PATIENT SAFETY AND RISK MANAGEMENT

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ABSTRACT

This chapter aims through evidence based analysis of systematic literature review, using available guidelines to summarise the current basic definitions, concepts and principles of patient safety in surgery and mark the fundamental risk assessment tools and managemental strategies especially in emergency general surgery. It consists of 5 sections: patient safety; patient safety in surgery; patient safety in emergency general surgery; risk assessment in surgery; risk management in surgery; practicing patient safety in Covid 19 pandemic and future of patient safety in emergency general surgery. Reviewing the impact of Covid 19 pandemic on emergency general surgery results in 2020 and 2021 it will try to outline the future developmental trends and tendencies in quality assurance and patient safety in surgery.

KEYWORDS: Patient Safety/PS/, Emergency General Surgery/EGS/, Risk Management/RM/

1.INTRODUCTION

1.1. LEARNING GOALS:

1. What is Patient Safety in medicine, surgery and emergency general surgery?
2. What is risk assessment and management and how are they implemented to assure better quality and patient safety in surgery?
3. How does Covid 19 pandemic changes everyday emergency surgery practice and what are we going to expect in the future?

1.2. PATIENT SAFETY

Patient safety is a global health issue receiving rapidly increasing attention. Patient safety is the (near) absence of (the chance of) avoidable harm inflicted on the patient through the actions and/or negligence of employees or through flaws in the healthcare system/1/.

PS is a new healthcare discipline that emphasizes the reporting, analysis, and prevention of medical errors which often lead to adverse healthcare events. Recognizing that healthcare errors impact one in every 10 patients around the world, the WHO calls patient safety an endemic concern/ 2/.

In 1919 WHO announced that 134 million adverse events occur each year due to unsafe care in hospitals in low- and middle-income countries, contributing to 2.6 million deaths. More than 15% of hospital expenses can be attributed to treating patient safety failures. WHO outlined that 4 out of 10 patients are harmed in the primary and ambulatory care, where 80% of harm in these settings can be avoided and concluded that ”No one should be harmed in healthcare”.

The death rate per year from jatrogenic injury and error varies from 44,000 to 98,000, exceeding the number of deaths in auto accidents in USA, similarly autopsy series suggest 15% error rate in the practice of medicine/3/.

On the first-ever World Patient Safety Day on 17 September 2019, WHO launched a global campaign to create awareness of global social, economic and medical significance of patient safety and urge people to show their commitment to making healthcare safer /4/. This date was established by the 72nd World Health Assembly in May 2019, following adoption of resolution WHA72.6 on

‘Global action on patient safety’. The resolution recognizes PS as a global health priority and promotes the objectives of World Patient Safety Day, namely to increase public awareness and engagement, enhance global understanding, and spur global solidarity and action to progress patient safety.

The World Health Organization defines patient safety as ‘the absence of preventable harm to a patient during the process of health care’ and the discipline of patient safety as ‘the coordinated efforts to prevent harm, caused by the process of health care itself, from occurring to patients’/5/.

“Patient safety is a key component of the human right to a healthy life and universal access to health services.” /6/.

Defined as 'the prevention of harm to patients' (Kohn et al. 2000) or as 'the prevention of errors and adverse effects to patients associated with health care' (WHO 2016), PS is inextricably linked to the identification and classification of categories such as 'adverse events', 'clinical incidents', 'adverse effects', 'harm' and 'medical error'. PS is dependent on the possibility of easily transforming vulnerable clinical situations or adverse patient effects into well-defined and delineated incidents that can be codified, classified, reported, counted and managed. As such, an organizing tool in the appearance of countable risk objects (Hilgartner 1992) has been introduced into healthcare with the safety programme/7/. Introduction of patient safety technology into healthcare is likely to cause rearrangements of roles, responsibilities, and earlier practices of both more formalized and invisible or informal character.

Patient safety has been the essence of medical ethics credo since Hippocrates “primum non nocere”/do not harm/, currently focusing on avoiding medical errors.

The principles of PS state that the discipline of Patient Safety acknowledges that risk is inherent in medicine and error is inherent in human condition. Wrong-site and wrong-patient surgeries happen not because of incompetent surgeons, but because of unreliable processes of patient identification and surgical site marking.

The first principle of PS discipline proposes that the fertile ground for medical errors is the “soil” of the healthcare delivery system and not the “seed” of the clinician.

The second states that the safer care is a function of good teams, nor good individuals acting alone, rejecting the notion of “I” in favor of “we”.

The third fundamental principle of PS is “Just Culture”, based on three premises – first - to learn from adverse events and therefore to report them; second – to shift the focus away from blaming and punishing the clinician, who is not exempt from human error; and third is balance between the “no-blame“ approach and learning trough reporting with appropriate accountability, assessing judiciously human errors/8/.

Quality and patient safety are integral aspects of modern healthcare. In recent years, we have seen a significant increase in the number of meaningful quality improvement and patient safety efforts across the globe, as a result of the recognition that:

1. Medical errors are a potentially preventable source of patient morbidity and mortality
2. Faulty systems, rather than negligent individuals, are often responsible for safety mishaps and suboptimal quality of care

3. Thoughtful efforts to improve quality of care and safeguard patient safety can simultaneously improve patient outcomes while decreasing healthcare costs, thus significantly improving the value of care provided/9/.

Back in 2006 Stevenson & al., in their pilot study have outlined that suboptimal quality of care and adverse events are often perceived to be the result of system failure, for which a novel approach for evaluating quality of care is needed, implementing interventions designed to increase the awareness and responsibility of individual members of staff. Today changing organization, roles and management, still minimal evidence of their efficacy in improving quality of care is to be found/10/.

Moving the focus from patient to the providers and environment has revealed failed practices and poor communication as the key elements that led to patient injury and harm, after system problems and therefore requiring systemic solutions/8/.

"Experience is merely the name men gave to their mistakes."

Fig No 1. Oscar Wilde, 1854-1900, /https://www.azquotes.com/quote/344823/

Errors are to be expected in health care and may be classified as being the result of commission, omission or inition/Fig. No 1/. An error of inition is a failure of effort or will and is a failure of professionalism. Adverse events occur in around 10% of surgical patients and may be even more common in emergency surgery. There is little formal teaching on surgical error in surgical education and training programmes despite their frequency/11/.

Cognitive errors are the result of some 30 cognitive biases, the most important of which are availability, confirmation, framing, attribution, search satisfying, hindsight, authority and anchoring biases/3/.

Diagnostic error may result in irrevocable harm, therefore it is dangerous and expensive. Physicians rely on instinctual thinking, which leads to errors in judgment and decision-making. Metacognition will help us understand and resolve the root cause of preventable cognitive errors in medicine. Diagnostic errors occur at a rate of 10—15% and are the most common reason for malpractice litigation, representing the most costly malpractice category. Diagnostic errors occur with "familiar" diagnoses and result in a significant rate of preventable mortality. Most diagnostic errors are atributable to a cognitive lapse on the part of the physician.

Technical errors are a common cause of surgical adverse events and include direct manual errors, errors in judgment, and errors due to lack of knowledge. Lack of specialization or expertise in a particular procedure, low volume, communication breakdown, and physician fatigue can contribute to technical errors/3/.

Common issues related to PS are retained surgical items and wrong site Surgery/WSS/8/. Retained surgical items and unretrieved device fragments in the operating room/OR/, for instance, being system problems, can be prevented by multistakeholder use of reliable OR practices and effective communication techniques. Wrong Site Surgery/WSS/ generally concerns surgical procedures performed on the wrong side/laterally/ of the correct patient, but in fact it encompasses the only field of surgical errors, including performing wrong operations on wrong patients, or correct operations on wrong level or patient site. This results in significant harm for the patient, family, caregivers and institution.

Retained surgical items (RSI) still represent the most frequently encountered sentinel event in OR worldwide. A retained surgical sharp (RSS) is a never event and is defined as a lost sharp (needle, blade, instrument, guidewire, metal fragment) that is not recovered prior to the patient leaving the operating room.

The term "Never Event", as defined by the National Quality Forum, is a medical error that should never occur, usually is preventable and results in significant patient harm. These must be reported to the patient as well as to the hospital incident committee.

A "near-miss" sharp (NMS) is an intraoperative event where there is a lost surgical sharp, that is recovered prior to the patient leaving the operating room. Both NMS and RSS events are difficult to quantify and their reporting to the Joint Commission (JC) is voluntary, so that underreporting remains a reasonable concern. NMS are less likely voluntarily reported as the problem was rectified prior to the patient leaving the OR and therefore the degree of risk to the patient(and provider/hospital) has been significantly reduced.

Avoidance of harm to patients can be achieved by blocking inevitable error and avoiding preventable error. However, error does occur in surgery and patients get injured. Assuming the statement of Corrigan & al. in 2000 "To Err is Human" the system nature of healthcare delivery has become broadly recognized. The process of quality measurement and error investigation foster quality and safety improvement and development of systems, more resistant to human error. This is the place for error disclosure systems, routinely underestimated and neglected, but really owing the potential for best error prevention and learning and culture tool. Creating and implementing a system of medical error disclosure will optimize the healthcare system, satisfy stakeholders and evolve and result in optimal, patient centered care delivery/ 8/.

With underreporting of such incidents, it is unrealistic to expect aggressive development of new prevention and detection strategies, also because awareness about the issue of "near-miss" or retained surgical sharps remains limited/12 /.

There is a global consensus that a system approach is required to tackle patient safety. This is based on the work of British psychologist James Reason, who concluded that safety failures are almost never caused by isolated errors, with most accidents resulting from multiple, smaller errors in environments with serious underlying flaws. Reason described this as the 'Swiss Cheese Model' and advocated that organisations should identify the individual holes within their systems and make changes in order to both shrink the size of the holes and create enough overlap so that the holes do not align/ Fig. No 2/13/. Reason used the terms active errors to describe errors made by individuals (which he argued are inevitable as no practitioners are able to practice perfectly) and latent errors to describe the failures of systems that allow the inevitable active errors to cause harm /13/.

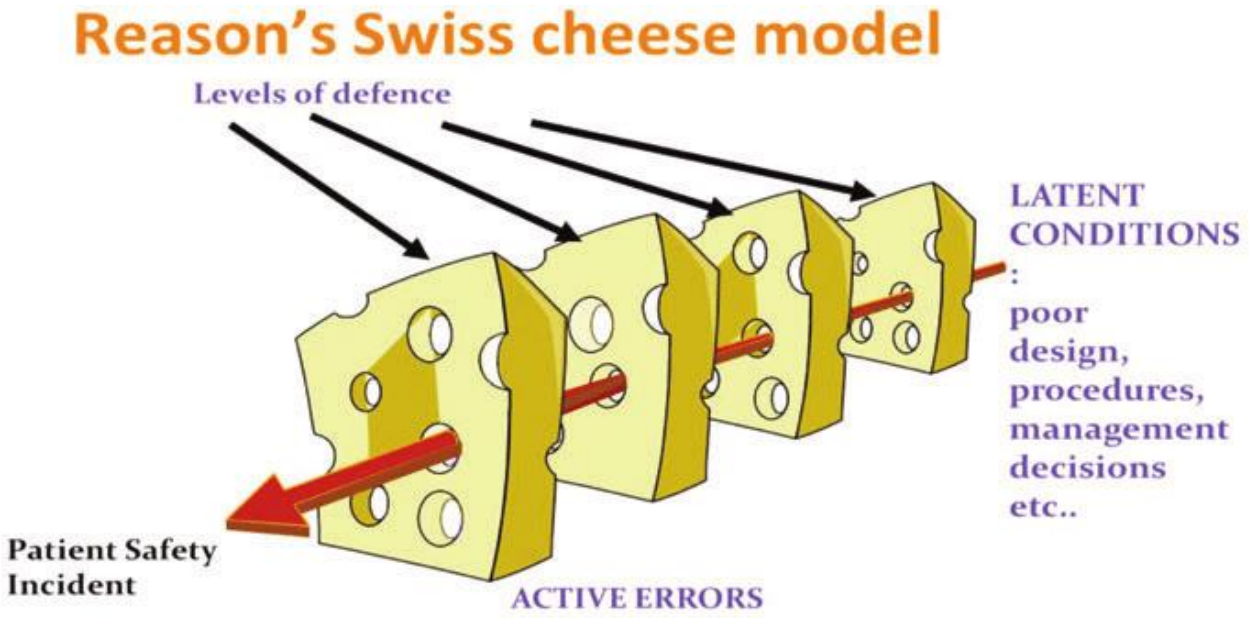

Figure No 2. Reasons' Swiss cheese model/13/.

Activities to improve patient safety in health care systems include

1. Identify current issues regarding patient safety
2. Revise systems, education, and training to address known patient safety issues
3. Educate health care professionals about the importance of patient safety concepts. Establish a system of checks and balances to reduce medical errors. Ensure practical application of patient safety concepts (training)
4. Enhance patient interaction to reduce errors and repeat the process to address errors that persist/14/.

PS and RM integral process, development and interaction substantially determine the patient management outcomes in medicine, surgery and especially in EGS.

1. 3. PATIENT SAFETY IN SURGERY

Surgery accounts for a large number of medical errors because of the critical nature o operative interventions. In fact, in a report by Gawande and colleagues, 66% of al adverse events were found to be surgical in nature, most of which occurred in the OR. More than half of these were thought to be preventable. ORS are intricate, high-stress environments characterized by a broad array of technological tools and interdisciplinary personnel, accompanied by a unique set of team dynamics, where professionals from multiple specialties whose goals and training differ widely are required to work in a closely coordinated manner. This complex setting provides multiple opportunities for suboptimal communication, clashing motivations, and errors arising from cognitive biases, poor interpersonal skills, and substandard environmental factors, all independent of technical incompetence /15/.

With the intent to save life In 2012 312·9 million surgical operations took place /66 countries surgical data reported between 2005 and 2013/, which is a 33·6% increase over 8 years, accounting to 1533 operations per 100 000 people/16/. Unfortunately, unsafe surgical care can cause substantial harm, leading to crude mortality rate after major surgery of 0.5-5% and complications after inpatient operations reaching 25% of patients. In developed countries, almost 50% of all adverse events in

hospitalized patients are related to surgical care, where half of the cases in which surgery led to harm are considered preventable.

Tentative estimates suggest that one in ten patients suffers from an adverse event in hospital. In the US, nearly 100,000 people die from the consequences of mistreatment. The intensive care units record 1.7 medical errors per patient and day. The most affected disciplines are the operative disciplines, particularly general surgery/17/.

Since the Institute of Medicine released its landmark patient safety report To Err Is Human, 21 years ago, the new report from medical liability insurer Coverys takes a close look at why patient safety is still far from optimal. The report examined 20,211 closed medical malpractice claims from 2010 to 2019 to provide risk managers, clinicians, and healthcare executives a unique view into factors that lead to claims, intending to proactively reduce conditions that result in patient harm and financial risk/18/.

Around 200 million surgical procedures are performed globally every year. Even with a conservative low estimate of 1 to 2% average complication rate , at least 2 to 4 million patients annually will suffer harm from surgical care. These facts impose some intuitive questions:

- How many patients and their families have been involved in a transparent shared decision-making process of surgery?
- How many times other alternative treatments or conservative treatment have been proposed?
- How often patients have been encouraged to seek for second opinion?
- How many patients have undergone ”unnecessary operations “ and suffered “unnecessary” complications, including preventable death from unneeded treatment?

The answers remain elusive. Here is a “moment of truth” question for all surgeons. How likely are you to consider having a surgical procedure done on yourself that you would recommend to your patients? Being intrinsically biased to towards recommending unnecessary surgery, we as surgeons must embrace the concept of “shared decision making” as a core pilar in the partnership with our patients. Listening skills, empathy and compassion should no longer be considered optional humanistic virtues for surgeons, if we are truly dedicated and committed to providing appropriate and safe surgical care to our patients/19/. “Surgical care is inherently risky, and when things go wrong, is a common basis for malpractice claims,” the report concluded. “Despite widely distributed guidance, checklists, team training, and simulation aimed at reducing their prevalence, events continue to occur involving retained foreign bodies, wrong site procedures, and less-than-optimal team performance.”

The OR environment is often characterized as a tight, congested area with an array of wires, tubes, and lines, known as the "spaghetti syndrome. Consequently, movements by members of the surgical team are often obstructed; instruments and supplies may be difficult to access and maintain, and the risk of accidental disconnection of devices and human error increases. Poor lighting, suboptimal temperature, and excessive or unwanted noise have been shown to negatively affect surgical performance.Unnecessary noise may also hinder appropriate communication needed among the OR staff. /15/.

Contemporary surgical practice is more sophisticated, efficient and effective than ever before, and yet the incidence of adverse events during surgical care is reported at approximately 15% of cases in retrospective series, and in reality is probably greater. The global burden of adverse incidents occurring in the operating theatre is staggering and stands comparison with the mortality sustained in armed conflict, representing the consequences of our well-intentioned but imprecisely executed actions in the operating theatre Adverse events are typically seeded from deficiencies in non-technical

skills (i.e. cognitive and social skills that complement technical skills and contribute to safe and efficient task performance/20/.

Adverse event rates for surgical conditions remain unacceptably high, despite multiple nationwide and global patient safety initiatives like the '100,000 Lives Campaign' (2005/2006) and subsequent '5 Million Lives Campaign' (2007/2008) by the Institute for Healthcare Improvement (IHI), the 'Surgical Care Improvement Project' (2006) and 'Universal Protocol' (2009) by the Joint Commission, and the WHO 'Safe Surgery Saves Lives' campaign accompanied by the global implementation of the WHO surgical safety checklist (2009)/14/.

Non-technical errors are usually due to communication break down which can contribute to adverse events. Sentinel events are defined as an unexpected occurrence involving death or serious physical or physiological injury or the risk thereof/19/.Patients can categorize unanticipated outcomes as malpractice, suggesting negligence or incompetence on the part of a professional. However for physicians and healthcare providers unanticipated outcomes and even some adverse events from the patient prospective are often viewed as known complications in practice.

Strategies to reduce surgical errors can be better decision making, operative planning and team performance for common operations, particularly in high risk circumstances like emergencies, reoperations and patients with difficult anatomy. Surgery itself is predisposed to adverse events by definition. Technical errors are the most important part in this field because they have a profound impact on complications and because they are preventable. They can be either attributable to direct intraoperative manual errors or to knowledge or judgement issues of surgical tactics. Different operations have different risks in terms of safety and result in different outcomes. The most common types of operations associated with technical errors are general or gastrointestinal, spine and gynecology surgery. Visceral injuries, like bowel injuries and haemorrhage, as well as retention of surgical materials are the most recurrent adverse events in abdominal surgery, often causing a high mortality rate and permanent disabilities/19/.

Patient Safety Culture (PSC)is an important aspect for advancement in healthcare that embodies crucial patient care guidelines and processes for preventing adverse events in health care and include established safety values and knowledge of specific patient care protocols./8/.

Surgery must adopt prevention based problem-solving approach, facing the possibility of technical error, such as improving anatomy knowledge, senior specialist consultation and collaboration, implementation and standardization of evidence based perioperative process of care and team training and simulations. Progress will also depend heavily on system analysis, education and the development of guidelines, and standards of practice and prevention. Transformation to a culture of safety is slow and challenging, especially for surgeons, due to fear of professional and legal consequences. Human error is inevitable and unavoidable. Surgeons should be able to study their errors in an open manner, use them as learning opportunities to improve health care and make every effort to decrease them/19/.

Poor communication has been increasingly regarded as a causal factor in a large percentage of sentinel events within the healthcare system. The interplay between different members of the surgical team is yet another critical component of surgical performance. Studies have shown that teamwork factors alone account for 45% of variance in errors committed by surgeons/15/.The human factor methods of studying surgical patient safety include observational studies; surveys, interviews and focus groups; and retrospective review. Most popular human factor methods of improving surgical patient safety are checklists, briefings and team training, handoff protocols and interventions, focused on well-being.

One of the most challenging issues to improve patient safety is preventing wrong-site surgery, with 95 wrong-patient, wrong-site, or wrong-procedure sentinel events reported to The Joint Commission in 2017. The last published2 (2006-2009) VHA rate of in–operating room (in-OR) adverse events was 0.4 adverse events per 10 000 procedures/21/.

Despite increased awareness of safety, errors routinely continue to occur in surgical care. Disruptions in the flow of an operation, such as teamwork and communication failures, contribute significantly to adverse events. Although it is apparent that some incidence of human error is unavoidable, there is evidence in medicine and other fields that systems can be better designed to prevent or detect errors before a patient is harmed. The complexity of factors leading to surgical errors requires collaboration between surgeons and human factors experts to carry out the proper prospective and observational studies. Only when we are guided by this valid and real-world data can useful interventions be identified and implemented. Improving the design of equipment, the order, allocation, and definition of surgical tasks, the design of the surgical environment, and the organization of services and support around the maintenance and improvement of surgical flow could all yield improvements in surgical performance and eventually caregiver and patient outcomes/15/.

In recent years studies of process failures, communication, teamwork, interruptions and distractions have now identified multiple vulnerabilities implicit within systems of surgical care /22/.

The increasing share of surgical care as an essential component of health care worldwide will continue to rise with the escalation of traumatic injuries incidences, cancers and cardiovascular disease, not rarely being the only choice of therapy.

1.4. PATIENT SAFETY IN EMERGENCY GENERAL SURGERY

The American Association for the Surgery of Trauma and the American College of Surgeons Committee on Trauma defined emergency general surgery (EGS) as a field in 2003. EGS constitutes 7% /approximately 3 million/ of all hospital annual admissions of patients in the United States where 850,000 EGS operations. The following seven procedures - partial colectomy, small bowel resection, cholecystectomy, peptic ulcer disease, lysis of adhesions, appendectomy, and laparotomy account for 80% of the operative EGS burden. EGS patients are a unique subset of patients with higher rates and risks of postoperative complications, mortality, readmissions, and care discontinuity. Approximately 50% of the patients undergoing emergency general surgery develop postoperative complications and 15% are readmitted to the hospital within 30 days of their index operation /23/.

The American Association for the Surgery of Trauma (AAST) was the first to develop a formal definition of emergency general surgery (EGS) in 2013/24/. The EGS patient was conceptually defined as "any patient (inpatient or emergency department) requiring an emergency surgical evaluation (operative or non-operative) for diseases within the realm of general surgery as defined by the American Board of Surgery".

Emergency general surgery was clearly defined, separate from trauma surgery and other general surgical specialties, for the first time in 2003 by the American Association for the Surgery of Trauma (AAST) and the American College of Surgeons Committee on Trauma/25/.

Over the past 10 years, acute care surgery has become widely accepted as a distinct surgical specialty and practice paradigm, encompassing 3 areas of surgical practice: trauma surgery, emergency general surgery, and surgical critical care. In the USA, the incidence and prevalence of EGS conditions exceed that of other common, highly studied public health problems, including newly diagnosed cancers and newonset diabetes. More than 3 million patients are admitted annually to US

hospitals with EGS conditions, representing over 7% of all US hospitalizations. Moreover, there are over 850,000 EGS operations performed annually in the USA/26,27/.

Recent studies have shown that EGS patients are at uniquely higher risk for medical errors and complications following surgery, with EGS patients up to eight times more likely to die compared to patients undergoing the same procedure electively/28,29/.

Hospital admissions for Emergency General Surgery (EGS) have increased 28% since 2001, with over 27 million admissions annually, representing more hospital admissions per year than the sum of all new diagnoses of cancer or diabetes.[1] Patients who undergo EGS procedures are up to 8 times more likely to die than those undergoing the same procedure electively.[2] EGS admissions and costs are projected to increase 45% to $41.20 billion annually by 2060 using US Census projections/30/.

Emergency General Surgery accounts for 11% of all hospital admissions yet represents the majority (50%) of all surgical mortality in the United States. Therefore, improving healthcare outcomes in the United States will require addressing optimal care and outcomes in EGS/31/.

Emergency surgery deals with the sickest patients with often unexpected conditions, in an environment which has availability of treatment facilities on a "first come - first served basis" rather than a triaged system within many hospitals. The relative inconsistency of the emergency team and "short notice" aspect to the work, places it at the forefront of risk from surgical error.

The elevated mortality rates of emergency surgery are attributable to risks from the nature of the illness, to the level of staff experience and the time and timing of interventions, with an incomplete information base contributing to variable outcomes. It is still a deficient area of supervision of training surgeons, team members preparation and familiarity as well as awareness and importance of human factors in emergency surgery whgich is on an early stage of acceptance within the profession.

The prevalence and severity of EGS-driven hospitalizations present a significant public health cost burden. The total estimated cost of EGS hospitalizations in 2010 was $28.4 billion, and this is expected to nearly double by 2060/32/.

Patients undergoing emergency general surgery (EGS) procedures are up to eight times more likely to die than patients undergoing the same procedures electively. This excess mortality is often attributed to nonmodifiable patient factors including comorbidities and physiologic derangements at presentation, leaving few targets for quality improvement. Patients from 303 hospitals, representing 153,544 admissions/2008–2011/, at hospitals with lower risk-adjusted trauma mortality show 33% lower risk of mortality after admission for EGS procedures. The structures and processes that improve trauma mortality may also improve EGS mortality. Emergency general surgery–specific systems measures and process measures are needed to better understand drivers of variation in quality of EGS outcomes/31/.

Evidence of a "weekend effect" is limited in emergency general surgery (EGS). Analyzing 438,110 EGS patients from The National Inpatient Sample (NIS) data/January 2014-September 2015/,of whom 103,450 underwent weekend operation, Hatchimonji & al. discovered a weekend effect on mortality (OR 1.22; 95%CI 1.02-1.46) and an interactive effect between weekend operation and teaching status on complications (teaching OR 1.22; 95%CI 1.15-1.29; interaction OR 1.13; 95%CI 1.03-1.25)/33/.

Delivery of thromboprophylactic treatment on an emergency general surgery admissions according to guidelines resulted in 61% reduction in radiologically detected clinical episodes of thromboembolism 2 months after admission demonstrating that the quality improvement process results in in major sustainable development in thromboprophylaxis /34/.

Anonymous incident reporting and validation of incident reports could provide useful input for the design of an effective tool to govern patient safety in emergency medical service organisations and hospital-based emergency departments. As emergency care organisations are lacking evidence-based and feasible tools to govern patient safety within their structure, established strategies from other high-risk sectors like aviation is needed to be evaluated in emergency care settings, using an experimental design with valid outcome measures to strengthen the evidence base/35/.

"The only surgeons without complications are retired or liars." /6/.

Emergency general surgery is characterized by an exceptionally high level of variability, which can be subcategorized as patient-variability (acute physiology and comorbidities) and system-variability (operating room resources and workforce)q Patient-variability and system-variability, with focus on multidisciplinary communication as a modifier, represent potential domains for quality improvement in this field/36/.

EGS continues to grow and consolidate as an area of practice constituting a significant portion of urgent and emergent care the healthcare system,. development of accurate, validated severity measures will allow for planning for the optimum care of these patients as we move forward /37/.

The principles of a consultant-led, patient-centered surgical management, continuity of care and specificity of expertise in managing surgical patients' complications and readmissions are particularly valuable and advisable in the field of Acute Care Surgery. Applying them in the management of the emergency surgical patients both in the perioperative period, will improve the outcomes and guarantee patient safety/38/.

1.5. RISK & PATIENT SAFETY

Patient safety program introduce risks, closely connected to the highly principle-based nature of the current paradigm, its strong standardization claims, its 'measure-and-manage' strategies and its blame-free ethos. These are the risks that could be determined as the self-inflicted plagues of the program. /7/. The notion of risk is used to determine when threats, dangers, vulnerabilities, or problems are constituted as measurable risk objects, most often through probability measures, while striving to account for and manage them. Risk should be understood as unwanted potential consequences, as a situation that involves 'the possibility of loss, injury, or other adverse or unwelcome circumstance' (Oxford English Dictionary). The accountability claim attributed to the risk label should be held in mind in discussions on how, when managing some risk via certain types of risk management tools, new areas of concern arise that must equally be attended to and accounted for; they are the risk of risk management.

Second order risk is a concept that draws attention to possible redistributions of focus from the concrete clinical situation, or from what could be determined as first-order safety issues, to second-order processes, such as the implementation and maintenance of the technologies themselves. Such redistributions show themselves as specific side effects of quality and safety technologies such as reporting and classification systems, medical information systems or specific safety technologies and procedures/7/.

Although standardization risk is perhaps the dominant organizing principle of contemporary safety management, it is at the same time the most criticized part of PS program, as it is said to undermine the complexity and situated status of risk, healthcare practices and clinical work. Standardization is supported by the program's failsafe systems approach, stating that safety is best ensured by creating

systems that reduce variation and make it as hard as possible for healthcare professionals to make mistakes.

2.DIAGNOSIS

2.1. RISK ASSESSMENT

Risk assessment is a structural and systematic procedure that depends on the correct identification of the hazards and an appropriate estimation of the risks arising from them, with a view to making inter-risk comparisons for the purposes of their control or avoidance. Risk assessment in a numerical manner will help hospitals to assess their safety status and prioritize their action plan in view of their resources /39/.

Proactive risk assessments were used to systematically identify and prioritize hazards in surgical wards and allowed interventions to be recommended/40/.

Risk assessments and outcome predictions for EGS patients are aided by validated scoring systems including Charlson age-comorbidity index (CACI), Emergency Surgery Score (ESS), and the Physiological and Operative Severity Score for the enumeration of Mortality and Morbidity (POSSUM). In addition, the AAST has developed a grading system for reporting anatomic severity of multiple EGS conditions. Further, the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) universal Surgical Risk Calculator is available online and through smartphone apps/24/.

Surgeon can have a major impact on assessing risk and that a reduction in risk can have a significant impact on reducing patient safety incidents, complaints and litigation. Correct and accurate assessment of the death and complication risk in every patient and its integration into the consent process with supporting documentation can radically reduce complaints and litigation, both areas that surgeons find most painful/41/.

Disclosing and reporting of medical errors is a basic tenet for improving patient safety. Implementing Quality Assurance Protocols, like this of Denver Health is aimed to lower the threshold of reporting all perceived complications, "near-misses", and "no-harm events", mandating a standardized peer-review of all reported occurrences in a "real-time" fashion, and relies on three cornerstones: anonymous "real-time" reporting of any suspected adverse occurrence, including "near miss" and "no harm" events; peer-review of each reported event at a weekly QA conference, using a standardized case review form; and corrective action is defined for each reviewed case/42/.Within two years of implementation of this QA process, the median rate of reported occurrences increased more than 6-fold from 1.7 to 11.1 per 100 surgical procedures, the overall complication rate for the entire Department of Orthopaedics at Denver Health increased 5-fold, from 1.4% to 6.7%. The reported 5-fold increase in complications within the department likely reflects the improved open and more honest reporting format and critical peer-review of each reported occurrence, rather than a decreased quality of care.

The thorough reporting and peer-review of surgical errors creates a new dilemma for the practicing surgeon: an increased quality of reporting leads to an increased complication rate, thus affecting the individual surgeon's professional track record and the respective institution's ranking among peers. Until legislation provides legal protection for medical error disclosure and analysis, we continue to rely on the limited and anecdotal reporting of medical errors and surgical complications in the peer-reviewed biomedical literature/43/.

The Surgical Risk Preoperative Assessment System is a parsimonious, universal surgical risk calculator integrated into electronic health record used for populating clinical decision support tools to lessen the burden on the busy surgeon /44/.

Individualized preoperative risk assessment of adverse outcomes for patients undergoing surgical procedures has the potential to improve the processes of informed consent and shared decision making, guide perioperative care, and ultimately reduce occurrence of postoperative complications/45/.

Proactive risk assessments were used to systematically identify and prioritize hazards in surgical wards and allowed interventions to be recommended. The 5 most hazardous processes prioritized for modified health care failure mode are hand hygiene, isolation of infection, vital signs, medication delivery, and hand off. Of 190 failures within these processes, 50 (26%) are considered hazardous and did not have effective control measures in place/40/.

Surgical Risk Preoperative Assessment System/SURPAS/ was designed as a user-friendly tool to provide accurate risk assessment based on eight preoperatively available predictor variables. It provides individualized preoperative risk assessment for eight different 30-day postoperative adverse outcomes: mortality, overall morbidity, and six complication clusters (infectious, transfusion and cardiac, renal, pulmonary, venous thromboembolic, and neurological complications). SURPAS provides accurate risk assessments based on eight preoperatively available predictor variables, four of which are operative characteristics (work, Relative Value Unit, inpatient/outpatient operation, primary surgeon specialty, and emergency operation status) and four of which are patient characteristics-ASA class, functional health status, age, and sepsis within 48 h of surgery. SURPAS has proved the potential to enhance the informed consent and shared decision making, processes, guide perioperative care, and ideally, ultimately reduce occurrence of postoperative complications/46/.

New strategies to improve patient safety in surgery include the implementation of defined surgical safety checklists, standardized "readbacks" to improve communication in perioperative services, and medical team training programs/47/.

Progressive refinements to SURPAS improve the accuracy of the models,
and facilitate its easier use and implementation, predisposing future prospective external validation studies/48/.

The quality of trauma care is assessed by the Performance Improvement and Patient Safety (PIPS) Program, based on trauma records and severity indexes. Several severity scoring systems are available; some are universally accepted and reviewed periodically in order to improve their accuracy. These include the Trauma and Injury Severity Score (TRISS) implemented in 1992, a tool well suited for the evaluation of the quality of care and to propose improvements in trauma care. The TRISS comprises the Revised Trauma Score (RTS) and Injury Severity Score (ISS) indexes as well as the trauma type (blunt or penetrating) and the patient age. The ISS does not consider more than one lesion in each body region in its calculation, which may underestimate the severity. The updated ISS, the New Injury and Severity Score (NISS), considered the three most serious injuries in calculating the severity of the trauma, regardless of the body region affected, thus seeking to increase the sensitivity of the index, as trauma patients can present multiple severe injuries in the same body region. New Trauma and Injury Severity Score (NTRISS)-like, TRISS SpO_2, and NTRISS-like SpO_2. The first new variation (NTRISS-like) combines the physiological BMR parameters of the GCS, systolic blood pressure (SBP), and the anatomical variable of the NISS. The second and third variations include

SpO_2. In the TRISS SpO_2, the RTS is replaced by GCS and SBP values and SpO_2 score; in the NTRISS-like SpO_2, the value assigned to SpO_2 was added to the NTRISS-like index. All these given the clinical significance and ease of obtaining information from their components, seem to be good options to estimate the survival probability of trauma victims/49/.

The Emergency Surgery Score (ESS) was recently developed and retrospectively validated as an accurate mortality risk calculator for emergency general surgery. The multicenter prospective observational study of The Association for the Surgery of Trauma/April 2018 -June 2019/, with 19 centers enrolled, with 1,649 patients (aged >18 years) undergoing emergency laparotomy show 30-day mortality and complication rates 14.8% and 53.3%; 57.0% of patients required ICU admission. ESS gradually and accurately predicted 30-day mortality; 3.5%, 50.0%, and 85.7% of patients with ESS of 3, 12, and 17 died after surgery. ESS accurately predicted complications; 21.0%, 57.1%; and 88.9% of patients with ESS of 1, 6, and 13 developed postoperative complications /50/. Therefore ESS is useful for perioperative patient and family counseling, triaging patients to the intensive care unit, and benchmarking the quality of emergency general surgery care.

In broader UK practice for emergency laparotomies (some of which are not high-risk), both a consultant surgeon and consultant anaesthetist are present for 83% of operations performed during daytime hours on a weekday. However, for operations performed after midnight, where the predicted risk of death is more than twice as high as it is for daytime cases/51/.

Analyzing 124,335 emergency general surgery patients from 2007-2017 Gaitanidis & al. Found out that Emergency Surgery Score, a validated risk calculator, accurately predicts mortality and morbidity in the elderly EGS patient/52/.

Emergency Surgery Score can prove useful for (1) perioperative patient and family counseling, (2) triaging patients to the intensive care unit, and (3) benchmarking the quality of emergency general surgery care/ 50/.

Risk stratification tools (RST) facilitate a meaningful comparison of surgical outcomes between surgeons, hospitals and healthcare systems/54/. In the emergency setting we differentiate trauma scoring systems, critical care scoring systems, surgical risk stratification tools and Track and trigger systems/53/.

The ideal RST for EGS will meet six criteria for the generalized EGS patient population:

1. Accurately quantify morbidity and mortality risk in the EGS population.
2. Use readily obtainable objective data.
3. Be applicable early prior to a surgical intervention.
4. Be applicable in non-operative cases.
5. Can be used for auditing purposes.
6. Application that facilitates use in clinical practice.

Surgical RST, used to predict perioperative morbidity and mortality, fall under two general categories: physiologic scores and risk prediction models and are explicitly designed for use in the perioperative setting.

The American Society of Anesthesiologists Physical Status Grading (ASA-PS) was introduced in 1941 as a preoperative grading of the physical status of patients, and was subsequently modified in 1963. There are five grades based on the presence or absence of mild to serious life-threatening systemic disease, with an additional classification of E designated for emergency surgery.

The American College of Surgeons National Surgical Quality Improvement Programme (ACS-NSQIP) database was used to develop a web-based tool to estimate the surgical risk of most

operations. The resulting Universal Surgical Risk Calculator tool requires 21 preoperative factors (demographics, comorbidities, procedure), using regression models to predict mortality as well as six postoperative complications based on the preoperative risk factors.

The Charlson Comorbidity Index (CCI) was originally developed to facilitate classification of risk of death extrapolated from comorbidities, to be used in longitudinal studies. Charlson Age-Comorbidity Index (CACI) combines 19 medical conditions weighted 1–6, with age weighted 1 for every decade past 40 years.

The Emergency Surgery Acuity Score is a preoperative risk stratification system that predicts perioperative mortality in emergency surgery patients. It captures both patient comorbidities and the acute physiology at presentation. The ESAS includes 3 demographic variables, 10 comorbidities and 9 laboratory variables. Based on the relative impact of these 22 predictors, using weighted averages, a score is derived that ranges from 0 to 29 points.

Like ESAS, the Physiological Emergency Surgery Acuity Score (PESAS), was derived from sequential analyses of ACS-NSQIP and composed of 10 physiologic points linked to advanced clinical acuity and postoperative mortality.

The Physiological and Operative Severity Score for the Enumeration of Mortality and Morbidity (POSSUM) was devised in 1996 in the UK as a simple scoring system that could be used in surgical audit and is a 12 factor, four grade, physiological score (ranging from 12 through 88) plus a 6-factor operative severity score (ranging from 6 through 44).

The Perioperative Mortality Risk Score (PMRS) is a risk score for 30-day postoperative mortality derived from a study of surgical patients aged 70 years or older.

The Surgical Apgar Score (SAS) is a 10-point score based on the lowest heart rate, lowest mean arterial pressure and estimated blood loss intraoperatively

The original Surgical Mortality Score (SMS) is a risk stratification model for in-hospital mortality for patients undergoing surgical procedures developed across a range of surgical specialties in England.

The Surgical Outcome Risk Tool (SORT) is a preoperative risk prediction tool for death within 30 days of surgery in adults.

The Surgical Risk Scale was developed as an alternative system for comparative audit that used easily collected clinical data independent of the surgeon. The Surgical Risk Scale has three components: the Confidential Enquiry into Perioperative Deaths grade (categorized as elective, scheduled, urgent and emergency), the ASA-PS grade and the British United Provident Association (BUPA) operative grade (categorized as major, intermediate, major, major plus and complex major)

The Surgical Risk Score is an ASA-PS-based model to predict mortality based on preoperative data alone. It was formulated using data of all types of operations excluding cardiac surgeries and caesarian section. This score includes ASA-PS status, age, type of surgery (elective, urgent emergency) and degree of surgery (minor, moderate or major as described by the modified Johns Hopkins surgical severity score).

Track and trigger systems are defined as scoring systems that rely on periodic or interval measurements of data points (afferent information) with predetermined action plans (efferent action) when certain data or scoring thresholds are reached. Such systems are geared towards early identification of, and subsequent team-based response to, changes in patient physiologic status linked to adverse in-hospital outcomes.

In this vulnerable EGS patients, evidence-based RST that accurately predict individual risk will facilitate decision making, enhance informed consent and permit the comparison of outcomes in patient groups that share similar comorbidity profiles. Such an RST must incorporate information regarding an individual patients acute and chronic physiology through readily accessible data points, and expeditious use must be feasible. While valuable in the setting of acute injury, trauma scoring systems do not comprehensively evaluate the comorbid conditions inherent to the EGS population and are therefore not ideal for use in EGS.

The ACS-NSQIP surgical risk calculator incorporates a comprehensive body of preoperative data and accounts for the specific planned procedure. It has been previously validated in the EGS population and has shown broad statistical reliability/53/.

Teamwork in the operating theatre is becoming increasingly recognized as a major factor in clinical outcomes. Self-assessment of teamwork is influenced by professional differences and most robust self-assessment tool is the Safety Attitudes Questionnaire (SAQ), while the most robust observational tool is the Non-Technical Skills (NOTECHS) system/54/.

3.TREATMENT

3.1. RISK MANAGEMENT AND PS

Risk Management is the setting-up of organizational instruments, methods and actions that enable the measurement or estimation of medical risk and subsequently evolve strategies to handle it/55/.

Risk Management requires an integrated view of the risk-error problem, requiring a coordinated, multi-disciplinary approach that will ensure complementary measures and shared objectives of the proposed actions understood by all the players within the existing hospital structures.Assuring better safety aims at destroying traditional opportunism for new concepts of risk management in especially esteemed professionals and create solid pillars for optimal collaboration of medical specialists especially surgeons. Risk management and patient safety professionals are engaged in a close working relationship, which may be characterized by smooth integration, wary cooperation, or conflict.

The processes and outcome goals for risk management and patient safety are: identify, analyze, mitigate, and prevent clinical risk, with the overall objective of improving clinical outcomes throughout the organization. The process is multidisciplinary and collaborative. Data sources include patient and caregiver concerns; voluntarily submitted patient incident reports; sentinel and significant events; coded information such as the DRG-triggered hospital-acquired conditions; claims; write-offs due to service or potential errors; risk and quality assessments; literature and evidence-based practice; and external alerts from national and international sources/56/.

Patient safety is everyone’s responsibility and requires a team effort. Risk management and quality management must work together for the cause of patient safety.

3.2. RISK MANAGEMENT IN HEALTH CARE

Risk management in health care emerged as a result of the malpractice crisis of the 1970s. Professionals with clinical experience were hired with the hope that they could identify the systemic problems in specific clinical fields, like surgery, engage clinicians and educate them about the need to modify specific behaviors, and work collaboratively with others on the clinical and administrative teams to help design environments that would be more conducive to the delivery of safe care. Although at times successful—for example, the dramatic changes in safety associated with the

delivery of surgery and the enhancement of patient quality in that specialty—generally the hard work did not pay off/57/.

Historically, one of the most significant sources of risk management was the patient incident or the lawsuit that often followed. Even proactive risk management activities often were instituted only after a problem, or a provider was identified as high risk. When an adverse event was reported it was the top priority to meet with all parties involved in the treatment of the patient, record the information, and counsel them not to repeat the information to anyone else. Risk managers were primarily focused on managing the adverse events. Medical errors are inherent in the work of healthcare providers, where most often they are result of a complex interplay of multiple factors; while rarely they are due to the carelessness or misconduct of single individuals.

There are three axioms, or rules for approaching patient safety management with a pragmatic attitude in concrete clinical situations /7/:

1. Take point of departure in the clinical situation.
2. Be cautious about ideals of risk elimination through system optimization.
3. Preserve the importance of training, habits, and experiences.

They summarize the attitude to patient safety management and are supported by the presented pragmatic alternatives to mainstream safety thinking. Present safety management efforts should preserve the importance of training, habits and experiences.

Risk management in healthcare comprises the clinical and administrative systems, processes, and reports employed to detect, monitor, assess, mitigate, and prevent risks/58/. By employing risk management, healthcare organizations proactively and systematically safeguard patient safety as well as the organization's assets, market share, accreditation, reimbursement levels, brand value, and community standing. Deployment of healthcare risk management has traditionally focused on the important role of patient safety and the reduction of medical errors that jeopardize an organization's ability to achieve its mission and protect against financial liability. But with the expanding role of healthcare technologies, increased cybersecurity concerns, the fast pace of medical science, and the industry's ever-changing regulatory, legal, political, and reimbursement climate, healthcare risk management has become more complex over time. Maintaining high clinical quality will increasingly impact financial performance towards a greater emphasis on value and outcomes. Hospitals and other healthcare systems are expanding their risk management programs to ones that are increasingly proactive and view risk through the much broader lens of the entire healthcare ecosystem.

To expand the role of risk management across the organization, hospitals and other healthcare facilities are adopting a more holistic approach called Enterprise Risk Management/ERM/ which includes traditional aspects of risk management like patient safety and medical liability and encompasses eight risk domains/Fig. No 3/58/.

ERM in healthcare promotes a comprehensive framework for making risk management decisions which maximize value protection and creation by managing risk and uncertainty and their connections to total value. It uses technology to synchronize risk mitigation efforts across the entire organization and remove risk associated with siloed departments or business units. Additionally, data analytics are embedded to support decision-making, departmental cohesiveness, risk prioritization, and resource allocation.

Successful teamwork in RM includes four domains. The first - team climate consists of critical leadership, existence of communication environment and staff briefing. The second – planning incorporates critical in threat management, SOP briefings, plans, workload assignments and

contingency management. The third – execution requires to be critical in error management monitor/cross check, workload management and vigilance. The final forth domain advocates review /modify for undesired state management, evaluation of plans, inquiry and assertiveness. The high functioning team needs open lines of communication and an accurate shared mental model of the current state of affairs/ 19/.

Source: ASHRM Enterprise Risk Management: A framework for success
NEJM Catalyst (catalyst.nejm.org) © Massachusetts Medical Society

Figure No 3. The eight risk domains of Enterprise risk management/58/.

The role of the healthcare risk manager is to oversee and facilitate the ERM framework, proactively identify risks, estimate potential consequences, develop, respond and execute containment plans when adverse and unforeseen situations transpire. Current responsibilities of the healthcare risk manager include communicating with stakeholders, documenting and reporting on risk and adverse circumstances, and creating processes, policies, and procedures for responding to and managing risk and uncertainty and finaly monitor the shifting landscape of the healthcare risk continuum.

Performing risk management in healthcare, risk managers need to identify, quantify & prioritize risk; investigate & report sentinel events; perform compliance reporting; capture & learn from near misses & good catches; think beyond the obvious to uncover latent failures; deploy proven analysis

models for incident investigation; invest in a robust risk management information system and find the right balance of risk financing/transfer/retention.

Healthcare organizations need to have an established and on-going risk management plan being the guiding document for how an organization strategically identifies, manages and mitigates risk. Healthcare risk management plans communicate the purpose, scope, and objectives of the organization's risk management protocol as well as define the roles and responsibilities of the risk manager and other staff involved in risk mitigation.

The fundamental components of healthcare risk management plans consist of education, training, patient & family grievances, purpose, goals, & metrics, reporting protocols, communication, contingency, response & mitigation plans. The healthcare risk management plan needs to be a living document that is frequently updated and improved based on emerging risks, lessons learned, new information, and changes in the healthcare system and practice of medicine.

With more than 5,000 members American Society for Healthcare Risk Management (ASHRM) promotes effective and innovative risk management strategies and professional leadership through education, recognition, advocacy, publications, networking, and interactions with leading health care organizations and government agencies. ASHRM initiatives focus on developing and implementing safe and effective patient care practices, preserving financial resources, and maintaining safe working environments/ 59/."The medical culture that silently taught the ABCs as Accuse, Blame, and Criticize is fading. Rising in its place is a safety culture emphasizing blameless reporting, successful systems, knowledge, respect, confidentiality, and trust."

Only an integrated management of medical risk will bring about changes in clinical practice, promote an increase in health care awareness that is ever closer to both patient and operator, and contribute indirectly to a decrease in the cost of health services, thus ultimately facilitating the allocation of resources to interventions directed to the development of safe and efficient health organizations and facilities. What needs to change is the way in which risk management is orientated. The team should constructs a root cause analysis of systems and structures in advance of those risks actually materializing, so embedding a risk management discipline into the fabric of healthcare operations and corporate and strategic planning.

Hazards and risks are often misinterpreted as one term, while actually they are not the same. A hazard is something with the potential to cause harm, whereas a risk is the likelihood that illness, injury, or even death might result because of the hazard. Risk management comprises five basic steps: identifying hazards, assessing and prioritizing risks, deciding on control measures, implementing control measures, and monitoring and reviewing.

The risk manager needs to be more fully engaged in providing leadership to the organization that will enable it to make sound business decisions that balance fiscal accountability with quality of patient care and error reduction. The risk management process has to create a high reliability organization is grounded on the principles of reduction in variability through standardization of equipment and procedures, consistent clear leadership committed to safety and excellence, and an open non-punitive reporting culture. What is needed is intranet (or web based) reporting, and paging a risk manager, performance improvement of the staff and train them to identify potential problems and patient safety issues when doing prospective or retrospective audits. The risk manager has to to protect sensitive information to ensure patient confidentiality and to keep specific information gathered for a specific purpose out of the hands of those who might use it inappropriately or incorrectly for other purposes but, on the other, He must decide what to share and with whom, and to

assist the organization in designing a managemental policy, so that a true picture of risk and benefit can be appreciated. Risk managers should attempt to chart a new future. Risk managers must be part of a team that constructs a root cause analysis of systems and structures in advance of those risks actually materializing, thus embedding a risk management discipline into the fabric of healthcare operations and corporate and strategic planning.

Risk management needs to be more fully engaged in providing leadership to the organization to enable it to make sound business decisions that balance fiscal accountability with quality of patient care and error reduction.

The creation of a high reliability organization is fundamental to patient safety. It is important to develop a common taxonomy around error reporting so that consistency is maintained both in identifying the event and summarizing the causal factors contributing to it. Risk managers who accept change and think of new ways to embed risk management principles into their organizations to help create meaningful and sustainable change will prosper. Those who don't should get out now. They are destined to fail and to fail their organizations.

Most healthcare risk managers look forward to the opportunities ahead and are dedicated to managing their organization's risk and enhancing patient safety. Those risk managers who accept change and think of new ways to embed risk management principles into their organizations to help create meaningful and sustainable change will prosper. Those who don't should get out now. They are destined to fail and to fail their organizations.

3.2. RISK MANAGEMENT IN SURGERY AND EMERGENCY GENERAL SURGERY

Adverse event rates for surgical conditions remain unacceptably high, despite multiple nationwide and global patient safety initiatives like the ‘100,000 Lives Campaign’ (2005/2006) and subsequent ‘5 Million Lives Campaign’ (2007/2008) by the Institute for Healthcare Improvement (IHI), the ‘Surgical Care Improvement Project’ (2006) and ‘Universal Protocol’ (2009) by the Joint Commission, and the WHO ‘Safe Surgery Saves Lives’ campaign accompanied by the global implementation of the WHO surgical safety checklist (2009)/14/.

A culture of surgical safety requires devotion of the leadership to the safety mission, including dedicated time, focus, and financial investment. Beyond the organizational leadership, there should be a committee on patient safety and advisory boards, which include supervisors, middle managers, risk managers, safety officers, quality improvement officers, physician staff, nursing staff, and other clinical staff, and this committee should focus on the culture of the health care system as a whole. Teaching in medical schools and residency should be designed to reflect the importance of safety culture within health care and surgery. Specific tools, such as checklists, pre-briefs, debriefs, executive walk rounds, and event reporting systems can help to create a culture of patient safety, but no individual tool will work in isolation/15/.

Nearly one-third of patients having an emergency laparotomy in the UK do not have their risk documented preoperatively. The 30-day mortality for this undocumented group was found to be 7.1% in the 2017 NELA report. Patients for whom risk was not determined were less likely to be assessed preoperatively by a consultant surgeon and were less likely to go to critical care postoperatively,15 suggesting that the failure to assess risk results in some high-risk patients not receiving potentially protective interventions./51/.

“Measure twice, cut once. This is more important in surgery than in carpentry.” /6/

The risk of error can be minimized by good situational awareness, matching perception to reality, and, during treatment, reassessing the patient, team and plan. It is important to recognize and acknowledge an error when it occurs and then to respond appropriately without shaming or blaming. Classification of surgical error promotes understanding of how the error was generated, and utilizes a language that encourages reflection, reporting and response by surgeons and their teams, however, the individual surgeon still needs to reflect on their own contribution and performance /11/.

When physicians are sued for "medical malpractice" today, they are actually sued for negligence. In the legal sense negligence is defined as "a failure to exercise the care that a reasonable prudent person would exercise in like circumstances". The concept of legal negligence consists of 4 factors – duty, breach of duty, causation and damages/19/. Active efforts at risk management can decrease the incidence of medical liability suits and improve the defense of the suits that occur. Risk management focuses on the patient at risk and actively manages the case so that communication is improved and documentation of the case is appropriate. Physicians should notify the risk management department within their practice and hospital, whenever they become concerned that a particular patient's care results in an unexpectred outcome that could lead to litigation.

Examples of risk management initiatives are the COPIC/Colorado Physician Insurance Company/, which instituted the "3Rs Program" standing for "Recognize, Respond, and Resolve. The AAOS/American Academy of Orthopedic Surgeons/ has promoted the Team-STEPPS/Team Strategies & Tools to Enhance Performance and Patient Safety/ program seeking to improve communication between healthcare workers, better define team roles and responsibilities, resolve interpersonal conflicts and provide techniques to eliminate barriers to quality and safety/19/.

Active efforts at improving patient safety and communication within patients are integral to successful risk management. Combining these efforts with programs like COPIC and 3Rs can dramatically improve patient satisfaction and resolution of unexpected medical events. Physicians and hospitals should aggressively employ these tactics is an effort to improve the patient's overall care and positively affect the patient's experience. Successful risk management is not typically an attempt simply to close down and "circle the wagons".

WHO,s global and regional initiatives to address surgical safety, like Safe Surgery Saves Lives defiines set of standards on four areas in which dramatic improvements could be made in the safety of surgical care: surgical site infection prevention, safe anaesthesia, safe surgical teams and measurement of surgical services. The WHO Surgical Safety Checklist aims to decrease errors and adverse events, and increase teamwork and communication in surgery/Fig. No 4 /5/.

The 19-item checklist is now used by a majority of surgical providers around the world, resulting in significant reduction of morbidity and mortality. Factors for it successful implementation concern issues like staff engagement, leadership, multidisciplinarity, coaching, discussion, education, training, feedback and local adaptation.

The SAFROS Project was funded by the European Commission and aims to understand patient safety in robotic surgery through the development of technologies and procedures to assist surgeons. and to explore whether safe robotic surgery can improve the level of patient safety currently achievable by traditional surgery.

The WHO Global Initiative for Emergency and Essential Surgical Care (GIEESC) is a global forum of health providers that share knowledge, advise policy formation and develop educational resources to reduce the burden of death and disability from conditions that could be treated through surgery. Strengthening emergency and essential surgical care it empowers healthcare systems by

multidisciplinary and multisectoral effort. The WHO has had major success in surgery through the Global Patient Safety Initiative, Surgical Safety Checklist, and Infection Prevention and Control with the recently published WHO Global Guidelines for the prevention of Surgical Site Infections, which needs a multidisciplinary team and a multi-modal approach to move the guidelines into practice.
The WHO Surgical Safety Checklist has become a high-profile symbol for patient safety efforts in surgery, showing its positive effects on teamwork, communication, and patient outcomes/60/.

Figure No 4. The WHO Surgical Safety Checklist/5/.

Institutional cultural norms and infrequent communication between the team members in the operating room can compromise a patient's safety in the operating room. Implementation of the World Health Organization Surgical Safety Checklist (WHO SSC) has improved multidisciplinary communication practices and reduced morbidity and mortality in surgical settings. The role of the checklist is to improve the completion of critical tasks, which have the potential of increasing risk or be life threatening if missed, at points where the detection of missed task is still possible. The WHO Surgical Safety Checklist has three components - the first part occurs before the induction of anesthesia and is initiated by the anesthesia team and includes confirmation of the patient's identity, procedure, and consent and site marking. The second part occurs before skin incision and is initiated by the surgery team. It focuses on introduction of all team members by name and role, patient's identity, procedure and site of incision, and prophylactic antibiotics. The surgery /23/.

The WHO SCC includes the following steps - Before induction of anesthesia, Before skin incision and Before patient leaves the operating room. The SURPASS preoperative and postoperative checklist includes admission to ward, recovery room or ICU, ward boarding and discharge.

Combining the surgery checklists has a more significant impact on patient safety and clinical outcomes than adhering to a single checklist/61/.

The usage of the World Health Organization Surgical Safety Checklist and the Surgical Patient Safety System (SURPASS) checklist is beneficial for patients, indicates research on 9,000 surgical procedures, outlining that joint use of the WHO SCC and the SURPASS was associated with fewer complications, fewer reoperations, fewer hospital readmissions thus improving processes of care and patient safety/62/.

Performing a realist synthesis to examine the implementation and sustained use of checklist protocols in surgery Gillespie & al.found out that the sustained use of surgical checklists is discipline-specific and more successful when medical staff are actively participating and leading the implementation process. Second, involving clinicians in tailoring the checklist to the nuances of their context and encouraging them to reflect on and evaluate the implementation process enable greater participation and ownership. In implementing surgical checklists, the weakest link in the chain appears to include leadership, tailoring, and reflection on the process. Focussing on yielding more data on checklist implementation, is better than undertaking process evaluations and designing studies across multiple healthcare settings and then collecting data on how implementation varied across contexts/63/.

"The checklist only works if the front line team actually uses it." /6/

Checklists should not be a solitary measure of the reliability of our safety environment but a method by which we can foster accountability and ensure the most basic steps to improve patient care are accomplished. Sustained use of checklists requires difficult cultural change and organizational efforts/ 19/.

Checklists liberate the surgeon's mind from the task of remembering routine obligate procedures and need to be employed. Checklists are not a panacea however against all forms of individual or team error/3/.

To achieve an optimal level of patient safety in the OR, checklist should be performed, strictly applied by the hospital administration and modified in personal work practices to ameliorate the level of patient safety in surgery. Development of a risk management program for patient safety in the OR with defined roles, monitoring, evaluation, analysis, and continuous improvement is a must/2/. The checklist should be implemented as part of the daily surgical routine as an organized document which should contain:

(1) The patient's identity, site of surgery, and the name of the procedure in order to minimize the percentage of errors of identification.

(2) Checking the patient presurgical condition and surgical site marking should be a routine procedure in order to minimize the possibility of wrong site surgery.

(3) The surgical consent of the patient, increasing the level of communication between the surgeons and the patients discussing their conditions and the possible outcomes of the surgeries.

(4) Assessing the possibility of blood loss

(5) Organized discussions of the surgical team before surgeries

(6) Application and monitoring of a clear prophylactic antibiotics policy

(7) Development of a risk management program for patient safety in the OR with defined roles, monitoring, evaluation, analysis, and continuous improvement.

Checklists result in significantly improved standardization, evidence-based management of postoperative complications, and quality of ward rounds, thereafter representing low-cost intervention to reduce rates of failure to rescue and to improve patient care/38/.

A recent survey of 846 operating room staff and surgeons from 138 hospitals in China show widespread acceptance of WHO Surgical Safety Checklist (SSC) and its value in improving patient safety. The overall compliance of 79.8% and overall adverse events rate of 2.7% demonstrates that the WHO SSC remains a powerful tool for surgical patient safety in China. Cultural changes in nursing assertiveness and surgeon-led teamwork and checklist ownership are the key elements for improving compliance, which monitoring is ensured by standardised audits/64/.

The introduction of checklists to support the performance of surgical teams is associated with significant decreases in patient mortality and improvements in communication and teamwork. The degree to which checklists can support surgical teams relies on a structured implementation strategy coordinated by experienced sponsors and executed by local teams. Previous experiences implementing checklists through population-level quality improvement programs have demonstrated the critical elements to effective implementation of checklists/15/.

Patient Safety tools provided by NHS Improvement include a National Reporting and Learning System (NRLS) for reporting Serious Incidents, as well as a National Patient Safety Alerting System (NPSAS), which enables the dissemination of patient safety alerts to healthcare providers via a central alerting system/13/.

Evidence-based surgical safety tools should focus on encouraging the use of huddle strategies focused on modifiable factors unique to the EGS surgical subspecialty. The EGS communication tool can work as an adjunct to the WHO SCC and potentially improve intraoperative communication and PS in EGS patients. The communication tool created in Brigham and Women Hospital, Boston MA, and Harvard Medical School, which consists of three phases: (1) identification of modifiable huddle points, (2) pilot testing, and (3) implementation of the tool in the OR, has been institutionally successfully implemented into all operating rooms. Before the surgical incision, alongside with the WHO SCC, the EGS team acknowledges if the case is classified as an EGS procedure and verbalizes the anticipated postoperative disposition of the patient. All team members are encouraged to call a team huddle to discuss any concerns at any time /23/.

Effective communication is one of the most critical safety aspects in patient safety in surgery /3/. Structured communication is a critical technical tool for patient safety in surgery. Promising new strategies of standardized communication in health care include written checklists and standardized verbal communication strategies, including 'readbacks', and perioperative briefings/debriefings, in alignment with crew resource management programs from professional aviation. Despite the global implementation of surgical safety checklists in the past decade, general compliance appears poor, and serious preventable adverse events continue to occur.

On July1 2004, The United States Joint Commission published the Universal Protocol, designed to eliminate wrong site/side procedure/patient surgery. It consisted of three parts/3,19/:

1. Patient verification of the procedure to be performed.
2. Surgical site marking
3. A time-out before starting surgery.

Surgeons need to be aware of the areas of high risk by using accurate interpersonal communication and perform preoperative briefings to confirm the correct patients, site, operation, medicine, labs and equipment needed for a successful surgery, as well as use checklists and postoperative reviews. The

surgeon as a team leader can help change the underlying tone of surgical experience by embracing these patient-centered tools/19/.

Preventive strategies like The Universal Protocol consist of verification, site marking and "time out", fulfilled by a collaborative team approach. The Universal Protocol is a mandatory safety standard designed to eliminate wrong procedures by preoperative verification, site marking, and "time out" process to confirm the correct patient, procedure, site/side before any operation. Good teamwork, communication and redundant systems are the only way to reduce WSS. Institutions that have implemented medical team training programs and checklists, briefings and debriefings have substantially reduced the rate of WSS and overall surgical mortality8/.

Large cohort studies indicate that complication rates are approximately 15% for EGS patients requiring surgery, where wound-related complications are most common, followed by pulmonary issues. Mortality rates are relatively low, around 1.5% across multiple large studies, and have declined over time despite increasing volume, where postoperative stroke, major bleeding, and acute myocardial infarction present the highest risks for death/24/.

The Lancet Commission on Global Surgery proposed the perioperative mortality rate (POMR) as one of the six key indicators of the strength of a country's surgical system. To improve the usefulness of POMR as a safety benchmark, standard reporting items should be included with any POMR estimate. Choosing a basket of procedures for which POMR is tracked may offer institutions and countries the standardisation required to meaningfully compare surgical outcomes across contexts and improve population health outcomes/65/. Perioperative mortality rates/POMR/ though frequently reported in low-income and middle-income country lacks standardised approach for reporting and risk stratification, resulting in wide variation in POMR across procedures and specialties. A quality assessment checklist for surgical mortality studies could improve mortality reporting and facilitate benchmarking across sites and countries.

As Standard Operating Procedure (SOP) non-compliance has been a prominent reported cause of incidents reporting of non-compliance with SOPs associated with human failure by professionals themselves is an important area for improvement. Shortcomings in communication, mistakes, and forgetting are important targets for improvement to reduce perioperative incidents. Acknowledgement of the risk of human attitude, behaviour and failure are a prerequisite and a challenge for the development of tools to improve guideline adherence and effective communication, in order to improve perioperative patient safety/66/.

Medication reconciliation in trauma is highly inaccurate and puts patients at risk for adverse events and poor clinical outcomes, therefore tools and techniques to improve its accuracy in patient population is needed/67/.

Healthcare-Failure-Mode-Effects-Analysis (HFMEA) is a methodology which allows for hazardous process failures to be prospectively identified when managing deteriorating patients, assessing surgical competence and safe postoperative care and solutions to be recommended. Observations on surgical wards in 3 London hospitals with 100% response, discovered that outdated communication technology, understaffing, and hierarchical barriers were identified as root failure causes of escalation of care process in surgery. The expert consensus group recommended defined escalation protocols, human factors education, enhanced communication technology, and improved clinical supervision as basic risk management tools/68/.

The current objective for safety in surgical practice integrates training, education, research, and delivery of clinical care reqiuring cooperation among the responsible institutions. The classification

of the safe behaviours relevant to surgery/Non-Technical Surgical Skills for Surgeons/has made a major contribution to surgeons, educators, and curriculum developers appreciating the importance, content, and teaching of patient safety, for better understanding of operating team members social behaviours and cognitive skills needed to ensure safe and efficient surgical performance./20/.

Efforts to reduce the high mortality and morbidity in EGS should include standardized EGS definitions, EGS severity assessment, risk-adjusted outcomes using a national EGS registry, inclusion of operative and nonoperative care, and development of standardized EGS patient care using evidence-based guidelines and bundles/30/.

Success in patient safety depends on several factors that include identification, revision of systems, education, and training to address known patient safety issues. Medical educators and mentors must understand and practice the culture of patient safety so the new generation of surgeons will incorporate the same values intuitively by mimicking the leadership/14/.

More complete understanding of task shifting, as a strategy to expand the surgical workforce, will strengthen strategic planning of surgical providers where shortages in the global surgical workforce lead to lack of access to surgical care of billions people worldwide /69/.

Although there is an overall decrease in the number and severity of incorrect surgical procedures telling people to follow the policy is not enough to prevent incorrect surgery. The tools for risk management could be application of specialty-specific safety measures, continued leadership support and peer-to-peer communication, mindfully conducting time-outs, using standardized procedures, universal protocol, and human factors engineering to work toward eliminating incorrect surgical adverse events/21/.

Solutions to reduce cognitive biases and enhance risk management are not very apparent like other areas of patient safety. Simple strategies include feedback and follow up, increase perception, making expertise more available," time out" to decrease reliance on memory, awareness of fatigue, stress, burnout and following guidelines. More advanced strategies are control of biases, computer based decision support system, simulation, game training and metacognition and cognitive forcing/3/.

Recent publications emphasize the fact that our current patient safety protocols are indeed not safe in protecting our patients from suffering unintended and preventable harm/70/.

Current approach for improving safety culture and engaging frontline clinicians to identify and mitigate defects in care delivery is The Johns Hopkins University, Comprehensive Unit-based Safety Program (CUSP), which discusses the scope and prevalence of perioperative harm, causes of error in healthcare, and perioperative never events. It nalyzes safe practices, cognitive workload, fatigue, and the effects of noise in the OR, outlining risk management tools like dynamics of surgical teams, safer perioperative team communication, and the culture of safety/71/.

The structured approach to quality and safety with integrated system of care, including a physician model, and commitment to transparency, bolstered by a strong health information technology infrastructure, demonstrates that excellent care quality and patient safety can be successfully advanced within healthcare institutions even when challenged by limited resources and socially disadvantaged and complex patients./42/.

Although standardization is a common tool used in any field requiring consistent, high quality outcomes, it has not been a term widely used in surgery, or medicine overall, until 2000 when the Institute of Medicine published "To Err is Human: Building a safer Healthcare System." In this publication, the lack of standardization in health care was highlighted; "standardization and simplification are two fundamental human factors principles that are widely used in safe industries

and widely ignored in health care." The lack of standardization is due to the fact that every specialty is different and that each patient is unique. The exposure of errors in health care brought new light to the fact that standardization is a critical component of providing effective and safe patient care. The accelerated transition to the electronic health record (EHR) has forced standardization of care, even on the unwilling clinician. The Affordable Care Act or "Obama Care" included significant financial incentives for hospitals to adopt EHR. Around the same time, checklists, although always used, were highlighted as effective tools to improve communication and teamwork, standardizing care along the way/15/. The literature supports standardized, evidence-based care to improve patient safety in the surgical setting, including checklists and ERP. Patient complexity and hospital setting can represent barriers to implanting standardized practices, but they can be overcomed with thoughtful strategies. The electronic health record is a valuable tool for standardization and patient safety, but careful attention to development and implementation of order sets and pathways is required. When partnered with changes in culture, checklists and enhanced recovery programs increase standardization and reduce surgical morbidity and mortality. Culture, patient complexity, and rotating trainees can represent challenges to standardization, but can be mitigated with thoughtful strategies/15/.

Accountability is another issue which can foster risk management of PS in EGS. which is defined as the responsibility of an individual provider or practitioner (e.g. physician or provider) in the care that he/she does or does not provide for an individual patient. Accountability is poorly wielded as a tool to improve health care delivery and quality/3/.

3. 3. COVID 19 AND PATIENT SAFETY IN EMERGENCY GENERAL SURGERY

On 29thof May, 2021, WHO reported for 169 118 995 confirmed cases of COVID-19, including 3 519 175 deaths worldwide, thus revealing the huge challenges and risks facing health workers globally, working in stressful environments making them more prone to errors which can lead to patient harm /72/.

Health systems and healthcare workers all around the world, including emergency surgery teams, have met serious difficulties due to the rapid spread of COVID-19 /73/.

Guidelines have recommended postponing, and even cancelling, all elective and semi-elective interventions, but little guidance has been provided “by surgeons for surgeons” concerning the emergency surgeries and interventions for general surgery and trauma patients /74/.

Several reports on EGS patients with Covid 19 suggest that though the number of emergency surgeries performed have been reduced by half, emergency and non-postponable surgical interventions should be managed without delay and can be carried out safely in a COVID-19 pandemic/75/.

Healthcare providers have always been the professionals most exposed to the risk of contracting to any kind of infection due to the nature of their profession. Elective interventions have been postponed to give care of patients with COVID-19. However, some interventions cannot be delayed, such as trauma surgery, acute abdomen, and emergency endoscopies. To maintain the sustainability of the healthcare system, the protection of healthcare providers should be the top priority. On the other hand, patients, who need emergency healthcare, should also be provided with appropriate treatment. Surgeons should act appropriately when an intervention is inevitable during the COVID-19 pandemic and choose a treatment method appropriately in the circumstances to protect themselves and their patients as much as possible/76/.

Recognizing the global disastrous impact of Covid19 The World Society of Emergency Surgery educational board (WSES) conceived a position paper with the purpose of providing recommendations for the management of surgical patients in emergency setting under COVID-19 pandemic for the safety of the patient and healthcare workers based on available evidences and experienced surgeons' opinion. After performing a systematic review and meta-analysis the group of experts Deliberately and consecutively presented statements and 11 recommendations concerning Covid -19 patients in terms of diagnosis, preoperative screening, treatment/prophylaxis, indications for surgery according to TACIS, profound and exquisite safe measures for the surgeon and patient, close and specific for both surgical disease and Covid -19 prophylaxis and treatment until discharge. The aim is to provide an evidence-based guidelines for emergency surgeons to perform safe surgery during this pandemic to limit the diffusion of the SARSCoV- 2 infection and to decrease mortality rate related to COVID-19 surgical patients. The basic steps are presurgical ward screening multidisciplinary management of COVID-19 surgical patients and protective measures for the staff and safety of the patient in the operating room if an immediate surgical procedure is mandatory/ 77/.

The COVID-19 pandemic is a reminder that besides our core duty to care, we also have duties to improve and to learn, re-evaluate strategies that have harmed patients, families, so as to improve care. When the pandemic is finally over, we should be able to look back and conclude that critical care is stronger than ever before/78/.

3.4. FUTURE OF EMERGENCY GENERAL SURGERY AND PATIENT SAFETY

As the prevalence of injuries and non-communicable diseases increases, the provision of effective surgical care will become an increasingly important priority to reduce death and disability. In the global trend towards standardisation of curricula and competency-based training a cross-nationally coordinated strategy will be important to address the burden of surgical disease /79/.

"Patient safety is a core attitude and thus needs to be introduced early and then reinforced throughout postgraduate education and continuing professional development." (*Stefan Lindgren, President of the World Federation for Medical Education*)

Patient safety should be regarded as a new basic science for health professions education. Major reforms will be needed to incorporate patient safety into the curricula of professional schools, training programs, develop competencies and changing behavior.

The new curriculum should include capabilities for providing patient-centered care, working in interdisciplinary teams, using evidence-based practices, and applying quality improvement concepts. Students should be able to see individual safety problems with system lenses, identify and test potential solutions.A major barrier is the prevailing culture of shame, blame,
and denial about medical errors. The new curriculum shall create a culture of safety, allow optimal learning and give students opportunities to practice their new skills in real world settings/80./.

The WSES process of building up a common training and educational program to promote EGS formation consisted of: formulating key steps; implementatioin of the National Delegate Project for refining the WSES guidelines, position papers, and consensus conferences according to each country's needs;performing many courses around the world; establishing key performance indicators (KPIs) for quality assessment of systems performance in both process and clinical outcomes; and set up the WIRES project (WSES International Registry of Emergency General Surgery to evaluate results on a macrodata basis and to give index allowing stratifying, evaluating, and improving the

outcomes. All these activities inevitably will positively influence the global improvement of patient safety in the field of EGS/81/.

Efforts to reduce the high mortality and morbidity in EGS should include standardized EGS definitions, EGS severity assessment, risk-adjusted outcomes using EGS registry, inclusion of operative and nonoperative care, and development of standardized EGS patient care using evidence-based guidelines and bundles/30/.

Future risks for diagnostic and communication errors could emerge from new technology, novel procedures, and current events like the coronavirus pandemic, the growing use of urgent care, electronic health records, telehealth, and robotics.

In the era of new and ever-evolving technology we should determine how we can best utilize this information to help us become better acute care surgeons rather than letting the technology drive how we care for our patients/25/.

Always ensure that benefits outweigh harms, and if there is uncertainty use your judgement and involve the patient in decision making/82/.

Innovations, building research and evaluation will help us arrive more quickly to the goal of making patients safer.

DOS for PS and RM

1. PS is currently recognized and highly assessed element of global healthcare.
2. PS is extremely relevant and demanding for EGS.
3. PS and RM are the pillars and bridges to quality achievement and improvement in EGS.
4. Wider implementation into surgical practice of RM tools for PS like checklists, protocols and programs fosters easier formulation of consensus statements, guidelines and recommendations to finally reach standardization of care in EGS.

DON'TS for PS and RM

1. PS and RM in EGS are still underestimated issues for the improvement of care quality.
2. Error reporting and analysis are currently misunderstood basic tools for improving PS in EGS.
3. Insufficient awareness and implementation of RM tools for PS in EGS is a major drawback for improving quality of care in this field.
4. There is lack of enough body of scientific evidence on PS & RM in EGS to convince surgeons and decision makers for their utmost importance in quality assurance in this area.

MULTIPLE CHOICE QUESTIONS

1. The World Health Organization defines patient safety as:
a. Uneventful treatment of patient in the healthcare system
b. Successful medical management of every patient.
c. The absence of preventable harm to a patient during the process of health care
d. Optimal outcome in every patients' medical treatment
2. In 1919 WHO announced that adverse events occurring each year, due to unsafe care in hospitals in low- and middle-income countries account for:
a. 134 000
b. 1.34 million
c. 13.4 million
d. 134 million

3. Patients undergoing emergency general surgery (EGS) procedures are more likely to die than patients undergoing the same procedures electively up to:
a. up to two times
b. up to five times
c. up to eight times
d. up to twelve times
4. Risk management in health care emerged as a result of:
a. appeal for healthcare reform globally in the 1960s
b. the malpractice crisis of the 1970s
c. demand for multidisciplinary medical approach in 1980s
d. profound technological advancement in medicine in 1990s.
5. Responsibilities of the healthcare risk manager include:
a. communicating with stakeholders, documenting and reporting on risk and adverse circumstances,
b. creating processes, policies, and procedures for responding to and managing risk and uncertainty
c. monitor the shifting landscape of the healthcare risk continuum
d. a+b+c
6. The WHO Surgical Safety Checklist consists of:
a. 9 items
b. 15 items
c. 19 items
d. 25 items
7. Errors in health care may be classified as being the result of:
a. commission, omission or inition
b. cognitive and technical errors
c. diagnostic and management errors
d. a+b+c
8. The current objective for safety in surgical practice integrates:
a. training and education,
b. delivery of clinical care reqiuring cooperation among the responsible institutions
c. training and research,
d. a+b+c
9. Errors in medicine and surgery usually are result of:
a. individual error
b. institutional error
c. systemic error
d. team error
10. In developed countries, almost …% of all adverse events in hospitalized patients are related to surgical care, where half of the cases in which surgery led to harm are considered preventable
a. 20%
b. 30%
c. 40%
d. 50%

TAKE-HOME MESSAGES

1. PS and RM mutually are profoundly related and dependent categories in healthcare
2. PS and RM integral process, development and interaction substantially determine the patient management outcomes in medicine, surgery and especially in EGS.
3. To perform effective risk management of patient safety in emergency general surgery we need protocolized and standardized pathways based on consensus statements, guidelines and recommendations.
4. Recognizing the value of a culture of safety and accountability, providers must take performance measures for accountability.
5. Innovations, building research and evaluation will help us arrive more quickly to the goal of making patients safer.

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