Safety in Healthcare: Primer

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Abstract Since healthcare providers are human, human error is bound to happen one way or the other. Thousands of people around the world die each year due to preventable error or harm. To avoid or minimize error and decrease the risks associated with hospitalization, critical care, or surgery, safety has become an important issue which has received increased attention in recent years. Safety is fundamental to delivering quality essential health services. This paper provides a primer on safety in healthcare industry. It answers a series of questions related to safety in healthcare: What is safety? Who is responsible? Where does it take place? How do we improve it? What are the global consequences of safety?

Introduction

Numerous studies have documented the impact of human error on patient safety. To err is human, and expecting flawless performance from human beings working in complex environments such as healthcare is unrealistic. In spite of our best intentions, we are unnecessarily harming patients, who are experiencing unnecessary risk. To this end, physicians take the Hippocratic Oath: "Do No Harm." Their number one priority has to avoid causing harm and ensure safety.

The current healthcare system is becoming increasingly complex and fragmented. Although it brought us wonderful benefits, but every encounter also carries risk of various kinds. Despite all the known power of modern medicine to cure, hospitals are places fraught with risk of patient harm. Things go wrong and inflict unintentional harm on the patients. Consequently, safety must be considered one of the main priorities of the healthcare system. When safety is present, life is saved and mistakes are only tolerated.

There is a widespread awareness of the problem of healthcare safety and considerable efforts have been made to improve it. Millions of patients suffer injuries or physically die due to unsafe environment and poor-quality healthcare. In order for healthcare organizations to hold patient safety as a core value and practice, they need to build and maintain a culture of patient safety. They must continually engineer patient safety into healthcare processes [1].

What is safety?

The issue of healthcare safety has advanced since the Institute of Medicine (IOM) released a report: *To Err Is Human: Building a Safer Health System* in 1999. The report called for leadership from the US Department of Health and Human Services (DHHS) in reducing medical errors. IOM defined safety as "freedom from accidental injury." World Health Organization (WHO) defines safety as the "prevention of errors and adverse effects to patients associated with health care." Safety may be regarded as preventing adverse events that may cause patient harm when receiving care. These adverse events include accidents and errors. Accidents are inevitable in any complex system. Many factors interact to cause patient safety incidents. Typical errors are: (1)

A nurse gives a patient an overdose of a medication and patient dies; (2) A physician removes the wrong kidney; (3) A patient receives an overdose that causes brain damage. Safety is freedom from accidental harm or injury. Who is responsible for healthcare safety? Safety in healthcare industry is often an ownerless process with responsibility falling under a myriad of departments. Mistake or error can inappropriately focus attention on a single source or individual as the cause of an adverse event. Healthcare continues to shift from viewing medical error as an individual's responsibility and towards recognizing safety as a collective responsibility. Everyone who works in a healthcare organization is responsible for ensuring safety.

The following factors may be responsible for lack of safety [2].
- Medication errors
- Health care-associated infections
- Unsafe surgical care procedures
- Unsafe injections practices
- Diagnostic errors
- Unsafe transfusion practices
- Radiation errors

Types of Safety

Healthcare can be provided in a variety of settings such as hospitals, clinics, dental offices, out-patient surgery centers, birthing centers, emergency medical care, home healthcare, and nursing homes. Safety can be considered from various perspectives including the patient, healthcare workers, and healthcare facilities such as hospitals or clinics.

- *Patient Safety:* Patient safety is a healthcare discipline that emerged with rise of patient harm in healthcare facilities. It applies safety science methods toward the goal of achieving a trustworthy system of health care delivery. It aims to prevent and reduce risks, errors and harm that occur to patients during treatment. It commonly is described as associated with issues that may cause harm due to lack of basic nursing care, misdiagnosis, delayed treatment, and mistaken patient identities. Lack of patient safety can put a burden on healthcare systems and resources. Figure 1 shows an example of patient safety [3].

Figure 1: An example of patient safety [3]

- *Hospital Safety*: This is generally referred as w**orkplace safety.** A patient in hospital may be given a wrong medication due to poor communication or wrong packaging. Patient safety during hospitalization have emerged as major issue. Hospitals are tasked to keep patients well while keeping them safe. **Healthcare-associated infections** have long plagued healthcare facilities. The Patient Safety Movement Foundation strongly believes in reaching ZERO preventable deaths in hospitals is an attainable goal with the mix of right people, ideas, and technology.

- *Worker Safety:* Healthcare workers account for about 12% of the total workforce in the US. The safety of a patient largely depends on the healthcare worker's ability to do what is right. Healthcare givers work in a complex environment and face a number of serious safety challenges. Health workers can only treat others when they themselves are well. Without a safe and healthy work environment for the care gives, the core goal of ensuring patient safety is placed at risk. Ensuring safety of the workforce is a prerequisite for patient safety. In 2014, two nurses contracted Ebola virus while caring for an infected Ebola patient. Workers face risks and are injured on a regular basis. Figure 2 illustrates healthcare workers concerned for safety [4].

Figure 2: Healthcare workers concerned for safety [4]

- *Medication Safety:* Medication errors constitute one of the most common causes of patient injuries in the United States. They can occur during all stages of the medication process including writing, transcribing, and dispensing. Medical errors in hospitals are the third leading cause of death in the US, just behind heart disease and cancer. The Mayo Clinic suggests medication errors are largely communication errors. Medical error refers to any act of commission or omission that exposes patients to a potentially hazardous situation. It is the failure of a planned action to be completed as intended. It often occurs during transition times: from the ICU to the floor or from inpatient to outpatient status. Every provider handoff creates the potential for miscommunication and mistakes.

Other safety issues include misdiagnosis errors, poor compliance, and physical barriers.

Improving Safety

Since to err is human, considerable attention has been paid to improving safety in healthcare. Healthcare leaders, organizations, practitioners, and patients must work together to achieve a total systems approach to safety around the world that none of us could achieve on our own. The AMA is setting the pace for physicians' efforts to improve patient safety by implementing the Patient Safety Act. It encourages physicians to take the lead in

providing safe and effective patient care. Safety in healthcare can be improved by taking the following measures [5].

- *Adopting a Culture of Safety:* A fundamental culture change is necessary to ensure that innovations for improving patient safety actually achieve their intended goal. The concept of a culture of safety needs to be adopted in healthcare industry just as it has been adopted in airline and other industries. A safety culture complements patient safety efforts. Both professional and organizational cultures in healthcare need transformation to promote safety and create safer environment. To cross over to a culture of safety, healthcare organizations should focus on [1]: (1) an organizational self assessment of safety, values and beliefs; (2) establishing a blame-free environment surrounding patient safety; (3) building incentives for patient safety processes; (4) never accepting that harm cannot be reduced; (5) orienting care around effective teamwork; and (6) establishing new norms for patient safety in medical training programs. A safety culture complements patient safety efforts.

- *Hand Hygiene*: This is first line of defense against infections. Although this seems easy, hand hygiene compliance rates simply remain low. Each hospital or healthcare facility should follow proper safety protocols, including hand hygiene.

- ***Patient Engagement:*** Patient engagement in healthcare should be encouraged at all levels. Patient safety can be improved through patient-centered care strategies and by having patients more directly involved. By involving patients in their treatment plans, they become allies in their care and can serve as a layer of defense against many safety issues.

- *Technology:* Technology is an effective tool for enhancing safety. For example, health IT promises to improve quality and safety. It has substantially reduced the risks to patient safety. Technology can be an excellent aid in improving safety of medication administration [6]. A movement toward designing to increase efficiency in hospital rooms and workflow areas, and to make the most of existing space. However, every new technology often brings new problems. Also, differences in health IT capabilities affect how successful they may be used by hospitals and health systems.

- *Health Literacy:* Campaigns to make patients more informed consumers of healthcare services are worthy and necessary. A patient with low health literacy will be compromised. Such a person will not understand health information or medical instructions about medications. Patients who are health literate know how to ask questions of providers and this can go a very long way to improve healthcare.

- *Provide Leadership:* Healthcare leaders play a critical role in improving safety. Leadership throughout organizations, led by nurse and physicians, is critical in determining whether or not safety care can be achieved. Since healthcare administrators are the final decision makers and the ultimate drivers of designing for patient safety, they need to become safety champions. Leaders should make safety a clearly recognized priority. They should provide the resources necessary for improving safety. They should be vigilant for safety concerns and new sources of error, making safety everyone's responsibility, establish an environment of team work and collaboration, and continually engineer out adverse events. Investments (staff and money) must be made, including spending for new technology.

- ***Communication***: Open communication brings all members of the healthcare team, (patients, their families, and healthcare professionals) together to ensure that the plan of care is patient-centric, safe, and reliable. Engaging the patient and their support system integrates them with the safety team and leads to better outcomes.

- *Prevention:* Prevention is better than cure. Investing in the prevention of harm can help address adverse events (failure costs). This is similar to other high risk sectors such as automotive and the oil industry, where investment decisions are made on balancing costs of preventing errors with the costs incurred by errors. Not all adverse events can be prevented. Preventability is a fluid concept. For example, the incidence of some infections, previously considered unpreventable, has been reduced and even eradicated.

Some of the improvement measures are illustrated in Figure 3 [7]. Other improvement measures include ensuring cleanliness of all areas, minimize hospital room clutter, minimizing noise, and infection control.

Figure 3: Three ways to improve healthcare safety [7]

Challenges

Given the pressures facing the healthcare industry, change is inevitable. A major challenge is the need to improve safety across the continuum of care. After all, the goal of healthcare is to help the patients enjoy the best quality of life. However, changing physician attitudes can be a substantial undertaking. A challenge is that healthcare safety is a constantly moving target and healthcare differs from other safety-critical industries such as airlines and oil and gas industry. The increased use of electronic health records has also given rise to safety challenges. For example, patients may be given the incorrect dose of a medication or physicians may select the wrong person when making an order. In order address these issues, a commitment is needed at the national level in the form of legislation.

Global Healthcare Safety

Safety is regarded as a global health priority. To increase public awareness of safety and promote global solidarity and action, a day in the year has been declared World Patient Safety Day. WHO established Global Patient Safety Challenges to facilitate healthcare safety within member states. Healthcare safety is now recognized in many countries, with global awareness being promoted by the World Health Organization's World Alliance for Patient Safety.

International cooperation in patient safety is necessary in order to improve overall healthcare quality and safety in their own country or abroad. In 2004, the World Alliance for Patient Safety was launched to promote patient safety, to coordinate patient safety initiatives globally, and to reduce the impact of unsafe healthcare [8]. In developed nations, it is estimated that one in every ten patients is harmed while receiving hospital care. Globally, 4 in 10 patients are harmed in primary and outpatient health care. It is believed that medical errors kill more people than HIV, malaria, and tuberculosis, combined. Healthcare workers in developing countries inconsistently practice universal precautions. Promoting the safety of healthcare workers in developing countries is an essential

- *United States:* Healthcare in the US is not as safe as it could or should be. It is now one of the most dangerous professions in the US with respect to incident rate. Job stressors associated with health care

workers include work overload, pressure at work, burnout, unsupportive leadership, staff shortages, long hours of work, and conflict between work and family demands [9]. Some US states have taken steps to encourage patient engagement.

- *Europe Union:* The European Commission defines patient safety as "freedom for a patient from unnecessary harm or potential harm associated with healthcare." It has been estimated that the number of patients in the EU with at least one hospital-acquired infection is 4.1 million annually. In Europe, the Luxembourg Declaration on Patient Safety proposes fundamental improvements and strategies for patient safety. EU member states are at different levels in their implementation of comprehensive patient safety strategies. For example, Greece has made legislative changes necessary for healthcare quality and patient safety [10].

- *Australia:*   Currently, there is significant impetus for healthcare reform in Australia. The Australian Commission in Safety and Quality in Health Care has been tasked with developing a National Safety and Quality Framework healthcare over the next ten years. The Commission works on a range of safety issues with the aim of ensuring safe care. Traditionally, the Commission has had a focus on the safety issues within the acute health care sector. The Pharmacy Guild of Australia implements a number of activities with a focus on improving quality and safety [11]. Exemplary approaches to improve patient safety are underway in Australia, the United States, and the United Kingdom.

- *Canada:* The rate of adverse events in hospitals in the UK and Canada is estimated to be around 10%. Patient safety and access to high quality care are currently the top priorities for the Canadian healthcare system. A review of hospital data compiled by the Canadian Institute for Health Information shows that 3.3 to 5 per cent of patients admitted to Ontario hospitals from 1992 to 1997 experienced adverse events related to their treatments. All continuously look into the deeper causes of adverse events to build safety records that are fundamental to the survival of their industries. The changes needed to increase patient safety in Canada should take into account the current structures and resources of the Canadian healthcare systems [12].

- *United Kingdom:* The UK has led the way in government commitment to safety. UK has the ambition for the National Health Service (NHS) to be the safest healthcare system in the world. NHS Improvement is working hard to achieve the ambition and improve patient safety in the NHS. Although there is still a lot to be done, they are making progress. There has been a range of initiatives with regards to implementing the changes recommended in *Healthcare for All* in order to promote the safety of patients in NHS hospitals [13]. The National Patient Safety Agenda was launched in 2001 for reporting adverse events, medical errors, and near misses.

Conclusion

Safety has become a serious public health issue. Making mistakes is human nature and cannot be eradicated. *Patients* and providers stand to gain from safe hospitalist environment. The National Patient Safety Foundation made eight key recommendations in 2015 to ensure continued progress in the safety field [14]:

- Ensure that leaders establish and sustain a safety culture
- Create centralized and coordinated oversight of patient safety
- Create a common set of safety metrics that reflect meaningful outcomes
- Increase funding for research in patient safety and implementation science
- Address safety across the entire care continuum
- Support the health care workforce
- Partner with patients and families for the safest care
- Ensure that technology is safe and optimized to improve patient safety

Patient safety is a relatively new discipline within the healthcare professions. It has emerged in response to a high prevalence of avoidable adverse events. Graduate programs are being offered on patient safety as a discipline. More information of healthcare safety can be found in the books in [15-20] and the following related journal: *Journal of Patient Safety.*

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