic end-organ damage to the glomerulus, eventually to the point of proteinuria. Experts have suggested that there may be disadvantaged nephron development in those born to mothers with diabetes, predisposing the offspring to chronic kidney disease during their lives. Some also posit that hyperglycemia sensitizes end-organs to hypertensive damage, and because diabetes and hypertension often occur together, this has an additive deleterious effect on the kidney [64]. The initial manifestation is often albuminuria and hyperfiltration (i.e., an elevation in GFR) [65]. Over time, albuminuria increases to the point of overt nephropathy, accompanied by a decline in GFR. Hyperglycemia-mediated overactivation of protein kinase C is also thought to be involved in progressive renal parenchymal damage, resulting in the loss of selective permeability in the glomerulus and an increase in local inflammation [66]. In addition to glomerular damage, thickening of the basement membrane and afferent and efferent arterioles may be noted [66].

Hypertensive nephropathy is another common cause of chronic kidney disease and induces renal damage through a variety of mechanisms. One mechanism is sympathetic nervous overactivity resulting in constriction of efferent arterioles and decreased outflow from the glomerulus, allowing for increased oncotic pressure in the nephron. Activation of the RAAS may also occur as a response to sympathetic nerve activity. Arterial stiffness, a central component of hypertension, is a contributing mechanism as well. Impaired salt and water excretion from sympathetic nervous overactivity or from RAAS activation serves to increase hypertension and thereby increase renal damage.

Other underlying causes of the renal damage leading to chronic kidney disease are generally associated with unique mechanisms, including immune complex deposition and interstitial damage from prolonged use of nephrotoxic drugs. Acute kidney injury may also lead to chronic kidney disease if the initial insult has not been removed or if the initial injury has not been completely reversed. Even in cases of full recovery after acute kidney injury, the risk of developing chronic kidney disease is increased [67]. Renal ischemia-reperfusion injury may also cause lasting damage [68].

Many of the complications and comorbidities associated with chronic kidney disease stem from this initial damage and begin to manifest as renal damage progresses. Hypertension, a common comorbidity of chronic kidney disease, can cause renal damage as well as be exacerbated by it, as discussed. Anemia is a common complication of chronic kidney disease and is likely due to reduced renal production of erythropoietin, though other factors, such as uremia-induced inhibition of erythropoiesis, shortened erythrocyte survival, and disordered iron homeostasis, also play a role [69]. A study of patients with stage 3 chronic kidney disease determined that renal anemia is associated with rapid progression to stage 4 and a higher risk of cardiovascular disease and hospitalization [70].

Alterations in bone and mineral metabolism are commonly seen in patients with chronic kidney disease, starting in early-stage disease. Hypocalcemia is common in these patients, often leading to parathyroid hyperplasia and secondary hyperparathyroidism [71]. The hypocalcemia is likely attributable to phosphate retention, skeletal resistance to parathyroid hormone, altered vitamin D metabolism, or a combination of these factors [72]. In line with altered vitamin D metabolism, patients with chronic kidney disease also have defective intestinal calcium absorption. Hyperphosphatemia is also common, and the resultant elevation in the plasma calcium-phosphate product often leads to precipitation of calcium phosphate in soft tissues and to calcific changes in the walls of arterioles and small arteries [72]. These electrolyte derangements are largely attributable to intrarenal damage and hormonal abnormalities, both of which affect electrolyte excretion and reabsorption. Activation of fibroblast growth factor 23 (FGF-23) and parathyroid hormone is implicated in the regulation of phosphate reabsorption in the tubules. FGF-23 also inhibits vitamin D production and promotes catabolism of vitamin D stores [73].

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### Clinical Manifestations

The clinical presentation of chronic kidney disease is often subtle, and symptoms are uncommon with a GFR greater than about 35 mL/min/1.73 $m^2$. Therefore, suspicion for mild renal disease should be based on recognition of the primary pathologic mechanism responsible for renal injury, particularly in patients with diabetes and/or hypertension. It is equally important to begin early screening for the complications of renal disease to prevent morbidity and to establish a credible baseline for the individual patient.

In adult patients with stages 1 through 4 chronic kidney disease, the Department of Veterans Affairs Guideline Panel recommends that blood pressure targets should be less than 140/90 mm Hg.

(https://www.healthquality.va.gov/guidelines/CD/ckd/VADoDCKDCPG2014.pdf. Last accessed August 14, 2020.)

**Strength of Recommendation**: Strong

After the GFR falls to less than 35 mL/min/1.73 $m^2$, a variety of metabolic, psychiatric, hematologic, cardiovascular, and acid-base regulatory problems occur. Clinical presentation at this point depends on the particular complication and the underlying cause of renal failure [44; 53; 54; 55; 75].

### Therapeutic Measures

The management of chronic kidney disease is multifaceted, involving a series of tactical measures (including the effective management of comorbidities) designed to reduce the risk of further damage and slow the progression of kidney disease. The clinician should first seek to identify and treat reversible causes, such as lower urinary tract obstruction, which should be considered in any patient with unexplained deterioration in renal function. Optimal glucose control in the patient with diabetes and blood pressure control in those with hypertension, as well as initiation of angiotensin-converting enzyme (ACE) inhibitor or angiotensin II receptor blocker (ARB) therapy, are important to limit progression [76; 77]. Certain nephrotoxic agents should be avoided if at all possible, especially in the patient with diabetes or receiving loop diuretics. These include nonsteroidal anti-inflammatory drugs, aminoglycoside antibiotics, and radiographic contrast material. Additional measures to protect the kidney and slow progression include smoking cessation, statin therapy to control hyperlipidemia, dietary protein restriction, and satisfactory treatment of metabolic acidosis.

The Department of Veterans Affairs Guideline Panel recommends against the use of combination renin-angiotensin-aldosterone system blockade (ACE inhibitor and ARB with or without a direct renin inhibitor) in patients with chronic kidney disease.

(https://www.healthquality.va.gov/guidelines/CD/ckd/VADoDCKDCPG2014.pdf. Last accessed August 14, 2020.)

**Strength of Recommendation**: Strong

For cases of chronic kidney disease that do progress to late-stage kidney disease, it is also important to anticipate and prepare patients for renal replacement therapy [76]. Patients with a GFR less than 30 mL/min/1.73 $m^2$ should be referred to a nephrologist to make preparations for impending end-stage disease and renal replacement therapy [76]. It is well to keep in mind, however, that acute, intercurrent declines in GFR are often due to reversible factors such as volume depletion, radiographic contrast or nephrotoxic drug use, and urinary tract obstruction; efforts should be made to correct these in order to appropriately address declines in GFR and determine whether true progression of the disease has occurred [76].

An intensive and multifactorial management approach is required for patients with renal disease in order to address all risk determinants. The mainstays of treatment are management of complications and/or comorbidities, lifestyle modification, and dialysis for patients with severe or late-stage disease. Some patients may be candidates for kidney transplant, although the wait for a non-related donor can be long. Psychosocial issues and patient education (primarily to ensure compliance with the established treatment plan) are important as well.

### Nursing Measures

An essential component of renal disease management is diet modification and dietary referral is beneficial for optimum care. This is especially true in patients with underlying diabetes and in patients who are under- or overweight, as the dietary recommendations must be modified in these cases. The American Dietetic Association has established guidelines for renal failure diets, which are published in the *Manual of Clinical Dietetics* [78].

For adults with CKD without diabetes, not on dialysis, with estimated GFR less than 50 mL/min/1.73m$^2$, the American Dietetic Association recommends a protein-controlled diet providing 0.6—0.8 g dietary protein per kg of body weight per day.

(https://www.andeal.org/topic.cfm?cat=3927. Last accessed November 12, 2018.)

**Level of Evidence**: Expert Opinion/Consensus Statement

Although the medical management of chronic kidney disease may seem overwhelming to even veteran healthcare providers, it is often devastating to patients. Therefore, it is essential to provide adequate social and psychiatric support. Patients with ESRD (especially patients on hemodialysis) are known to suffer from high rates of depression, insomnia, and anxiety [79]. Often ignored, sexual dysfunction occurs at high rates in both male and female patients with ESRD [79]. The treatment of these and other psychiatric complications should begin before the onset of ESRD, when possible, and continue as long as necessary.

## ACUTE KIDNEY INJURY

Acute kidney injury is primarily a disease of hospitalized patients and often is the result of pre-existing chronic kidney disease [63]. Acute kidney injury in the Medicare population has reached an annual average of approximately 4.7%, compared with 1.5% in 2005 [63]. Acute kidney injury rates are significantly associated with aging and with black/African American race [63]. The most common causes of acute kidney injury vary according to pathophysiology, but possible etiologies include trauma, dehydration/volume depletion, tubulointerstitial disease, glomerulonephritis, and obstruction [53; 80].

### Clinical Manifestations

The usual clinical presentation of acute kidney injury includes signs and symptoms of accumulation of nitrogen in the blood, such as fatigue, headache, anorexia, nausea, and vomiting. Potassium imbalances can result in tachycardia. Patients at highest risk for prerenal acute kidney injury have pre-existing chronic kidney disease, have recently undergone surgery, been exposed to radiocontrast dye, have received aminoglycoside antibiotics, or have developed sepsis [80]. Postrenal acute kidney injury is associated with flank or abdominal pain and possibly neurologic symptoms. Most patients with acute kidney injury have identifiable risk factors, such as chronic kidney disease, advanced age, liver disease, diabetes, or vascular disease [80]. Therefore, it is possible and essential to identify those at high risk before acute kidney injury develops in order to minimize damage.

### Therapeutic Measures

Treatment of acute kidney injury is generally guided by the specific location and nature of the injury. Supportive care and patient comfort should be considerations for nurses.

## NEUROGENIC BLADDER

A neurogenic bladder occurs in patients whose normal neural innervation of bladder contraction is interrupted. The result may be sensory disruption, motor disruption, or both. A neurogenic bladder may have a variety of causes. Diabetes-related autonomic neuropathy may result in a sensory deficit. Neurologic disease (e.g., multiple sclerosis, amyotrophic lateral sclerosis), spinal cord injury, or central nervous system malignancy may also result in a neurogenic bladder [81; 82].

### Clinical Manifestations

Patients with lower motor neuron neurogenic bladder have lost the perception of bladder fullness and do not experience a desire to urinate. As a result, overflow incontinence occurs when bladder capacity is exceeded. The distended bladder may be palpated and percussed. Patients with upper motor neuron neurogenic bladder experience spontaneous voiding when the bladder is stimulated. However, the bladder is hyperirritable, and voiding is not complete [84].

Patients with neurogenic bladder are more susceptible to the development of urinary tract infection as a result of ineffective bladder emptying and catheterization. In turn, repeated infections increase the risk for chronic renal failure. Urinary tract obstruction from struvite stones (a type of renal calculi) is more likely in patients with neurogenic bladder [84].

### Therapeutic Measures

Parasympathomimetic agents (e.g., bethanechol chloride, neostigmine) may be prescribed for patients with a lower motor neuron neurogenic bladder to improve contraction of the detrusor muscle. For patients with upper motor neuron neurogenic bladder, parasympatholytics (e.g., propantheline bromide, methantheline bromide) may be indicated. Muscle relaxants (e.g., diazepam) may reduce skeletal muscle spasms. In addition to pharmacologic agents, voiding or catheterization programs may be prescribed [84].

### Specific Nursing Measures

Emotional support and educational interventions are important nursing measures for patients with neurogenic bladder. Patients may be instructed to perform the Credé maneuver to promote bladder emptying. This consists of placing the palm of the hand on the lower part of the abdomen, over the bladder. The palm of the hand is flattened, gradually increasing pressure as the palm is rotated [28].

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Intermittent self-catheterization may also be necessary. A clean (rather than aseptic) technique is adequate and should not result in an increased risk of urinary tract infection. Catheterization is generally required every four hours. Limiting fluid intake after 6 p.m. will help minimize problems with nocturnal incontinence or the need for awakening at night for self-catheterization [28].

## INFECTIOUS DISORDERS

Renal and urinary infections are a common clinical problem and may occur anywhere in the urinary tract.

### Cystitis

Cystitis, or inflammation of the urinary bladder, is usually the result of bacterial contamination; however, it may also be the result of fungal infection or fibrosis of the bladder wall. Bladder calculi, urinary diverticulum, or an indwelling urethral or suprapubic catheter will increase the likelihood of cystitis. Because of the relatively short female urethra and its proximity to the rectum and vagina, women are much more susceptible to cystitis than men. In healthy subjects, bacteriuria increases following sexual intercourse; however, this increase is transient [24; 81; 82].

Interstitial cystitis (also known as painful bladder syndrome) is a condition also characterized by painful bladder and urinary frequency and urgency. This is a chronic condition, and the diagnosis is one of exclusion; there are no effective diagnostic tests. The cause of the condition is not clear, but it not believed to be related to infection.

#### *Clinical Manifestations*

Cystitis is characterized by a burning discomfort upon urination. Frequency, urgency, nocturia, bladder spasms, or incontinence may also be present. The urine may be cloudy or cola-colored from the presence of white and/or red blood cells. Other symptoms may include fever, fatigue, and pelvic and abdominal discomfort. When cystitis is associated with urinary tract obstruction at the bladder neck, the patient may have symptoms of urinary obstruction and/or uremia [24; 81; 82].

#### *Therapeutic Measures*

If cystitis has resulted in obstruction or acute renal failure, the obstruction should be removed immediately. Failure to remove the obstruction and treat the infection can result in permanent renal damage [24; 81; 82]. Antibiotics effective in eradicating the bacteria causing the cystitis will be prescribed.

Patients with cystitis should have a liberal fluid intake of at least 3 L/day. Patients should be encouraged to void frequently, even if it is uncomfortable, to help flush contaminating micro-organisms. Surgery to remove obstructions is rare but may be indicated [24; 81; 82].

#### *Specific Nursing Measures*

Nursing interventions for the care of patients with cystitis are supportive and educational. Phenazopyridine may be taken for the first two to three days to lessen pain and bladder spasms. This drug colors the urine red or orange and may stain fabrics. Warm compresses or sitz baths may help patients achieve adequate relaxation for natural micturition. Urethral catheterization should be avoided whenever possible, because additional contamination may result [27; 28; 83].

Patients should receive education on the prevention of future infections. Moisture around the urethral meatus provides a medium for enhanced bacterial growth and increased the risk for an ascending urinary tract infection. Cotton underwear is less likely to trap moisture than synthetic fabrics. Acidification of the urine can inhibit bacterial growth and is achieved through drinking cranberry or prune juice. Conversely, urine may become alkaline through the ingestion of tomato, orange, grapefruit, or apple juices [27; 28; 83; 85].

### Pyelonephritis

Pyelonephritis is inflammation of the renal pelvis. Acute pyelonephritis is the result of bacterial invasion of the renal pelvis and medulla—usually an infection that has ascended from the lower urinary tract. A major cause of chronic pyelonephritis is believed to be ureterovesical reflux, in which infected urine ascends into the ureter and, consequently, the renal pelvis due to inadequate closure of the ureterovesical valve during voiding [24; 81; 82; 86].

#### *Acute Pyelonephritis*

Patients with acute pyelonephritis generally present with fever, chills, nausea, and vomiting. Unilateral or bilateral severe pain or constant dull aching over the kidney in the flank area may be present. Urine of these patients will contain white blood cells [24; 86].

Appropriate antibiotics should be administered, with follow-up cultures to ensure that the urine is sterile. Antispasmodics, rest, nutrition, and adequate fluid intake are necessary for the patient's condition to improve [84; 86; 87].

#### *Chronic Pyelonephritis*

Unless there is an acute episode, patients are generally unaware of chronic pyelonephritis. If symptoms are present, they are typically bladder irritability, chronic fatigue, or a slight aching over one or both kidneys. Eventually, patients will develop hypertension and the kidneys will atrophy [24; 86].

In addition to antibiotics to treat the bacterial infection, agents that suppress new infections are generally prescribed. The major goal of medical management of chronic pyelonephritis is to prevent farther damage to the renal parenchyma. If ESRD develops, dialysis or transplantation will be necessary [84; 86; 87].

### Renal Abscess

A renal abscess is an infection that develops within the kidney. Single or multiple sites of bacterial abscess may be present. Renal abscesses are most common in patients with a history of pyelonephritis, chronic obstruction, or calculous disease [84; 86; 87].

#### *Clinical Manifestations*

The patient usually has pain in the costovertebral angle, fever, and chills. Physical examination may reveal edema and a palpable mass.

#### *Therapeutic Measures*

Antibiotics should be given immediately. If the infection is associated with chronic pyelonephritis, a broad-spectrum antibiotic should be selected. If severe bacteremia develops, sepsis and shock may follow. Surgical drainage of the abscess may be necessary, and partial or complete nephrectomy may be required if significant renal deterioration has occurred [23; 24].

#### *Specific Nursing Measures*

Patients with renal abscess are acutely and potentially critically ill. Administration of the prescribed antibiotics is a priority. Nursing interventions also include careful monitoring of vital signs, including temperature. Changes in level of consciousness and/or blood pressure may signify systemic infection. Measurement of intake, output, and daily weight should be part of the nursing care plan [27; 28; 83].

## NEOPLASTIC DISORDERS

In general, nursing interventions for patients with kidney or urinary tract cancers include providing comfort; providing emotional support during the diagnostic, therapeutic, and convalescent periods; and educating the patient in self-care and decision making. Patients should also be regularly assessed for potential complications related to cancer or therapeutic interventions (e.g., infection, urinary tract obstruction, acute renal failure) [18; 86; 88].

### Renal Cell Carcinoma

In 2020, 73,750 new cases of kidney cancer (45,520 in men and 28,230 in women) will be diagnosed [89]. Average age at diagnosis is 64 years; appearance in adults younger than 45 years of age is rare. Risk factors include smoking, hypertension, obesity, and hepatitis C. Because the malignancy frequently grows for months before detection, the tumor may be quite large at initial presentation. Metastasis is relatively common, and the most common sites are the liver, lungs, long bones, and other kidney [84; 87; 90].

#### *Clinical Manifestations*

When symptoms are present, gross hematuria is the most common manifestation of a renal cell carcinoma. Dull flank pain may be present, but this is generally a late symptom that develops as the tumor enlarges and presses upon adjacent structures. Occasionally, the patient may identify a mass in the flank region, but this is rare. Other manifestations may include nausea or vomiting, which result from the displacement of abdominal contents. Metastatic symptoms include weakness, weight loss, and bone pain [84; 87; 90].

#### *Therapeutic Measures*

Surgery is the primary treatment of renal cell carcinoma, and the surgical procedure of choice is a nephrectomy. In some cases, especially if the cancer has metastasized, immunotherapy and/or chemotherapy may be necessary.

### Bladder Cancer

Bladder malignancies are the most common tumors of the genitourinary tract, with the exception of prostatic tumors. An estimated 81,400 new cases of bladder cancer (62,100 in men and 19,300 in women) will be diagnosed in 2020 [91]. Bladder tumors commonly involve the ureteral orifices or bladder neck. Metastases are common [84; 87; 90].

Considerable evidence shows that exposure to certain compounds is associated with an increased incidence of bladder cancer. For example, there is a well-established link between prolonged exposure to industrial compounds (e.g., aniline dyes) and development of bladder cancer. Tryptophan and the tars of tobacco smoking have been strongly linked with bladder cancer [84; 87; 90]. An estimated 50% of all cases of bladder cancer are found in smokers.

#### *Clinical Manifestations*

Painless hematuria is the primary clinical manifestation of bladder cancer. The hematuria is typically intermittent, so it may be ignored initially. Obstruction of the urinary tract may alter the outflow of urine, causing intermittent anuria/polyuria, a decrease in the force or volume of the urinary stream, and potentially bladder distention. Infection may cause symptoms of dysuria, such as burning, frequency, or urgency [84; 87; 90].

#### *Therapeutic Measures*

Treatment of nonmuscle-invasive bladder cancers is based on risk stratification. Essentially all patients are initially treated with a transurethral resection of the bladder tumor followed by a single immediate instillation of intravesical chemotherapy (usually mitomycin C) [92].

Standard treatment for patients with muscle-invasive bladder cancers whose goal is cure is either neoadjuvant multiagent cisplatin-based chemotherapy followed by radical cystectomy and urinary diversion or radiation therapy with concomitant chemotherapy [92].

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## NEPHROLITHIASIS AND UROLITHIASIS

Obstructive disorders of the kidneys and urinary tract are fairly common in adults. The most common nonmalignant obstructive disorders result from the formation of calculi or the effects of their obstruction or from hyperplasia of prostatic tissue (benign prostatic hyperplasia) [18; 86; 88].

Nephrolithiasis and urolithiasis refer to the presence of calculi (stones) in the urinary tract. Calculi in the urinary tract are a relatively common problem, especially for men, and they often occur within the same family, indicating a possible heritable factor. There is also a high incidence of recurrence, with as many as 40% of patients reporting a recurrence within two years. Renal calculi are extremely painful, and individuals are incapacitated during an acute episode. When associated with infection or obstruction, renal calculi may be life-threatening [18; 86].

Most calculi originate in the renal parenchyma (nephrolithiasis) and are passed out into the ureters or bladder (urolithiasis). Calculi are usually composed of calcium salts (calcium oxalate or phosphate, uric acid, or struvite [magnesium ammonium phosphate]). A number of factors contribute to the formation of calculi, primarily the degree to which the urine is supersaturated with a normally excreted element, the pH of the urine, the presence of substances that inhibit the formation of crystals, the stasis of urine, and the pre-existing environment [18; 86].

Immobilization, primary hyperparathyroidism, hypervitaminosis D, renal tubular acidosis, and dietary excess of foods containing calcium or purine may result in hypercalciuria. Medications or supplements taken in excess, such as antacids or vitamin C, may also result in hypercalciuria or excess calcium oxalate. However, most cases of calculus formation are idiopathic [93; 94; 95].

With infection and the consumption of some foods/beverages, the urine may become slightly alkaline or acidic. Uric acid and cystine calculi will form in acidic urine; calcium phosphate calculi will dissolve in acidic urine; and calcium oxalate calculi are not influenced by the pH of the urine. Urea-splitting bacteria (e.g., *Proteus*, *Xanthomonas*, *Pseudomonas*, *Klebsiella*, *Staphylococcus*, *Mycoplasma*) convert urea to ammonia, and the alkaline urine contributes to the formation of struvite calculi. Calculus formation is enhanced when there is urinary tract scarring (either from infection or surgical procedures in the urinary tract) or when urinary stasis or urinary crystallization is present [93; 94; 95].

### *Clinical Manifestations*

The primary clinical manifestation of nephrolithiasis/urolithiasis is pain, and its location may suggest the location of the calculus. In some situations, there may be no discomfort at all. However, if the calculus descends into the ureters, the patient may describe the pain as excruciatingly severe (i.e., 10+ on a 10-point scale). The ureteropelvic junction, the point at which the ureter crosses anterior to the iliac vessels, and the ureterovesical junction—the narrowest points in the ureters—are the sites at which calculi are most likely to become lodged. Severe intermittent pain results as the musculature of the ureters goes into spasm (colic) in an attempt to move the calculus out of the ureters by peristalsis. The pain of urethral colic may traverse along the route of the ureter and extend into the lower abdomen, the vulva, or the testes. Patients commonly experience nausea and vomiting. They may also report blood in the urine and, if infection is present, chills and fever [93; 94; 95].

### *Therapeutic Measures*

Opioids are generally necessary to relieve pain associated with renal or urinary calculi. Antispasmodics may also be prescribed to relax the urethral musculature. If infection is present or if instrumentation is necessary to remove the calculus, antibiotics will be prescribed. Other agents may be prescribed to alter the urinary pH to create the desired environment (e.g., sodium acid phosphate, potassium acid phosphates, or ascorbic acid to promote the formation of acidic urine). Thiazide diuretics increase calcium reabsorption and thus may be prescribed for patients who form calcium calculi. However, these diuretics may cause hyperuricemia, so agents to manage excess uric acid (e.g., allopurinol) may also be necessary. For patients who require more alkaline urine, 50% sodium citrate may be prescribed [93; 94; 95].

Patients with a history of calculi should focus on producing high-volume, dilute urine. This may be achieved by consuming 4 L fluid (preferably water) per day. It is also important to void before bedtime and to awaken in the night to empty the bladder. When awakened, the patient should drink more water to ensure a constant dilution of urine [93; 94; 95].

Dietary modifications will depend on the content of the calculi. A low-calcium diet is only recommended for patients with active hypercalciuria. For patients who should limit calcium oxalate, foods to avoid include tea, cola, spinach, and citrus fruits.

Patients who are hyperuricosuric and form uric acid calculi may benefit from a diet low in purines. This means limiting intake of meat, fish, and poultry. Struvite calculi contain phosphates; therefore, a diet that limits phosphorus (from seafood, chicken, pork, nuts, dairy, and grains) may be indicated. Medications that alter urine composition are often more effective than dietary modification [25].

Patients with calculi too large to pass spontaneously may be candidates for extracorporeal shock wave lithotripsy. In this treatment, the patient is supported and suspended in lukewarm water or on a cushion or membrane. An extracorporeal shock wave lithotripter sends shock waves to the calculus, which shatters and is excreted within several days [93; 94; 95]. This procedure generally takes one hour and requires thousands of waves be sent.

In percutaneous nephrolithotomy, a small incision is made and a scope is introduced to visualize the calculus. The stone(s) can then be pulverized with ultrasound vibration and flushed.

In some cases, the calculus may be retained and additional treatment necessary. A variety of surgical procedures may be used to remove the calculus; the method selected depends somewhat on its location [93; 94; 95].

### *Specific Nursing Measures*

Care of the patient with renal or urinary calculi is primarily focused on comfort and the prevention of infection. In addition to measuring intake and output carefully, urine should be strained through fine mesh in order to obtain a calculus or calculus fragment that may be analyzed to determine its chemical characteristics [27; 28; 83].

Initially, patients may require IV administration of morphine to obtain pain relief. Antibiotics should be administered as prescribed. A high fluid intake (3–4 L/day) is usually recommended for the remainder of the patient's lifetime [25; 36; 52].

## TRAUMATIC DISORDERS

Direct or indirect injury to the organs of the urinary system can interrupt the structural integrity of the kidney(s), the ureter(s), and/or the bladder. A major interruption of vascular supply may occur concomitantly. Traumatic injuries are commonly classified as either penetrating or nonpenetrating (blunt) [93; 94; 95; 96]. Abdominal gunshot or stab wounds are the most common sources of penetrating trauma. Automobile accidents, automobile-pedestrian accidents, motorcycle accidents, assault, and injuries from sporting events may result in blunt trauma [93; 94; 95; 96].

Injuries to the renal system may significantly affect patients' overall health. Preservation of renal function is the primary goal. Loss of a single kidney from trauma may not be life-threatening, assuming the other kidney is functioning adequately, but it can have serious consequences. Patients who experience renal trauma are often victims of other abdominal trauma as well [93; 94; 95; 96].

Obtaining a careful patient history is often the most important part of diagnosis. Gunshot or stab wounds are obvious, but the history may disclose less obvious traumatic events. Physical sports involving heavy direct contact, such as football or ice hockey, may result in injuries that did not seem significant at the time. A history of rib fractures, chest injuries, or abdominal injuries suggest the potential for renal trauma.

Physical assessment includes the collection of a urine specimen to determine the presence of blood. Flank pain or suprapubic tenderness may or may not be present. Alterations in urinary output and patterns of voiding are important [93; 94; 95; 96].

### Renal Trauma

Renal trauma is generally categorized as minor, major, or critical. Minor injuries include contusions, hematomas, and simple lacerations. Major injuries involve significant laceration of the renal parenchyma, loss of the renal parenchyma, and injury to a major branch of the areal artery. Critical injuries involve lacerations of the renal artery, renal vein, or renal pelvis. A transplanted kidney is not as well protected from injury, so abdominal injuries to transplant recipients may result in significant traumas. Other abdominal organ trauma should be explored in patients with known or suspected renal trauma [23; 93; 94; 95; 96].

### *Clinical Manifestations*

Gross or microscopic hematuria, flank pain, and abdominal pain are the most common manifestations of renal trauma. A significant hematoma may develop in the retroperitoneal space. Blood clots that form and descend into the ureter may result in pain that mimics renal colic and obstruction from nephrolithiasis/urolithiasis [88].

### *Therapeutic Measures*

Patients with renal trauma should undergo appropriate radiologic testing to evaluate the extent of traumatic injury; abdominal ultrasonography, CT scan, and renal arteriography are among the most useful tests. Significant hemorrhage occurs with renal pedicle injuries; therefore, blood, volume expanders, and fluid are administered parenteraly to support blood pressure and perfusion of vital organs. Surgical intervention is required to control hemorrhage, preserve renal function, and prevent death [88].

For nonpenetrating and minor renal injuries, a conservative approach is generally indicated, including bed rest, monitoring laboratory data (e.g., hemoglobin, hematocrit, serum creatinine, BUN), and evaluation of fluid balance. Minor bleeding ceases from the tamponade effect within the kidney capsule [88].

Penetrating injuries, in contrast, necessitate surgical exploration to ensure that bleeding is controlled and other tissue tears, especially intraperitoneal lacerations, are repaired. Nephrectomy, partial nephrectomy, and renal bench surgery with auto-transplantation may be required. Antibiotics are generally prescribed for any penetrating traumas. Perforating wounds often perforate the peritoneum and abdominal organs and cause a significant amount of pain [88]. Dosages of any medications prescribed should be adjusted for renal dysfunction, if necessary.

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### *Specific Nursing Measures*

Urine output and vital signs should be monitored. Patients should be assessed for hypovolemic shock that may occur secondary to hemorrhage or peritonitis. The administration of food, fluids, volume expanders, antibiotics, and education for pain relief is a primary nursing responsibility. If surgery is done to control hemorrhage or repair the kidney, preoperative and postoperative nursing care will be necessary [83].

### Bladder Trauma

As with renal trauma, penetrating (e.g., gunshot, stab wounds) or nonpenetrating (e.g., automobile injuries, automobile-pedestrian accidents) injuries may result in bladder trauma. A full bladder is at increased risk to injury from perforation during a traumatic or compression injury. Keeping the bladder non-distended reduces the risk of injury from seat belt use—it should not be used as justification to avoid seat belts [88; 96].

### *Clinical Manifestations*

Manifestations of bladder injury include hematuria, difficulty with voiding, or absence of urine output. Suprapubic pain or tenderness is common, as is scrotal or perineal swelling from the extravasation of urine into these tissues [88; 94; 95; 96].

### *Therapeutic Measures*

The immediate recognition and treatment/repair of bladder rupture are vital to avoiding death. For bladder contusions, however, conservative treatment (e.g., rest, drainage via a Foley catheter) is indicated. Suspected bladder tears or lacerations require surgical exploration and potentially repair. Antibiotics are usually required with leakage of urine into the peritoneum or other tissues [88; 94; 95; 96].

### *Specific Nursing Measures*

Nurses should be vigilant of symptoms that may identify previously undetected bladder rupture; for example, persistent, unidentified fever may result from leakage of urine.

Intake and output should be monitored to ensure that fluid balance is achieved. Alterations in urinary output should be detected as soon as possible, so corrective measures may be initiated. Complications associated with stasis of pulmonary secretions or venous congestion in the extremities are possible but may be avoided with appropriate nursing measures. In addition, appropriate health teaching and emotional support should be provided [83].

## DIALYSIS

There are two major types of dialysis currently in use in the United States: hemodialysis and peritoneal dialysis. Though generally used for patients with ESRD, it may also be a short-term option in the treatment of patients with acute kidney injury or in post-transplant patients with delayed graft function. It is estimated that nearly 460,000 patients are receiving hemodialysis in the United States, an increase of 80.2% since 2000 [63]. Despite this large number, dialysis is a relatively new therapy and has only been routinely provided for approximately 40 years [55].

### HEMODIALYSIS

Planning for access should occur well before the need for dialysis, as proper access may take months to properly heal. Up to 80% of patients presenting for initial dialysis are dialyzed via temporary venous catheters due to a lack of established access [63].

Hemodialysis can be provided via three major different types of access: an AV fistula, an AV graft, or a temporary venous catheter. The National Kidney Foundation endorsed a goal for at least 65% of all patients on hemodialysis to have a working AV fistula by 2009, but this goal was not met [97]. As of 2017, reporting institutions dialyzed 62.8% of all patients on hemodialysis via AV fistulas [63].

AV fistulas are created surgically by attaching an artery directly to a vein. Generally placed in the forearm, AV fistulas may be categorized as radial-cephalic, brachial-cephalic, or brachial-basilic based on the vein and technique used [55; 98]. Generally, the radial-cephalic, having a lower anatomical position in the forearm, is preferred for first access as it preserves the higher veins for later use. After anastomosis, the resultant increase in blood flow to the vein results in thickening of the venous wall, allowing it to withstand the numerous punctures required for hemodialysis [98]. AV fistulas generally require at least three months to fully mature. AV fistulas are recommended as the first form of access, and they should be promoted in all eligible patients who choose hemodialysis, as they improve outcomes and reduce costs compared with central venous catheters [99]. They also offer the best access for longevity and have the lowest association with morbidity and mortality [100]. However, multiple studies suggest that certain subgroups of patients (i.e., the elderly and those with limited life-expectancy) may benefit from alternative forms of access. A patient-centered, individualized approach to the choice of access may indicate the use of a method other than AV fistula [101; 102].

AV fistulas are not without complications, and the overall patency rate is only 50% after five years [98]. Fistula failure can be classified as early (in the first three months) or late (after three months) [98]. Early failure is generally due to infection, stenosis, or obstruction (either of inflow or outflow). Late failure is generally due to either venous stenosis or arterial lesions, with venous stenosis being the most common cause of late AV fistula failure [55; 98]. Steal syndrome is another possible complication of AV fistulas and results in too high of a diversion of blood flow from the extremity distal to the fistula. Patients with steal syndrome may present with signs and symptoms of decreased blood flow to the affected extremity, particularly in the digits of the hand. Treatment of this complication includes the takedown of the fistula or placement of coils in the fistula to decrease diversion. Patients deemed at risk for imminent limb or digit loss should be referred immediately to the emergency department for evaluation by a vascular surgeon.

Fistula patency can be assessed by palpation of "thrill" and auscultation of bruit. A palpable motion in the surface of the fistula and a bruit when a stethoscope is placed over the fistula should both be present. The bruit should be loudest at the arterial side of the fistula. Patients found to have nonpatent grafts should be referred immediately to interventional radiology, as patency can often be restored by the use of antithrombotics (e.g., tissue plasminogen activators) and/or balloon angioplasty. Unfortunately, the use of contrast medium is usually necessary in order to restore patency. In these cases, the patient should be dialyzed within 24 hours of receiving the contrast. If the patient is to receive dialysis immediately after angioplasty, catheters may be left in place so it is not necessary to recannulate immediately after the procedure. If the patient is to return the following day for dialysis, temporary catheters should be removed to prevent potentially deadly hemorrhage. At no point should any patient with ESRD receive gadolinium-based contrast dye due to the risk of nephrogenic systemic fibrosis. Postexposure dialysis does not decrease the risk of developing nephrogenic systemic fibrosis in at-risk patients.

AV grafts are generally considered to be inferior to AV fistulas and superior to temporary catheters, but fewer than half are patent after five years [103]. These grafts are often used for patients who lack veins large enough to create fistulas. The determination of need for graft placement versus fistula is accomplished via vein mapping and clinical evaluation.

AV graft formation is accomplished by implantation of a synthetic tube that connects a vein and an artery. Dialysis is then performed by cannulating the synthetic graft. Synthetic grafts have higher rates of infection and clotting and, as noted, generally fail sooner than fistulas [104].

Both AV fistulas and grafts should be cannulated only by trained practitioners. Repeated same-site cannulation can result in destruction of grafts, aneurisms, and/or infiltrates. Although not all of these complications are entirely preventable, trained inserters can minimize their occurrence.

Temporary catheters are the least preferred method of access for hemodialysis, but one of the most frequently used. However, according to data from the Centers for Medicare and Medicaid Services, catheter use in the United States declined slightly from approximately 28% in 2006 to 24% in 2007 [105]. Central venous catheters for dialysis (CVCDs) are generally tunneled catheters with two external access ports ("pigtails") and a tunneled lumen under the skin that extends into the vena cava; they may last up to one year. The introduction of advanced CVCDs has helped make temporary catheters a viable solution for patients with very poor vascular status. Patients often prefer the temporary catheters to other forms of access, as they do not involve the pain of subcutaneous cannulation and are often cosmetically more acceptable. Using a tunneled catheter helps reduce the risk of infection but does not eliminate it.

## PERITONEAL DIALYSIS

The peritoneal catheter is the only option for peritoneal dialysis. The invention of the Tenckhoff catheter in 1968 helped reduce high rates of peritonitis associated with peritoneal dialysis. It is made of silicone rubber and Dacron cuffs and can be coiled or straight. Compared with coiled cuffs, straight cuffs have higher catheter survival and fewer complications [106]. Coiled catheter use has been associated with lower rates of failure due to outward migration of the catheter [107; 108]. Most catheters in use today have two cuffs: one in the musculature of the abdominal wall and one in the subcutaneous tissue nearer the exit. Placement is generally performed operatively and can now be accomplished laparoscopically. Other methods, such as blind insertion via Tenckhoff trocar or guidewire, are available.

After insertion, approximately 7 inches of catheter extend beyond the surface. The catheter will usually have an external suture in place for the first two weeks after implantation. An external flow switch that is capped when not in use is present at the end of the catheter.

## COMPLICATIONS SPECIFIC TO PATIENTS RECEIVING HEMODIALYSIS

Hemodialysis is a risk factor for a variety of complications, and patients must be closely monitored. Mortality rates for patients with ESRD are high in part due to uncontrolled complications associated with dialysis.

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Patients on hemodialysis often experience hypotension during and after dialysis sessions. A fluid gain of 4 or more liters between sessions is not uncommon, and this same amount of fluid must then be removed over a four-hour dialysis session. Most of this fluid is situated in the extravascular space, and dialysis removes fluid only from the intravascular space. So, changes in osmotic pressure between the intravascular and extravascular must allow for fluid movement during dialysis. If the patient becomes acutely hypotensive, the dialysis may need to be interrupted and the patient placed in Trendelenburg (supine) position with elevated feet. Rarely, fluid replacement may be required.

Cramping is also common, especially at the end of the dialysis session after large amounts of fluid and electrolytes have been removed. Severe cramping may require administration of normal saline. For patients who are significantly bothered by cramping, hydromorphone (Dilaudid) 1–2 mg orally may be given one hour before the usual onset of cramping. Hydromorphone has the advantage of not being dialyzed out of the patient's system.

## RENAL TRANSPLANTATION

Renal transplantation involves the surgical implantation of a kidney from either a living or deceased donor into the body of a patient with ESRD. Generally, candidates must have GFRs less than 20 mL/min/1.73 $m^2$. Transplants are classified as living donor related, living donor unrelated, or deceased (cadaveric) donor. The first truly successful human kidney transplant was in 1954 by Dr. Joseph Murray at Brigham Hospital in Boston. This first transplant involved identical twins, as anti-rejection medications had yet to be discovered. In the 1960s, tissue typing and anti-rejection drugs made the use of deceased donor kidneys and non-twin living donors possible.

In 1980, more than 3,000 kidney transplants were being performed annually. By 2013, this figure had risen to more than 17,600 [109]. Fewer than one-third of transplanted kidneys were from living donors in 2013. From 2012 to 2013, there was a 3.1% increase in the cumulative number of recipients with a functioning kidney transplant [109].

The benefits of renal transplantation should not be underestimated. The survival of transplant patients is far higher than patients receiving dialysis. Some of this may be attributable to patient selection; healthier patients are selected for transplantation and terminally ill patients are rarely selected. Still, the statistics are impressive. At 80.5%, the five-year survival rate for transplant patients is more than twice the rate for patients receiving dialysis (47.1%) [63]. However, patient survival is not the same as donor graft survival. For the most recent years of data available, the probability of graft survival for living-donor transplants was 99%, 92%, and 79%, for 1-, 5-, and 10-year periods post-transplant, respectively [109].

### INDICATIONS AND CONTRAINDICATIONS

The indication for transplantation is ESRD, or a GFR of <15 mL/min/1.73 $m^2$ [57]. In recent years, the process for selection of kidney transplant has liberalized, with larger numbers of elderly patients being accepted for transplantation. In 1991, 30% of kidney transplant recipients were older than 50 years of age; by 2016, this number had increased to more than 70% [63]. Transplant counts for recipients 65 years of age and older have been steadily increasing [63]. Guidelines for selection of patients for transplantation vary from program to program. Generally, metastatic disease or severe pulmonary or heart disease are exclusionary factors. Human immunodeficiency virus (HIV) is no longer considered an absolute contraindication, and studies have shown that patients with ESRD and HIV nephropathy have an increased life expectancy when treated with transplantation versus dialysis [110].

### ALLOCATION OF DONATED KIDNEYS

Allocation of all transplants in the United States is managed by the United Network for Organ Sharing (UNOS). Kidney transplant guidelines place the highest considerations on histocompatibility and time spent on the transplant list [111]. Children suffering from ESRD will lose growth (and possibly other milestones) while on dialysis, so they are given priority. The median adult wait time for a cadaver kidney is four years [63].

One result of this method of allocation is a potential mismatch of grafts and patients. If a patient with a life expectancy of 10 to 20 years receives a kidney from a donor who is/was 20 years of age (with a potential for 50 to 60 years of function), the transplanted kidney will potentially be underutilized. Worse, if a patient with a 40- to 50-year life expectancy receives a kidney from an older donor, he or she will likely outlive the donated kidney. In fact, approximately 15% of all patients awaiting transplantation have already received at least one transplant [63].

To address these problems and others, in 2011, the UNOS released a concept document that proposes changes to the allocation system in order to more accurately match donors and recipients [112]. While this proposal has been met with some controversy, UNOS believes that it could actually increase the number of functioning years obtained from the current pool of donated kidneys. This gain would occur both from increased age matching as well as from eliminating the current designation of "expanded donor criteria" kidneys. These kidneys do not meet all donation criteria, either due to existing disease in the graft or risk factors of the donor. An estimated 12% of all donated kidneys are not used because they are classified as expanded donor criteria kidneys, meaning they have an increased potential for rejection [112]. However, an elderly recipient may be better off receiving a kidney with only 10 to 15 years of expected graft survival, as they are unlikely to live long without a transplant.

### SURGICAL TRANSPLANTATION

Transplanted kidneys are generally placed in the extraperitoneal space in the right iliac fossa. Pediatric patients can have their grafts placed in the intraperitoneal space. The major consideration for placement of the graft is surgical access to the renal arteries, renal veins, and the ureter. Failed kidneys are rarely removed unless infection or carcinoma is present. The donor's renal artery is usually anastomosed to the recipient internal iliac artery, and the donor renal vein is connected to the recipient external iliac vein. Lastly, the donor ureter is attached to the recipient bladder.

### POSTOPERATIVE CARE OF THE KIDNEY TRANSPLANT PATIENT

Immediate postoperative care of the patient post-transplant involves all the usual issues involved in major surgery (e.g., bleeding, pain management, bowel function, infection, postoperative cardiac or pulmonary complications) as well as issues specific to kidney transplantation. These issues include graft function, acute rejection, urine leakage from the ureter anastomoses, and complications from immunosuppression. Acute rejection is not nearly the problem it was prior to the development of tacrolimus and cyclosporine, although chronic rejection remains a problem in long-term graft survival.

After transplantation, the graft may function immediately, have delayed graft function, or have complete non-function. Delayed graft function is a common problem in transplants, affecting up to 23% of cadaver transplants and 6% of living transplants [113]. The delay may last from days to weeks and may require temporary dialysis. Complete non-function by definition does not resolve and requires a return to dialysis.

For patients experiencing acute rejection of a transplanted kidney, the National Kidney Foundation recommends biopsy first, unless the biopsy will substantially delay treatment.

(https://kdigo.org/wp-content/uploads/2017/02/KDIGO-2009-Transplant-Recipient-Guideline-English.pdf. Last accessed August 14, 2020.)

**Strength of Recommendation/Level of Evidence**: 1C (Recommended based on low quality of evidence)

## END-OF-LIFE CARE

An end-of-life discussion is recommended in the presence of stage 4 or 5 chronic kidney disease or ESRD [114; 115; 116]. Hospice is generally approved when patients with ESRD are not candidates for dialysis, have a creatinine clearance less than 15 mL/minute, and/or have a serum creatinine level greater than 8 mg/dL (or 6 mg/dL in patients with diabetes) [117]. Guidelines from the Renal Physicians Association note that prognosis should be fully discussed with all patients who have stage 4 or 5 disease or ESRD [115]. Clinicians should carefully prepare for the discussion of prognosis by reviewing the patient's medical record and talking to other healthcare professionals involved in the care of the patient [118]. Because there is variation among patients with regard to their desire for information, clinicians should follow the "ask-tell-ask" approach: ask the patient if he or she is willing to discuss prognosis; if yes, discuss the prognosis and then ask the patient to confirm his or her understanding [114; 119]. When discussing prognosis, quantitative estimates are more understandable for patients and family than qualitative ones (e.g., "poor"), and general timeframes for survival should be given [114; 119; 120; 121]. In addition, clinicians should emphasize that prognosis is determined by looking at large groups of patients and that it is harder to predict survival for an individual [114; 115]. The discussion of prognosis is often not documented in the patient's record, but it should be [118].

Clinical guidelines have begun to address the use of aggressive treatment at the end of life. The Renal Physicians Association recommends forgoing dialysis for patients with chronic kidney disease or ESRD who have "very poor prognosis" [115]. Early discussion of preferences for life-sustaining measures is especially important. Nearly three-quarters of people will be unable to participate in some or all of the decisions about their care at the end of life [122]. Documentation of preferences helps inform decision making by the physician and the patient's healthcare proxy (surrogate decision maker). Clinicians should encourage their patients to designate a healthcare proxy early in the course of a life-limiting disease [74; 114; 123]. Patients should be urged to clarify their wishes with their chosen proxy, as a proxy often inaccurately predicts a patient's wishes or may have values that conflict with those of the patient [122].

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## CONCLUSION

With knowledge of renal structure and function and the dynamic pathology that intrudes and impedes normal function, nurses can readily provide quality and often life-saving care. The awareness of the pathophysiology underlying symptoms leads to quicker reporting and optimal patient care. Nurses can also perform immediate interventions based on standing orders and the recognition of what needs to be done in order to provide safe, quality care. This knowledge changes what could be only technical care to professional care through use of decision-making skills built upon the knowledge of pathophysiology.

## CASE STUDIES

### ACUTE GLOMERULONEPHRITIS

Patient A, a man 27 years of age, presents to an outpatient clinic complaining of two days of facial and hand swelling. He first noticed swelling around his eyes, along with difficulty putting on his wedding ring because of swollen fingers. Around the same time, he began to notice that his urine appeared reddish-brown. He reports having less urine output over the past several days. He has no significant medical history. His only medication is ibuprofen, which he took more than one week ago for fever and sore throat that have since resolved. On examination, he is afebrile, with a heart rate of 85 beats per minute and a blood pressure of 172/110 mm Hg. Patient A has periorbital edema; his funduscopic examination is normal, without arteriovenous nicking or papilledema. His chest is clear to auscultation. His heart rhythm is regular, with a nondisplaced point of maximal impulse, and he has no abdominal masses or bruits. The patient also has edema of his feet, hands, and face. A dipstick urinalysis in the clinic shows specific gravity of 1.025 with 3+ blood and 2+ protein, but is otherwise negative. A fresh-spun urine specimen is positive for red blood cell casts.

The physician diagnoses acute (likely poststreptococcal) glomerulonephritis. This condition is most likely to affect children with a history of upper respiratory infection or a history of strep throat one to three weeks earlier, although adults may also be affected. Patients present with edema, hypervolemia, hypertension, hematuria, and oliguria. Red blood cell casts on urinalysis verify the diagnosis. Systemic lupus erythematosus is another possible cause, but this patient has no signs or symptoms indicating this etiology.

Treatment of poststreptococcal glomerulonephritis focuses on managing hypertension and edema. Patient A is placed on a low-salt diet and liquid intake is restricted. If the edema was more severe, loop diuretics would be prescribed. However, the edema begins to resolve and his blood pressure begins to lower with conservative management. Additionally, Patient A is prescribed oral penicillin G at a dosage of 250 mg four times per day for 7 to 10 days to eradicate the nephritogenic strain. The patient is instructed to rest and avoid vigorous physical activity for a day or two.

### HEMATURIA

Patient B, a man 40 years of age with no past medical history, presents to the clinic to establish care. He reports that he had a prior urinalysis that revealed blood as an incidental finding. The urinalysis was done as a standard screening test by his former employer. He denies ever seeing any blood in his urine and denies any voiding difficulties, dysuria, sexual dysfunction, or any history or risk factors for sexually transmitted infections. His review of systems is otherwise negative. He reports having smoked a half-pack of cigarettes per day for the past 10 years and jogging 15 minutes and light weight training daily. On examination, his vital signs are normal, and the entire physical examination is unremarkable. A complete blood count and a chemistry panel (electrolytes, blood urea nitrogen, and creatinine) are normal. The results of a urinalysis are:

- Specific gravity: 1.015
- pH: 5.5
- Leukocyte esterase: Negative
- Nitrites: Negative
- White blood cell count: 0
- Red blood cell count: 4–5 per high-power field

The likely diagnosis is determined to be asymptomatic microscopic hematuria. Repeat urinalysis is ordered to assess for risk factors. A urine culture is necessary to rule out infection. Imaging studies are also ordered. The primary concern is to rule out malignancy, including renal cell carcinoma and transitional cell carcinoma. The nurse counsels Patient B on the importance of an appropriate work-up, but reassures him that the prevalence of renal cancers is low. Because the patient is a smoker, bladder cancer should be ruled out (or identified) as soon as possible.

## NEPHROTIC SYNDROME

Patient C, a Hispanic woman 48 years of age, presents to a medical office complaining of persistent swelling of her feet and ankles, to the degree that she cannot put on her shoes. She first noted mild ankle swelling approximately two to three months previously. She borrowed some diuretic pills from a friend, and the pills seemed to help, but now she has run out. She also reports that she has gained 20 pounds over the last few months, despite regular exercise and trying to adhere to a healthy diet. Her medical history is significant for type 2 diabetes, for which she takes a sulfonylurea agent. She neither sees a physician regularly nor monitors her blood glucose at home. She denies dysuria, urinary frequency, or urgency, but she does report that her urine has appeared foamy. She has had no fever, joint pain, skin rashes, or gastrointestinal symptoms.

Her physical examination is significant for mild periorbital edema, multiple hard exudates, and dot hemorrhages on funduscopic examination. She also has pitting edema of her hands, feet, and legs. Her heart rhythm is regular without murmurs, and her abdominal examination is benign. She has diminished sensation to light touch in her feet and legs to mid-calf. A urine dipstick performed in the office shows 2+ glucose, 3+ protein, and negative leukocyte esterase, nitrates, and blood.

The presumed diagnosis is nephrotic syndrome secondary to diabetic nephropathy. A 24-hour urine collection is taken to measure proteinuria and to verify the diagnosis. Usual causes in adults include diabetes, hepatitis B, amyloidosis, lupus erythematosus, and drugs such as penicillamine and captopril.

Maintenance of glycosylated hemoglobin (HbA1c) to 7.0% or lower is recommended, and Patient C is started on diabetes care (with regular follow-up and screening). To address the nephrotic syndrome, an ACE inhibitor is prescribed to control her blood pressure. In order to meet her blood pressure targets more quickly, a diuretic is also prescribed. Patient C is instructed to limit her intake of fluids and protein (to less than 2 g/day). She is asked to return in several weeks for additional screening and to call if the edema does not resolve.

## UROSEPSIS

The emergency resident calls up a new admission, describing a female patient, 84 years of age. Patient D was brought to the emergency department by ambulance from her long-term care facility for increased confusion, combativeness, and fever. Her medical history is significant for Alzheimer disease and well-controlled hypertension; otherwise, she has been healthy. The resident states that the patient is "confused" and combative with staff, which, per her family, is not her baseline mental status. Her temperature is 100° F, heart rate is 130 beats per minute, blood pressure 76/32 mm Hg, respiratory rate 24 breaths per minute, and oxygen saturation 95% on room air. On examination, Patient D is lethargic but agitated when disturbed. Her neck veins are flat, her lung fields are clear, and her heart rhythm is tachycardia but regular, with no murmur or gallops. Abdominal examination is unremarkable, and her extremities are warm and pink.

After administration of 2 L of normal saline over 30 minutes, her blood pressure is 95/58 mm Hg. The initial laboratory work indicates a white blood cell count of 14,000/mm$^3$, with 67% neutrophils, 3% bands, and 24% lymphocytes. No other abnormalities are noted. Chest x-ray obtained in the emergency department is normal. Urinalysis of a catheterized sample shows 2+ leukocyte esterase, negatives nitrite, and trace blood. Microscopy shows 20–50 white blood cells per high-power field, 0 to 3 red blood cells, and many bacteria.

Patient D is diagnosed with urinary tract infection that has progressed to urosepsis and possibly shock. She has several risk factors that predispose her to urinary tract infection, including older age, female sex, cognitive dysfunction, and fecal incontinence. Blood pressure support is continued, with IV fluids or vasopressors as necessary. Broad-spectrum antibiotics are started immediately. As the infection clears, the patient's combativeness resolves as well.

## ACUTE RENAL FAILURE

Patient E is a man, 42 years of age, who has driven to the mountains to hunt. While tramping through thick woods, a stray bullet (perhaps from another hunter) hits Patient E's thigh, tearing into muscles and blood vessels. He is thrown to the ground and temporarily loses consciousness. When he awakens a few minutes later, his leg is bleeding profusely. He yells for help, but there is no reply.

The patient slows the bleeding somewhat by tying his shirt around his leg and manages, with great effort, to get to a rural roadside where he again loses consciousness. A driver finds him a few hours later, pulls him into his car, and takes him to the hospital.

When he arrives, Patient E is immediately treated for shock that resulted from extensive blood loss. He is taken to surgery, and his leg is repaired. Although the patient's blood pressure increases and his pulse rate decreases with appropriate fluid replacement and cessation of blood loss, his urine output remains low.

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Two days after admission, Patient E's total urine output has been 320 mL, with an average specific gravity of 1.013. His blood pressure is 150/95 mm Hg (an increase from his previous average of 125/80 mm Hg). His pulse is 90 beats per minute, and his respirations are 18 breaths per minute. He is complaining of nausea, which seems unrelated to the administration of his pain medication. Significant blood tests reveal a BUN of 48 mg/dL and elevations in serum creatinine and potassium. Urinalysis results are consistent with renal failure findings. A diagnosis of acute renal failure secondary to prolonged hypovolemic shock is made. Patient E's physicians administer trial doses of mannitol and furosemide (Lasix) in an effort to produce diuresis. Because no increase in urine results from this therapy, further diuretics are not employed. However, his physicians hope to manage him conservatively and avoid dialysis, if possible.

### POLYCYSTIC KIDNEY DISEASE

Patient F is a white woman, 35 years of age, with a history of frequent urinary tract infections who now presents with gross hematuria. On physical exam, she is thin with a palpably enlarged right kidney. On questioning, she states that her mother had some sort of "cyst disease" of the kidney. She further states that her mother died of a heart attack several years ago, at 62 years of age. A renal ultrasound reveals numerous large, fluid-filled cysts on the right kidney and several cysts on the left kidney. Further imaging also reveals a fluid-filled cyst visible on the liver. A consultation with nephrology and a geneticist results in a diagnosis of autosomal dominant polycystic kidney disease (ADPKD).

ADPKD is the fourth leading cause and the leading genetic cause of ESRD, and the most common life-threatening hereditary disease in the United States. ADPKD occurs in approximately one of every 1,000 live births. Children of affected individuals have a 50% chance of inheriting the disorder.

Patients with ADPKD can present with flank pain, hematuria, and/or palpable kidneys. Individuals with a family history are considered to have ADPKD if ultrasound reveals two unilateral or bilateral cysts in patients 15 to 30 years of age, two or more cysts in each kidney for patients 30 to 59 years of age, or four or more cysts in each kidney in patients older than 60 years of age. For patients with no known genetic risks (either from family history or genetic testing), the diagnostic criteria are three or more unilateral or bilateral cysts in patients 15 to 39 years of age or two or more cysts in each kidney for patients 30 to 59 years of age.

While the predominant clinical feature of ADPKD is renal disease (50% of affected patients have ESRD by 60 years of age), extrarenal manifestations are also common, which suggests that the disease may involve a generalized collagen disorder. As well as liver and pancreatic cysts, patients have an increased risk of cerebral hemorrhage due to intracranial aneurysms, cardiac valve abnormalities, aortic root dilation, and abdominal hernias.

## RESOURCES

**American Association of Kidney Patients**
https://aakp.org

**American Kidney Fund**
https://www.kidneyfund.org

**American Society of Nephrology**
https://www.asn-online.org

**Dialysis Patient Citizens**
https://www.dialysispatients.org

**International Society for Hemodialysis**
http://www.ishd.org

**Kidney and Urology Foundation of America, Inc.**
http://www.kidneyurology.org

**National Kidney Foundation**
https://www.kidney.org

**National Kidney Foundation Disease Outcomes Quality Initiative**
https://www.kidney.org/professionals/guidelines

**Renal Support Network**
https://www.rsnhope.org

**United Network for Organ Sharing**
https://unos.org

**Customer Information/Answer Sheet insert located between pages 88–89.**

## COURSE TEST - #38860 PATHOPHYSIOLOGY: THE RENAL SYSTEM

*This is an open book test. Please record your responses on the Answer Sheet.*
*A passing grade of at least 70% must be achieved in order to receive credit for this course.*

***This 15 contact hour activity must be completed by July 31, 2023.***

1. **The cortex and the medulla are referred to collectively as the renal parenchyma.**
   A) *True*
   B) *False*

2. **In healthy individuals, the typical glomerular filtration rate (GFR) is 730 mL/min/1.73 $m^2$.**
   A) *True*
   B) *False*

3. **Enlargement of one or both kidneys is most commonly related to neoplastic cells (cancer).**
   A) *True*
   B) *False*

4. **In most cases, cloudy urine is the result of ketosis.**
   A) *True*
   B) *False*

5. **The best test to measure overall renal function is a BUN level.**
   A) *True*
   B) *False*

6. **Percutaneous nephrostomy (PCN) is most often used for patients with kidney stones or bladder or pelvic tumor obstructions.**
   A) *True*
   B) *False*

7. **The two leading causes of ESRD are diabetes and hypertension.**
   A) *True*
   B) *False*

8. **The primary clinical manifestation of bladder cancer is painless hematuria.**
   A) *True*
   B) *False*

9. **Severe cramping at the end of a dialysis session may be treated with oxygen therapy.**
   A) *True*
   B) *False*

10. **Hospice is generally approved when patients with ESRD are not candidates for dialysis.**
    A) *True*
    B) *False*

Be sure to transfer your answers to the Answer Sheet insert located between pages 88–89.
***PLEASE NOTE: Your postmark or facsimile date will be used as your test completion date.***

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# Course Availability List

These courses may be ordered by mail on the Customer Information form located between pages 88–89.
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## MODERATE SEDATION/ANALGESIA

**#30463** • 15 ANCC / 15 Pharm Hours

Book By Mail – $68 • **ONLINE – $60**

**Purpose:** The purpose of this course is to provide nurses with the knowledge required for safe drug delivery based on standardized operational guidelines. Preprocedural, intraprocedural, and postprocedural patient care are presented, as well as a thorough review of the drugs used, their advantages and disadvantages, and the safe administration of these agents.
**Faculty:** Susan Engman Lazear, RN, MN
**Audience:** This course is designed for all nurses, especially those in procedural and diagnostic areas, such as radiology, endoscopy, cardiac cath, outpatient surgery, intensive care, and emergency departments.
**Additional Approval:** AACN Synergy CERP Category A
**Advanced Pharmacology:** This course meets the requirement for Advanced Pharmacology education for Florida APRN-IPs.

## ASTHMA: DIAGNOSIS AND MANAGEMENT

**#30482** • 10 ANCC / 5 Pharm Hours

Book By Mail – $48 • **ONLINE – $40**

**Purpose:** Asthma is increasingly common, and most healthcare professionals will encounter patients with the condition. The purpose of this course is to provide nurses and nurse practitioners with up-to-date, accurate information regarding the diagnosis and management of asthma and long-term outcomes for those with the condition.
**Faculty:** Sharon M. Griffin, RN, PhD; Patricia Walters-Fischer, RN, BS
**Audience:** This course is designed for nurses and nurse practitioners who may care for patients with asthma.
**Additional Approval:** AACN Synergy CERP Category A
**Differential Diagnosis:** This course meets the requirement for Differential Diagnosis education for Florida APRN-IPs.

## OSHA AND HEALTHCARE FACILITIES

**#31233** • 5 ANCC Hours

Book By Mail – $28 • **ONLINE – $20**

**Purpose:** The purpose of this course is to provide information that will allow facilities to more easily comply with the broad spectrum of rules covered by the OSHA regulations.
**Faculty:** Carol Shenold, RN, ICP
**Audience:** This course is designed for healthcare staff in all specialties.
**Additional Approval:** AACN Synergy CERP Category B

## IRON: IMPACT ON HEALTH AND WELLNESS

**#34160** • 2 ANCC / 0.5 Pharm Hours

Book By Mail – $23 • **ONLINE – $15**

**Purpose:** The purpose of this course is to provide nurses with information about the importance of iron for human health so they can identify patients at risk of iron deficiency and provide nutrition counseling and education about recommended iron intake.
**Faculty:** Evangeline Y. Samples, MS, RDN, LD
**Audience:** This course is designed for nurses and allied health professionals in all practice settings.
**Additional Approval:** AACN Synergy CERP Category A

## CLINICAL USE OF NEUROMUSCULAR BLOCKING AGENTS

**#35110** • 10 ANCC / 10 Pharm Hours

Book By Mail – $48 • **ONLINE – $40**

**Purpose:** The purpose of this course is to provide intensive care, emergency, and prehospital providers with the clinical knowledge to administer neuromuscular blocking agents in a safe and effective fashion, as well as to know how such agents can be effectively monitored and, ultimately, safely and efficiently reversed.
**Faculty:** Richard E. Haas, RN, MSN, EdM, PhD, CRNA, PHRN, LTC (Retired)
**Audience:** This course is designed for nurses, nurse practitioners, and other allied health professionals in a variety of settings, including the intensive care unit, emergency department, acute care, prehospital settings, critical care, and post-anesthesia care.
**Additional Approval:** AACN Synergy CERP Category A
**Advanced Pharmacology:** This course meets the requirement for Advanced Pharmacology education for Florida APRN-IPs.

## MIGRAINE: DIAGNOSIS AND THERAPEUTIC ADVANCES

**#90071** • 5 ANCC / 5 Pharm Hours

Book By Mail – $28 • **ONLINE – $20**

**Purpose:** The purpose of this course are to provide an integrated update of the recent developments on the pathophysiology of migraine and resulting "mechanism-related" therapies, to evaluate the clinical benefit-risk ratio of antimigraine medications, and to summarize the current and evidence-based guidelines for the clinical management of migraine.
**Faculty:** A. José Lança, MD, PhD
**Audience:** This course is designed for physicians, physician assistants, nurses, nurse practitioners, and other healthcare professionals involved in the care of patients with known or suspected migraine.
**Additional Approval:** AACN Synergy CERP Category A
**DIfferential Diagnosis:** This course meets the requirement for Differential Diagnosis education for Florida APRN-IPs.

***Prices are subject to change. Visit www.NetCE.com for a list of current prices.***

# Course Availability List *(Cont'd)*

## HYPERLIPIDEMIAS AND ATHEROSCLEROTIC CARDIOVASCULAR DISEASE

**#90843** • 10 ANCC / 7 Pharm Hours

Book By Mail – $48 • **ONLINE – $40**

**Purpose:** The purpose of this course is to increase awareness of the crucial role of hyperlipidemias in the development of cardiovascular disease, evaluate the therapeutic benefits of pharmacologic and nonpharmacologic approaches to lipid control, and contribute to a more positive interaction between the healthcare professional and the patient, through fostering patient awareness, implementation of lifestyle changes, and compliance to therapy.

**Faculty:** A. José Lança, MD, PhD

**Audience:** This course is designed for physicians, physician assistants, nurses, and pharmacy professionals who may intervene to limit the effects of hyperlipidemias in their patients, promoting better long-term health and preventing cardiovascular disease.

**Additional Approval:** AACN Synergy CERP Category A

**Advanced Pharmacology:** This course meets the requirement for Advanced Pharmacology education for Florida APRN-IPs.

## STRATEGIES FOR APPROPRIATE OPIOID PRESCRIBING: THE FLORIDA APRN/PA REQUIREMENT

APRN Mandate

**#91151** • 3 ANCC / 3 Pharm Hours

Book By Mail – $23 • **ONLINE – $15**

**Purpose:** The purpose of this course is to provide clinicians who prescribe or distribute opioids with an appreciation for the complexities of opioid prescribing and the dual risks of litigation due to inadequate pain control and drug diversion or misuse in order to provide the best possible patient care and to prevent a growing social problem.

**Faculty:** Mark Rose, BS, MA

**Audience:** This course is designed for all nurses and physician assistants who may alter prescribing practices or intervene to prevent drug diversion and inappropriate opioid use.

**Additional Approval:** AACN Synergy CERP Category A

**Special Approval:** This course, offered by the NetCE Physicians Professional Association, is approved to fulfill the Florida physician assistant requirement for 3 hours of education on the safe and effective prescribing of controlled substance medications.

**Advanced Pharmacology:** This course meets the requirement for Advanced Pharmacology education for Florida APRN-IPs.

## SMOKING AND SECONDHAND SMOKE

**#91783** • 10 ANCC / 5 Pharm Hours

Book By Mail – $48 • **ONLINE – $40**

**Purpose:** The purpose of this course is to provide physicians, nurses, behavioral health professionals, and other members of the interdisciplinary team with a formal educational opportunity that will address the impact of tobacco smoking and secondhand exposure in public health and disease as well as interventions to promote smoking cessation among their patients.

**Faculty:** Mark S. Gold, MD, DFASAM, DLFAPA

**Audience:** This course is designed for physicians, nurses, and other healthcare professionals who may intervene to stop patients from smoking.

**Additional Approval:** AACN Synergy CERP Category A

## THE CORONAVIRUS DISEASE (COVID-19) PANDEMIC

FREE Online

**#94150** • 2 ANCC Hours

Book By Mail – $8 • **ONLINE – FREE**

**Purpose:** The purpose of this course is to provide physicians, nurses, and other healthcare professionals an overview of the 2019–2020 global outbreak of novel human coronavirus (SARS-CoV-2) infection, including background epidemiology, clinical features, mode of transmission, epidemic potential, and the clinical and public health measures recommended to limit the spread of infection and control the outbreak.

**Faculty:** John M. Leonard, MD

**Audience:** This course is designed for nurses, and other healthcare professionals who may identify or educate patients regarding coronavirus infection.

**Additional Approval:** AACN Synergy CERP Category A

## AUTOIMMUNE DISEASES

**#94453** • 15 ANCC / 10 Pharm Hours

Book By Mail – $68 • **ONLINE – $60**

**Purpose:** The purpose of this course is to provide healthcare professionals with the information necessary to diagnose and treat the most common autoimmune disorders according to evidence-based or guideline-endorsed recommendations in order to improve patient quality of life.

**Faculty:** Lori L. Alexander, MTPW, ELS, MWC

**Audience:** This course is designed for nurses and other healthcare professionals involved in the diagnosis, treatment, and care of patients with autoimmune diseases.

**Additional Approval:** AACN Synergy CERP Category A

**Advanced Pharmacology:** This course meets the requirement for Advanced Pharmacology education for Florida APRN-IPs.

## HIV/AIDS: EPIDEMIC UPDATE FOR FLORIDA

**#94722** • 1 ANCC / 1 Pharm Hour

Book By Mail – $23 • **ONLINE – $15**

Mandate

**Purpose:** In view of the already existing crisis in health care in the United States, the problems associated with providing the necessary care for persons with HIV infection or AIDS are significant.

**Faculty:** Jane C. Norman, RN, MSN, CNE, PhD; John M. Leonard, MD

**Audience:** This course is designed for all Florida nurses, physicians, and allied healthcare professionals involved in the care of patients with HIV/AIDS.

**Additional Approval:** AACN Synergy CERP Category A

## OPTIMIZING OPIOID SAFETY AND EFFICACY

**#95141** • 15 ANCC / 15 Pharm Hours

Book By Mail – $68 • **ONLINE – $60**

**Purpose:** The purpose of this course is to provide clinicians with the information necessary to choose the appropriate opioid agents for their patients, with a resultant improvement in patients' quality of life and compliance with prescribed treatments.

**Faculty:** Mark Rose, BS, MA

**Audience:** This course is designed for nurses and other healthcare professionals involved in the care of patients who may benefit from the use of opioids to address pain.

**Additional Approval:** AACN Synergy CERP Category A

**Advanced Pharmacology:** This course meets the requirement for Advanced Pharmacology education for Florida APRN-IPs.

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# Course Availability List *(Cont'd)*

### MEDICAL MARIJUANA AND OTHER CANNABINOIDS

**#95172** • 5 ANCC / 5 Pharm Hours

Book By Mail – $28 • **ONLINE – $20**

**Purpose:** The purpose of this course is to provide healthcare professionals with unbiased and evidence-based information regarding the use of marijuana and other cannabinoids for the treatment of medical conditions.

**Faculty:** Mark Rose, BS, MA

**Audience:** This course is designed for physicians, nurses, physician assistants, social workers, therapists, and counselors in the primary care setting involved in the care of patients who use or who are candidates for the therapeutic use of marijuana and other cannabinoids.

**Additional Approval:** AACN Synergy CERP Category A

**Advanced Pharmacology:** This course meets the requirement for Advanced Pharmacology education for Florida APRN-IPs.

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### ANXIETY DISORDERS

**#96181** • 15 ANCC / 10 Pharm Hours

Book By Mail – $68 • **ONLINE – $60**

**Purpose:** The purpose of this course is to provide healthcare professionals with the knowledge and skills necessary to appropriately identify and treat patients with anxiety disorders, addressing knowledge gaps, enhancing clinical skills, and improving patient outcomes.

**Faculty:** Mark Rose, BS, MA

**Audience:** This course is designed for health and mental health providers involved in the identification, treatment, and care of patients with anxiety disorder.

**Additional Approval:** AACN Synergy CERP Category A

**Differential Diagnosis:** This course meets the requirement for Differential Diagnosis education for Florida APRN-IPs.

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### ATTENTION DEFICIT HYPERACTIVITY DISORDER

**#96212** • 5 ANCC / 2 Pharm Hours

Book By Mail – $28 • **ONLINE – $20**

**Purpose:** The purpose of this course is to educate healthcare professionals about the epidemiology, diagnosis, and management of ADHD.

**Faculty:** John J. Whyte, MD, MPH; Paul Ballas, DO

**Audience:** This course is designed for all nurses involved in the care of patients with attention deficit hyperactivity disorder.

**Additional Approval:** AACN Synergy CERP Category A

**Differential Diagnosis:** This course meets the requirement for Differential Diagnosis education for Florida APRN-IPs.

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### SUICIDE ASSESSMENT AND PREVENTION

**#96441** • 6 ANCC Hours

Book By Mail – $32 • **ONLINE – $24**

**Purpose:** The purpose of this course is to provide health and mental health professionals with an appreciation of the impact of depression and suicide on patient health as well as the skills necessary to identify and intervene for patients at risk for suicide.

**Faculty:** Mark Rose, BS, MA

**Audience:** This course is designed for nurses and other healthcare professionals who may identify persons at risk for suicide and intervene to prevent or manage suicidality.

**Additional Approval:** AACN Synergy CERP Category A

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### PARKINSON DISEASE

**#98771** • 10 ANCC / 5 Pharm Hours

Book By Mail – $48 • **ONLINE – $40**

**Purpose:** The purpose of this course is to provide physicians, nurses, and other members of the interprofessional healthcare team a review of current concepts of pathogenesis, disease progression, diagnosis, and management of Parkinson disease, in order to improve patient care and quality of life.

**Faculty:** Mark Rose, BS, MA

**Audience:** This course is designed for all healthcare providers in the primary care setting who may encounter patients with Parkinson disease.

**Additional Approval:** AACN Synergy CERP Category A

**Differential Diagnosis:** This course meets the requirement for Differential Diagnosis education for Florida APRN-IPs.

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### IRRITABLE BOWEL SYNDROME

**#98931** • 10 ANCC / 5 Pharm Hours

Book By Mail – $48 • **ONLINE – $40**

**Purpose:** The purpose of this course is to provide primary care physicians and nurses a review of irritable bowel syndrome, emphasizing pathophysiology, clinical assessment, and principles of care that take into account the biopsychosocial features of this common disorder. The goal is to improve clinical recognition and treatment and to promote management strategies that lead to better patient outcomes.

**Faculty:** Mark Rose, BS, MA

**Audience:** This course is designed for physicians, physician assistants, nurses, and other healthcare providers who may improve the identification and care of patients with irritable bowel syndrome.

**Additional Approval:** AACN Synergy CERP Category A

**Differential Diagnosis:** This course meets the requirement for Differential Diagnosis education for Florida APRN-IPs.

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### GERIATRIC FAILURE TO THRIVE: A MULTIDIMENSIONAL PROBLEM

**#99202** • 5 ANCC Hours

Book By Mail – $28 • **ONLINE – $20**

**Purpose:** The purpose of this course is to educate nurses, social workers, and other healthcare providers regarding geriatric failure to thrive and to promote evidence-based clinical practice when caring for patients with this condition.

**Faculty:** Susan Waterbury, MSN, FNP-BC, ACHPN

**Audience:** This course is designed for nurses, nurse practitioners, and behavioral health professionals who work in or are interested in learning more about geriatrics. Other disciplines that may benefit from this training include dieticians, therapists, and psychologists.

**Additional Approval:** AACN Synergy CERP Category A

**Differential Diagnosis:** This course meets the requirement for Differential Diagnosis education for Florida APRN-IPs.

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|---|---|---|---|
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**Please note the following:**

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- Darken only one circle per question. **A = True, B = False**
- Use pen or pencil; please refrain from using markers.
- **Information on the Customer Information form must be completed.**

**#91333 MEDICAL ERROR PREVENTION AND ROOT CAUSE ANALYSIS—2 HOURS**

Please refer to page 14.

*Expiration Date: 08/31/22* *May be taken individually for $15*

| | A | B | | A | B |
|---|---|---|---|---|---|
| 1. | ❍ | ❍ | 6. | ❍ | ❍ |
| 2. | ❍ | ❍ | 7. | ❍ | ❍ |
| 3. | ❍ | ❍ | 8. | ❍ | ❍ |
| 4. | ❍ | ❍ | 9. | ❍ | ❍ |
| 5. | ❍ | ❍ | 10. | ❍ | ❍ |

**#97922 DOMESTIC VIOLENCE: THE FLORIDA REQUIREMENT—2 HOURS**

Please refer to page 26.

*Expiration Date: 07/31/22* *May be taken individually for $15*

| | A | B | | A | B |
|---|---|---|---|---|---|
| 1. | ❍ | ❍ | 6. | ❍ | ❍ |
| 2. | ❍ | ❍ | 7. | ❍ | ❍ |
| 3. | ❍ | ❍ | 8. | ❍ | ❍ |
| 4. | ❍ | ❍ | 9. | ❍ | ❍ |
| 5. | ❍ | ❍ | 10. | ❍ | ❍ |

**#31252 LAWS AND RULES FOR FLORIDA NURSES—2 HOURS**

Please refer to page 34.

*Expiration Date: 10/31/22* *May be taken individually for $15*

| | A | B | | A | B |
|---|---|---|---|---|---|
| 1. | ❍ | ❍ | 6. | ❍ | ❍ |
| 2. | ❍ | ❍ | 7. | ❍ | ❍ |
| 3. | ❍ | ❍ | 8. | ❍ | ❍ |
| 4. | ❍ | ❍ | 9. | ❍ | ❍ |
| 5. | ❍ | ❍ | 10. | ❍ | ❍ |

**#31111 RECOGNIZING IMPAIRMENT IN THE WORKPLACE: THE FLORIDA REQUIREMENT—2 HOURS**

Please refer to page 43.

*Expiration Date: 10/31/22* *May be taken individually for $15*

| | A | B | | A | B |
|---|---|---|---|---|---|
| 1. | ❍ | ❍ | 6. | ❍ | ❍ |
| 2. | ❍ | ❍ | 7. | ❍ | ❍ |
| 3. | ❍ | ❍ | 8. | ❍ | ❍ |
| 4. | ❍ | ❍ | 9. | ❍ | ❍ |
| 5. | ❍ | ❍ | 10. | ❍ | ❍ |

**#97110 RECOGNIZING AND REPORTING HUMAN TRAFFICKING IN FLORIDA—2 HOURS**

Please refer to page 61.

*Expiration Date: 08/31/22* *May be taken individually for $15*

| | A | B | | A | B |
|---|---|---|---|---|---|
| 1. | ❍ | ❍ | 6. | ❍ | ❍ |
| 2. | ❍ | ❍ | 7. | ❍ | ❍ |
| 3. | ❍ | ❍ | 8. | ❍ | ❍ |
| 4. | ❍ | ❍ | 9. | ❍ | ❍ |
| 5. | ❍ | ❍ | 10. | ❍ | ❍ |

**#94300 FIBROMYALGIA—3 HOURS**

Please refer to page 77.

*Expiration Date: 07/31/23* *May be taken individually for $15*

| | A | B | | A | B |
|---|---|---|---|---|---|
| 1. | ❍ | ❍ | 6. | ❍ | ❍ |
| 2. | ❍ | ❍ | 7. | ❍ | ❍ |
| 3. | ❍ | ❍ | 8. | ❍ | ❍ |
| 4. | ❍ | ❍ | 9. | ❍ | ❍ |
| 5. | ❍ | ❍ | 10. | ❍ | ❍ |

**#38860 PATHOPHYSIOLOGY: THE RENAL SYSTEM—15 HOURS**

Please refer to page 116.

*Expiration Date: 07/31/23* *May be taken individually for $60*

| | A | B | | A | B |
|---|---|---|---|---|---|
| 1. | ❍ | ❍ | 6. | ❍ | ❍ |
| 2. | ❍ | ❍ | 7. | ❍ | ❍ |
| 3. | ❍ | ❍ | 8. | ❍ | ❍ |
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