Prevention of Medical Errors for Florida Occupational Therapy

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LEARNING OUTCOME AND OBJECTIVES: Upon completion of this course, you will understand current, evidence-based interventions to prevent medical errors in the practice setting. Specific learning objectives to address potential knowledge gaps include:

- Define "medical errors" and associated terminology.

- Discuss common causes of medical errors and root cause analysis.

- Review the most common medical errors and strategies to prevent them.

- Summarize the elements of effective communication and documentation.

- Outline contraindications and indications for occupational therapy management.

- Discuss Florida's statutory requirements for addressing medical errors.

INTRODUCTION

Healthcare providers know medical errors create a serious public health problem that poses a substantial threat to patient safety. Yet, despite providers' best efforts, medical error rates remain high, with significant disability and death. Errors can occur at any point while an individual is in the healthcare system—in hospitals, clinics, surgery centers, dialysis centers, medical offices, dental offices, nursing homes, pharmacies, and even in patients' homes—anywhere that patients receive healthcare services.

It is estimated that approximately 400,000 hospitalized patients experience some type of preventable harm each year, including surgical, diagnostic, medication, devices and equipment, system failures, infections, and falls. Most errors in outpatient healthcare are related to a missed or late diagnosis.

Analyzing why medical errors happen has traditionally been focused on the human factor, concentrating on individual responsibility for making an error, and the solutions have involved training or retraining, additional supervision, or even disciplinary action. Healthcare professionals experience profound psychological effects such as anger, guilt, inadequacy, depression, and suicide due to real or perceived errors. The loss of clinical confidence and fear of punishment can make healthcare professionals reluctant to report errors.

The alternative to this individual-centered approach is a system-centered approach, which assumes that humans are fallible and that systems must be designed so that humans are prevented from making errors. The trend is for patient safety experts to focus on improving the safety of healthcare systems to reduce the probability of errors and mitigate their effects rather than focus on an individual's actions.

Errors represent an opportunity for constructive changes and improved education in healthcare delivery. Acknowledging that errors happen, learning from them, and working to prevent errors in the future are important goals and represent a major change in the culture of healthcare—a shift from blame and punishment to analysis of the root causes of errors and the creation of strategies to reduce the risk of errors. In other words, healthcare organizations must create a culture of safety that views medical errors as opportunities to improve the system. Every person on the healthcare team has a role in making healthcare safer for patients and workers (Rodziewicz et al., 2023).

DEFINING MEDICAL ERRORS

In 1999, the Institute of Medicine defined a medical error as "the failure of a planned action to be completed as intended (i.e., error of execution) or the use of a wrong plan to achieve an aim (i.e., error of planning)" (IOM, 1999). Errors can include problems in practice, products, procedures, and systems.

Errors can be further be described as **adverse events**. Important subcategories of adverse events include:

- Preventable events, in which harm may have been lessened or prevented had patient safety risk mitigation strategies been applied. Example: Performing surgery on the wrong body part.

- Negligent adverse events resulting from care that falls below the standards expected of clinicians in the community. Example: Not properly monitoring a patient under anesthesia.

- Unpreventable adverse events that result from complications that cannot be prevented given the current state of knowledge. Example: Appropriately prescribing, dispensing, and administering a drug to a patient not known to have an allergy who subsequently has an allergic reaction.

- Ameliorable events, which are not entirely preventable but may have resulted in less harm if the care had been provided differently. Example: A clinician failing to respond to a patient with medication-related symptoms.
(Boisvert & Pellet, 2022; Rodziewicz et al., 2023)

In addition to adverse events, other terms used to describe medical errors include *near misses*, *sentinel events*, and *serious reportable events (SREs)*.

Near Misses

A near miss (also known as a *close call*) is an incident that might have resulted in harm but did not occur because of timely intervention by healthcare providers, the patient, or the patient's family. Example: A nurse recognizes a potential drug overdose in a physician's prescription and does not administer the drug but instead calls the error to the physician's attention (Performance Health Partners, 2024).

Sentinel Events

Sentinel events are those medical errors resulting in death, permanent harm, or severe temporary harm and intervention required to sustain life. Such events are called *sentinel* because they signal the need for immediate investigation and response (VA, 2023).

Not all sentinel events occur because of an error, and not all medical errors result in sentinel events. Examples of sentinel events include:

- Surgery or other invasive procedure performed on the wrong site or wrong patient

- Patient death or serious injury associated with a medication error

- Suicide during treatment or within 72 hours of discharge

- Death or serious injury to a neonate

- Discharge of an infant to the wrong family

- Patient death or serious injury associated with a fall in the healthcare setting

- Abduction of a patient/resident of any age while receiving care

- Sexual abuse/assault on a patient or staff member in the healthcare setting

- Criminal event
(Kamakshya & De Jesus, 2023)

Serious Reportable Events (SREs)

The National Quality Forum has compiled a list of serious reportable events, which are consequential, largely preventable, harmful adverse events (also referred to as *never events,* or events that should never happen). SREs are grouped into seven categories, as follows:

- Surgical SREs (e.g., surgery/invasive procedure performed on wrong body parts or the wrong patient)

- Product/device SREs (e.g., patient death/serious injury associated with use of devices, drugs, or biologics provided by the healthcare setting)

- Patient-protective SREs (e.g., patient elopement or suicide while in a healthcare setting)

- Care management SREs (e.g., patient death/serious injury associated with a fall while in a healthcare setting, medication errors)

- Environmental SREs (e.g., patient death/serious injury associated with the use of restraints while in a healthcare setting, burns, electric shock)

- Radiologic SREs (e.g., patient/staff death/serious injury associated with the introduction of a metallic object into an MRI area)

- Criminal SREs (e.g., sexual abuse/assault on a patient or staff member within or on the grounds of a healthcare setting)
  (NQF, 2024)

Active and Latent Errors

Active errors (human errors) are those that occur at the point of contact between a human and some aspect of a large system (e.g., a machine). They are generally readily apparent (e.g., pushing an incorrect button or ignoring a warning light) and almost always involve someone at the front line.

Latent errors are accidents waiting to happen. They refer to a less apparent failure in system or process design, faulty installation or maintenance of equipment, or ineffective organizational structure that contributes to the occurrence of errors, allowing them to cause harm to patients (Sameera et al., 2021).

COMMON MEDICAL ERRORS AND HOW TO PREVENT THEM

Medical errors usually occur in stressful, fast-paced environments such as emergency departments, intensive care units, and operating rooms. Errors often occur when staffing is inadequate and necessary personnel are not available when needed (Carver et al., 2023).

The 10 **most common causes of medical error** include:

1. Ineffective communication (the most common cause)

2. Changes in clinician's ability to make good judgments and quick decisions

3. Deficiencies in education, training, orientation, and experience

4. Inadequate methods of identifying patients, incomplete assessment on admission, failing to obtain consent, and failing to provide patient education

5. Inadequate policies and procedures to guide healthcare workers

6. Lack of consistency in procedures

7. Inadequate staffing and/or poor supervision

8. Technical failures associated with medical equipment

9. No audits in the system

10. No one prepared to accept responsibility or change the system
    (Rodziewicz et al., 2023)

ROOT CAUSE ANALYSIS (RCA)

Root cause analysis has been adopted widely as a method for investigating serious adverse events. The Joint Commission has mandated use of RCA to analyze sentinel events since 1997.

Root cause analysis identifies underlying problems that increase the likelihood of errors while avoiding focusing on mistakes made by individuals. The approach identifies both active errors and latent errors and is one of the most widely used retrospective methods for detecting safety hazards. The ultimate goal of RCA is to prevent future harm by eliminating the latent errors that often underlie adverse events.

RCAs follow a prespecified protocol, beginning with data collection and reconstruction of the events through record review and participant interviews. A multidisciplinary team then analyzes the sequence of events leading to the error, with goals of identifying how the event occurred (by identifying active errors) and why the event occurred (by systematic identification and analysis of latent errors). The steps in this process include:

- Verifying the incident and defining the problem

- Commissioning the root cause analysis investigation

- Mapping a timeline (event and causal factor chart)

- Identifying critical events

- Analyzing the critical events (cause and effect chart)

- Identifying root causes

- Supporting each root cause with evidence

- Identifying and selecting the best ways of addressing the problem

- Developing recommendations

- Writing and presenting the report
  (VDH, 2021)

Medication Errors

Medication errors are the **most common** errors in both outpatient and inpatient settings. Each year in the United States, over 7 million people are affected, and 7,000 to 9,000 people die due to a medication error. In addition, many other patients experience but often do not report an adverse reaction or other complications related to medication. The total cost of caring for patients with medication-associated errors exceeds $40 billion each year (Tariq et al., 2023).

Causes of medication errors include:

- Expired product, usually related to improper storage

- Administering medication for a shorter or longer duration than prescribed

- Incorrect preparation before final administration

- Incorrect strength

- Incorrect rate, most commonly with IV push or infusions

- Incorrect timing, which may lead to under- or overdosing

- Incorrect dose, including overdose, underdose, and extra dose

- Incorrect route, often resulting in significant morbidity and mortality

- Incorrect dosage form, such as immediate release instead of extended release

- Incorrect patient action correctible only with patient education

- Known allergen

- Known contraindication

Medication errors may be due to human errors but often result from **system failures**, such as:

- Inaccurate order transcription

- Failure to disseminate drug knowledge

- Failing to obtain allergy history

- Incomplete order checking

- Mistakes in tracking of medication orders

- Poor professional communication

- Unavailable or inaccurate patient information
(Tariq et al., 2023)

Medication errors are **most common** during the ordering or prescribing stage, although errors may occur at any step in the process.

- Ordering/prescribing. The clinician must select the appropriate medication, dose, frequency, and duration.

- Dispensing. The pharmacist must check for drug-drug interactions and allergies and release the appropriate quantity of the medication in the correct form.

- Administering. The correct medication must be supplied to the correct patient at the correct time, by either a nurse, other trained staff, patient, or caregiver.

- Monitoring. This includes laboratory tests, side effects, effectiveness of therapeutic action, and vital signs.

- Documenting. The name, strength, and quantity of drug; the date and time administered; and the name of the person administering the drug must be entered in the patient's medication administration record in a timely manner.
(Tariq et al., 2023, MacDowell et al., 2021)

Occupational therapists contribute to **medication management** by identifying problems that make it difficult for patients to adhere to medication routines and by helping them integrate medication administration into their daily life routines. This involves an **assessment** to determine the patient's ability to safely manage medications, which may include:

- Cognition (short-term memory, problem-solving, safety awareness)

- Range of motion/fine motor coordination (ability to open pill bottles, push pills out of foil packets, pick up pills, bring pills to the mouth without dropping)

- Ability to administer medications (e.g., insulin by syringe or pen, pain patches, eye/ear drops, inhaler devices)

- Ability to organize medications and take according to a prescribed schedule

- Ability to read and tell time using a clock

- Ability to name all the medications and recognize each one by color/shape

- Ability to read the labels on prescription bottles

- Ability to order refills of prescriptions from the pharmacy

- Pill box or other organized system to store medications

- What to do when missing a dose

- Whom to call with questions about medications

- Family members who can help organize medications and monitor compliance

- Openness to having a home health nurse or OT address medication management at home
  (Colon, 2023)

Surgical Errors

At least 4,000 surgical errors occur in the United States each year. Surgical errors include retained foreign bodies; mislabeled surgical specimens; and wrong-site errors, wrong procedure errors, and wrong patient errors (WSPEs). Errors can occur at various stages in the surgical process.

Some **causes** of surgical errors include:

- Lack of adequate surgeon training and education

- Absence of standardized rules and regulations

- Major gap in communication between surgeon, anesthesiologist, and other ancillary staff

- Gap in communication between the surgeon and the patient

- Use of unreliable systems or protocols

- Rushing to complete cases

- Human factors
  (Santos & Jones, 2023; Rodziewicz et al., 2023)

Instances of **retained surgical items** are known to occur approximately 40 times per week in the United States, and the most common are surgical sponges or laparotomy pads, which then become gossypibomas, or masses within the body comprised of a cotton matrix surrounded by a foreign body reaction. These gossypibomas account for 48% to 69% of retained foreign bodies (Steris Healthcare, 2024). Clamps and retractors are the most common types of retained instruments. The second most common category is catheters and drains. Needles and blades are the third most common category, a majority of which are suture needles.

Anesthesia-related adverse events are fairly uncommon, although not rare. The American Society of Anesthesiologists reports that approximately 1 in every 200,000 patients experiences an anesthesia-related complication leading to mortality. **Common anesthesia errors** include, but are not limited to:

- Dosage errors (overdosing and underdosing)

- Delayed delivery of anesthesia

- Improper intubation

- Improper monitoring

- Failure to respond to a patient's vital signs

- Equipment malfunction

- Failure to complete a thorough patient history to identify allergies or drug interactions

- Poor communication
(Shaked, 2024)

Tubing Misconnections

The FDA reports that medical device misconnections can occur when one type of medical device is attached in error to another type of medical device that performs a different function. Tubing misconnections can occur for several reasons. The **most common** reason is that many types of tubing lines for different medical devices incorporate common Luer lock connectors, which consist of a male taper with an associated threaded "skirt" and a female taper having flanges to engage the threads (FDA, 2023).

EXAMPLES OF TUBING MISCONNECTIONS

- Enteral feeding tube connected to an IV

- Enteral feeding tube connected to ventilator in-line suction catheter

- Blood pressure cuff tubing connected to an IV port

- IV tubing connected to tracheostomy cuff

- IV tubing connected to nebulizer

- Oxygen tubing connected to a needleless IV port

- IV tubing connected to nasal cannula

- Syringe connected to tracheostomy cuff

- Epidural solution connected to a peripheral or central IV catheter

- Epidural line connected to an IV infusion

- Bladder irrigation solution utilizing primary IV tubing connected to a peripheral or central IV catheter

- Foley catheter connected to NG tube

- IV infusion connected to an indwelling urinary catheter

- IV infusion connected to an enteral feeding tube

- Primary IV tube connected to a blood product meant for transfusion
(FDA, 2023)

Attempts to prevent device misconnections have included color-coding, labels, tags, and training. However, these methods alone have not effectively solved the problem, because they have not been consistently applied, nor do these methods physically prevent the misconnections.

In order to reduce the chances of tubing misconnections, non-Luer lock connections have been introduced. These include the NR-Fit connector for neuraxial and regional anesthesia catheters and the Enfit connectors for feeding tubes.

These connectors are designed to be incompatible with Luer adaptors, which are commonly used in IV applications. The connectors look and secure very similarly to a Luer threaded lock system, although the design is larger and, therefore, incompatible with connectors for unrelated delivery systems such as tracheostomy tubes, IV lines, and catheters (Rodziewicz et al., 2023).

Healthcare-Associated Infections (HAIs)

HAIs are infections that occur while receiving healthcare in a hospital or other healthcare facility and that first appear 48 hours or more after admission or within 30 days after having received healthcare. HAIs are considered system failures and are often preventable. As many as 1 in 31 hospitalized patients and 1 in 43 nursing home residents contract at least one HAI in association with their healthcare (CDC, 2023a).

HAIs AND HAND HYGIENE

One of the most important reasons in healthcare settings for the spread of bacteria resulting in HAIs, some of which are antibiotic resistant and can prove life-threatening, is the failure of physicians, nurses, and other caregivers to practice basic hand hygiene. Studies show that some healthcare providers practice hand hygiene on fewer than half the occasions they should. Providers might need to clean hands as many as 100 times per 12-hour shift, depending on the number of patients and intensity of care (CDC, 2023b).
[end box]

Types of healthcare-associated infections include:

- Catheter-associated urinary tract infections

- Surgical site infections

- Central line-associated bloodstream infections

- Peripheral IV catheter-related bloodstream infections

- *Clostridioides difficile* (*C. diff*) infections

- Multidrug-resistant organism infections

Prevention measures include:

- Following infection control policies and procedures

- Practicing hand hygiene measures

- Keeping environment and equipment clean

- Utilizing sterile technique when appropriate

- Using antibiotics when appropriate
  (CDC, 2023a)

Errors Related to Medical Devices and Equipment

Occupational therapists use different types of electrical treatment equipment, such as electrical stimulation and ultrasound devices, that could be hazardous if:

- Water and electrical energies mix, resulting in a possible shock hazard

- Equipment is used improperly

- Electrical cords are frayed or damaged, resulting in potential electrical exposure

Prevention controls and work practices include maintaining machines in good working order, including:

- Routinely monitoring the condition of equipment

- Training employees to correctly and safely use and clean equipment

- Maintaining adequate working space and access to equipment

- Visually inspecting equipment before using

- Not using equipment if cords are frayed or damaged

- Not using the machine and calling for assistance if anything else does not look right
  (OSHA, 2023)

Risk for Falls

Falls are the most common type of accidents in people 65 years of age and older, with over 30% of such individuals falling every year. In approximately one half of these cases, the falls are recurrent. These percentages increase to around 40% in individuals 85 years and older.

Approximately 10% of falls result in serious injuries, including fracture of the hip, other fractures, traumatic brain injury, or subdural hematoma. They are the major cause of hospitalization related to injury in those 65 years and older and are associated with increased mortality.

Falls in institutional settings occur more frequently and are associated with greater morbidity than falls that occur in the community. Approximately 50% of individuals in the long-term care setting fall yearly (Appeadu & Bordoni, 2023; Kiel, 2023).

Fall risks can be categorized as either **intrinsic** or **extrinsic**. Intrinsic factors include issues that are unique to the individual and concern medical, psychological, and physical issues. Extrinsic factors generally can be changed and address environmental risks that patients encounter (Appeadu & Bordoni, 2023).

A fall **risk assessment** is done on admission, and reassessment is done whenever there is a change in a patient's condition or when a patient is being transferred to another unit. A reliable, standardized, and validated assessment scale should be used that includes a history of falls, mobility problems, use of assistive devices, medications, and mental status.

There are many fall assessment tools. The following tools have been extensively studied and recommended:

- Timed Up and Go Test

- Timed Up and Go Dual Task (Cognitive & Motor)

- Berg Balance Scale

- Falls Efficacy Scale

- Fear-Avoidance-Belief Questionnaire

- History of Falls Questionnaire

- 30-Second Sit to Stand Test

- Balance Evaluation Systems Test (BEST)

- Functional Reach Test/Modified Functional Reach Test
(AOTA, 2024)

Fall risk factors addressed by occupational therapy include:

- Lower body weakness

- Vitamin D deficiency

- Medications, including over-the-counter

- Vision problems

- Foot pain

- Poor footwear

- Home hazards
(Covell-Pierson, 2022a)

The most successful fall prevention initiatives use multifaceted approaches. Occupational therapy practitioners are skilled at evaluating and addressing influences from the person, their activity, roles and routines, and the environment to maximize independence (Covell-Pierson, 2022b).

STEADI (STOP ELDERLY ACCIDENTS, DEATHS AND INJURIES)

The Centers for Disease Control and Prevention's STEADI initiative is a coordinated approach for the implementation of practice guidelines for fall prevention in community-dwelling adults. Recommendations include:

- Screening for fall risk annually, or any time the patient presents with an acute fall
- Assessing those who are found to be at risk
- Intervening to reduce identified risk factors

(CDC, 2023c)

Occupational therapists play a central role in improving safety and reducing fall risk at home. Fall **prevention efforts** may include:

- Removing clutter and excess furniture
- Removing or securing throw rugs
- Installing hand rails and grab bars along stairs and in bathrooms
- Repositioning bedroom furniture
- Installing grab rails on beds
- Increasing home lighting
- Providing durable medical equipment such as bedside commodes, bath benches, and raised toilet seats

In addition to identifying the above environmental hazards, other fall prevention practices include designing targeted fall prevention home exercise programs, providing ongoing patient and caregiver education, and collaborating with and educating other healthcare professionals about best practices for reducing falls (Meydem, 2023).

PATIENT SAFETY CULTURE

Patient safety culture describes the extent to which an organization's culture supports and promotes patient safety and refers to the values, beliefs, and norms shared by practitioners and other staff throughout the organization that influence their behaviors and actions. **Key features** of a safety culture include:

- Strong support from organizational leadership

- Acknowledgement of the high-risk nature of an organization's activities

- Determination to achieve consistently safe operations

- Responsibility by everyone for safety, implementing and reporting unsafe conditions

- A blame-free environment for individual reporting of errors or near misses without fear of reprimand or punishment

- Encouragement of collaboration about decision-making across all staff levels and disciplines to seek solutions to worker and patient safety problems

- Organizational commitment of resources to address safety concerns
(CDC, 2023d)

EFFECTIVE DOCUMENTATION AND COMMUNICATION

Occupational therapy documentation systems can take various forms, such as handwritten notes, electronic medical records (EMRs), or specialized occupational therapy practice management software. Documentation should be comprehensive and objective, and should adhere to professional guidelines and standards. Guidelines for documenting include:

- Documentation practices and storage and disposal of documentation must meet all state and federal regulations and guidelines, payer and facility requirements, practice guidelines, and confidentiality requirements.

- Client's full name, date of birth, gender, and case number, if applicable, are included on each page of the documentation.

- Identification of type of documentation and the date service is provided and documentation is completed.

- Acceptable terminology, acronyms, and abbreviations are defined and used within the boundaries of the setting.

- Clear rationales for the purpose, value, and necessity of skilled occupational therapy services are provided.

- Professional signature (first name or initial, last name) and credential; cosignature and credential when required for documentation of supervision; and, when necessary, signature of the recorder.

- All errors are noted and initialed or signed.
(AOTA, 2018)

Communication Tools to Prevent Errors

Research indicates that poor communication is a root cause of the great majority of all sentinel events.

RISK FACTORS FOR POOR COMMUNICATION

Verbal communication is a common source of medical error. Risk factors for such errors include:

- Disruptive behavior, rudeness, or verbal abuse
- Environmental noise issues
- Cultural differences between patients and providers
- Hierarchy issues
- Providers acting as autonomous agents
- Personality differences
- Language barriers
- Failure to work as a team
- Multiple conversations occurring at the same time
- Education and literacy
  (Rodziewicz et al., 2023)

TOOLS FOR EFFECTIVE COMMUNICATION

Communication among healthcare providers using a standard framework and proven tools for reporting and sharing information can enable more effective communication. Examples of such tools include:

- SBAR (see below)
- BATHE protocol (**B**ackground, **A**ffect, **T**rouble, **H**andling, and **E**mpathy) is an interviewing process utilized in outpatient settings to connect with patients, screen for mental health problems, and empower patients to handle identified issues more constructively.
- Ticket-to-Ride for handoffs is a short, in-house document ensuring that transporters and providers unfamiliar with the patient will have important information readily available if problems arise or the patient is away from the unit longer than expected.
- Hourly rounding to each patient's room or bedside is an intervention that helps to proactively anticipate and address each patient's needs.

- Patient teach-back is a technique for healthcare providers to ensure that medical information has been explained clearly so that patients and families understand the information given to them.

- I-PASS is a clinical handoff verbal and written protocol for patient in-house transfer that includes **P**atient summary, **A**ction to-do list, **S**ituation awareness and contingency plan, and **S**ynthesis or **S**ummary of the information by the receiver.

- Technologic communication tools:

    o Bedside tablets for patients instead of call lights

    o HIPAA-compliant text messaging platforms for communicating among members of the care team

  (HIPAA Journal, 2021)

SBAR is one of the most commonly used communication tools for structured communication to ensure that information is transferred accurately between two clinicians, such as during a shift transfer. *SBAR* stands for Situation (S), Background (B), Assessment (A), and Recommendation (R). It uses prompt questions in four areas to guide a conversation to ensure efficient transfer of concise information (IHI, 2021).

S	Situation	What is happening right now?
B	Background	What are the circumstances that led up to this situation?
A	Assessment	What do I think the problem is with this patient?
R	Recommendation	What should be done to correct the situation?
(IHI, 2021)		

CONTRAINDICATIONS AND INDICATIONS FOR OCCUPATIONAL THERAPY MANAGEMENT

Florida Statute 486.203 defines occupational therapy as the therapeutic use of occupations through habilitation, rehabilitation, and the promotion of health and wellness with individuals, groups, or populations, along with their families or organizations, to support participation, perform, and function in the home, at school, in the workplace, in the community, and in other settings for clients who have or who have been identified as being at risk of developing an illness, an injury, a disease, a disorder, a condition, an impairment, a disability, an activity limitation, or a participation restriction.

Occupational services include, but are not limited to:

1. Assessment, treatment, and education of or consultation with the individuals, groups, and populations whose abilities to participate safely in occupations are at risk, including:

    - Activities of daily living skills

- Instrumental activities of daily living

- Rest and sleep

- Education

- Work

- Play

- Leisure

- Social participation

Due to issues related to, but not limited to:

- Developmental deficiencies

- The aging process

- Learning disabilities

- Physical environment

- Sociocultural contact

- Physical injury or disease

- Cognitive impairments

- Psychological and social disabilities

2. Methods or approaches used to determine abilities and limitations related to performance of occupations, including but not limited to identification of physical, sensory, cognitive, emotional, or social deficiencies

3. Specific occupational therapy techniques used for treatment, which include but are not limited to:

- Training in activities of living

- Environmental modification

- Assessment of need for use of interventions such as:

  o The design, fabrication, and application of orthotics or orthotic devices

  o Selecting, applying, and training in the use of assistive technology and adaptive devices

- Sensory, motor, and cognitive activities

- Therapeutic exercises

- Manual techniques

- Physical agent modalities

- Occupational therapy services in mental health

(FL Legislature, 2023)

Florida Occupational Therapy Practice Laws and Rules do **not** state that a physician's prescription is required to provide OT services. However, there may be, and often are, facilities, company policies, insurances, HMOs, and/or billing requirements that may mandate a physician's prescription, including other regulatory entities such as the Agency for Health Care Administration, Medicare, Medicaid, etc. (FL BOT, 2023).

When **physical agent modalities** are utilized in the practice of occupational therapy, they are always integrated into a broader occupational therapy regimen, such as preparation of an area for other treatment techniques used to improve functional ability. They may also be used along with therapeutic activity or exercise. Modalities may include heat, cold, sound, electricity, mechanical forces, and light in order to obtain a specific therapeutic response. Therapists must be aware of the indications for their use as well as contraindications in order to prevent the occurrence of adverse events.

Superficial Thermal Modalities

HEAT

A primary reason for applying a heat agent is to increase the temperature of soft tissue to a specific therapeutic range so that a physiologic response will be achieved. Heat will increase skin, intramuscular, and joint temperature; increase capillary permeability and blood flow; increase metabolic rate and oxygenation; decrease joint stiffness; increase tissue extensibility; and facilitate muscle relaxation. Heat agents can also reduce pain and muscle spasm (Bracciano, 2022).

Various applications include whirlpools, fluidotherapy, hot packs, contrast baths, warm water soaks, and paraffin bath.

Indications for use of superficial thermal modalities include:

- Subacute or chronic inflammation
- Subacute or chronic pain
- Subacute edema removal
- Decreased range of motion
- Resolution of swelling
- Myofascial trigger points
- Muscle guarding
- Muscle spasm
- Subacute muscle strain
- Subacute ligament sprain

- Subacute contusion

Precautions for use of superficial thermal agents include monitoring blood pressure, respiration, and skin color. Use is to be discontinued if increased redness, petechiae, and blistering are observed.

Superficial heat is **contraindicated** for patients with:

- Impaired sensation

- Poor thermal regulation

- Tumors/cancer

- Acute inflammation, including acute edema

- Deep vein thrombosis

- Pregnancy (full immersion)

- Bleeding tendencies

- Infection

- Primary repair of tendon or ligament

- Advanced cardiac disease

- Semicomatose or impaired mental status

- Impaired speech/language difficulties

- Rheumatoid arthritis

- Acute musculoskeletal conditions

- Compromised circulation

- Peripheral vascular disease

- Skin anesthesia

- Open wounds or skin conditions

COLD

Cryotherapy or cold therapy is a common modality used in the treatment of acute injuries or trauma for decreasing spasticity and spasms or in reducing edema and pain (Bracciano, 2022). Cold agents can be **applied** in several ways, including:

- Cold packs
- Ice massage
- Cold/ice water immersion baths

- Cool whirlpool

- Ice towels

- Cold compression units

- Vapocoolant sprays

Cryotherapy is **contraindicated** in patients with:

- Any medical condition in which vasoconstriction will aggravate symptoms, such as:
    - Impaired circulation
    - Peripheral vascular disease
    - Hypersensitivity to cold
    - Impaired sensation
    - Open wounds
    - Skin conditions (e.g., psoriasis)
    - Infections
- Patients who have been diagnosed with:
    - Cold urticaria
    - Cryoglobulinemia
    - Raynaud's disease
  (Bracciano, 2022)

Cryotherapy **precautions** are described below:

- Physiological effects can last several hours, and rewarming of the extremity tissues takes 20 minutes.

- Monitor the patient's skin closely to ensure that there are no adverse reactions.

- Numbness indicates analgesia; the patient's protective sensation is removed, and the patient should be cautioned.

- Side effects include itching, hives, sweating, and wheal areas with reddened borders and blanched centers.

- Never apply gel packs or ice packs directly to the skin surface and never for longer than 20 minutes.
  (Bracciano, 2022)

Therapeutic Ultrasound and Phonophoresis

Therapeutic ultrasound has two primary purposes and effects in rehabilitation: to heat deeper tissues and to heal tissues through its mechanical, nonthermal effects (Bracciano, 2022). **Indications** for ultrasound include:

- Increase tissue length
- Decrease pain
- Tissue healing
- Decrease inflammation

Phonophoresis is the noninvasive use of therapeutic ultrasound to facilitate the delivery of topically applied drugs, most frequently corticosteroids, hydrocortisone acetate, and dexamethasone sodium, as well as other medications, such as erythromycin and lidocaine. Phonophoresis is indicated to increase tissue repair and to manage pain (Bracciano, 2022).

Precautions for therapeutic ultrasound include:

- Over metal implants
- Over epiphyseal growth plates or immature bones
- Areas with sensory loss or decreased sensation
- Over plastic or cemented implants
- Subcutaneous or bony prominences
- In the vicinity of a cardiac pacemaker or other implanted device
- In patients with decreased mentation, cognition, or ability to communicate
- Avoid stationary transducer

Contraindications for therapeutic ultrasound include:

- In patients with vascular disease, deep vein thrombosis, emboli, or atherosclerosis
- In patients with hemophilia not covered by factor replacement
- Over the eye, sex organs, or uterus during pregnancy
- Over stellate ganglions
- Over the spinal cord following laminectomy
- Directly over external metal implants
- Over pacemakers, the heart, or implanted electronic devices
- In areas of cancer malignancy

- Over rash, eczema, areas of skin irritation

- Over carotid sinus

- Over anesthetic areas

- Over areas that have been irradiated
  (Bracciano, 2022)

Electrotherapy

Commonly used electrotherapy modalities in occupational therapy include:

- Transcutaneous electrical nerve stimulation (TENS), for pain control

- High-voltage pulsed current (HVPC), for wound healing and edema control

- Electrical muscle stimulation (EMS), for denervated muscle stimulation

- Functional electrical stimulation (FES), to treat symptoms following damage to the central nervous system

- Iontophoresis, for transcutaneous drug delivery
  (Bracciano, 2022)

NEUROMUSCULAR ELECTRICAL STIMULATION (NMES)

Clinically, NMES is used to selectively evoke muscle contraction through stimulation of the intact or partially intact peripheral nervous system. NMES is indicated for muscle strengthening, neuromuscular reeducation, preventing disuse atrophy, muscle spasm, or edema.

NMES **precautions** include:

- Over areas with pathology

- In patients with hypertension or hypotension

- In patients with obesity with excessive adipose tissue

- In patients unable to provide clear feedback (e.g., patients with dementia or cognitive disorders)

- Over areas with pathology of the myelin sheath (e.g., diabetic neuropathy, multiple sclerosis)

- Over areas with pathology of the synapse points between muscle and nerve (e.g., myasthenia gravis)

- In areas of absent or diminished sensation

- In patients with autonomic dysreflexia

Contraindications include:

- Over the thoracic region, as it may interfere with heart activity

- In patients with demand-type pacemakers, defibrillators, deep brain stimulators, or implanted electrical devices

- Over phrenic nerve or bladder stimulators

- Over the anterior neck or carotid sinus

- Transcerebrally or in patients with epilepsy

- In patients with peripheral vascular disease, venous thrombosis, or thrombophlebitis

- Over the eye, sex organs, or pregnant uterus during the first trimester

- Over or near superficial metal pins, plates, or hardware

- In patients with active cancer, malignancy, infection, tuberculosis, or hemorrhage

- Over areas with pathology (e.g., Duchenne's muscular dystrophy)

- Over areas where movement is contraindicated or to be avoided

- Near diathermy devices
  (Bracciano, 2022)

IONTOPHORESIS

Iontophoresis is a method of topically delivering medications or ionized drugs into a localized area of tissues using the force of a low-intensity, direct electrical current to create a therapeutic effect. Iontophoresis is a safe and effective way to administer medication because it is essentially painless, nontraumatic, sterile, and relatively noninvasive. **Indications** for iontophoresis include inflammatory conditions, joint pain, modifying scar tissue, and as local anesthesia.

Occupational therapists should always discuss with the pharmacist the medications being prescribed, any related questions, and the treatment protocol. **Caution** is advised for patients who are or may be pregnant and for patients with diabetes who are insulin dependent due to fluctuations in their blood sugar levels after treatment with corticosteroids. Iontophoresis is contraindicated over skin that is irritated (Bracciano, 2022).

LASER THERAPY

Low-level laser therapy (LLLT) and phototherapy are noninvasive interventions that can be used adjunctively in rehabilitation to facilitate wound and soft tissue healing, decrease inflammation, and decrease both acute and chronic pain.

Damage can occur if the beam is directed toward the eyes or when viewing the beam or its reflection. Thus, the patient and clinician should both wear goggles or eye protection as a precaution.

Contraindications include:

- Direct application to the eyes

- To the vagus nerve or over the carotid sinus

- In patients with decreased sensation, infected tissue, or an active hemorrhage

- Over the gonads, sexual organs, and epiphyseal plates of children

- Over tumors or cancerous lesions

- Over the endocrine glands
  (Bracciano, 2022)

DIATHERMY

Microwave diathermies (MWD) utilize electromagnetic radiation emitted from a transducer. Diathermy allows for deep heating in the subcutaneous tissues, deep muscles, and joints for a variety of physiological effects. Clinical application may be **indicated** for selectively heating joint structures to decrease stiffness, increase tissue extensibility, improve blood flow to an area, and decrease pain (Bracciano, 2022).

Because the equipment produces diffuse radiation, the therapist should not stand close to the machine. Metal should be avoided when using diathermy, and the patient should remove all jewelry and watches and should not be positioned on metal furniture during application.

Diathermy may be **contraindicated** in any clinical condition where increased tissue temperature may produce negative effects, which may include:

- Ischemic areas

- Over areas of decreased sensitivity

- In pregnant individuals

- Patients with metal implants, pacemakers, implanted or transcutaneous neural

  stimulators, and other surgical implants

- Over the eyes and testes

- Over the epiphyseal plates of children

- Over areas of malignancy
  (Bracciano, 2022)

FLORIDA STATUTORY REQUIREMENTS

The 2023 Florida Statutes require every licensed facility to establish an internal risk management program and develop and implement an incident reporting system. It is the duty of all healthcare providers and all agents and employees to report adverse incidents to the risk manager or their designee within 3 business days after their occurrence.

Internal Risk Management Program Requirement

The Florida Statutes require every facility licensed under F.S. 395-1097 to establish an internal risk management program that must include the following:

- The investigation and analysis of the frequency and causes of adverse incidents

- The development of appropriate measures to minimize risk, including:

  o Education and training of all nonphysician personnel as part of initial orientation and at least one hour of such education and training annually for all personnel working in clinical areas and providing patient care, except for licensed healthcare practitioners who are required to complete continuing education coursework pursuant to chapter 456 or their respective practice act

- The analysis of patient grievances related to patient care

- A system for informing a patient or designee pursuant to state law that the patient was the subject of an adverse event

- Prohibition against a single staff person attending patients in recovery rooms unless there is live observation, electronic observation, or any other reasonable measure to ensure patient protection and privacy

- Prohibition against any unlicensed person from assisting or participating in any surgical procedure unless authorized to do so

- An incident reporting system to report adverse incidents to the risk manager or designee within three business days after their occurrence

Adverse Incident Reporting Requirements

F.S. 395-0197 mandates internal reporting within three business days of any adverse incident (event) over which healthcare personnel could exercise control and that is associated in whole or in part with medical intervention rather than the condition for which such intervention occurred. These include:

1. Adverse events resulting in one of the following injuries:

   - Death

   - Brain or spinal damage

- Permanent disfigurement

- Fracture or dislocation of bones or joints

- Limitation of neurologic, physical, or sensory function which continues after discharge from the facility

- 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

- 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

2. 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

3. 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 the informed-consent process

4. A procedure required to remove unplanned foreign objects remaining from a surgical procedure

Licensed facilities in Florida are required to submit two types of reports to the Agency for Health Care Administration (AHCA):

- An **adverse incident report** must be submitted to the AHCA by mail or by using the online Adverse Incident Reporting System (AIRS) within 15 calendar days after the adverse incedence's occurrence, whether occurring in the licensed facility or arising from healthcare prior to admission to the licensed facility.

- An **annual report** summarizing the incident reports that have been filed in the facility for that year, including:

  o The total number of adverse incidents

  o Types of adverse events listed by category, and number of incidents occurring within each category

  o Code numbers of each professional and individual directly involved and number of incidents each has been directly involved in

  o Description of all malpractice claims filed against the facility, including number of pending and closed claims and the status and disposition of each claim

(Florida Legislature, 2024)

CASE
David, an occupational therapist employed by a Florida skilled nursing facility, has been trained in the use of a Hoyer lift. Due to short staffing at the facility, he was asked to train two certified nursing assistants (CNAs) to use the lift to transfer a patient from her wheelchair back to her bed.
David reported the incident to his rehab director, who stated that it was lucky that nobody had been hurt but warned David to be more vigilant next time. The incident was reported internally to the nursing director and facility administration, but no further action was taken at that time.
Two days later, the patient began complaining of worsening hip pain. Finally, the pain grew so bad that she was taken to the local hospital for an X-ray, which revealed a femur fracture. The facility determined that the injury had resulted from the fall out of the Hoyer lift sling; however, no external report was made to the Florida Agency for Health Care Administration (AHCA). The site administrator and risk manager knew that they were legally obligated to make an adverse incident report within 15 calendar days of the adverse event but decided to keep the incident quiet, as they had already had several adverse incident reports in the past few months.
However, three weeks after the incident, David felt overcome with guilt at what had happened. He used the AHCA's online Adverse Incident Reporting System (AIRS) to file a report about the incident. When an investigator was sent to follow up on the incident, the facility was cited for failing to report the incident within the legally required timeframe.

CONCLUSION

Everyone has a stake in the safety of the healthcare system—healthcare workers as well as the general public. In the past, patient safety was not a traditional part of the education of most healthcare workers, but today this is no longer true. All healthcare workers are being actively educated about their roles in the prevention of avoidable negative outcomes for all patients. It is essential that all clinicians understand the journey every patient makes through the system, recognize how the system can fail, and take action to prevent those failures.

To counter errors and safeguard patients, changes must continue to be made in how the workforce is deployed; in how work processes are designed; and in the leadership, management, and culture of healthcare organizations. Because communication issues are so commonly involved in medical errors, it is crucial that physicians, nurses, therapists, and other healthcare personnel work together as a team, respecting each other's contributions to the well-being of the patients in their care. Collaborative teamwork is essential for optimizing quality and safety in healthcare.

RESOURCES

Florida Agency for Health Care Administration, Division of Health Quality Assurance
https://ahca.myflorida.com/health-care-policy-and-oversight#1

Hospital Safety Grade
https://www.hospitalsafetygrade.org

Institute for Healthcare Improvement
https://www.ihi.org

National Quality Forum
https://www.qualityforum.org

Patient Safety Network
https://psnet.ahrq.gov

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TEST

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1. Which statement **best** defines a "medical error"?
    a. An event that is not entirely preventable
    b. A provider failure to make a correct diagnosis
    c. An occurrence that is always preventable
    d. An unintended healthcare outcome

2. Which term is used by the Joint Commission to refer to a patient safety event that results in death, permanent harm, or severe temporary harm and intervention required to sustain life?
    a. Sentinel event
    b. Medical error
    c. Near miss
    d. Adverse event

3. Which cause is the most common **reason** for medical errors?
    a. Impulsive behavior by a clinician
    b. Dangerous actions by a particular practitioner
    c. Inaction undertaken purposefully by an individual
    d. Communication issues

4. Which outcome is the ultimate goal of a root cause analysis?
    a. Determine who was at fault
    b. Prevent future harm by eliminating latent errors
    c. Reeducate the person who made the error
    d. Determine the impact of the error on the patient

5. During which stage do more medication errors occur?
    a. Ordering
    b. Transcribing
    c. Dispensing
    d. Administering

6. Which statement does the occupational therapist make when communicating their "assessment" using the SBAR technique?
    a. "The client has a contusion to the head with increased confusion."
    b. "The patient sustained a fall at home three days ago."
    c. "The findings suggest a possible traumatic brain injury or concussion."
    d. "Would you like to see the patient in your office for a follow-up?"

7. Over which area is neuromuscular electrical stimulation contraindicated?
    a. Joint effusions
    b. Wounds
    c. Carotid sinuses
    d. Edema

8. Within which time period after an adverse incident do Florida statutes require a report to be submitted to the Agency for Health Care Administration?
    a. 48 hours
    b. 3 days
    c. 7 business days
    d. 15 calendar days