REDUCING OBSTETRIC ERRORS AND IMPROVING PATIENT SAFETY

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ABSTRACT: *The first global initiative to improve patient safety was passed by the World Health Assembly in 2002. Notwithstanding, patients continue to experience healthcare related harms despite advancements in medical technologies. Patient safety strategies do exist in certain institutions; however, they may not be consistent, well applied or appreciated by all staff. Errors in obstetric care are common due to the dynamic nature of the discipline and are associated with a high incidence of litigation, which drives interest away from obstetric practice. This article aims to improve our understanding of medical errors and related terminology, explore strategies to reduce errors in obstetrics and improve patient safety in all areas of care. Reporting systems and guidelines are also suggested with a view to achieving improved patient outcomes in the field.*

KEYWORDS: Obstetric Errors, Patient Safety, Medical Error

INTRODUCTION

A medical error is considered as a preventable adverse effect, whether it is evident or harmful to a patient or not.[1] Errors such as adverse drug events, improper transfusions, misdiagnosis, under or over treatment, operative injuries, wrong-site surgery, restraint-related injuries, falls, burns, pressure ulcers, and mistaken patient (mother or baby) identities may arise during clinical care. Errors with serious consequences are likely to occur in maternity units, but they also occur in intensive care units, theatres, and emergency departments.[2] Errors are also associated with extremes of age, procedures, emergencies, and severity of the medical condition.[3]

Patient safety can be defined as the prevention of errors and adverse effects associated with the care of patients.[4] The patient safety concept has gained importance due to advancements in health care technologies and the resultant rise in patient incidents. This concept aims to prevent errors and reduce risks that predispose to harm. A cornerstone of the concept is continuous improvement based on ongoing evaluations of errors and adverse events.[4] Unsafe care is a leading cause of death and disability worldwide.[5] Approximately 10% of hospital patients experience harm in high-income countries,[6] and two-thirds of all adverse events from unsafe care occur in developing countries.[5] Whilst the most detrimental are related to diagnostic and medication related errors, almost 80% of harmful incidents are considered preventable[6].

Definitions

Errors are considered as unintentional deviations from safe practice.[7] An *adverse event* is an unintended injury resulting in disability or death, increased hospital stays or readmission.[8] A *near-miss* is defined as an error that has the potential to cause an adverse event but is circumvented because of an interception.[9] The monitoring and evaluation of near misses provide insight into shortfalls in the clinical management and in the system, highlighting checkpoints to prevent recurrence. A *violation* occurs when there is an intentional deviation from safe practice resulting from a disregard or lack of adherence to safety norms and standards.[10] *Preventability* implies that the adverse event could have been averted with different forms of management or treatment.[8]

Nature of Errors in Obstetrics

Obstetric errors contribute significantly to adverse outcomes in both mothers and babies, frequently leading to negligence or malpractice lawsuits. In the UK and USA, it is estimated that approximately 75 % of senior gynaecologists have been implicated in litigation,[11] whilst in some developing countries, medical negligence cases in state facilities have increased exponentially in recent years.[12] Over 50 % of these litigation cases are related to obstetrics and gynaecology, of which 76 % were for cerebral palsy.[13]

Obstetric errors can occur during pregnancy, labour or after childbirth. Errors arise when serious conditions or warning signs in pregnancy or labour are missed, neglected, or managed inappropriately. Generally, errors result from omissions or commissions, either intentionally or unintentionally.[10] An omission results from inadequate or no treatment, e.g., eclampsia resulting from pregnancy related hypertension which is neglected. A commission results from overtreatment or hazardous treatment, e.g., penicillin administered for syphilis during pregnancy in a penicillin sensitive patient.

Inadequate or absent fetal monitoring during labour can lead to serious injuries such as cerebral palsy. Erb's palsy can result from the failure to identify and manage shoulder dystocia, leading to paralysis in the arm, hand or wrist. Birth trauma can cause brain injury and result in the loss of mobility, speech, and other functions. Stillbirths may occur especially if the mother is neglected during labour. In the mother, errors may lead to perineal tears, post-partum haemorrhage, uterine rupture, incontinence, infections, and emotional trauma.

Errors can further be classified into latent and active. Latent errors are inherent in the system, including system design, administrative decisions, and quality of equipment and supplies, which may go unnoticed for long periods without effect. An active error is the actual event that results in harm and commonly occurs at the point of contact between the practitioner in the frontline of the system.[10]

Contributing Factors to Obstetric Errors

Factors associated with staff, patients, excessive workload, organisational, external and administrative factors, etc contribute to obstetric errors. The commonest types of adverse events may be associated with therapeutic, diagnostic errors and operative errors.[8] Therapeutic errors occur when an appropriate therapeutic response was not affected following a diagnosis. In medication related errors, conceptual errors occur frequently; however, mathematical and measurement errors also occur.[14] A lack of knowledge of drugs amongst staff and newly appointed staff also predispose to medication errors.[15] The quality of prescriptions also impacts on the safe administration of medication.[16] Howell et al. have suggested that only 50 % of prescriptions reflect all the required details for correct patient identification, and fewer have a record of allergies documented.[17] Excessive workload, inadequate staffing and the lack of policies or guidelines may also contribute to errors in patient care.[17] *See Fig 1 below:*

Fig 1: Factors associated with errors

Staff related	- Inadequate clinical knowledge and surgical expertise due to inadequate training - Administrative human errors—poor recording of previous caesarean sections, previous haemorrhage, etc. - Poor communication—inadequate/incorrect patient data sharing, e.g., presence of a fetal heart, seizures, etc. - Reckless behaviour—uninterested/forgetful/poor follow up of critical findings, e.g., repeat BP checks, Hb levels in abruptio placentae, etc. - Social factors—mental or physical illness, substance abuse, stress, domestic issues, etc.
Patient related	- Poor health behaviour—minimal or no antenatal visits - Communication issues—language barriers/complex medical terminology - Social problems—alcohol and drug abuse, poor compliance, financial barriers - Age extremities—risks associated with advanced and very young ages - Co-morbidities—mental illness, cerebrovascular accidents, etc.

Work related factors	● Environment/infrastructure—faulty/absent equipment, e.g., cardiotocograph machines, BP machines ● Consumables—insufficient balloon tamponades, theatre packs ● Security/safety—insufficient security systems, e.g., aggressive patients with mental illness/postpartum depression
Organisational / system factors	● Protocols/policies and procedures—not updated to latest safety standard, e.g., diazepam for eclamptic seizure control ● Service delivery challenges—inadequate theatre availability for emergency caesarean sections ● Interdepartmental teamwork—lack of input from the physicians for high-risk cases such as eclampsia or cardiac disease ● Staffing—shortage of staff impacts on patient waiting times and timeous interventions
External factors	● Unrest/strikes/natural disaster—disruption of services ● Equipment malfunction—failure/poorly serviced resuscitation equipment ● Delayed procurement of equipment—e.g., cardiotocography machines ● Emergency medical services—delays in transporting obstetric emergencies, e.g., antepartum haemorrhage, eclampsia

Misdiagnosis in pregnancy occurs when signs and symptoms attributable to the condition are not appreciated, e.g., bradycardia on a cardiotocograph, misdiagnosis of abruptio placentae, etc. Surgical errors frequently include bladder or bowel injuries, uterine perforation during curettage, retained foreign bodies such as swabs or instruments, etc. Investigation errors include the failure to perform appropriate laboratory, ultrasound, or other investigations and to manage accordingly. Tracking/follow-up errors include the non-communication of test results, poor surveillance of compliance and clinical outcomes, and the lack of a follow-up plan.

Approach to Error Prevention

The goal is to create a patient safety culture and develop a framework that includes all stakeholders, including hospital management. As errors are multifactorial, a wholistic or system approach is required, which includes improved communication, reporting systems, protocols and training and simulation workshops.[10]

Develop a Reporting System

All institutions that provide care should implement an adverse event reporting system for all patient safety incidents. This will enable the institution to identify error patterns, conduct a root cause analysis, implement corrective action, and obtain statistics for surveillance. Confidentiality should be encouraged to reduce underreporting due to a reputational issue, intimidation, and litigation.[10] *See Table 1 below:*

Table 1: Stepwise reporting framework

1: Identify the error/patient safety incident and contributing factors
2: Implement immediate remedial and preventative action
3: Compile a report using a patient safety reporting system/code
4: Communicate with relevant stakeholders
5: Practice safe record keeping for future references
5: Analyse the root cause—provider, system, administrative
6: Inform safety committee members and hospital management
7: Develop a collective activity and implementation plan
9: Follow-up quality improvement initiatives related to the original hazard
10: Implement skills development and capacity building initiatives

(Adapted from National Guideline for Patient Safety Incident Reporting and Learning in the Health Sector of South Africa – Version 2)[18]

Working Hours

Maternity and theatre staff may suffer fatigue from prolonged working hours. This may affect their communication and skills and contribute to adverse events. The National Sleep Foundation recommends 7–9 hours of sleep per night; however, there are no current guidelines on the number of deliveries or procedures to be performed by an individual, or the length of a shift.[19] Sleep deprivation contributes to challenges with language, numeric skills, retention and short-term memory, and decreased concentration.[20]

Cognitive Aids

Checklists are the commonest examples of cognitive aid used to improve patient safety. The WHO Surgical Safety Checklist is widely accepted as it has been shown to reduce surgical mortality and morbidity. The most suitable versions of modified checklists may be utilised, provided there is universal compliance and recordings are accurate.[21]

Communication

Information must always be communicated clearly and timeously to all team members. Talkbacks and alert phrases are communication aids that can be applied. Following a verbal instruction, team members can repeat the instruction to minimise error.[22] Rapid communication in obstetric emergencies can be achieved using alert phases such as "code red" to convey the urgency and seriousness of the case. The rapid alert phrases must be clearly understood by all team members and adherence should be checked regularly.

Prescription Errors

Wrong patient orders occur more frequently in obstetric units compared with medical or surgical hospital wards.[23] Approximately 2.1 % of all medication errors in obstetric inpatients are wrong patient errors.[24] Studies suggest that the most frequent medication errors in obstetrics involve antibiotics, opioids, tocolytics, and magnesium sulfate.[23] Prescriptions should be legible and incorporate widely accepted or standard abbreviations. Verbal orders should be written down and confirmed prior to recording in the chart. A history of drug sensitivities must

be taken, and reporting of adverse drug reactions is mandatory. The inadvertent prescription of teratogenic drugs in pregnancy may have serious consequences for the healthcare worker and patient alike. Research has demonstrated that electronic medical recording can reduce wrong-patient order errors.[25]

Disclosing Errors

Competent practitioners can make errors of judgement and may deviate from standard protocols occasionally. A 'just culture' recognises that human error is inevitable, and hence, practitioners must disclose errors while maintaining professional accountability. The general principle in a just culture is applied as follows: "console human error; coach at-risk behaviour; and punish reckless behavior"[26].

At-risk or reckless behaviour must be avoided, as it puts patients at significant risk of harm and shows a conscious disregard for patient care.

The Role of Leadership

Effective leadership is necessary to advocate for appropriate financial and human resources to achieve patient safety goals. Optimal communication and collaboration amongst team members are equally important in promoting of patient safety and reducing harm.[27]

Surgical Errors

Surgical errors may result in partial, complete, temporary, or permanent loss of function. It is imperative that all theatre staff communicate effectively to ensure correct patient and procedure identification. The World Health Organization's Safe Surgery Saves Lives program, endorsed by the International Federation of Gynecology and Obstetrics, should be used as it has been shown to reduce surgical morbidity and mortality significantly in multiple settings.[21]

Miscellaneous

A variety of strategies can be developed and implemented, including protocols, guidelines, and standard operating procedures. Technical support for computerised and electronic patient databases should be strengthened. Communication between providers, patients and their families should be improved, and apology and redress sessions should be conducted timeously. Skills audits, skills accreditation, teaching programmes, capacity building and implementation of tools such as checklists will assist in reducing errors and improving patient safety.

CONCLUSION

The first global initiative to improve patient safety was passed by the World Health Assembly in 2002;[8] however, patients continue to experience healthcare related harms. The most frequent obstetrical errors include induced abortions, diagnosis of pregnancy, delivery techniques, treatment of haemorrhages, amongst other complications.[28] Commitments to improve patient safety through collective leadership, investments in safety standards, education and training of doctors and nurses, the creation of health and safety committees, implementation of safety reporting systems, and a culture of patient-focused care in which safety is a priority, is likely to have a significant impact on improving patient safety.

Declaration of Conflicting Interests

The author declares that there is no conflict of interest

REFERENCES

1. Hofer TP, Kerr EA, Hayward RA. What is an error? *Eff Clin Pract* 2000; 3(6): 261-9.
2. Prin M, Kadyaudzu C, et al. Obstetric admissions and outcomes in an intensive care unit in Malawi. *Int J Obstet Anesth* 2019; 39: 99-104.
3. Carver N, Gupta V, Hipskind JE. *Medical Error*. 1st ed. Stat Pearls Publishing; 2022
4. World Health Organization. Patient safety- Global action on patient safety. Report by the Director-General, https://apps.who.int/gb/ebwha/pdf_files/WHA72/A72_26-en.pdf (2019, accessed June 23, 2022).
5. Jha AK. Patient Safety – A Grand Challenge for Healthcare Professionals and Policymakers Alike, https://globalhealth.harvard.edu/qualitypowerpoint (2018, accessed 23 June 2022).
6. Slawomirski L, Auraaen A, Klazinga N. The economics of patient safety: strengthening a value-based approach to reducing patient harm at national level, http://www.oecd.org/els/health-systems/pdf (2017, accessed June 26, 2022).
7. Vincent C. *Reporting and Learning Systems. Patient Safety*. 2nd ed. Chichester: Wiley Blackwell, 2010.
8. Wilson RM, Michel P, Olsen S, et al. Patient safety in developing countries: retrospective estimation of scale and nature of harm to patients in hospital. *BMJ* 2012; 344: e832.
9. World Health Organization. World alliance for patient safety: WHO draft guidelines for adverse event reporting and learning systems: From information to action, http://www.who.int (2005, accessed 20 June 2022)
10. Vattipalli S, Bindra A, Rath G. Human errors and their prevention in healthcare. *J. Anaesthesiol. Clin. Pharmacol 2021*; 37: 328-335.
11. Vincent C, Bark P, et al. The impact of litigation on obstetricians and gynaecologists. *J Obstet Gynaecol* 1994; 14: 381–7.
12. Bateman C. NHI Bill set to worsen SA's medico-legal nightmare, https://www.medicalbrief.co.za/archives/nhi-bill-set-to-worsen-sas-medico-legal-nightmareexperts (2019, accessed 25 June 2022)
13. Taylor B, S Cleary S. A retrospective, observational study of medicolegal cases against obstetricians and gynaecologists in South Africa's private sector. *SAMJ* 2021; 111(7): 661-667
14. Blais K, Bath JB. Drug calculation errors of baccalaureate nursing students. *Nurse Educ* 1992.(1): 12-15.

15. Leape LL, Bates DW, Cullen DJ, et al. Systems analysis of adverse drug events. *JAMA* 1995; 274(1): 35-43.

16. Walters JA. Nurses' perceptions of reportable medication errors and factors that contribute to their occurrence. *Appl Nurs Res* 1992; 5(2): 86-88.

17. Howell M. Prescription for disaster. *Nursing Times* 1996;92(34): 30-31.

18. NDoH. National Guideline for Patient Safety Incident Reporting and Learning in the Health Sector of South Africa, *https//:test. idealhealthfacility.org.za* (2022, accessed June 27, 2022).

19. Hirshkowitz M, Whiton K, Albert SM, et al. National sleep foundation's sleep time duration recommendations: Methodology and results summary. *Sleep Health*, *https://doi.org/10.1016/j.sleh.2014.12.010* (2015, accessed June 27, 2022)

20. American College of Obstetricians and Gynecologists. Fatigue and Patient Safety. ACOG Committee Opinion No 730. *Obstet Gynecol* 2018;131: e 78-81

21. Haynes AB, Weiser TG, Berry WR, et al. A surgical safety checklist to reduce morbidity and mortality in a global population. Safe Surgery Saves Lives Study Group. *N Engl J Med* 2009; 360:491–9.

22. Ornato JP, Peberdy MA. Applying lessons from commercial aviation safety and operations to resuscitation. *Resuscitation* 2014; 85:173–6.

23. Kern-Goldberger A, Kneifati-Hayek J, Yelstin Fernandes Y, et al. Wrong-Patient Orders in Obstetrics. *Obstet Gynecol* 2021; 138:229–35.

24. Kfuri TA, Morlock L, Hicks RW, et al. Medication errors in obstetrics. *Clin Perinatol* 2008; 35:101–17.

25. Adelman JS, Kalkut GE, Schechter CB, et al. Understanding and preventing wrong patient electronic orders: a randomized controlled trial. *J Am Med Inform Assoc* 2013; 20:305–10.

26. Marx D. Patient safety and the "just culture": a primer for health care executives. New York (NY): Trustees of Columbia University in the City of New York, *http://www.mers-tm.org/support/Marx_Primer.pdf* (2009, accessed June 29, 2022)

27. American College of Obstetricians and Gynecologists. Patient Safety in Obstetrics and Gynecology. ACOG Committee Opinion No. 447, https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles (2009, accessed June 20, 2022).

28. Marek Z. Medical errors in obstetrics. *Ginekol Pol* 1984; 55(8): 545-52.