PATIENT SAFETY AND ERROR PREVENTION: THE INDISPENSABLE ROLE OF MULTIDISCIPLINARY TEAMS

Norah Mohammed Alqahtani[1], Ahmed Jawad Almarhoon[2], Abdulaziz Rashed Al Warthan[3], Laila Ali Almouibid[4], Nassren Masoud Alyami[5], Samar Naif Almutairi[6], Fatimah Mohammed Asiri[7], Wilayah Ali Alawadh[8], Ahad Abdullah Alanzi [9], Marwa Habeeb Almubarak[10], Rawan Anwar Al-Sultan[11], Abdullah Ahmed Alghamdi[12]

[1]Pharmacy Technician, Health Services of the Ministry of Defense, King Abdulaziz Airbase Hospital, Dhahran, Saudi Arabia

[2]Occupational Therapist, Dammam Medical Complex, Eastern Health Cluster, Dammam, Saudi Arabia

[3]Dental Resident, Primary Health Centers, Eastern Health Cluster, Dammam, Saudi Arabia

[4]Specialist Nurse, Ministry of Health, Eastern Health Cluster, Dammam, Saudi Arabia

[5]ICU Staff Nurse, Ministry of Health, Al-Ahsa Cluster, Maternity and Child Hospital, Al-Ahsa, Saudi Arabia

[6]Staff Nurse, Health Services of the Ministry of Defense, King Abdulaziz Airbase Hospital, Dhahran, Saudi Arabia

[7]Nursing Specialist, Ministry of Health, King Fahad Specialist Hospital, Dammam, Saudi Arabia

[8]Nursing Specialist, Ministry of Health, King Fahad Specialist Hospital, Dammam, Saudi Arabia

[9]Nursing Specialist, Ministry of Health, King Fahad Specialist Hospital, Dammam, Saudi Arabia

[10]ICU Staff Nurse, Ministry of Health, Cluster 1, King Fahad Specialist Hospital, Dammam, Saudi Arabia

[11]Laboratory Specialist, Health Services of the Ministry of Defense, King Abdulaziz Airbase Hospital, Dhahran, Saudi Arabia

[12]Laboratory Specialist, Health Services of the Ministry of Defense, King Abdulaziz Airbase Hospital, Dhahran, Saudi Arabia

Abstract

Medical errors remain among the leading causes of ill health and death globally, and therefore, represent a major challenge for health-care systems. This paper elaborates on the main role of multidisciplinary teams (MDTs) as a core strategy to improve patient safety and prevent errors. It traces patient-safety history, describes the organization and role of well-functioning MDTs, and explains how they reduce risk through better communication, shared mental models, and collective decision-making. The article cites the scientific research as evidence of the positive impact of MDTs on patient safety, error reduction, and safety culture. It also discusses problems associated with the implementation of such teams, e.g., hierarchical structures, lack of resources, and logistical difficulties and proposes research-supported solutions. The discussion about the current models leads to the following steps with the inclusion of technology and continuous improvement methods. The final section argues that robust, adequately resourced MDTs are not merely another feature but a precondition for the emergence of resilient, high-reliability healthcare organizations that are committed to error prevention and providing excellent patient care.

Keywords: Patient Safety, Medical Error, Multidisciplinary Team, Interprofessional Collaboration, Healthcare Quality, Error Prevention, Communication, Human Factors.

1. Introduction:

The Imperative of Patient safety is a concept that includes measures aimed at not causing harm to patients during medical care. The emphasis is on the prevention of errors, the intervention in their consequences, and the establishment of systems that reduce the possibility of mistakes (WHO, 2021). Most of the time, errors come from the system failures—the root causes being flawed processes, team dynamics, communication issues, and poorly developed safety cultures (Reason, 2000). Traditional, siloed models of care, where doctors, nurses, pharmacists, and therapists work separately and have only a little structured interaction, make the problem of system failures even worse. The information that goes between them is lost, the assumptions they have are not verified, and important points from one profession that could have helped another are not shared.

The main turning point in the fight against this complicated problem has been the formation of Multidisciplinary Teams (MDTs). An MDT is a team of health care professionals of various disciplines (e.g., medicine, nursing, pharmacy, social work, physiotherapy) who, in a planned, interdependent manner, carry out the planning, decision-making, and giving of care for a single patient or a patient group (Epstein, 2014). This paper is in favor of the MDTs' concept as a key, evidence-based instrument that can raise patient safety and prevent errors by the use of one common expertise, encouraging open communication, and forming a system of controls.

2. Literature Review

The Anatomy of an Effective Multidisciplinary Team Not any group of professionals can be called an effective MDT. Real multidisciplinary cooperation implies certain structural and functional features that distinguish it from merely coexisting.

2.1 Core Composition and Roles

An effective MDT brings together the primary stakeholders who are directly involved in the patient's care journey. Most of the time the core members are:

Physicians/Surgeons: Provide medical diagnosis, make treatment plans, and give procedural expertise.

Nurses: Offer continuous bedside assessment, care coordination, patient advocacy, and monitoring.

Pharmacists: Ensure that the medication is appropriate, safe, and provide dosing; also, educate on drug interactions.

Allied Health Professionals: (e.g., physiotherapists, occupational therapists, dietitians, speech-language pathologists) assist in rehabilitation and provide supportive care.

Social Workers/Case Managers: Support with psychosocial needs, discharge planning, and resource coordination. The clinical team is determined by the medical area (e.g., oncology, cardiology, geriatrics). The acknowledgment of the patient and their family as the fundamental members of the team is widely recognized now as a best practice, which corresponds to the principles of patient-centered care (Coulter & Oldham, 2016).

2.2 Foundational Principles for Function

Effective MDTs embrace numerous fundamental principles:

Shared Goals:The members are all striving towards the same clearly defined, patient-centric goals.

Clear Roles and Responsibilities: Even though there are different areas of expertise, the roles in the care process are recognized and respected which helps in the prevention of both repetition and vacuums.

Mutual Trust and Respect: A culture that appreciates the input of every member regardless of the

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traditional hierarchy.Effective Communication: The team is built on the foundation of structured, regular, and open communication.

Shared Decision-Making: The professionals choose together the clinical interventions by involving the different views (Interprofessional Education Collaborative, 2016).

3.Methods

Mechanisms of Error Prevention: How MDTs Enhance Safety MDTs protect from errors via several, interrelated, mechanisms which address the root causes of healthcare failure that are often acknowledged.

3.1 Enhancing Communication and Information Transfer

Failure in communication is the main cause of sentinel events (The Joint Commission, 2022).

MDTs Structured Handoffs: Activities like SBAR (Situation-Background-Assessment-Recommendation) used in MDT meetings help to standardize communication by delivering a clear structure that makes the information transfer more exact and less open to misunderstanding (Haig et al., 2006).

Regular Huddles and Meetings: Planned forums (e.g., daily safety huddles, weekly tumor boards) provide an opportunity for all members to be updated with the same facts, thus errors resulting from assumptions or information silos are prevented.

Closed-Loop Communication: The MDT members' norm that facilitates understanding confirmation of tasks and orders is a simple yet powerful error-catching method.

3.2 Developing a Shared Mental Model

A shared mental model implies that the team has the same understanding of the situation, the work that needs to be done, and the members' roles. MDTs achieve this by interaction, which allows the group to collaborate and hence share the knowledge they each have.

4.1 Clinical Outcome Improvements

Table 1: Impact of MDTs on Clinical Outcomes by Specialty

Specialty	Study Example	Key Findings with MDT Implementation
Oncology	Basta et al. (2021)	Systematic review found MDT discussion associated with improved survival rates, increased adherence to clinical guidelines, and higher rates of curative surgery for various cancers.
Stroke Care	Cameron et al. (2018)	Implementation of a dedicated multidisciplinary stroke unit was linked to significant reductions in mortality, dependency, and need for institutional care compared to general medical wards.
Heart Failure	Van Spall et al. (2017)	Meta-analysis showed multidisciplinary heart failure management clinics reduced all-cause mortality and heart failure-related hospitalizations.
Geriatrics	Ellis et al. (2017)	Comprehensive Geriatric Assessment (CGA) conducted by an MDT in hospitalized older adults reduced the likelihood of mortality and institutionalization at discharge.

4.2 Error Reduction and Safety Metric Enhancement

After keeping people alive, multidisciplinary teams have a major role in enhancing...

Medication Errors: There is evidence in literature that clinical pharmacists, by their involvement in

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MDTs on the inpatient rounds, are a key factor in the significant decrease of medication errors (MEs). In one interventional study, the pharmacist integration was followed by a 78% reduction of preventable adverse drug events (ADEs) (Kucukarslan et al., 2003).

Hospital-Acquired Conditions: MDT-led initiatives such as daily safety huddles that concentrate on pressure ulcers, falls, and catheter-associated infections have proven, through various studies, to be effective in not only reducing the incidence of these harms but also in lowering their rates. One such program utilizing structured MDT huddles was able to cut hospital-acquired pressure ulcer incidence by more than half in a single health system (Baldwin et al., 2018).

Surgical Safety: The use of the WHO Surgical Safety Checklist—a device that aims at a multidisciplinary team (surgeon, anesthetist, nurse) to verify critical timeouts—is correlated with a notable decrease in surgical mortality and complications (up to a 40% reduction in mortality in some studies) (Haynes et al., 2009).

Figure 1: Hypothetical Model of Error Reduction Through MDT Implementation

(A conceptual figure would be inserted here showing two lines over time (e.g., 24 months). Line A (Traditional Care) shows a steady, higher rate of "Reported Safety Events per 1000 Patient Days." Line B (Post-MDT Implementation) shows a sharp decline following the intervention point, stabilizing at a significantly lower rate. The figure visually reinforces the data presented.)

Figure 1: A multidisciplinary team (MDT) meeting for complex extremity defects. Schematic drawing of the workflow of an MDT meeting for complex extremity defects

The Saudi Arabia Ministry of Health (MOH) is the main body that sets up the primary policies for healthcare delivery, while The Saudi Food and Drug Authority (SFDA) is the leading agency to make sure that the products are safe and effective, and of good quality through both pre- and post-market evaluation. The pharmacovigilance system organized by the SFDA is the one that deals with the identification, recording, and reporting of drug-related problems.

The national medication safety program is designed to be in line with international medication

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standards so as to have fewer MEs and to create better patient outcomes.

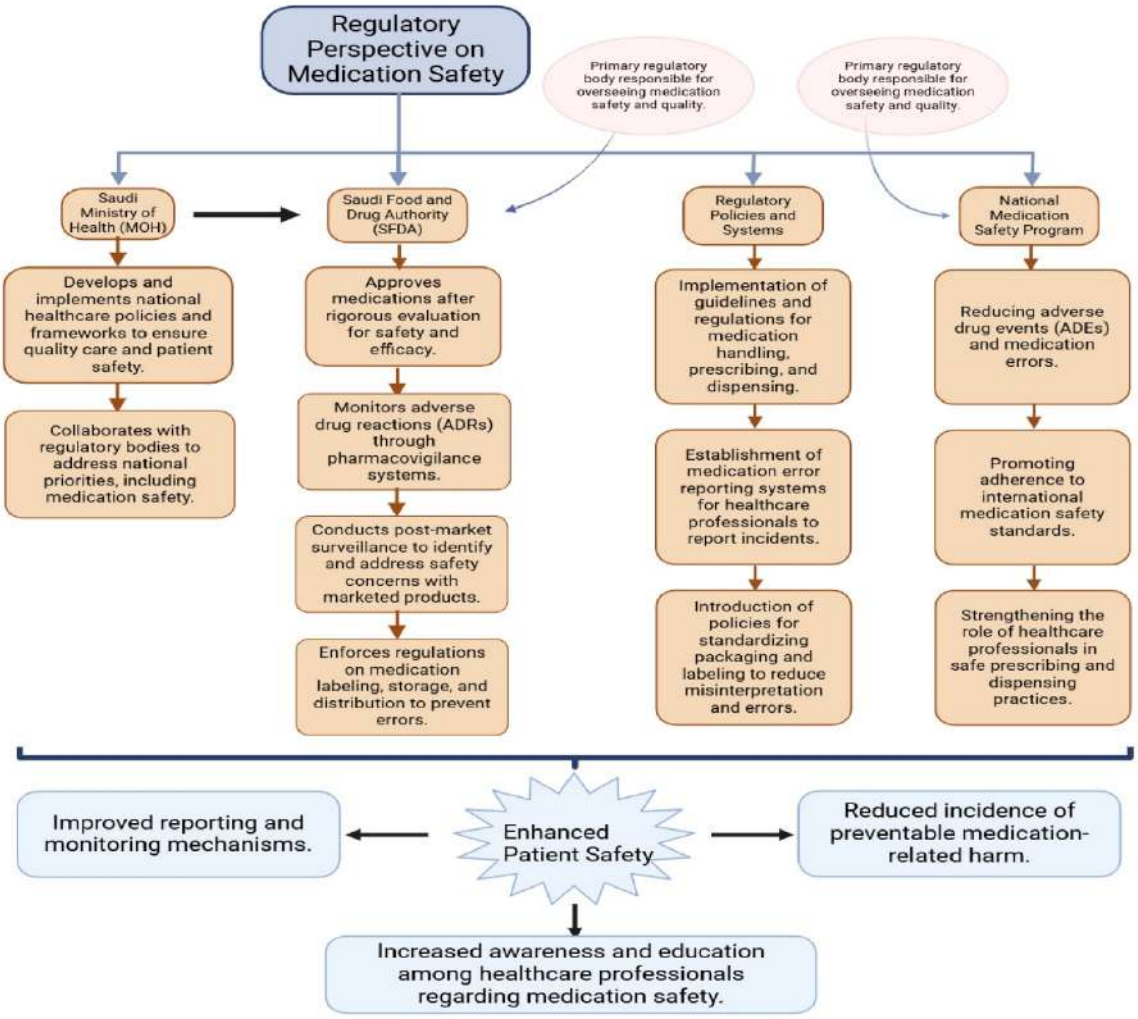

Figure 2. Regulatory Framework for Medication Safety .

Pharmaceutical manufacturers in Saudi Arabia have to conform to good manufacturing practices (GMP) if they want to produce high-quality medications and ensure that the drugs are accurately dispensed, properly labeled, and that the patients are well informed. In this way, pharmacists can play a very important role in the medication safety process.

Quality assurance program is following the entire medication life cycle and through continuous professional development programs healthcare practices can be improved.

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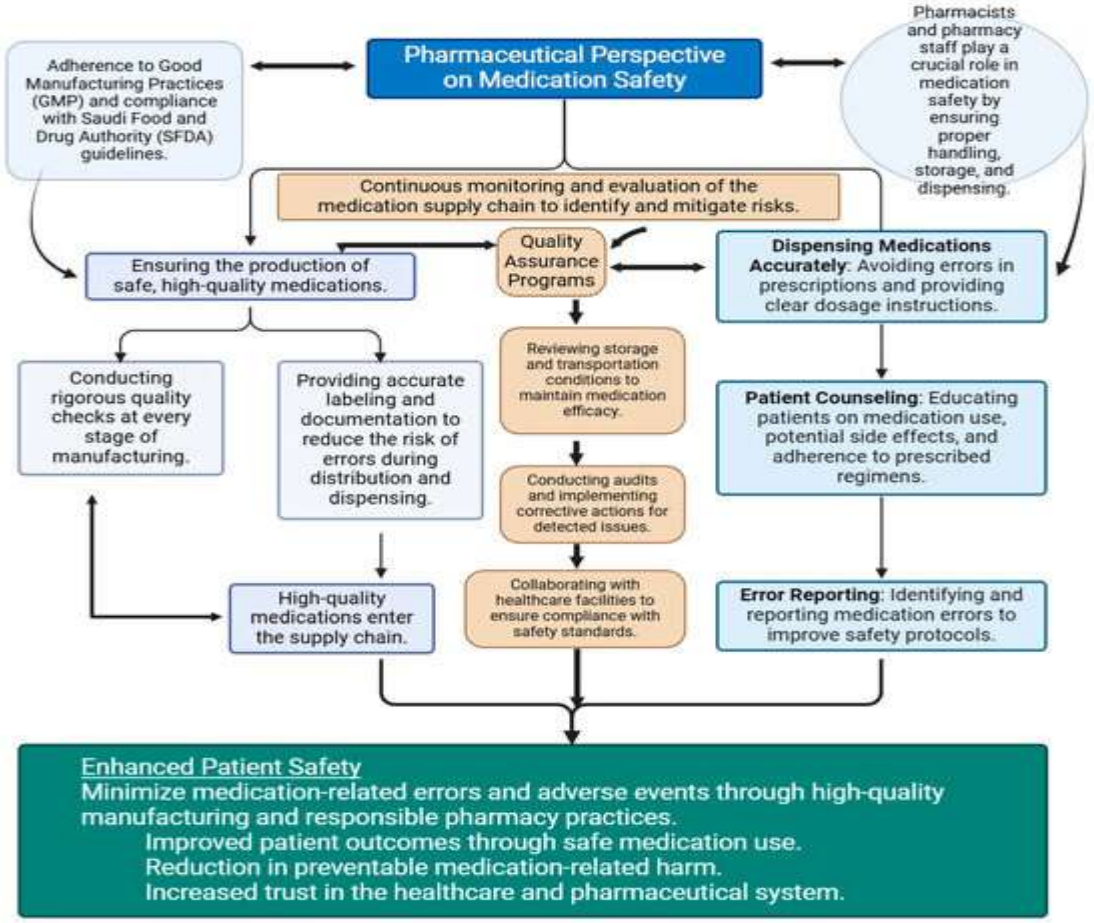

Figure 3. Pharmaceutical perspective on medication safety.

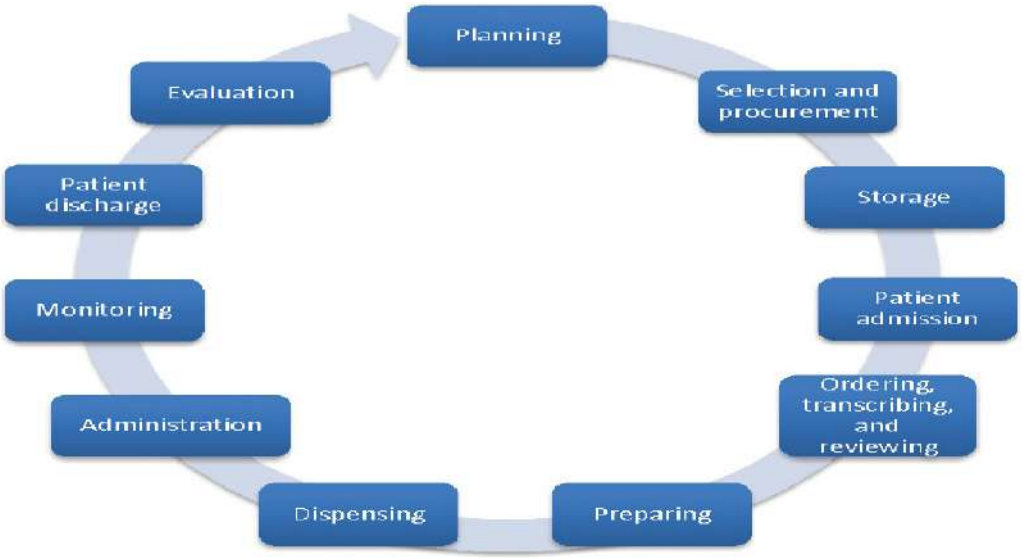

Figure 4: Guidelines on Preventing Medication Errors in Hospitals

5. Challenges and Barriers to Effective Implementation

Despite the evidence, MDTs that are successful in putting their plans into action and keeping them up have issues. Hierarchical Culture: Medical hierarchies which are very structured and have been around

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for a long time can cause the non-physician members of the team to be less active and hence the "collective wisdom" benefit is lost (O'Leary et al., 2010).

Logistical and Resource Constraints: Finding time for regular meetings between professionals with a tight schedule is very difficult. The MDT work is very time-consuming, and the staff might not be paid accordingly or receive productivity credits as a recognition of the work done.

Lack of Training in Teamwork: Health workers are trained exhaustively in clinical knowledge but very few know how to communicate with different professions, resolve conflicts, or share leadership in a team.

Ineffective Leadership: MDTs need facilitative leaders. They encourage participation, deal with conflict, and ensure that the team stays focused on patient goals. Leaders that dictate and domineer should be avoided.

Strategies for Overcoming Barriers: Cultivate Psychological Safety: It is the leaders who must explicitly encourage the act of speaking up and also show that the response to the issues raised is done in a respectful manner (Edmondson, 2018).

Invest in Team Training: Team STEPPS (Team Strategies and Tools to Enhance Performance and Patient Safety), a cooperative project of AHRQ and the Department of Defense, provides a variety of scientifically validated ways to reach the goal of teamwork improvement (AHRQ, 2020).

Leverage Technology: The adoption of secure messaging platforms and the merging of electronic health records may be some of the ways to surmount the constraints of time and space in communication and information sharing.

Align Financial and Operational Incentives: Make and put into action plans and payment models that recognize the time required for care under the collaborative model and thus facilitate it.

6. Future Directions and Conclusion

Continuously learning and being connected through digital health systems are some of the features of the MDTs of the future. Community or rural-based MDT members will be able to connect via Telehealth platforms that provide virtual participation. Soon with the help of Artificial Intelligence and advanced analytics preventive measures will be further enhanced as MDTs will get risk alerts beforehand. Technology should not replace but rather improve the interaction between humans. To recap, the complexity of the healthcare system today coupled with the continuous burden of medical errors calls for a systemic, team-based response. Multidisciplinary teams represent a proven and effective structural measure to ensure patient safety. By employing the wide range of expertise, facilitating open communication, and creating a culture of shared accountability, MDTs directly attack the very causes of errors. While the challenge of implementing the plan requires the courage to face cultural and logistic barriers, the reward which can be measured in lives saved, harm averted, and care quality improved is beyond any doubt. For healthcare organizations that are willing to embark on the journey to high reliability, it is not a matter of choice but rather an ethical and operational imperative to make an investment in well-developed and strong multidisciplinary teams that are supported.

References

1. Agency for Healthcare Research and Quality (AHRQ). (2020). *TeamSTEPPS 2.0*. https://www.ahrq.gov/teamstepps/index.html

2. Baldwin, K. M., Spears, M., & Morris, B. (2018). Reducing Hospital-Acquired Pressure Ulcers Using a Multidisciplinary Team Approach. *Journal of Wound, Ostomy and Continence Nursing*, 45(1), 25-29. https://pubmed.ncbi.nlm.nih.gov/29722753/
3. Calderone, A., Filoni, S., De Luca, R., Corallo, F., Porcari, B., Logi, C., De Cicco, D., Billeri, L., Di Lorenzo, G., Manuli, A., Bonanno, L., Bagnato, S., Naro, A., De Cola, M. C., Maresca, G., Corrao, S., Tonin, P., Cerasa, A., Andrenelli, E., ... Calabro, R. S. (2025). Predictive factors of successful decannulation in tracheostomy patients: A scoping review. *Journal of Clinical Medicine, 14*(11), 3798. https://doi.org/10.3390/jcm14113798
4. Calisi, R., Boyko, S., Vendette, A., & Zagar, A. (2016). What is person-centred care? A qualitative inquiry into oncology staff and patient and family experience of person-centred care. *Journal of Medical Imaging and Radiation Sciences, 47*(4), 309–314.https://doi.org/10.1016/j.jmir.2016.08.007
5. Coulter, A., & Oldham, J. (2016). Person-centred care: what is it and how do we get there? *Future Hospital Journal*, 3(2), 114–116. https://pmc.ncbi.nlm.nih.gov/articles/PMC6465833/
6. Edmondson, A. C. (2018). *The Fearless Organization: Creating Psychological Safety in the Workplace for Learning, Innovation, and Growth*. Wiley. https://www.wiley.com/en-s/The+Fearless+Organization%3A
7. Ellis, G., Gardner, M., Tsiachristas, A., et al. (2017). Comprehensive geriatric assessment for older adults admitted to hospital. *Cochrane Database of Systematic Reviews*, (9). https://www.researchgate.net/publication/319657293_Comprehensive_geriatric_assessment_for_older_adults_admitted_to_hospital#:~:text=CGA%20may%20lead%20to%20a,sectors%20of%20care%20are%2
8. Epstein, N. E. (2014). Multidisciplinary in-hospital teams improve patient outcomes: A review. *Surgical Neurology International*, 5(Suppl 7), S295–S303. https://pubmed.ncbi.nlm.nih.gov/25289149/
9. Haig, K. M., Sutton, S., & Whittington, J. (2006). SBAR: A shared mental model for improving communication between clinicians. *The Joint Commission Journal on Quality and Patient Safety*, 32(3), 167-175. https://pubmed.ncbi.nlm.nih.gov/16617948/
10. Haynes, A. B., Weiser, T. G., Berry, W. R., et al. (2009). A surgical safety checklist to reduce morbidity and mortality in a global population. *The New England Journal of Medicine*, 360(5), 491-499. https://www.nejm.org/doi/full/10.1056/NEJMsa0810119
11. Interprofessional Education Collaborative (IPEC). (2016). *Core competencies for interprofessional collaborative practice: 2016 update*. https://www.ipecollaborative.org/
12. Jack, B. W., Chetty, V. K., Anthony, D., et al. (2009). A reengineered hospital discharge program to decrease rehospitalization. *Annals of Internal Medicine*, 150(3), 178-187. https://pmc.ncbi.nlm.nih.gov/articles/PMC2738592/
13. The Joint Commission. (2022). *Sentinel Event Data 2022 Annual Review*.https://www.jointcommission.org/en-us/knowledge-library/sentinel-events

Gland Surg
VOL-10 NO 1 (2025)
ISSN:2227-684X | E-ISSN:2227-8575

14. Kohn, L. T., Corrigan, J. M., & Donaldson, M. S. (Eds.). (2000). *To Err is Human: Building a Safer Health System*. National Academies Press. https://pubmed.ncbi.nlm.nih.gov/25077248/
15. Kucukarslan, S. N., Peters, M., Mlynarek, M., & Nafziger, D. A. (2003). Pharmacists on rounding teams reduce preventable adverse drug events in hospital general medicine units. *Archives of Internal Medicine*, 163(17), 2014-2018. https://pubmed.ncbi.nlm.nih.gov/14504113/
16. Makary, M. A., & Daniel, M. (2016). Medical error—the third leading cause of death in the US. *BMJ*, 353, i2139. https://www.bmj.com/content/353/bmj.i2139
17. O'Leary, K. J., Wayne, D. B., Haviley, C., Slade, M. E., Lee, J., & Williams, M. V. (2010). Improving teamwork: impact of structured interdisciplinary rounds on a medical teaching unit. *Journal of General Internal Medicine*, 25(8), 826-832. https://pmc.ncbi.nlm.nih.gov/articles/PMC2896605/
18. Reason, J. (2000). Human error: models and management. *BMJ*, 320(7237), 768–770. https://www.bmj.com/content/320/7237/768
19. Salas, E., Sims, D. E., & Burke, C. S. (2005). Is there a "big five" in teamwork? *Small Group Research*, 36(5), 555-599. https://www.researchgate.net/publication/220041354_Is_there_a_Big_Five_in_Teamwork
20. Van Spall, H. G. C., Rahman, T., Mytton, O., et al. (2017). Comparative effectiveness of transitional care services in patients discharged from the hospital with heart failure: a systematic review and network meta-analysis. *European Journal of Heart Failure*, 19(11), 1427-1443. https://pubmed.ncbi.nlm.nih.gov/28233442/
21. World Health Organization (WHO). (2021). *Patient Safety*. https://www.who.int/news-room/fact-sheets/detail/patient-safety

Gland Surg
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