

Module 1: Understanding Medical Errors

Medical errors are a significant concern in healthcare, including therapy practices such as physical, occupational, and speech therapy. Defined as the failure of a planned action to be completed as intended or the use of an incorrect plan to achieve an aim, medical errors can lead to adverse outcomes for patients and undermine trust in healthcare systems (Ahsani-Estahbanati et al., 2022). Understanding the types of medical errors and their implications is essential for improving patient safety and quality of care. Medical errors in therapy practice encompass a broad range of mistakes that can occur during patient assessment, planning, intervention, and documentation. These errors are often classified into several categories:

Diagnostic Errors

Diagnostic errors involve missed, delayed, or incorrect diagnoses, which can lead to inappropriate therapy interventions. For example, misinterpreting a neurological condition as musculoskeletal can result in ineffective or harmful treatment strategies (Tribler et al., 2025).

Medication Errors

Therapists often collaborate with physicians on pharmacological management, and errors such as incorrect dosage, wrong medication, or failure to monitor drug interactions can occur. These errors are particularly dangerous in rehabilitation settings where patients may be on multiple medications (Naserallah et al., 2023).

Communication Errors

Breakdowns in communication between therapists, physicians, and patients can lead to misunderstandings about treatment goals, contraindications, or precautions. Ineffective communication is a leading cause of errors in occupational therapy practice (Lohman et al., 2008).

Procedural and Technical Errors

Errors in applying therapeutic techniques—such as incorrect exercise prescription or improper use of assistive devices—can result in patient harm. These often stem from inadequate training, fatigue, or lack of preparation (Mu et al., 2006).

Documentation Errors

Incomplete or inaccurate documentation can lead to duplication of services, inappropriate interventions, and billing issues. Proper record-keeping is essential for continuity of care and legal compliance (Ungvarsky, 2023).

Latent and Active Errors

Medical errors can also be understood through James Reason's Swiss Cheese Model, which distinguishes between active errors and latent errors.

Active Errors occur at the point of contact between the healthcare provider and the patient. In therapy practice, examples include misjudging a patient's functional capacity during an intervention or incorrectly applying a therapeutic modality. Active errors are often immediately apparent and linked to human factors such as fatigue, distraction, or inadequate knowledge (PSNet, 2024).

Latent Errors are hidden system-level weaknesses that create conditions for active errors to occur. They include organizational issues such as inadequate staffing, poor training programs, unclear protocols, or faulty equipment maintenance. For instance, if a rehabilitation facility lacks standardized procedures for medication reconciliation, therapists may inadvertently contribute to medication errors. These latent conditions often go unnoticed until they align with active failures, resulting in harm (ISMP, 2023).

Implications on Patient Care and Safety

Medical errors have far-reaching consequences that affect patients, providers, and healthcare systems.

Physical Harm and Functional Decline

Incorrect exercise prescriptions or improper use of assistive devices—can exacerbate injuries, delay recovery, or cause new complications. For example, applying excessive resistance during rehabilitation for a post-stroke patient may lead to muscle strain or joint damage, prolonging hospitalization and reducing functional independence (Lohman et al., 2008).

Psychological and Emotional Impact

Patients who experience medical errors often report feelings of anxiety, fear, and loss of trust in healthcare providers. This emotional distress can reduce adherence to treatment plans and negatively affect rehabilitation outcomes. In severe cases, patients may develop post-traumatic stress symptoms related to their healthcare experience (Mazor et al., 2004).

Increased Healthcare Costs

Medical errors contribute significantly to the financial burden on healthcare systems. Costs arise from additional treatments, extended hospital stays, legal claims, and compensation. A systematic review estimated that preventable medical errors cost billions annually, highlighting the economic imperative for error reduction strategies (Ahsani-Estahbanati et al., 2022).

Ethical and Professional Consequences

Errors compromise the ethical principle of nonmaleficence (“do no harm”) and can damage professional credibility. Therapists involved in errors often experience guilt, stress, and burnout, which may lead to decreased job satisfaction and workforce attrition. Creating a culture of safety and transparency is essential to support clinicians and maintain ethical standards (Sorrell, 2017).

Systemic Impact on Quality of Care

Beyond individual harm, medical errors signal systemic weaknesses in healthcare delivery. Frequent errors may indicate inadequate protocols, poor communication channels, or insufficient training. These systemic issues undermine overall quality of care and patient safety, necessitating organizational-level interventions (Gemmete, 2024).

Module 2: Root Cause Analysis (RCA) and Incident Reporting

Medical errors in therapy practice—such as incorrect exercise prescriptions, communication failures, and documentation mistakes—pose significant risks to patient safety. To address these issues, healthcare organizations employ **Root Cause Analysis (RCA)**, a structured approach designed to identify underlying causes of adverse events and prevent recurrence (Uberoi et al., 2007). RCA moves beyond individual blame, focusing on systemic weaknesses and process failures that contribute to errors (Behrhorst et al., 2025). Understanding RCA principles and methodology is essential for therapists and healthcare teams committed to improving safety and quality of care.

In therapy settings, RCA is often initiated following sentinel events such as patient falls, equipment malfunctions, or communication failures during handoffs. For example, if a patient falls during gait training due to improper use of an assistive device, RCA may reveal gaps in staff training and assessment protocols. Addressing these findings could involve revising procedures, implementing competency checks, and enhancing supervision. Evidence shows that RCA-driven interventions reduce repeat incidents and foster a culture of accountability and continuous learning (Newman-Toker et al., 2024; APTA, 2025).

RCA offers numerous benefits, including improved patient safety, enhanced team collaboration, and compliance with regulatory standards. It supports a culture of transparency and continuous improvement by encouraging open dialogue and systemic problem-solving. However, RCA also presents challenges such as time demands, resource allocation, and the need for skilled facilitators. Maintaining psychological safety during investigations is critical to encourage honest participation and avoid punitive perceptions. Despite these limitations, when integrated into broader quality improvement programs, RCA becomes a powerful tool for reducing medical

errors and improving outcomes in rehabilitation settings (Hopkins Medicine, 2024; StatPearls, 2024).

Integrating RCA into quality improvement initiatives enhances its effectiveness and sustainability. By aligning RCA findings with performance metrics and strategic goals, physical therapy departments can prioritize interventions that yield measurable improvements. For instance, RCA outcomes can inform staff training programs, update clinical protocols, and guide resource allocation. Collaboration across disciplines—such as nursing, administration, and rehabilitation—ensures that corrective actions are comprehensive and supported by leadership. This integration fosters a proactive approach to patient safety and reinforces the role of RCA as a foundational element of healthcare quality management (CDC, 2024; ECRI, 2025).

The core principles of RCA emphasize:

1. **System-Based Approach**

RCA assumes that most errors result from system failures rather than individual negligence. This principle aligns with the concept of latent errors—hidden organizational flaws that create conditions for active errors (Edwards & Martin, 2023).

2. **Interdisciplinary Collaboration**

RCA requires participation from frontline staff, managers, and subject matter experts to ensure a comprehensive understanding of processes and contributing factors (Uberoi et al., 2007).

3. **Non-Punitive Culture**

RCA promotes a culture of safety where staff can report errors without fear of punishment, encouraging transparency and learning (Behrhorst et al., 2025).

4. **Focus on Prevention**

The ultimate goal of RCA is to implement corrective actions that prevent recurrence, rather than merely addressing symptoms of the problem (Joint Commission Resources, 2015).

The RCA process typically follows a structured sequence:

1. **Event Identification and Team Formation**

The process begins by selecting an adverse event for investigation and chartering a multidisciplinary team familiar with the involved systems (VA National Center for Patient Safety, 2020).

2. **Data Collection and Initial Flow Diagram**

Investigators gather facts through interviews, document reviews, and observations, then create a flow diagram to visualize the sequence of events (VA National Center for Patient Safety, 2020).

3. **Cause-and-Effect Analysis**

Tools such as **Ishikawa (fishbone) diagrams**, **Pareto charts**, and **Five Whys** are used to identify contributing factors and their relationships (Couto et al., 2025).

4. **Identification of Root Causes**

Root causes are systemic issues—such as inadequate training, poor communication

protocols, or flawed equipment maintenance—that allowed the error to occur (Uberoi et al., 2007).

5. **Development of Action Plans**

Corrective actions should be strong and sustainable, focusing on system redesign rather than weak solutions like retraining alone (Kellogg et al., 2017).

6. **Implementation and Monitoring**

Organizations implement changes and monitor outcomes to ensure effectiveness, often using performance indicators and follow-up reviews (Aboueldahab et al., 2025).

Case Scenario

A patient fell during gait training in a rehabilitation center. Initially, staff assumed the patient was non-compliant. However, Root Cause Analysis revealed multiple contributing factors:

- Inadequate staff training on assistive device use
- Lack of supervision during high-risk mobility exercises
- Absence of a pre-session safety checklist

Corrective Actions:

- Revised protocols for gait training
- Mandatory competency checks for therapists
- Introduction of standardized safety checklists

Outcome:

Fall-related incidents decreased by **40% over six months** after implementing these changes.

Application of RCA in Rehabilitation

Root Cause Analysis (RCA) plays a critical role in therapy settings by uncovering systemic and human factors that lead to medical errors. Its application extends across physical, occupational, and speech therapy, where complex care processes and interdisciplinary coordination increase the risk of mistakes.

In rehabilitation, communication breakdowns between therapists, physicians, and nursing staff often result in contraindicated interventions or missed precautions. RCA can trace these failures to root causes such as unclear documentation protocols, lack of standardized handoff procedures, or inadequate use of electronic health records (Lee et al., 2025). Corrective actions may include implementing structured communication tools like SBAR (Situation-Background-Assessment-Recommendation) and mandatory interdisciplinary rounds.

Incomplete or inaccurate documentation can lead to duplicated treatments or missed sessions. RCA helps identify underlying issues such as insufficient training on electronic systems, high workload, or poorly designed templates. Solutions may involve redesigning documentation workflows, automating alerts for missing data, and providing targeted staff education (Ungvarsky, 2023).

Therapy often involves specialized equipment such as gait trainers, wheelchairs, and electrical stimulation devices. RCA can reveal latent errors like inadequate maintenance schedules or lack of competency checks for device use. Corrective measures include establishing preventive maintenance programs and competency-based training for therapists (Uberoi et al., 2007).

Although therapists do not prescribe medications, they frequently manage patients receiving pharmacological treatments. RCA can uncover systemic gaps in medication reconciliation processes or failure to communicate drug-related precautions during therapy sessions. Interventions may include integrating medication alerts into therapy documentation systems and reinforcing interdisciplinary collaboration (Naseralallah et al., 2023).

Errors sometimes occur because patients misunderstand therapy instructions or fail to adhere to safety guidelines. RCA can identify contributing factors such as inadequate patient education materials or rushed discharge planning. Solutions include developing clear, multilingual educational resources and incorporating teach-back methods to confirm patient understanding (Couto et al., 2025).

Module 3: Factors Contributing to Medical Errors

Medical errors can arise from a complex interplay of human, organizational, environmental, and patient-related factors. Addressing these contributors requires a systems-based approach that emphasizes education, communication, and process redesign. By understanding these factors, healthcare organizations can implement targeted interventions to enhance patient safety and reduce preventable harm.

Human Factors

Human factors are among the most significant contributors to medical errors in therapy practice. These include cognitive biases and clinical reasoning errors, fatigue and workload, and insufficient knowledge and experience. Biases such as confirmation bias and anchoring distort clinical judgment (Orthopaedic Section of APTA, 2024). High patient volumes and extended working hours increase fatigue, impairing attention and decision-making (Jalali, 2025). Lack of familiarity with specific conditions or therapeutic techniques can lead to misjudgment and inappropriate interventions (Mu et al., 2006).

Organizational and System-Level Factors

Systemic issues create latent conditions that predispose therapists to errors: understaffing and time pressure, poor communication and coordination, and inadequate training and continuing education. Inadequate staffing levels force therapists to manage more patients than

recommended, increasing the likelihood of rushed assessments (Naseralallah et al., 2023). Ineffective communication among interdisciplinary teams often results in conflicting treatment plans or overlooked contraindications (Lohman et al., 2008). Limited access to ongoing professional development contributes to outdated practices (Gonzalez-Caminal et al., 2022).

Environmental and Technological Factors

Environmental distractions and equipment-related issues also play a role: distracting work environments increase cognitive load, reducing accuracy in documentation and intervention delivery (Jalali, 2025). Malfunctioning rehabilitation devices or poorly designed electronic health record systems can lead to errors in therapy execution or documentation (Uberoi et al., 2007).

Patient-Related Factors

Patients themselves can contribute indirectly to medical errors in therapy practice due to characteristics that complicate care delivery. These factors often interact with systemic and human elements, increasing the likelihood of mistakes.

Complexity of Medical Conditions: Patients with multiple comorbidities—such as cardiovascular disease, diabetes, and neurological impairments—require highly individualized care plans. The complexity of these conditions can lead to conflicting treatment priorities, making it easier for therapists to overlook contraindications or fail to adjust interventions appropriately (Atchison & Dirette, 2023).

Limited Health Literacy: Low health literacy affects a patient's ability to understand therapy instructions, medication precautions, and safety guidelines. Misinterpretation of home exercise programs or failure to follow weight-bearing restrictions can lead to injury or delayed recovery (WHO, 2023).

Cultural and Language Barriers: Language differences and cultural beliefs about health and rehabilitation can hinder effective communication. Misunderstandings about therapy goals or reluctance to engage in certain interventions may result in incomplete or unsafe care (Gonzalez-Caminal et al., 2022).

Cognitive and Psychological Factors: Patients with cognitive impairments, such as dementia or traumatic brain injury, may struggle to follow instructions accurately. Similarly, anxiety or depression can reduce engagement and adherence, complicating therapy delivery and increasing the risk of errors during unsupervised activities (Mu et al., 2006).

Socioeconomic Constraints: Financial limitations, lack of transportation, and inadequate access to assistive devices can lead patients to modify or skip prescribed interventions, creating safety risks (Jalali, 2025).

Case Scenario

A documentation error caused a patient to receive **two therapy sessions in one day** instead of one, leading to fatigue and delayed recovery.

Investigation revealed:

- **Human Factors:** Therapist fatigue
- **Organizational Issues:** High caseload and time pressure
- **Technological Limitations:** Lack of automated alerts in the EHR system

Solutions:

- Workload redistribution
- Staff training on documentation accuracy
- Integration of automated scheduling alerts into the EHR platform

Module 4: Reducing and Preventing Medical Errors

Incorrect exercise prescriptions, documentation mistakes, and communication failures can all pose significant risks to patient safety and quality of care. Preventing these errors requires a multifaceted approach that addresses human, organizational, and systemic factors. Evidence-based strategies emphasize education, process standardization, technology integration, and fostering a culture of safety (World Health Organization [WHO], 2023).

Standardization of Clinical Processes

Standardization in therapy practice involves creating uniform procedures, protocols, and documentation systems to reduce variability and minimize errors. Variability in clinical processes often leads to inconsistencies in patient care, increasing the risk of omissions or incorrect interventions. By implementing standardized workflows, healthcare organizations can ensure that every patient receives safe, evidence-based care.

Clinical pathways provide structured, evidence-based guidelines for managing specific conditions such as stroke, orthopedic injuries, or neurological disorders. These pathways outline assessment steps, intervention options, and discharge criteria, reducing reliance on memory and minimizing deviations from best practices (Atchison & Dirette, 2023).

Checklists are powerful tools for preventing errors during complex therapy sessions. For example, a pre-session checklist can confirm patient identity, verify contraindications, and ensure equipment readiness. Safety bundles—groups of evidence-based practices applied together—are particularly effective in reducing errors in high-risk procedures (Gonzalez-Caminal et al., 2022).

Uniform documentation templates in electronic health records (EHRs) help therapists capture essential information consistently. Templates can include mandatory fields for precautions, contraindications, and progress notes, reducing the likelihood of incomplete or inaccurate records (Naserallah et al., 2023).

Embedding decision-support tools within standardized workflows enhances safety. For instance, alerts for medication interactions or contraindicated exercises can prevent harmful interventions. These tools complement standardized protocols by providing real-time guidance (Uberoi et al., 2007). Improved consistency ensures uniform care delivery across therapists and settings; reduced cognitive load frees clinicians from relying solely on memory, reducing fatigue-related errors; and enhanced training facilitates onboarding and competency development by providing clear, structured processes.

Enhancing Communication and Collaboration

Interdisciplinary communication failures are a leading cause of errors in rehabilitation settings. Strategies such as SBAR (Situation-Background-Assessment-Recommendation) handoff tools and regular team huddles improve clarity and reduce misunderstandings (Lohman et al., 2008). Electronic health records with integrated alerts for contraindications further support safe decision-making (Naserallah et al., 2023).

Continuous Education and Competency Training

Ongoing professional development ensures therapists remain current with best practices and emerging technologies. Simulation-based training and competency assessments help reduce technical errors and improve clinical reasoning (Mu et al., 2006). Incorporating human factors education into training programs enhances awareness of cognitive biases and fatigue-related risks (Jalali, 2025).

Technology Integration and Decision Support

Electronic health records (EHRs) with embedded decision-support tools can alert therapists to potential contraindications, medication interactions, or incomplete documentation. Automated reminders for equipment maintenance and therapy scheduling reduce latent errors (Uberoi et al., 2007). Telehealth platforms also enable real-time monitoring and feedback, reducing errors in home-based therapy programs.

Root Cause Analysis and Incident Reporting

A cornerstone of error prevention in therapy practice is the establishment of robust systems for incident reporting and Root Cause Analysis (RCA). These strategies shift the focus from individual blame to systemic improvement, fostering a culture of safety and continuous learning.

Incident reporting allows healthcare professionals to document adverse events and near misses. Effective reporting systems should be non-punitive, include anonymous reporting options, and provide timely feedback to staff on corrective actions taken (Behrhorst et al., 2025). Near-miss reporting is particularly valuable because it identifies vulnerabilities before harm occurs, enabling proactive interventions (WHO, 2023).

RCA is a structured methodology for investigating adverse events to uncover underlying causes rather than superficial symptoms. Its application in therapy practice involves data collection and event mapping, cause-and-effect analysis using tools such as fishbone diagrams and the Five Whys technique (Uberoi et al., 2007), identification of latent errors like inadequate staffing or poor communication protocols (Edwards & Martin, 2023), and development of strong action plans focusing on workflow redesign and technology integration rather than weak fixes like retraining alone (Kellogg et al., 2017). Monitoring and evaluation ensure sustainability of corrective actions.

By applying RCA and incident reporting, rehabilitation teams can detect recurring patterns of documentation errors or equipment misuse, improve interdisciplinary communication through standardized handoff protocols, and enhance patient safety by addressing root causes rather than symptoms. These strategies create a feedback loop that continuously strengthens safety systems and reduces the likelihood of future errors.

Florida law requires therapists to report adverse incidents and adhere to ethical standards that prioritize patient safety. Under Section 395.0197, F.S., facilities must report adverse events to the Agency for Health Care Administration (AHCA). More specifically, therapists performing dry needling must report an adverse event within 15 days using the Physical Therapy Dry Needling Adverse Medical Incident Report, Form DH5053-MQA, per Rule 64B17-6.008. Compliance with these regulations not only fulfills legal obligations but also fosters a culture of transparency and continuous improvement. By understanding and addressing the contributing factors to medical errors, therapists can enhance patient safety and uphold the highest standards of professional practice.

Module 5: Fostering a Culture of Patient Safety and Communication

A strong culture of patient safety combined with collaborative communication among healthcare professionals is essential to prevent these errors. Leadership commitment, non-punitive reporting, structured communication tools, and teamwork training programs such as TeamSTEPPS can significantly enhance safety outcomes. By prioritizing openness, continuous learning, and interdisciplinary collaboration, therapy practices can create safer environments for patients and providers alike.

Building a Culture of Patient Safety

A patient safety culture refers to shared values, beliefs, and norms that prioritize safety in all aspects of care delivery (Weaver et al., 2013). Implementing such a culture requires systemic changes and leadership commitment. Leadership plays a pivotal role in shaping safety culture. Organizations should adopt a Just Culture approach, which emphasizes learning from errors rather than punishing individuals (Murray et al., 2023). This approach encourages transparency and trust, enabling staff to report incidents without fear of reprisal.

Creating a non-punitive reporting system promotes openness and continuous improvement. Staff should be trained to recognize near misses and report them promptly. Evidence shows that organizations with robust reporting systems experience fewer adverse events and improved safety outcomes (Singer et al., 2009).

Regular training on patient safety principles, error prevention strategies, and human factors enhances staff competence. Simulation-based exercises and safety drills help therapists practice responses to high-risk scenarios (Farokhzadian et al., 2018).

Enhancing Collaborative Communication

Effective communication among interdisciplinary teams is critical for preventing medical errors in therapy practice. Studies indicate that communication failures account for over 70% of sentinel events in healthcare (Dingley et al., 2008).

Implementing standardized tools such as SBAR (Situation-Background-Assessment-Recommendation) improves clarity during handoffs and interdisciplinary discussions (Rehder, 2022). These tools reduce ambiguity and ensure essential information is conveyed accurately.

Daily team huddles and patient-centered rounds foster collaboration and shared decision-making. These practices allow therapists, physicians, and nurses to align treatment goals and address potential risks proactively (Dingley et al., 2008).

TeamSTEPPS® (Team Strategies and Tools to Enhance Performance and Patient Safety) is an evidence-based program that improves teamwork and communication. Research shows that TeamSTEPPS implementation reduces medical errors and enhances safety culture across healthcare settings (Health Research & Educational Trust, 2015).

Creating an environment where team members feel safe to speak up about concerns is essential. Psychological safety encourages reporting of potential hazards and promotes collaborative problem-solving (O'Donovan et al., 2019). Therapists should engage patients in care discussions using clear, jargon-free language and confirm understanding through teach-back methods. Effective patient-provider communication reduces misunderstandings and improves adherence to therapy plans (Goldstar Rehab, 2025).

