An Emerging Roadmap For Patient Safer Culture:

Strategies to Improve Perinatal Care

UTHealth The University of Texas Health Science Center at Houston

MARCH OF DIMES

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Glossary of Terms

Sentinel event: is a Patient Safety Event that reaches a patient and results in any of the following:

- Death
- Permanent harm
- Severe temporary harm and intervention required to sustain life

(Joint Commission, accessed 9/27/2019 at https://www.jointcommission.org/sentinel_event_policy_and_procedures/)

The following definitions are from World Health Organization Conceptual Framework for the Classification of Patient Safety, 2009, accessed 9/27/2019 at https://www.who.int/patientsafety/taxonomy/icps_full_report.pdf

Patient Safety: is the absence of preventable harm to a patient during the process of health care and reduction of risk of unnecessary harm associated with health care to an acceptable minimum. (World Health Organization, accessed 9/27/2019 at https://www.who.int/patientsafety/about/en/)

Patient safety incident: an event or circumstance which could have resulted, or did result, in unnecessary harm to a patient.

Harm: impairment of structure or function of the body and/or any deleterious effect arising there from. Harm includes disease, injury, suffering, disability and death.

Contributing Factor: a circumstance, action or influence which is thought to have played a part in the origin or development of an incident or to increase the risk of an incident.

Incident type: a descriptive term for a category made up of incidents of a common nature, grouped because of shared, agreed features.

Root cause analysis: a systematic iterative process whereby the factors which contribute to an incident are identified by reconstructing the sequence of events and repeatedly asking why? Until the underlying root causes have been elucidated.

Adverse reaction: unexpected harm resulting from a justified action where the correct process was followed for the context in which the event occurred.

Side effect: a known effect, other than that primarily intended, related to the pharmacological properties of a medication.

Preventable: accepted by the community as avoidable in the particular set of circumstances.

Executive Summary

In the last 15 years, successes in patient safety initiatives have taken into account human factors and failures, safety cultures, error reporting/analysis and patient engagement. For many, adopting and implementing various patient safety initiatives represents improving safety, but these often lack an overarching strategy that promotes sustainability and optimal outcomes. Good patient safety initiatives fail due their lack of optimal dissemination and implementation as well as an integration that promotes a robust safety culture. A total systems approach to safety is required that is systematically applied across the total continuum of care. A culture of safety must be the foundation for safe patient care. Although the cultural emphasis is on systems of safe care, individual attitudes, knowledge, beliefs and behaviors are the safety culture foundations. According to the Joint Commission, a safety culture promotes trust and empowers staff to report errors, near misses, and risks. While much of focus in patient safety has been on the inpatient setting, there is much less experience with outpatients. Perinatal care often crosses geographic domains and clinical practices. Transitions of care exist between ambulatory and hospital settings as well as healthcare teams that care for two distinct patients (obstetricians to neonatologists and pediatricians to surgical subspecialists).

Perinatal medicine presents significant challenges to the healthcare system to maintain continuity and patient safety along a complex continuum of care. Transformational outcomes in the form of dramatic improvements in perinatal safety are needed to enhance the health of mothers and babies. While patient safety has largely focused on changes in behaviors and culture in inpatient settings, new approaches must encompass a safety culture extending into outpatient clinics and offices in communities, to multiple hospital settings, including labor and delivery, post-partum care units, normal nurseries and neonatal intensive care units, and the patients' home.

Organizations, like the Agency for Healthcare Quality (AHRQ), have created toolkits targeted to improve perinatal patient safety and provide a strong base for describing interventions to address problem-specific perinatal safety concerns. The University of Texas Health Science Center at Houston (UTH), in partnership with the Moore Foundation, March of Dimes, Rice University and multiple advisory councils, assembled a roadmap of tools to measure and improve safety culture, based on a new evidence-based, action-oriented safety culture framework. By following this roadmap healthcare organizations should be able to create and maintain a safe culture and improve patient safety.

Our hope is that this roadmap broadens the view of patient safety to address the important factors that contribute to the culture of safety from the highest organizational leader to those most affected by the culture, the patient/s and their family.

An Emerging Roadmap for Patient Safety Culture: Strategies to Improve Perinatal Care

MODULE I: Introduction

In 1999, the Institute of Medicine (IOM) reported more than 1 million preventable adverse U.S. events occurring each year and as many as 98,000 are fatal (Institute of Medicine [IOM], 2000). Annual deaths from medical errors among hospitalized patients were more than car crashes, breast cancer, or AIDS (IOM, 2001). Medical errors have recently been estimated to be the third leading cause of death in the U.S. (Makary & Daniel, 2019). Efforts to improve patient safety began in earnest in 2000 with the report To Err is Human. Since then, some areas of healthcare are safer, but errors and preventable harm to patients remain too frequent. This is true across all areas of healthcare, and there is particular concern about the safety of perinatal healthcare.

According to the Centers for Disease Control and Prevention (CDC), trends for pregnancy-related deaths in the US are steadily increasing with 7.2 deaths per 100, 000 live births in 1987 to 17.2 deaths per live births in 2015 (IOM, 2000). Although the majority of childbirths in the US result in healthy infants and mothers, serious adverse events occur resulting in devastating outcomes for infants, mothers and families. In some cases, these events are unavoidable or have increased risk due to pre-existing conditions; however, estimates suggest that 30% to 60% are preventable (IOM, 2001). Pregnancy-related complications result in increased days in the hospital and are about 50% as costly as uncomplicated births, accounting for $17.4 billion in annual US hospital costs (Makary & Daniel, 2019).

Neonates are particularly vulnerable to medical errors, with reported rates as high as 74 events per every 100 patients, 56% considered preventable (CDC, 2019). Error rates were higher in premature infants born at 24 to 27 weeks gestation (57%) than full-term newborns (3%) (The Joint Commission [TJC], 2017). The National Patient Safety Foundation concluded that a "total systems approach" is required, and that leadership must establish a "culture of safety" (Kristensen, 2016). Experts agree that improving patient safety will require a transformation of the culture of the healthcare industry (TJC, 2017). However, how to achieve that transformation in safety culture remains elusive in healthcare.

Patient safety culture has many definitions, but generally, it refers to values, norms, and beliefs about the role of the organization and employees in ensuring positive patient health outcomes (Kristensen, 2016). Culture dictates how healthcare leaders and providers are expected to behave, appropriate attitudes to exhibit, and the social rewards or punishments associated with specific actions (Sorra & Dyer, 2010). A positive patient safety culture may be associated with fewer adverse events in hospitals (Mardon, 2010). This evidence, plus requirements and endorsements to measure safety culture by regulators and expert groups such as the National Health Service in the U.K., and Centers for Medicare and Medicaid Services, The Joint Commission and the Leapfrog Group in the U.S., have contributed to the recent growth of safety culture publications (Bisbey, 2019).

Despite the importance of safety culture, existing frameworks fail to distinguish among factors that influence safety culture, safety culture itself, the behaviors that result from a safety culture, and the safety outcomes produced by the safety culture. These frameworks are also incomplete; they do not

include all the known factors related to a safe culture. Given these limitations, efforts to improve safety culture have met with mixed results. For example, current improvement efforts begin with baseline measurements that use surveys of clinicians (Sexton, 2006; Sorra & Dyer, 2010; Singer & Vogus, 2013). These measure only attitudes and perceptions - safety climate. In contrast, safety culture assessment requires a more comprehensive assessment of an organization including not only the attitudes and perceptions (climate), but also the behavioral norms, values, and assumptions.

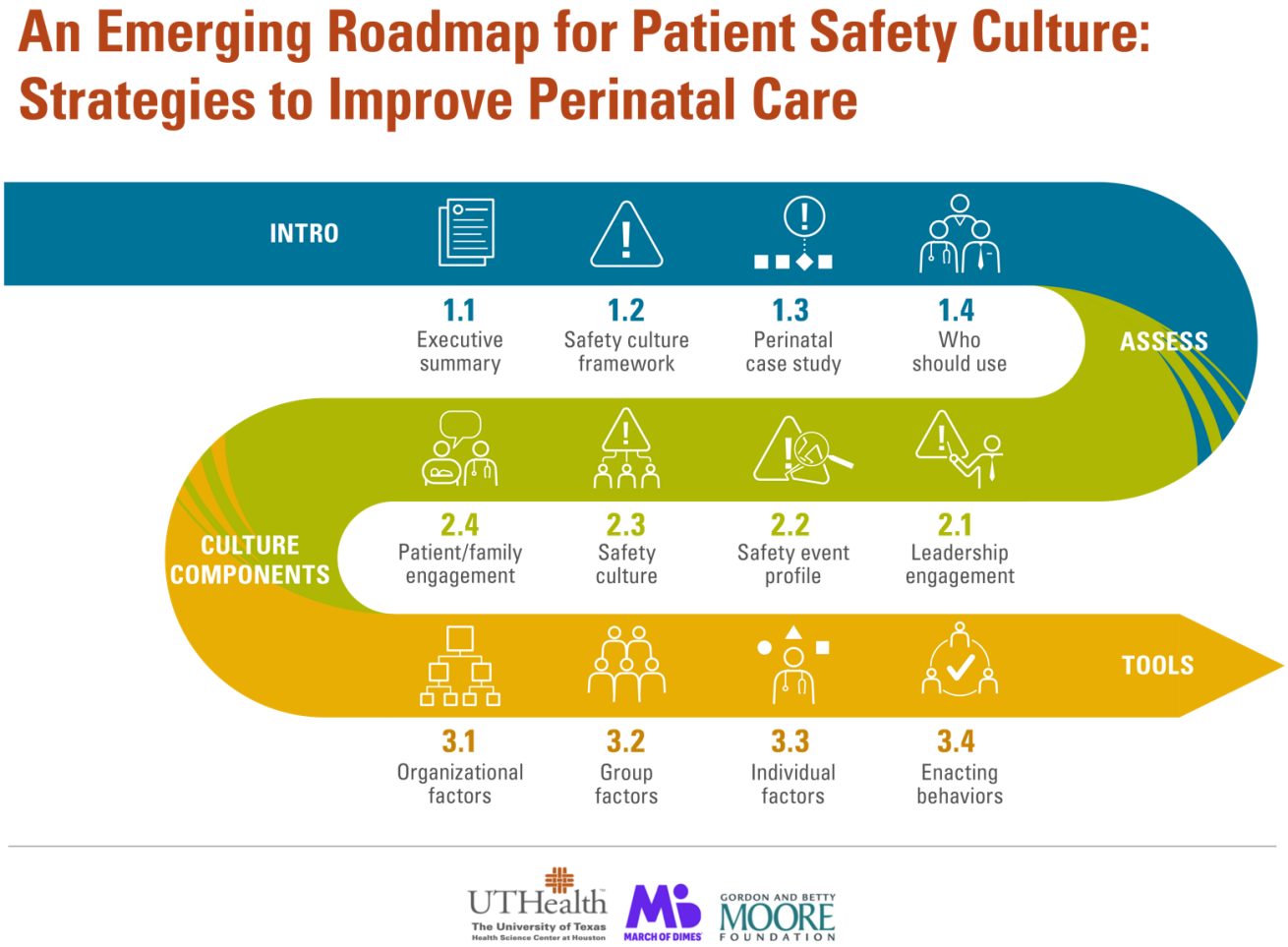
Consequently, it is unsurprising that healthcare organizations continue to struggle with improving patient safety culture and reducing patient harm. There is a critical need within the healthcare community for a comprehensive and evidence-based approach to improve and sustain patient safety culture. Toward this effort, we have adopted our recently advanced evidence-based framework for developing safety culture (Bisbey, 2019) and provide tools to help measure and improve culture. Using this framework and accompanying tools, we create a new roadmap for safety culture to help organizations assess and improve their culture, and ultimately reduce preventable harms.

Safety Culture and Perinatal Care

Tragedies such as preventable maternal deaths highlight the urgency for healthcare organizations to adopt cultures of care that promote safety for patients. Our safety culture framework supports a roadmap generalizable to all areas of healthcare, but with funding from the March of Dimes and the Moore Foundation our initial work centers on improving safety culture perinatal care. This is due to recent research highlighting serious concerns about perinatal patient safety. In the US between 2000 and 2014, the maternal death rate increased 26.6%, higher than most developed countries (MacDorman, 2016). With an average of 700 women dying every year from pregnancy or childbirth related causes, it is estimated that 60% are preventable. In addition, infants suffer high rates of preventable harms in neonatal ICUs (Gray, Suresh, & Ursprung, 2006). National organizations such as ACOG, AAP, IHI and others are leading specific interventions to improve specific areas of perinatal safety, but for these interventions and others to meet their potential to improve safety, the overall safety culture of organizations must also be improved. Our hope for these efforts is to provide a road map for health care systems, institutions, and providers that enables them to choose a route forward that is compatible with their existing goals and helps them sustain a culture that enables all contributors to enact best practices regarding perinatal safety, improving outcomes for both mothers and babies.

A Journey through the Roadmap

This roadmap is designed in modules to take you through an introduction of perinatal safety and safety culture framework, methods to assess organizational safety culture, a deeper understanding of the foundational components of safety culture and lastly a compendium of measures and interventions to improve culture. In this introductory module we will describe the framework.



Framework for Safety Culture

In order to understand the components of a culture of safety, we reviewed the literature from all types of industries where safety is a priority. We examined frameworks described in aviation, aerospace, nuclear energy and other high reliability organizations. From these papers, we identified the common factors that create a safe culture and the common behaviors arising from a safe culture.

This framework identifies *seven enabling factors* that form the foundation for organizational safety culture. These enabling factors are framed within three categories:

1) **Organization** (*leadership commitment* and *policies/resources* dedicated to safety)
2) **Group** (*cohesion* and *psychological safety*) and
3) **Individual** (*knowledge of safety*, *sense of control* and *commitment to safety*).

Each enabling factor, defined below, represents an essential component influencing the culture. As the building blocks of safety culture, these enabling factors provide the context for the norms, values and assumptions around safety to develop within the organization. We propose that all of these factors be present and exist in unison to develop a positive safety culture.

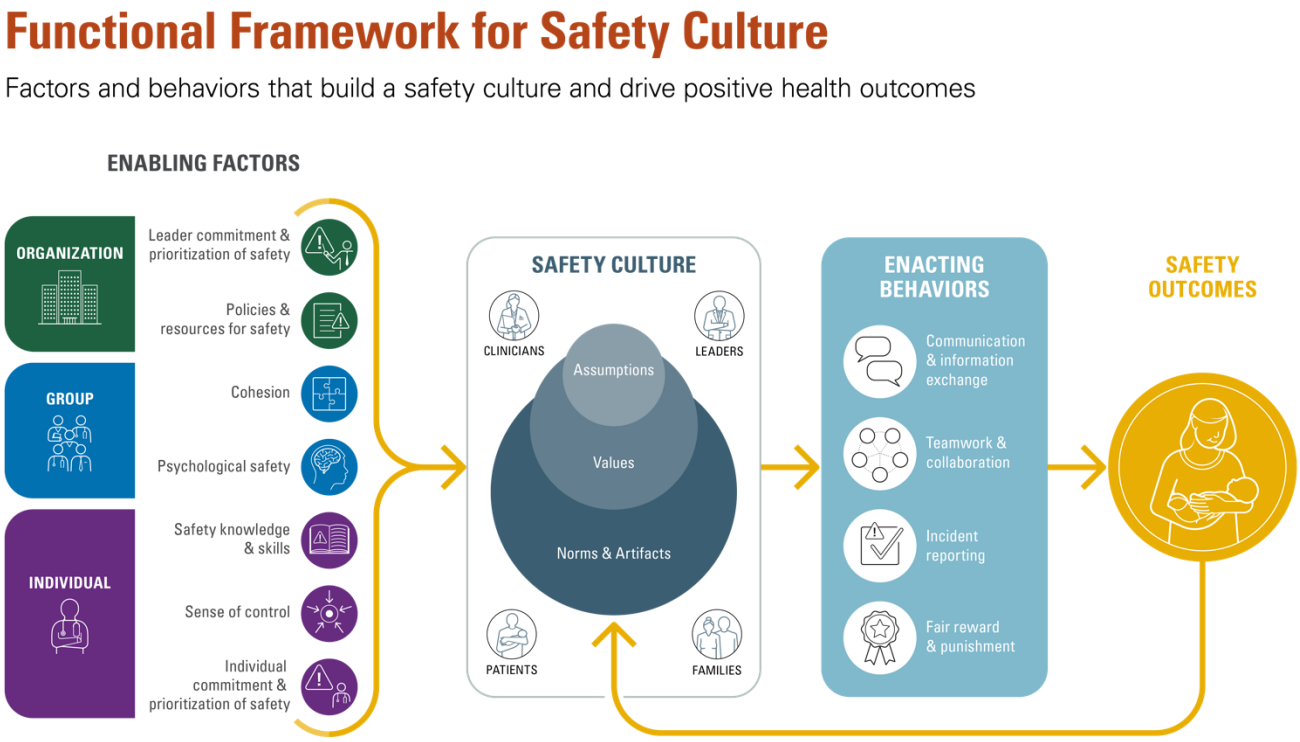
FOUNDATIONAL ENABLING FACTORS	
ORGANIZATION	*factors that impact all members within an organization or department to a similar degree*
Leader commitment & prioritization of safety	leadership is perceived to hold a priority of safety over all other performance goals (e.g., profit, speed)
Policies and resources for safety	policies and resources provided by the organization concerning safety (e.g., training resources, maintained equipment, safety policies and protocols
GROUP	*factors that impact all individuals within a team or group to a similar degree, and may differ across teams/ groups*
Cohesion	commitment to the group and its goals, as well as pride for the group's values and perceived importance of being a member
Psychological safety	a collective perception that the group is safe for interpersonal risk taking and can speak up without fear of embarrassment, punishment, or ridicule
INDIVIDUAL	*factors that may differ from person to person within the organization*
Safety knowledge & skills	the ability to recognize safety threats, understand their origins and carry out procedures to address them effectively
Sense of control	the belief that one's behavior has the potential to impact important outcomes
Individual commitment & prioritization of safety	a positive attitude and motivation towards safe operations, and a priority of safety over all other performance goals

The safety culture created by the leaders, groups and individuals of the organization determine the type of enacting behaviors the organization adopts to promote and ensure safe care. Enacting behaviors are the behavioral expressions of held assumptions, values and norms around safety.

The *four most common enacting behaviors* for safety are:

1) *communication and information sharing,*
2) *incident reporting,*
3) *teamwork and collaboration and*
4) *fairly rewarding and punishing its members for safety outcomes*.

ENACTING BEHAVIORS	
Communication & information exchange	the exchange of information between individuals and/or teams, and the extent to which messages are effectively sent and received
Teamwork & collaboration	observable behaviors groups enact in efforts to collaborate towards task goals (e.g., monitoring, providing backup, goal-setting and planning, coordinating)
Incident reporting	engaging in reporting when an error or near-miss occurs that has safety-related consequences
Fair rewarding and punishing	rewarding desired/effective behaviors and enforcing fair, non-punitive consequences for errors.



Note: Figure taken directly from Bisbey T, Kilcullen M, Thomas EJ, et al. (2019). Safety Culture: An Integration of Existing Models and a Framework for Understanding Its Development, *Human Factors*, https://doi.org/10.1177/0018720819868878. Functional Framework for Safety Culture details the foundational enabling factors that set conditions for individual employees and all stakeholders to adopt safety culture within an organization. The underlying assumptions, values, and norms of safety culture are manifested in employee behaviors, which in turn influence safety outcomes. Employees learn from these safety outcomes to feed back into reinforcing the safety culture.

Application to Real World

How does this model apply to the real safety culture of healthcare? We applied our Safety Culture Framework to the following case study, to illuminate the fundamental issues of patient safety culture, which can lead to tragic maternal outcomes.

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A CASE OF PREVENTABLE MATERNAL DEATH

Keoni was a vibrant and intelligent black woman who traveled extensively, raced cars and spoke five languages. She was married to her college sweetheart, and together, they had a 19-month-old son. At 39 years of age, she underwent fertility treatments in order to conceive a second child. The couple chose to deliver at a world-renowned medical center. Keoni was in excellent health and never missed a prenatal appointment. On April 12, 2016 Keoni, accompanied by Max, was admitted for an elective repeat cesarean section. The surgery was over within an hour and she and her newborn were transferred to the PACU.

Approximately **2 hours after the surgery**, (4:30pm), Keoni was still in the PACU when her nurse noted that there was bright red blood draining from the Foley catheter and her fundus (the top of the uterus) had risen well above the level of the umbilicus. The PACU nurse called the resident "to evaluate the rising fundus and concern for excessive bleeding." The resident told the nurse to replace the Foley catheter and called Keoni's physician to make him aware of her condition. The catheter was removed and replaced, but eight minutes later the nurse noted frank red blood draining from the new catheter.

Three hours after surgery, (5:30pm) the nurse alerted the resident to the presence of frank blood in the catheter and a fundus at +4 above the umbilicus. A bedside ultrasound performed by the resident showed a 6cm heterogeneous fluid collection suspicious for a large hematoma. The resident ordered uterotonics, including oxytocin and called Keoni's private physician again. At this time, Max noted that Keoni was trembling uncontrollably, experiencing increasing pain and was sensitive to touch. The nurse medicated her with Dilaudid, a powerful narcotic. Labs and a computerized tomography (CT) scan of the pelvis and lower urinary tract were ordered STAT. The resident's note regarding the rationale for the CT scan read, "to fully evaluate patient's post op abdomen/pelvis, high concern for pelvic hematoma but uncertain regarding injury to the bladder and ureters". Keoni continued to have intractable abdominal pain and frank red blood in the Foley catheter over the next hour.

Four hours after the surgery (6:30pm) the nurse called the resident noting Keoni had no urine output. The resident performed another bedside ultrasound, which showed the hematoma had enlarged. Keoni and her husband were told by the resident "although the hematoma appeared stable, there was concern regarding blood in the Foley catheter with no urine output." The resident made Keoni's physician aware of her condition.

Five hours post-surgery (7:30pm), the OB resident saw Keoni again. She had little to no urine output despite fluid boluses and there was still a significant amount of blood in the catheter. A CBC showed her hemoglobin and hematocrit dropping and her heart rate was tachycardic in the 120's. Keoni's quantitative blood loss (QBL) was 1500cc's. The resident's note read, "this suggests symptomatic acute blood loss anemia" and the decision was made to transfuse Keoni with 2 units of packed red blood cells. Also, the decision was made to proceed with a CT urogram to evaluate the kidneys/ureters/bladder given the frank blood in the Foley catheter and it was noted that the STAT CT had not arrived. The resident contacted Keoni's physician with an update on the situation.

Six hours post-surgery (8:30pm) Keoni's private physician arrived at her bedside in the PACU. Keoni's status was reviewed with him: "bloody urine", "abnormal hemoglobin", "tachycardia", "and possible hematoma". There were no new orders received by the PACU nurse.

Eight hours post-surgery (10:30pm) the nurse notified doctors that Keoni's blood pressure was 70/50 and she complained of feeling groggy. Fresh frozen plasma was ordered for transfusion. The stat CT scan had still not been done. The resident notified Keoni's primary physician of his concern, "for active internal bleeding". The resident discussed with Keoni and Max the need for surgery and consents were signed.

Nine hours post-surgery (11:30pm) Keoni feels "a little groggier than before". Her vital signs included a heart rate of 120 and her blood pressure was 90/70. Keoni's physician was at the bedside and stated that he "wishes to continue expectant management at this time". Shortly thereafter Keoni's vital signs dropped significantly and the Massive Transfusion Protocol (MTP) was initiated. Keoni was taken to surgery emergently and 3 liters of blood was found in her abdomen.

Approximately eleven hours post-surgery, at 2:22 am, Keoni was pronounced dead. Autopsy showed the cause of "death was due to hemorrhagic shock, due to acute hemoperitoneum" secondary to a nicked bladder during the cesarean section.

BREAKDOWNS IN PATIENT SAFETY CULTURE

Safety Knowledge & Skills: Both the nurse and the resident physician were lacking Safety Knowledge and Skills in the assessment and management of a patient with the continued presence of bright red bleeding into the Foley. Vital signs should have been performed when there was a change in patient status- hypotension is a late sign of hypovolemia. The nurse and resident physician individually lacked the Safety Knowledge and Skills to recognize the symptoms of acute blood loss and maternal compromise. A 6cm hematoma is significant, based on the resident's subsequent orders the resident was not clear on treatment options for a hematoma pointing to a deficit of Safety Knowledge & Skills at the individual level. The nurse did not associate Keoni's pain with the hematoma identified on the ultrasound by the resident, showing a lack of Safety Knowledge & Skills.

Sense of Control: The nurse lacked a Sense of Control in that she did not believe that giving the resident information or escalating her concerns via the chain of command would change the plan of care. The resident physician also demonstrated a lack of Sense of Control by not escalating his concerns when the private physician was not attending to his patient.

Individual Commitment & Prioritization of Safety: The lack of escalation on the nurse's part may have been due to a lack of Individual Commitment & Prioritization of Safety. By not adequately responding to the resident physician, the attending physician showed an ongoing lack of Individual Commitment & Prioritization of Safety.

Psychological Safety: Perhaps the nurse lacked the Psychological Safety to be able to inform the resident of the continued bleeding due to a hierarchical culture. Psychological Safety may have been a factor in her not feeling comfortable escalating care or activating the chain of command. The uncertainty about bladder/ureter injury should have been escalated by the resident up his Chain of Command and would have been clearly identified in the CT scan. With no urine output and blood in the catheter there were still no actions taken by the resident or the nurse to manage the situation including activating the Chain of Command. This lack of response may be attributed to a lack of Psychological Safety manifested by both the resident and her nurse caring for Keoni.

Cohesion: There was a lack of Cohesion between the resident and the attending physician as to the severity of Keoni's condition. The hematoma had enlarged but the resident did not respond with any changes in the plan of care. They were still waiting for the CT scan to be performed. If the resident and the nurse were pushing for the scan to be done there was a lack of Cohesion in the group as to the urgent necessity of the scan that was not relayed to the CT team. The resident contacted Keoni's physician with an update on the situation The attending physician did not respond with any interventions. Lack of collaboration, Cohesion, between the resident and the attending physician delayed the surgical intervention.

Policies & Resources for Safety: There might have been a deficit in Policies & Resources for Safety such as an obstetric hemorrhage policy to guide the nurse's actions. The resident or the nurse did not escalate the high concern for hematoma when Keoni's physician offered no changes in the plan of care. The both appeared to be unaware of a policy for escalation.

Leadership Commitment & Prioritization: With no urine output and blood in the catheter there were still no actions taken by the resident or the nurse to manage the situation including activating the Chain of Command. There may have been no leadership support or policy for utilization of Chain of Command. The uncertainty about bladder/ureter injury should have been escalated by the resident up his Chain of Command and would have been clearly identified in the CT scan. This lack of action was due to an absence of organizational enabling factors including Leadership Commitment & Prioritization.

Several enabling factors were absent within the labor and delivery unit in the hospital that influenced her patient safety. Although we do not know what hospital policies were in place, we do know that Keoni's was the victim of "failure to rescue" and "failure to escalate." Lack of **cohesion** was observed as the academic physicians, private physician and nurses failed to work as a team with the husband to recognize the dangers and provide immediate care. At the first frank blood in the foley catheter the resident should have notified the attending. When the resident and attending failed to write orders, change their plan of care, the nurse with a strong sense of control and solid escalation policy should have gone up the chain of command. The process of junior physicians and nurses not speaking up and intervening to escalate her condition to another higher-ranking physician to rescue Keoni exemplifies lack of **psychological safety**. Failure of her primary obstetrician to recognize the imminent danger of his patient despite multiple signs and symptoms presented played a role in Katie's spiraling postpartum deterioration. Hours into her crisis providers may have lacked a **sense of control**, which led to hesitancy to take additional actions. A lack of **policy or organizational process** may have existed in how to escalate her care by the other healthcare providers in order to get her back to the OR. Eventually some individuals were motivated to respond but unfortunately, it was too late.

Underlying assumptions, values, and norms (**the culture**) of this labor and delivery department were manifested in the health care provider's behaviors and influenced this patient's outcome. Preventing a recurrence of this tragic event invites all of the health care providers (and including patient representation) to review the factors affecting this culture and to evaluate the **enacting behaviors** of communication /information exchange and teamwork/ collaboration that was their downfall.

Preventing serious maternal events is our goal. Using the Safety Culture Framework model, we sought to identify existing tools (measures, interventions and resources) that organizations can use to measure and improve safety culture. Taken together, these comprehensive and evidence-based framework and tools comprise a road map that organizations can use to guide their efforts to improve safety culture.

Who should use this roadmap?

This roadmap is applicable for many types of users within healthcare. We realize that potential users will possess different levels of understanding in how to conduct effective quality improvement initiatives. For this version, we geared the roadmap for individuals that would be tasked with developing initiatives that affect the culture of an entire organization. This version is specifically designed for leaders of patient safety and quality initiatives in healthcare organizations.

- Organizational leaders, quality improvement or patient safety officers wanting to lead their organization to improve overall safety culture.

- National leaders wanting to promote maternal and infant health such as policy makers, public health leaders, and regulators.

As the roadmap is refined and expanded, we hope to make it applicable to:

- Clinicians or managers wanting to learn more about how to improve safety culture within their organization or unit.

- Researchers wanting to test, refine and revise the framework and related tools to improve safety culture.

How to Use the Patient Safety Culture Roadmap

A "roadmap" is a collection of related information, resources, or tools that together can guide users to develop a plan or organize efforts to follow evidence-based recommendations or meet evidence-based specific practice standards. The focus of this roadmap is to improve patient safety culture.

Measures are survey tools, developed and validated, to assess safety culture within healthcare or aspects of safety culture that are aligned with our conceptual framework. **Interventions** are specific actions taken within healthcare to improve safety culture. **Resources** are strategies, policies, procedures or websites that can be helpful to users in the journey to improve safety culture. We used a four-prong approach to identify the measures, interventions and resources related to safety culture and organized them according to the model:

1. Reviewed the literature for measures of safety culture
2. Reviewed the literature for interventions used to improve safety culture
3. Conducted web-based search of patient safety tools and roadmaps
4. Explored practical tools used in a large academic healthcare system to improve patient safety culture.

We categorized the tools, measures and resources so that users will know what type of tool they are referencing.

- **Evidenced-based** tools are those we found in our literature search which have been studied and shown to improve safety culture.
- **Consensus-based** (icon) tools are those that were discussed by a panel of experts as important but may or may not have been rigorously tested in perinatal patients.
- **Practical** but untested (icon) tools are those have been used within our organization but not tested using safety culture as a measure.

Tools will be listed in several ways within this roadmap. In module II, examples of strategies that coincide with the components of our framework will be listed after a description of each component.

Enabling factors are elements that provide the necessary context for norms, values, and assumptions around safety to develop. These factors are divided into three levels of focus:
1) Organizational 2) Group and 3) Individual.

Enacting behaviors are behavioral expressions of held assumptions, values, and norms around safety. These are divided into types of behaviors: 1) Communication and Information Exchange, 2) Teamwork and Collaboration, 3) Incident Reporting and 4) Fair, Rewarding and Punishing.

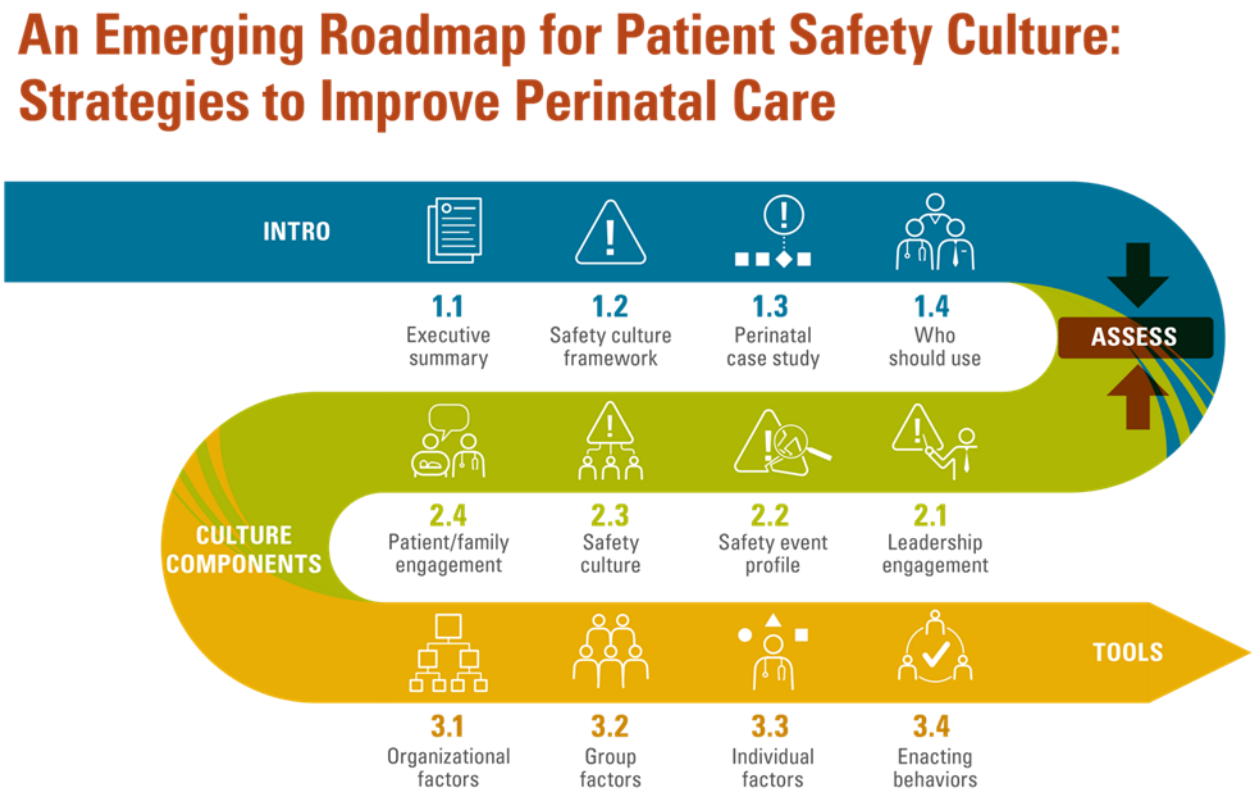
In module III, tools will be listed alphabetically as either measures or interventions.

MODULE II: Where to Start?

Organizational Assessment:

Before improvement work in a culture can begin, an assessment of the gaps in the overall safety culture can help determine how ready the organization is for responding to these gaps in culture within the healthcare setting.

We recommend a four-pronged approach to conducting a safety culture needs assessment. **First,** ensure leaders are engaged in safety and committed to creating a culture that prioritizes and promotes patient safety and which includes patients and families as valuable resources to the team. **Second**, examine the patterns in root causes of the serious adverse events, incident reports and patient-reported events such as complaints in your organization. **Third,** analyze safety culture survey data to identify low scoring domains and worsening trends over time. Then use the safety culture framework to identify which enabling factors or enacting behaviors are repeatedly involved as root causes or as low scoring culture survey domains. **Fourth**, identify the integration of patient and family input to understanding and improving patient safety across the perinatal continuum. Together, this information can showcase the gaps impeding an effective safety culture and direct attention to the factors or behaviors that need further investigation and effort to improve.



1. Leadership Engagement:

Improving the culture of safety requires strong and courageous leaders who "set and demonstrate the behaviors and expectations essential to a safe and transparent culture (Leading a Culture of Safety, ACHE)". In collaboration with the National Patient Safety Foundation's Lucian Leape Institute, the American College of Healthcare Executives convened a council of experts to develop a comprehensive guide for healthcare leaders entitled, "Leading a Culture of Safety: a Blueprint for Success". The Blueprint highlights six leadership domains that require leaders' attention in building and sustaining a culture of safety.

These domains are:

- Establish a compelling vision of safety
- Value trust, respect and inclusion
- Select, develop and engage your Board
- Prioritize safety in the selection and development of leaders
- Lead and reward a just culture
- Establish organizational behavior expectations.

Within each domain is a list of strategies to promote improvement. An organizational self-assessment is included at the end to guide leaders through a process to evaluate the gaps within these domains. Prioritize the gaps based found in the first three areas. These are primary to a successful culture transformation.

Link: Leading a Culture of Safety: a Blueprint for Success, Self-Assessment Form, pg. 33-40

2. Safety Profile of Adverse Events:

Learning from failures is central to a culture that not only focuses on safety but that makes improvements that are meaningful to patients, families and staff in preventing reoccurrences. Examining the contributing factors associated with serious safety events, incident (self-reported safety events) reports and patient complaints can guide leaders in learning where the gaps in culture exist.

Serious safety events or sentinel events are "patient safety events (not primarily related to the natural course of the patient's illness or underlying condition) that reaches a patient and results in death, permanent harm or temporary requiring intervention to sustain life" (Joint Commission). Over 80% of the root causes of these events involve failure to protect the patient from risks through ineffective communication, assessment or leadership. Drilling down to the root causes for each event is time consuming and requires feedback from all of the stakeholders including the patients and families involved. However collating these results can guide an organization to recognize gaps in the larger culture of safety.

Incident reports about events that cause less harm than serious safety events, or that are near misses, also present an opportunity to identify root causes or contributing factors that highlight enabling factors or enacting behaviors that need to be further assessed and improved. Capturing the root causes of these events is essential in evaluating the factors within the culture in need of change.

Patient complaints are often identified through patients comments relayed to managers or the patient relations department or on a satisfaction survey. Analyzing the types of complaints patients have can provide important information about potential causes of concern in the culture. Patient reports can identify errors and adverse events which may have been missed or not reported by clinicians. Recognizing these complaints as safety issues can highlight deficiencies in safety culture.

3. Safety Culture Assessment:

The Joint Commission recommends organizations obtain a baseline assessment of safety culture using a validated survey instrument and repeat it every 18 – 24 months. Several validated surveys are available. Choose one that matches your organizational needs for detecting staff perceptions of specific gaps you may have. The Agency for Healthcare Research and Quality (AHRQ) established the Surveys on Patient Safety Culture™ and provide a step by step of recommendations for organizations to create an action plan for administering and analyzing their patient safety culture results. AHRQ also provides a repository for organizations to voluntarily submit their safety cultures scores into a national database in order to offer national benchmark data.

Tools: SOPS Action Planning Tool (to guide users in how to develop a plan for conducting a survey)

SOPS Databases

Example of Considerations for Action Planning of Safety Culture Survey

Listing of Safety culture Surveys

SOPS Surveys

Other Safety Culture Surveys (See Module IV, Safety Culture Measures)

4. Patient and Family Engagement:

A critical component to assessing safety culture is examining how patients and families are integrated and participate in the culture to improve care and promote patient safety. Careful examination of the results of satisfaction surveys can disclose helpful information about how your organization communicates and integrates patients and families in the culture of care. AHRQ has many helpful resources to administer and analyze your patient experience surveys using Consumer Assessment of Healthcare Providers and Systems (CAHPS®).

However beyond obtaining your patients' experiences on a survey is learning directly from patients and families by enlisting their participation on patient safety initiatives. Several seminal reports (Frampton,

Carmen) highlight the importance and positive impact of engaging patients and families to improve safety culture and improve patient outcomes (Frampton). By sharing their stories and healthcare experiences, healthcare teams and organizational leaders can make improvements that embody the core principles of information sharing, respect, dignity, collaboration and participation inherent in the goal of patient/family centered care. Developing and empowering patient and family advisory councils to participate with clinicians and leaders on hospital boards, quality councils and improvement initiatives are essential to this goal. Patients and families want to tell their story even when something unexpected happens. Bringing patients'stories and experiences to our work focuses our attention on the importance to patients and ultimately to solutions which are sustainable and meaningful.

The Institute for Patient and Family Centered Care (IPFCC) provides a self-assessment tool to guide organizations in understanding how they think about and involve patients/families within the hospital culture. AHRQ offers a step by step guide to develop effective patient and family advisory councils within your organization.

Tools: IPFCC Organizational Self-Assessment

A Guide to Patient and Family Engagement

Analyzing Key Components of Organizational Safety Culture

List out the top 3 areas for improvement in each part of the assessment from above. Identify common areas of focus for your organization.

1. Leadership Engagement:

a. _____

b. _____

c. _____

2. Safety Profile of Adverse Events:

a. _____

b. _____

c. _____

3. Safety Culture Assessment:

a. _____

b. _____

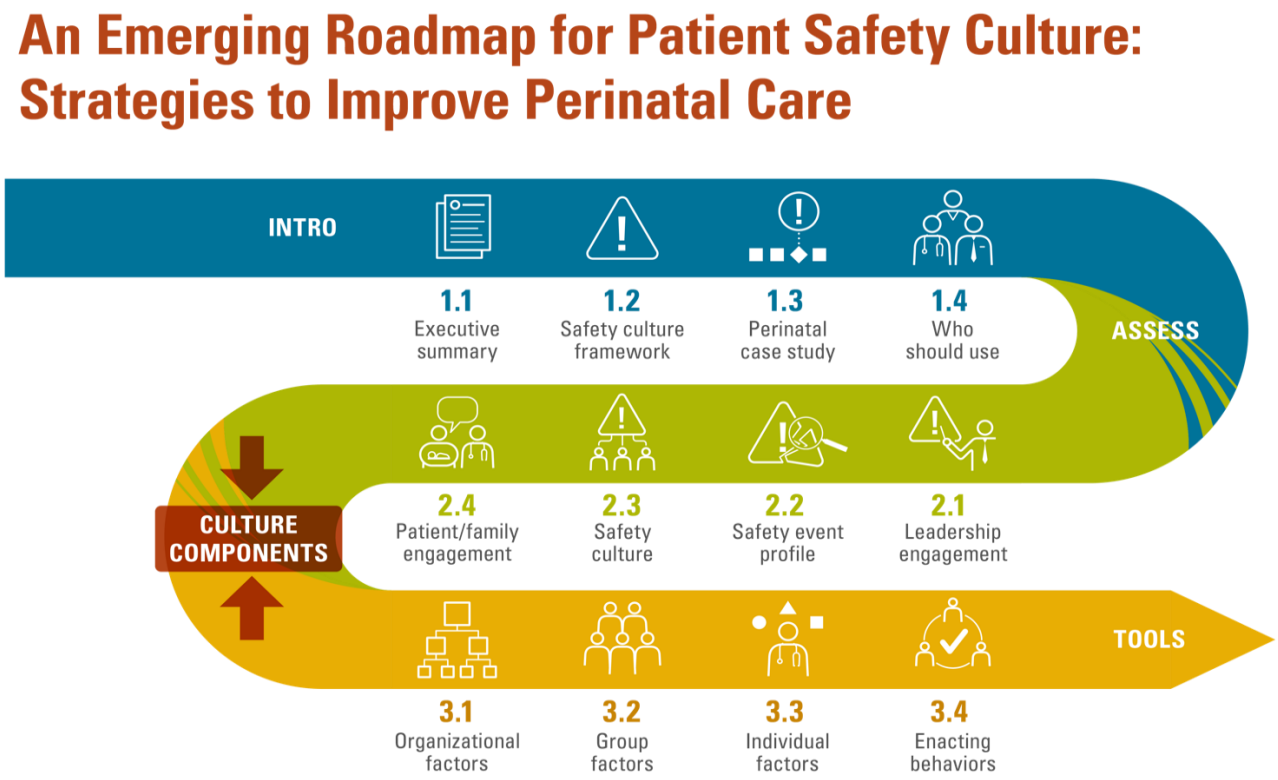
c. _____

4. Patient and Family Engagement:

a. _____

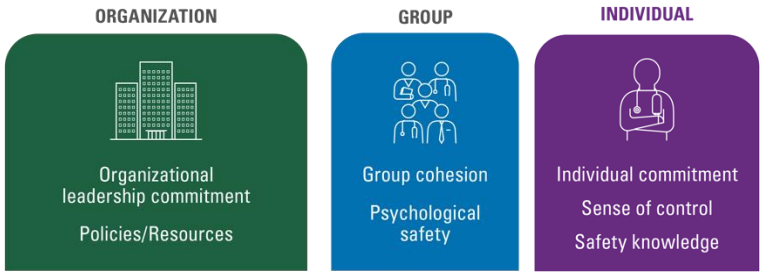
b. _____

c. _____



Let's stop to examine the enabling factors of the roadmap.

3.1-3.3 The Enabling Factors: provide the necessary context for norms, values, and assumptions around safety to develop. These factors are placed within three categories of focus or context to the culture and are colored-coded for ease of reference.



3.1 Organizational Factors: *Organization factors impact all members within an organization or department to a similar degree. (e.g. hospital, emergency department, cardiac unit, ICU).*

Leadership Commitment and Prioritization of Safety

Definition: leadership is perceived to hold a priority of safety over all other performance goals (e.g., profit, speed). Creating a culture of safety within an organization is driven by the leadership. A patient-focused, safe culture involves a committed leadership that makes excellence in patient care without causing unintended harm a priority.

When leadership is perceived to hold a priority of safety over all other performance goals (e.g., profit), individuals within the organization may be more likely to engage in patient safety culture. This may be because employees tend to adopt safety-related behaviors from their leaders, perceiving them to be role models (Brown, Treviño, and Harrison, 2005; Hofmann & Morgeson, 1999).

Indication/Reflection of Culture Factor: Governing boards, executive leaders, and unit leaders all verbalize and demonstrate a commitment to safety

Healthcare examples of leadership commitment and prioritization to safety:

- Implementing intervention/s which decrease NICU length of stay despite experiencing a loss of revenue – prioritizing safety and quality
- Enforcing the non-medically indicated 39 week rule-limiting induction may lead to losing a private practice physician but it is safer for patients.
- Multidisciplinary participation including patient/family input occurs in all committees and activities.

Tools to support leadership commitment and prioritization of safety:

IHI boards on board:

Leading a Culture of Safety, a Blue print for Success:

Joint Commission Leadership assessment tool:

Road map to a perinatal patient safety assessment tool:

Policies and Resources for Safety

Definition: policies and resources provided by the organization concerning safety (e.g., training resources, maintained equipment, safety policies and protocols).

In addition to managerial commitment and prioritization of safety, healthcare personnel may be more willing to adopt and contribute toward a patient safety culture when there are sufficient policies and resources provided by the organization concerning safety-related issues (e.g. training resources, equipment maintenance, safety protocols). By establishing specific policies to reduce risk, organizations signal to employees the value and importance that is placed on safety. Hospitals should also have resources such as data analysts with an expertise in safety science, who can access data to be used to monitor and improve safety, process improvement, and leadership development.

Indication/Reflection of Culture Factor: The organization has policies intended to support the delivery of safe patient care such as policies about just culture, safety event reporting, behavior expectations, and evidence-based safety practices. Resources would include support for data analysts who can access data in the EHR to monitor and improve safety, expertise in safety science, process improvement, leadership development, etc.

Healthcare examples:

- Policies are reviewed in a timely manner to reflect changes in best practice.
- Staff have access to equipment necessary to promote safe patient care.
- Budget is allocated for staff training on safety and quality improvement.
- Policies are in place to support staff escalation of serious patient safety concerns.

Tool examples to supporting policies and resources:

Pathway for postpartum care (MH)

Patient/family advisory councils

<u>3.2 Group Factors</u>: *Group factors impact all individuals within a team or group to a similar degree, and may differ across teams/ groups (e.g., OR team, primary care team).*

Group factors impact all individuals within a team or group to a similar degree, however, may differ across teams. For instance, group factors may influence how individuals within operating rooms, emergency rooms, and labor and delivery teams engage in patient safety culture differently. These teams may develop their own microenvironments that facilitate development of a unique organizational culture.

Cohesion

Definition: Commitment to the group and its goals, as well as pride for the group's values and perceived importance of being a member.

Cohesive teams enable group members to adopt norms, values, and assumptions supporting high safety standards.

Indication/Reflection of Culture Factor: Each member of the group (OR team) commits and willingly complies with patient safety initiatives such as doing the time out for surgical checklist.

Healthcare examples:

- Obstetricians, pediatricians, neonatologists, nursing and other allied health care providers collaborate to discuss patients at safety rounds.
- Multidisciplinary teams meet biweekly to discuss incident reports and make improvement plans.
- Surgical team are on a first name basis in the OR to flatten hierarchy.
- Labor & Delivery Mother/Baby and Labor & Delivery, NICU transport team debrief in real-time any issues in patient hand-off between the units.
- Unit celebrations for achievement in quality standards and certifications.

Tool examples supporting cohesion:

Multidisciplinary discharge rounds (MDDR)- hand off sheet for each RN per shift (mother/baby unit) of milestones needing to be accomplished during shift. Reviewed per shift at handoff

Daily safety rounds- Charge RNs, Residents, Physicians meet daily to discuss patient cases, discharges, safety issues

Psychological Safety

Definition: a collective perception that the group is safe for interpersonal risk taking and can speak up without fear of embarrassment, punishment, or ridicule.

Individuals within a team that is psychologically safe believe that they can speak up without fear of embarrassment, punishment, or ridicule. On the opposite spectrum, a healthcare team with low psychological safety may recognize a surgeon's error but neglect speaking up for fear of being criticized and embarrassed.

Indication/Reflection of Culture Factor: Staff willingly report variances in care and participate in multidisciplinary debriefings about safety events that occur on their unit.

Healthcare examples:

- All healthcare providers feel comfortable sharing their perspectives on incidents in discussions and debriefings.
- All healthcare providers openly express their opinions/suggestions in staff meetings.
- Everyone (i.e. patients, techs, environmental services, nurses or physicians) feel safe holding others accountable for hand hygiene.

Tool examples supporting psychological safety:

TeamSTEPPS

Daily safety rounds- Charge RNs, Residents, Physicians meet daily to discuss patient cases, discharges, safety issues

3.3 Individual Factors: *Individual factors are those factors that may differ from person to person within the organization (e.g., fellows, residents, interns, staff, contractors, patients and families).*

These factors influence the extent to which employees adopt safety-related values, norms, and assumptions. Individual-level dimensions identified include: safety knowledge and skills, sense of control, and individual commitment and prioritization of safety.

Safety Knowledge and Skills

Definition: the ability to recognize safety threats, understand their origins and carry out procedures to address them effectively

Safety knowledge and skills may be present among employees at the time of selection or be developed through training and education. A hospital with high safety culture would have personnel that are trained on safety-related knowledge, such as how to identify and report safety threats.

Indication/Reflection of Culture Factor: Clinicians, patients and families have the knowledge to report safety threats and participate in quality initiatives to correct these threats.

Healthcare examples:

- Nurses and physicians annually participate in high-risk intervention and fetal monitoring education.
- Multidisciplinary mock codes and postpartum hemorrhage drills are held on units.
- All staff involved in an incident participate in root cause analysis and process improvement.
- NICU staff and Patient/Family Council members received yellow belt training and participate in quality initiatives.
- Obstetrical ER/triage nurses are trained in the Maternal Fetal Triage Index (MFTI) to correctly assess patients to consistently streamline patient acuity for admission.

Tool examples supporting safety knowledge and skills:

Training programs for patient safety such as:

Breakthroughs in Patient Safety (TB Added)

IHI Open School: free resource for healthcare students

AHRQ Education Resources: free resources for healthcare clinicians

Clinical Safety and Effectiveness Course at UT (outline to be added)

Sense of Control

Definition: the belief that one's behavior has the potential to impact important outcomes

When employees do not believe that their actions will make a difference to safety outcomes, they will be less likely to engage in behaviors to improve safety. In a strong patient safety culture, hospital staff are aware of their ability to impact patient safety.

Indication/Reflection of Culture Factor: Clinicians, patients and families comply with completing surveys assessing their attitudes about safety outcomes.

Healthcare examples:

- Feedback is provided to individuals on the outcome of incident reporting.
- Patient Safety Dashboards are shared with staff to promote goals for improvement.
- Patients and families actively participate in hospital and unit-based quality councils.
- Patient feedback is invited and shared with staff.

Tools: (TB added)

Individual Commitment and Prioritization of Safety

Definition: a positive attitude and motivation towards safe operations, and a priority of safety over all other performance goals.

Indication/Reflection of Culture Factor: Clinicians participate in daily huddles about patient safety issues and discuss patient safety on rounds.

Healthcare examples:

- Nurses (and others providing medication) follow the 5 rights prior to administering medication
- Following the right process even when no one is looking
- Care providers have a positive attitude towards change in processes to improve patient safety outcomes—even when processes take more time (e.g. read back of verbal orders, safety checklists, double checking high-risk medications.)
- Care providers visually check patient and patient room for breech in safety precautions (e.g. lines are marked, fall precautions in place, white board updated.)

Tool examples supporting individual commitment and prioritization to safety:

Multidisciplinary discharge rounds (MDDR)- hand off sheet for each RN per shift (mother/baby unit) of milestones needing to be accomplished during shift. Reviewed per shift at handoff

Maternal-Fetal Triage Index Tool - Criteria to prioritize patients who present to OB triage, enabled MH to become a recognized OB-Emergency Department

An Emerging Roadmap for Patient Safety Culture: Strategies to Improve Perinatal Care

Next we will focus on the enacting behaviors of safety culture roadmap.

3.4 The Enacting Behaviors: four behavioral expressions of held assumptions, values and norms to promote patient safety outcomes.

Teamwork and Collaboration: observable behaviors groups enact in efforts to collaborate towards task goals (e.g., monitoring, providing backup, goal-setting and planning, coordinating)

Definition: Healthcare teams should be actively participating in efforts to collaborate towards task goals. Such behaviors may include: monitoring, providing backup, planning, and coordinating team and individual responsibilities. Within healthcare contexts, this could manifest in operative room teams, ward teams, labor and delivery teams exhibiting appropriate teamwork behaviors.

Indication/Reflection of Culture Factor: All staff work together for the sake of the patient and appear to be a team in all aspects of care.

Healthcare examples of teamwork:

- Care providers attend multidisciplinary workshops where they simulate effective management in crisis situations.
- Clinicians consult with each other in Multidisciplinary Discharge Rounds (MDDR) for timely completion of tasks for patient discharge.
- Multidisciplinary care providers share information and decide on a plan of care for patients during safety rounds.
- When transferring a patient to another unit, clinicians educate admitting staff and patient/family on new equipment and plan for care.

Tools to support teamwork and collaboration:

TeamSTEPPS

Communication and Information Exchange: the exchange of information between individuals and/or teams, and the extent to which messages are effectively sent and received

Definition: how personnel exchange information between individuals and between teams.

The extent to which messages are effectively sent and received may reflect the state of the safety culture within the organization. In a strong patient safety culture, each member considers the patient's entire journey through the healthcare system, rather than their particular departments. When transitioning care of patients between departments (e.g., inpatient to rehabilitation, intensive care to general ward, inpatient to outpatient primary care), personnel communicate information, confirm receipt, and close the loop by repeating back key information. Hospitals with a high safety culture may have a process to exchange information about safety events and what is being done to prevent them which filters back to unit-based safety council meetings.

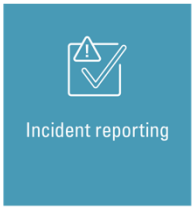
Indication/Reflection of Culture Factor:

Healthcare examples of teamwork:

- Shift handoff occurs at the patient bedside and plan of care is shared with all present.
- Care providers attend multidisciplinary workshops where they role-play effective communication.
- Nurses are taught consistent verbiage (scripting) to convey to physicians when they are needed at the bedside.

Tools for communication and information sharing:

IHI Daily Huddles



Incident Reporting: engaging in reporting when an error or near-miss occurs that has safety-related consequences

Definition: Incident reporting involves individuals engaging in reporting when an error or near-miss occurs that has safety-related consequences and then categorizing incident report responses to see if there are trends in the data. By reporting errors and near-misses, employees can help ensure that safety-related issues do no persist, are learned from, and are corrected. Within healthcare, there may be reporting of errors and near-misses in quality, service-line or unit-based team meetings.

Indication/Reflection of Culture Factor: After surgery, an OR team may perform an inventory count and realize the anesthetist used double the amount of anesthesia as usual. In a strong patient safety culture, an immediate debrief with the team members would take place and an incident report would be filed without fear of retribution.

Healthcare examples of incident reporting:

- Staff are committed to reporting all errors or near misses in order to improve quality and safety.
- Incidents and resolutions/outcomes are shared with staff.
- Clinicians share lessons learned with peers at staff meetings.

Tools for incident reporting:

Health Quality Ontario. Patient Safety Learning Systems: A Systematic Review and Qualitative Synthesis. Ont Health Technol Assess Ser [Internet]. 2017 Mar;17(3):1-23. Available from: http://www.hqontario.ca/Evidence-to-Improve-Care/Journal-Ontario-Health-Technology-Assessment-Series

Fair Rewarding and Punishing: rewarding desired/effective behaviors and enforcing fair, non-punitive consequences for errors. Should not be excessively punitive nor lenient

Definition: This behavior involves rewarding desired or effective behaviors when appropriate, while also enforcing fair, non-punitive consequences for errors. These consequences should not be excessively punitive nor lenient.

Employees understand the importance of avoiding errors while not being discouraged from reporting errors made. Within healthcare, clinicians should only be punished if they exhibit unprofessional behavior or intentionally violate policies known to improve safety (Marx, 2003).

Indication/Reflection of Culture Factor: Upon receiving a safety incident report from an OR team, the chief of surgery reviews the case thoroughly to find instances where both safe and unsafe choices were made.

Healthcare examples of incident reporting:

- Patient experience anecdotal are shared with staff and they receive a standing ovation.
- Magnet councils elect pillars of nurses who exemplify excellence annually during nurse's week.
- Individuals are not punished when they are transparent in sharing issues/mistakes.

Tools for Just Culture:

DEFINITIONS AND HEALTHCARE-RELEVANT EXAMPLES		
FACTOR	**DEFINITION**	**HEALTHCARE APPLICATION/TOOLS FOR TOOLKIT**
ENABLING FACTORS	*factors that provide the necessary context for norms, values, and assumptions around safety to develop*	
ORGANIZATION	*factors that impact all members within an organization or department to a similar degree*	*e.g., hospital, emergency department, cardiac unit, ICU*
Leader commitment & prioritization of safety	leadership is perceived to hold a priority of safety over all other performance goals (e.g., profit, speed)	Governing boards, executive leaders, and unit leaders all verbalize and demonstrate a commitment to safety. **Potential Tools:** • Hospital Board Commitment (IHI Boards on Board) • Executive performance indicators linked to patient safety • Organizational structure for Quality & Safety (ACHE Leading a Culture of Safety: Blueprint for Safety) • Patient/family engagement indicators

Policies and resources for safety	policies and resources provided by the organization concerning safety (e.g., training resources, maintained equipment, safety policies and protocols	The organization has policies intended to support the delivery of safe patient care such as policies about just culture, safety event reporting, behavior expectations, and evidence-based safety practices. Resources would include support for data analysts who can access data in the EHR to monitor and improve safety, expertise in safety science, process improvement, leadership development, etc.
		Potential Tools:
		• Checklist for policies:
		  ○ to reduce risk
		  ○ work hours, employee wellness
		  ○ transparency, disclosure of events, reporting,
		  ○ reward compliance
		  ○ Access to data
		• Evaluation of policy development, dissemination, sustainability

GROUP	*factors that impact all individuals within a team or group to a similar degree, and may differ across teams/ groups*	*e.g., OR team , primary care team*

Cohesion	commitment to the group and its goals, as well as pride for the group's values and perceived importance of being a member	Each member of the group (OR team) commits and willingly complies with patient safety initiatives such as doing the time out for surgical checklist.
		Potential Tools:
		• Tools/practices to develop trust and commitment to goals
		• Evaluate relationships for:
		  ○ Patient and Staff Perspectives
		  ○ Learning Together
		  ○ Peer to Peer Support initiatives
		  ○ Commitment to group goals

Psychological safety	a collective perception that the group is safe for interpersonal risk taking and can speak up without fear of embarrassment, punishment, or ridicule	Staff willingly report variances in care and participate in multidisciplinary debriefings about safety events that occur on their unit. **Potential Tools:** • Measures of speaking up • Interventions to improve speaking up
INDIVIDUAL	*factors that may differ from person to person within the organization*	*e.g., fellows, residents, interns, staff, contractors, patients and families*

Safety knowledge & skills	the ability to recognize safety threats, understand their origins and carry out procedures to address them effectively	Clinicians, patients and families have the knowledge to report safety threats and participate in quality initiatives to correct these threats.
		Potential Tools:
		• Curricula on Patient Safety Science, QI principles
		  ○ IHI Open School
		  ○ CPPS
		• Assessment tools for employee safety knowledge and skill competence

Sense of control	the belief that one's behavior has the potential to impact important outcomes	Clinicians, patients and families comply with completing surveys assessing their attitudes about safety outcomes. **Potential Tools:** • Evaluate a sense of control and personal connections ○ Accountability • Interventions to improve sense of control

Individual commitment & prioritization of safety	a positive attitude and motivation towards safe operations, and a priority of safety over all other performance goals	Clinicians participate in daily huddles about patient safety issues and discuss patient safety on rounds.
		Potential Tools:
		• Tools to evaluate and interventions to address:
		  ○ internal motivation to safety,
		  ○ willingness to act as a role model for safety
		  ○ individual values align with organizational values of safety

ENACTING BEHAVIORS	*behavioral expressions of held assumptions, values, and norms around safety*	
Communication & information exchange	the exchange of information between individuals and/or teams, and the extent to which messages are effectively sent and received	Handoffs among clinicians regarding patient status, transitions of care (inpatient to rehabilitation, intensive care to general ward, inpatient to outpatient primary care **Potential Tools:** • Communication Training • Dashboards
Teamwork & collaboration	observable behaviors groups enact in efforts to collaborate towards task goals (e.g., monitoring, providing backup, goal-setting and planning, coordinating)	Operative room teams, ward teams, labor and delivery teams that exhibit appropriate teamwork behaviors **Potential Tools:** • TeamStepps • Simulation Training
Incident reporting	engaging in reporting when an error or near-miss occurs that has safety-related consequences	Clinicians use the organization's incident reporting system to report patient safety events **Potential Tools:** • Usable, confidential reporting systems • Feedback of good catches and errors
Fair rewarding and punishing	rewarding desired/effective behaviors and enforcing fair, non-punitive consequences for errors. Should not be excessively punitive nor lenient	Clinicians who commit typical errors are not punished but instead contribute to learning from the errors. Clinicians who intentionally violate policies known to improve safety, or who exhibit other unprofessional behavior are punished. **Potential Tools:** • Interventions for a Just Culture

By considering the components of the safety culture framework, we can imagine a different outcome for our case study.

A POSITIVE SAFETY CULTURE AVERTS POTENTIAL MATERNAL HARM: A Hypothetic Construct

Keoni was a vibrant and intelligent Black woman described as being phenomenal. She traveled extensively, raced cars and spoke five languages. She was married to her college sweetheart, Max and they had a 19-month-old son. At 39, they underwent fertility treatments because they wanted their children back to back. The couple chose to deliver at a world-renowned Medical Center. Keoni was in excellent health and never missed a prenatal appointment.

On April 12, 2016, Keoni, accompanied by her husband, was admitted for a repeat elective cesarean section. Her surgery was completed within an hour and she was transferred to PACU to bond "skin to skin" with her baby. Approximately 2 ½ hours after the surgery, while still in PACU, the nurse noted that Keoni had bright red blood draining from her Foley catheter and a rising fundus. The nurse called the resident who immediately came to evaluate the patient. In consultation with the nurse, they decided to replace the Foley catheter and called her private physician. (Communication and Information Exchange; Teamwork and Collaboration.)

In the next hour, the nurse assessed that Keoni continued to have frank blood in her Foley catheter and was experiencing a rising fundus, so the private physician was contacted and came in to to see the patient (Sense of Control.) A bedside ultrasound performed by resident physician showed a 6cm heterogeneous fluid collection suspicious for a large hematoma. The resident physician ordered Uterotonics, Oxytocin and Misoprostol and asked the nurse to increase monitoring of her fundus and vaginal bleeding. The nurse, questioning an order for uterotonics when the bleeding did not appear to be uterine in origin, escalated to her charge nurse (Psychological Safety) who followed the hospital policy for escalation to notify the chief resident (Policies and Resources for Safety.) They estimated blood loss to be high and were monitoring Keoni's blood pressure and heart rate every 15 minutes. Keoni and Max were given a complete overview of the risks of Keoni's potential bleeding. After two hours, she was reassessed by her primary physician who consulted with a team of OB specialists about next steps (Cohesion). Labs and a stat CT was ordered, two units of PRBCs were given, with type and cross match for two more. If her condition worsened in an hour, they recommended she be taken back to surgery.

Keoni's status continued to decline and she and Max were given a complete overview of her condition. The team discussed with Keoni and Max the need for surgery and consents were signed (Communication and Information Exchange; Teamwork and Collaboration.)

Nurses continued monitoring her fundus, IV fluids were increased and Keoni was prepped for the operating room. In surgery, a tear in her left ureter was identified and was repaired. She underwent evacuation of hematoma and bleeding was controlled. She returned to the post-anesthesia care unit for monitoring. She recovered from anesthesia within a couple of hours and was able to hold her infant in 4 hours. The doctor disclosed to the husband and patient, the unexpected finding of a ureter tear causing the bleeding and promised to keep checking in with them over the next few weeks (Incident Reporting; Fair Rewarding and Punishing.)

After surgery, the labor and delivery staff held a debrief to discuss the events of the labor and delivery situation and post-recovery management (Leadership Commitment and Prioritization of Safety.) It was discovered that the nurse had put the CT order in for the am and not STAT (Individual Commitment and Prioritization of Safety.) The radio buttons were very similar in nature and by disclosing this information; IT was consulted to change their appearance in the order sets (Incident Reporting; Fair Rewarding and Punishing.)

On April 16, 2016, Keoni, Max and their newborn son were discharged home

MODULE IV: Strategies to Promote Patient Safety Culture

A "roadmap" is a collection of related information, resources, or tools that together can guide users to develop a plan or organize efforts to follow evidence-based recommendations or meet evidence-based specific practice standards.

This roadmap is comprised of measures, interventions and resources for improving patient safety culture.

- **Measures** are surveys, developed and validated, to assess safety culture within healthcare or aspects of safety culture that are within our conceptual framework.
- **Interventions** are specific actions taken within healthcare to improve safety culture.
- **Resources** are strategies, policies, procedures or websites that can be helpful to users in the journey to improve safety culture. These are included under each component but not listed separately.

We used a four-prong approach to identify the measures, interventions and resources related to safety culture and organized them according to the model:

1. Reviewed the literature for measures of safety culture
2. Reviewed the literature for interventions used to improve safety culture
3. Conducted web-based search of patient safety tools and roadmaps
4. Explored practical tools used in a large academic healthcare system to improve patient safety culture.

We categorized these measures, interventions and resources so that users will know what type of evidence the strategy has:

- **Evidenced-based** strategies are those we found in our literature search which have studied and shown to improve safety culture.
- **Consensus-based** (icon) tools developed through consensus by a panel of experts as important but may or may not have been rigorously tested in perinatal patients.
- **Practical** but untested (icon) tools are those have been used within our organization but not tested using safety culture as a measure.

Strategies for Promoting Safety Culture

Index of Measures of Safety Culture

1. California Patient Safety Culture Scale (Cal-PSCS)
2. High-Value Care Culture Survey
3. Hospital Survey on Patient Safety Culture (HSOPSC)
4. Latino Student Patient Safety Questionnaire
5. Manchester Patient Safety Assessment Framework (MaPSAF)
6. Medical Office Survey on Patient Safety Culture (MOSOPS)
7. Medical Student Safety Attitudes and Professional Survey (MSSAPS)
8. Nordic Patient Safety Culture Questionnaire (TUKU)
9. Nursing Home Survey on Patient Safety Culture (NHSPSC)
10. Patient Safety Climate in Healthcare Organizations (PSCHO) Scale
11. Pharmacy Survey on Patient Safety Culture (PSOPSC)
12. Safety Attitudes Questionnaire
13. Safety Organizing Scale (SOS)
14. Safety, Communication, Operational Reliability, and Engagement (SCORE) Survey
15. SCOPE (Dutch acronym for Systematic Culture Inquiry on Patient Safety)
16. TRAnsitional patient safety Climate Evaluation (TRACE) questionnaire
17. TWINS Patient Safety
18. Victorian Safety Climate Survey (SCS)

1. California Patient Safety Culture Scale (Cal-PSCS)

Purpose: Based on organizational change research, measure developed to assess key areas of employee sensemaking that contribute to climate and culture, including employee perceptions about having the support of coworkers in difficult situations (*team cohesion*), leadership messages of safety support (*leader commitment/prioritization*), resources and environment conducive to improving patient safety, and error reporting behavior. This is a good option to use in combination with another comprehensive scale.

Development: A literature review led to the development of 70 potential items that two subject-matter experts rated on a 5-point Likert-type scale for applicability to patient safety. A pilot study with 32 nurse practitioner doctoral students yielded data for a factor analysis that refined it to 38 items, which was further truncated to 22 items based on data from 30 hospitals and 31 non-hospital healthcare facilities. All participants were RNs or RNPs

Implementation: No information on administration is provided in the report. A PSC index, ranging from 0-100, can be calculated by aggregating the four factors into an overall score.

Validity/Reliability: $\chi 2 = .250$ ($p < .01$), GFI = .998, normed fit index = .997, RMSEA = .000, RMSR = .05). Reliability: Overall internal consistency of PSC index $\alpha = .843$.

Evidence:

Avramchuk, A. S., & McGuire, S. J. (2018). Patient Safety Climate: A Study of Southern California Healthcare Organizations. *Journal of Healthcare Management, 63*(3), 175-192.

Gaps in it use: Limited use reported in the literature, validation study done with nurses only

Link(s):

https://www.researchgate.net/publication/324967954_Patient_Safety_Climate_A_Study_of_Southern_California_Healthcare_Organizations

2. High-Value Care Culture Survey

Purpose: Used to investigate strategies for improving care quality outcomes at a low cost and the impact of salary + productivity bonuses. Assesses leadership and health system messaging (*leader commitment/prioritization*), data transparency and access (*communication*), comfort with cost conversations (*psychological safety*), and blame-free environment (*fair rewarding/ punishing*)

Development: A national modified Delphi process of 28 providers (physicians and nurses), which led to survey tested with factor analyses with data from 162 internal medicine residents and 91 hospitalists from two academic medical centers.

Implementation: Scoring procedure is unclear. It is administered via electronic survey (see link below). The survey takes about 5 minutes, but the message upon completion states, "As a reminder, we are unable to provide feedback on your individual data at this time, but if you would like to learn more about using this survey within your group and obtaining detailed feedback, please contact Reshma Gupta [the creator of the scale]" (although I am unable to find that message anywhere else).

Validity/Reliability: Bentler-Bonett Normed Fit Index 0.976 and RMSR 0.056. Leadership/health system messaging ($r=0.56$, $p<0.001$), data transparency and access ($r=0.15$, $p<0.001$) and blame-free environment ($r=0.37$, $p<0.001$) differed significantly between institutions and were positively correlated with Value-Based Purchasing scores. Leadership/health system messaging ($\alpha=0.94$), data transparency/access ($\alpha=0.80$); comfort with cost conversations ($\alpha=0.70$); and blame-free environment ($\alpha=0.70$).

Evidence:

Gupta, R., Steers, N., Moriates, C., & Ong, M. (2019). Association between Hospitalist Productivity Payments and High-Value Care Culture. *Journal of Hospital Medicine, 14*, 16-21.

Gaps in it use: Limited use reported in the literature, no empirical tests of predicting patient safety outcomes

Link(s):

http://www.highvaluecareculturesurvey.com/about/
https://utexas.qualtrics.com/jfe/form/SV_a3DQnpsByyviTPL?Q_JFE=qdg

3. Hospital Survey on Patient Safety Culture (HSOPSC)

Purpose: To assess perceptions of management support and expectations for safety (*leader commitment*), teamwork, communication openness (*psychological safety*), communication about errors, non-punitive responses to errors (*fair rewarding/punishing*), staffing practices (*policies and resources for safety*), and incident reporting

Development: Authors conducted a review of literature and existing measures, and held interviews with subject-matter experts to identify key factors. Next, they drafted survey items to assess key factors and pilot tested them in over 21 hospitals with 1,400 employees. Factor structure and reliability analyses were performed to finalize the scale. The HSOPSC has since been translated and found valid and reliable across several countries (see https://www.ahrq.gov/sops/resources/ref-list.html)

Implementation: The user decides how it will be implemented (e.g., paper survey, web survey). For information on scoring, see pages 27-32 of the user's guide at: https://www.ahrq.gov/sites/default/files/wysiwyg/professionals/quality-patient-safety/patientsafetyculture/hospital/userguide/hospitalusersguide.pdf

Validity/Reliability: Internal consistency (reliability) measures for all composites ranged from α = .62 to .85, with an overall α = .77. All composites had acceptable levels (α >.70) except *Staffing* (α = .62). Intercorrelations of composites support that they are unique. No criterion-related validity tests reported. Studies report "moderate-to-strong validity and reliability" for most subscales.

Evidence:

Donnelly, L. F., Dickerson, J. M., Goodfriend, M. A., & Muething, S. E. (2009). Improving patient safety: effects of a safety program on performance and culture in a department of radiology. *American Journal of Roentgenology*, *193*(1), 165-171.

Etchegaray, J. M., & Thomas, E. J. (2012). Comparing two safety culture surveys: safety attitudes questionnaire and hospital survey on patient safety. *BMJ Qual Saf*, *21*(6), 490-498.

Halbesleben, J. R., Wakefield, B. J., Wakefield, D. S., & Cooper, L. B. (2008). Nurse burnout and patient safety outcomes: nurse safety perception versus reporting behavior. *Western Journal of Nursing Research*, *30*(5), 560-577.

Lawton, R., O'hara, J. K., Sheard, L., Reynolds, C., Cocks, K., Armitage, G., & Wright, J. (2015). Can staff and patient perspectives on hospital safety predict harm-free care? An analysis of staff and patient survey data and routinely collected outcomes. *BMJ Qual Saf*, *24*(6), 369-376.

Meddings, J., Reichert, H., Greene, M. T., ... & Saint, S. (2017). Evaluation of the association between Hospital Survey on Patient Safety Culture (HSOPS) measures and catheter-associated infections: results of two national collaboratives. *BMJ Qual Saf*, *26*, 226-235.

Sexton, J. B., Sharek, P. J., Thomas, E. J., ... & Profit, J. (2014). Exposure to Leadership WalkRounds in neonatal intensive care units is associated with a better patient safety culture and less caregiver burnout. *BMJ Qual Saf*, *23*, 814-822.

Sorra JS, Dyer N. Multilevel psychometric properties of the AHRQ Hospital Survey on Patient Safety Culture. *BMC Health Serv Res* 2010 Jul 8;10:199.

Woodhouse, K. D., Volz, E., Maity, A., Gabriel, P. E., Solberg, T. D., Bergendahl, H. W., & Hahn, S. M. (2016). Journey toward high reliability: A comprehensive safety program to improve quality of

care and safety culture in a large, multisite radiation oncology department. *Journal of oncology practice*, *12*(5), e603-e612.

Gaps in it use: Does not assess team cohesion toward safety goals, safety knowledge and skills of employees, sense of control over work towards safety, or individual commitment/prioritization of safety.

Link(s):
https://www.ahrq.gov/sops/surveys/hospital/index.html

4. Latino Student Patient Safety Questionnaire

Purpose: Spanish-language questionnaire designed to assess attitudes and knowledge about patient safety. The questionnaire contains 5 factors: openness in communication, understanding of human factor, proactive attitude to avoid risks in security, awareness of error, and system complexity and interrelationship. The five factors represent the different types of information health science students receive about patient safety in their programs.

Development: Developed using a sample of medical and nursing students undergoing clinical training in Spain and four countries in Latin America. Literature review was carried out and 786 medical and nursing students were surveyed. It was designed to assess the results of patient safety curricula. Probably not the most helpful for our purposes.

Implementation:

Validity/Reliability: Shown to have good reliability. Cronbach's alpha for each dimension was a 0.67 or higher.

Evidence:

Mira, J. J., Navarro, I. M., Guilabert, M., Poblete, R., Franco, A. L., Jiménez, P., ... & Valle, Y. D. D. (2015). A Spanish-language patient safety questionnaire to measure medical and nursing students' attitudes and knowledge. *Revista Panamericana de Salud Pública*, *38*, 110-119.

Gaps in it use: Actual questionnaire not provided, nor is there a list of items. No evidence of it being used outside of Mira et al. (2015). Meant to assess the results of a patient safety curricula and does not include many of the dimensions in the framework.

Link(s): N/A

5. Manchester Patient Safety Assessment Framework (MaPSAF)

Purpose: Integrates safety culture maturity framework with dimensions of commitment and prioritization of safety, incident reporting and response, communication, staff knowledge and training about safety, and teamwork. Intended to use as an educational exercise or to build engagement by demonstrating how much the organization has progressed towards developing safety culture, not as an assessment tool.

Development: A literature review led to nine dimensions reviewed by primary care leaders, as well as interviews and focus groups with staff. Since then this has been repeated with healthcare providers across domains. There are several versions available specific to various healthcare contexts (link below has PDFs for each)

Implementation: Implementation and evaluation information for each specific scale can be accessed from the link below. Participants 'grade' their teams and/or organizations on each dimension of patient safety culture, then compare their profiles. Differences between members and low ratings are used to start discussions on how to improve.

Validity/Reliability: Various reports of face validity in different contexts. Format does not align with goals of reliability analysis (not meant for assessment).

Evidence:

Ashcroft, D. M., Morecroft, C., Parker, D., & Noyce, P. R. (2005). Safety culture assessment in community pharmacy: development, face validity, and feasibility of the Manchester Patient Safety Assessment Framework. *BMJ Quality & Safety*, *14*(6), 417-421.

Kirk, S., Parker, D., Claridge, T., Esmail, A., & Marshall, M. (2007). Patient safety culture in primary care: developing a theoretical framework for practical use. *BMJ Qual Saf*, *16*, 313-320.

Parker, D. (2009). Managing risk in healthcare: understanding your safety culture using the Manchester Patient Safety Framework (MaPSaF). *Journal of nursing management*, *17*, 218-222.

Gaps in it use: Not used often in the literature; not intended for psychometric purposes; reports largely from primary care and pharmacies; no empirical evidence of implications for clinical outcomes.

Link(s):

https://webarchive.nationalarchives.gov.uk/20171030124256/http://www.nrls.npsa.nhs.uk/resources/?EntryId45=59796

6. Medical Office Survey on Patient Safety Culture (MOSOPS)

Purpose: AHRQ sponsored the development of the Medical Office Survey on Patient Safety Culture in response to requests for a survey in this setting. This survey is designed specifically for outpatient medical office providers and other staff and asks for their opinions about the culture of patient safety and health care quality in their medical office. Items on communication about error, communication openness, office processes and standardization, organizational learning, overall perceptions of patient safety and quality, leadership support for patient safety, patient care tracking/follow-up, staff training, teamwork, and work pressure/pace. See second link for further information.

Development: Development funded by AHRQ. Survey includes 38 items that measure 10 composites of patient safety culture. See second link for further information.

Implementation: Implementation instructions in the below link, including information on: getting started, selecting a sample, determining data collection methods, establishing data collection procedures, conducting a web-based survey, preparing/analyzing data, and producing reports. This survey has been distributed via paper and web.

Validity/Reliability: The second link is to a report that presents statistics on patient safety culture composites and items from this survey. Shown to have good reliability (Cronbach's alpha = 0.75-0.9; Gorman et al., 2012). This survey has been implemented in dental settings (Ramoni et al., 2014).

Evidence:

Gorman, P. N., O'Malley, J. P., & Fagnan, L. J. (2012). The relationship of self-report of quality to practice size and health information technology. *The Journal of the American Board of Family Medicine*, *25*(5), 614-624.

Ornelas, M. D., Pais, D., & Sousa, P. (2016). Patient safety culture in Portuguese primary healthcare. *Qual Prim Care*, *24*(5), 214-5.

Ramoni, R., Walji, M. F., Tavares, A., White, J., Tokede, O., Vaderhobli, R., & Kalenderian, E. (2014). Open wide: looking into the safety culture of dental school clinics. *Journal of dental education*, *78*(5), 745-756.

Gaps in it use: Catered specifically to medical office providers. Derived from the Hospital Survey on Patient Safety Culture (HSOPSC), so it has the same gaps.

Link(s):

https://www.ahrq.gov/sops/surveys/medical-office/index.html

https://www.ahrq.gov/sites/default/files/wysiwyg/sops/quality-patient-safety/patientsafetyculture/2018mosopsdatabasereport-part1.pdf

7. Medical Student Safety Attitudes and Professional Survey (MSSAPS)

Purpose: Focuses on promoting curricular and cultural change for residents during their hospital rotations. Includes 28 items measuring 5 dimensions: safety culture, teamwork culture, experiences with professionalism, error disclosure culture, and comfort expressing professional concerns.

Development: Developed by surveying 228 graduating fourth year medical students from three U.S. medical schools. Unable to access Liao et al. (2014) original article on this survey's development.

Implementation: Administered to students in medical schools as part of mandatory capstone courses. Implemented via a web-based survey. Has also been implemented in a French medical university with 3-year GP residents and has also been modified and used in colleges of medicine in Korea.

Validity/Reliability: Been validated as an American version (Liao et al., 2014) and a French version (MSSAPS-F; Larramendy-Magnin et al., 2019). The French version had Cronbach's alpha coefficients ranging from 0.74 to 0.78 (Larramendy-Magnin et al., 2019). American version claims to be a "reliable and valid survey" but I can't actually find the numbers.

Evidence:

Larramendy-Magnin, S., Anthoine, E., L'Heude, B., Leclère, B., & Moret, L. (2019). Refining the medical student safety attitudes and professionalism survey (MSSAPS): adaptation and assessment of patient safety perception of French medical residents. *BMC medical education, 19*(1), 222.

Lee, H. Y., Hahm, M. I., & Lee, S. G. (2018). Undergraduate medical students' perceptions and intentions regarding patient safety during clinical clerkship. *BMC medical education, 18*(1), 66.

Liao, J. M., Etchegaray, J. M., Williams, S. T., Berger, D. H., Bell, S. K., & Thomas, E. J. (2014). Assessing medical students' perceptions of patient safety: the medical student safety attitudes and professionalism survey. *Academic Medicine*, *89*(2), 343-351.

Gaps in it use: Geared towards medical students. Only part of this survey is about safety culture, includes information that is probably not relevant for our purposes.

Link(s): N/A

8. Nordic Patient Safety Culture Questionnaire (TUKU)

Purpose: Measures the psychological factors and employees perceptions of the organizational functions. Contains a total of 65 Likert-type questions on psychological dimensions and organizational functions including: safety motivation, sense of control, sense of personal responsibility, mindfulness, work conditions management, work process management, safety management and leadership, supervisory support for safety, proactive safety development, hazard control, competence management, change management, and management of third parties.

Development: Based off of the DISC (Design for Integrated Safety Culture) model that separates three perspectives to culture: psychological factors, organizational functions, and social processes. Developed in a publicly funded research project in 2008 and has two parts: psychological factors and organizational dimensions. Psychological factors of work instrument was based on the CULTURE-survey developed by Reiman and Oedewald (2004). Organizational dimensions component was developed for the TUKU survey through a literature review (Reiman & Pietikainen). More information on the development in the link below.

Implementation: Has been implemented in Finnish hospitals. Seems to be used or referenced in a decent amount of studies, but a lot of them are not available in English and they are mostly by the same authors. More information on the implementation in the link below.

Validity/Reliability: Shown to have good reliability. Cronbach's alpha ranging from 0.78 to 0.92 (Reiman et al., 2013). More information about the validity and reliability of the measure in Reiman et al. (2013).

Evidence:

Reiman, T., Silla, I., & Pietikäinen, E. (2013). The validity of the Nordic patient safety culture questionnaire (TUKU). *International Journal of Risk & Safety in Medicine*, *25*(3), 169-184.

Reiman, T., & Oedewald, P. (2004). Measuring maintenance culture and maintenance core task with CULTURE-questionnaire—a case study in the power industry. *Safety Science*, *42*(9), 859-889.

Gaps in it use: Does not contain all of the dimensions in the framework, but it does have a lot of questions on leadership and includes sense of control.

Link(s): Reiman et al. (2013) contains all of the questions in table format.

https://www.yumpu.com/en/document/read/16488468/development-of-a-finnish-patient-safety-culture-survey-tuku-vtt

9. Nursing Home Survey on Patient Safety Culture (NHSPSC)

Purpose: Designed to measure the culture of resident safety from a nursing home staff perspective. It contains 42 items that measure 12 composites of organizational culture pertaining to patient safety culture. Includes questions on: teamwork, staffing, compliance with procedures, training & skills, nonpunitve response to mistakes, handoffs, feedback & communication about incidents, communication openness, supervisor expectations & actions promoting resident safety, overall perceptions of resident safety, management support for resident safety, and organizational learning.

Development: Developed by Westat (a private research organization) and funded by the Agency for Healthcare Research and Quality (AHRQ), using a review of the literature on safety, interviews with long-term care researchers, and interviews with nursing home administrators.

Implementation: Paper surveys have been distributed to staff in over 40 nursing homes (Castle et al., 2010) as part of a pilot testing. PDF versions in English and Spanish are available on AHRQ's site (see second site link), as well as a user guide for how to conduct the survey and report the results.

Validity/Reliability: All domains shown to have "acceptable levels of reliability" using Cronbach's alpha (Castle et al., 2010). Cronbach's alphas by dimension range from 0.71 to 0.86 (according to the AHRQ site).

Evidence:

Castle, N. G., Wagner, L. M., Perera, S., Ferguson, J. C., & Handler, S. M. (2010). Assessing resident safety culture in nursing homes: using the nursing home survey on resident safety. *Journal of patient safety*, *6*(2), 59.

Gaps in it use: Not widely used. Focuses more on resident safety culture and not patient safety culture.

Link(s):

https://www.ahrq.gov/sites/default/files/wysiwyg/professionals/quality-patient-safety/patientsafetyculture/nursing-home/2016/nhsurv16-pt1.pdf

https://www.ahrq.gov/sops/surveys/nursing-home/index.html

10. Patient Safety Climate in Healthcare Organizations (PSCHO) Scale

Purpose: To assess aspects of leader commitment/prioritization, policies/resources, psychological safety, and fair rewarding/punishing

Development: Authors reviewed existing safety climate surveys and extracted key topics into a questionnaire to assess them and tested it in four studies of healthcare providers (n = 42,249) of US hospitals (all areas and levels of experience). They used half of this data for an exploratory factor analysis and half to validate the factor structure.

Implementation: The PSCHO survey has 45 items and can be administered in electronic or paper format. Each item is answered on a scale where users respond by selecting from Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree, or Not Applicable. The PSCHO instrument is scored to highlight responses opposed to safety, or "problematic responses" (does not specify "problematic," but likely those indicating disagreement). Three indicators can be calculated (item-level, dimension-level, and overall safety climate): (1) the average percent of problematic responses for a given item, (2) the score on each dimension by averaging the means of each item relating to that dimension, (3) and the overall safety climate score by averaging all item means in the survey. Lower scores indicate better safety climate perceptions.

Validity/Reliability: Demonstrated convergent and discriminant validity of constructs with a multi-trait analysis. Reliability for each of the nine scales was α =0.50-0.89.

Evidence:

Singer, S., Lin, S., Falwell, A., Gaba, D., & Baker, L. (2009). Relationship of safety climate and safety performance in hospitals. *Health services research*, *44*(2p1), 399-421.

Benzer, J. K., Meterko, M., & Singer, S. J. (2017). The patient safety climate in healthcare organizations (PSCHO) survey: Short-form development. *Journal of evaluation in clinical practice*, *23*(4), 853-859.

Gaps in it use: Does not assess many of the components in the safety culture framework

Link(s):

http://www.midss.org/sites/default/files/pscho_survey_2006.pdf

11. Pharmacy Survey on Patient Safety Culture (PSOPSC)

Purpose: Designed to measure safety culture in a pharmacy setting by AHRQ. Assesses 11 dimensions of pharmacy with 36 items of patient safety culture in Likert-type format. Dimensions include: physical space and environment, teamwork, staff training & skills, communication openness, patient counseling, staffing work pressure and pace, communication about prescriptions across shifts, communication about mistakes, response to mistakes, organizational learning – continuous improvement, and overall perceptions of patients safety.

Development: Developed by AHRQ in 2012, also referred to as Community Pharmacy Survey on Patient Safety Culture. Survey design team conducted a review of the literature on patient and medication safety in pharmacies, interviewed pharmacy experts and researchers, and had a technical expert panel review the survey items. Pilot study used 55 pharmacies with 496 staff in the United States. More information about the development is in the technical report (see second link).

Implementation: Full version is available on AHRQ's site (see link below). It has also been translated, in a modified version in Chinese and validated in hospital pharmacies in China (Jia et al., 2014).

Validity/Reliability: Chinese modified version showed high reliability with a Cronbach's alpha of 0.89 (Jia et al., 2014).

Evidence:

Jia, P. L., Zhang, L. H., Zhang, M. M., Zhang, L. L., Zhang, C., Qin, S. F., ... & Liu, K. X. (2014). Safety culture in a pharmacy setting using a pharmacy survey on patient safety culture: a cross-sectional study in China. *BMJ open*, *4*(6), e004904.

Westat R, Martha F, Joann S. Pharmacy survey on patient safety culture: user's guide. Agency for Healthcare Research and Quality, 2012. (Prepared by Rockville, MD 20850 Contract No. HHSA290200710024C). AHRQ Publication No. 12(13)-0085. http:// www.ahrq.gov/professionals/quality-patient-safety/ patientsafetyculture/pharmacy/index.html

Gaps in it use: Not widely used. Geared towards pharmacies and not general patient safety. Does not include all dimensions from our framework.

Link(s):

https://www.ahrq.gov/sops/surveys/pharmacy/index.html

https://www.ahrq.gov/sites/default/files/publications/files/pharmsops_pilotresults.pdf

12. Safety Attitudes Questionnaire

Purpose: To assess perceptions of: management support/approval, teamwork climate, safety climate, quality of the working environment (resources), and impact of stress on performance; and feelings of job satisfaction

Development: Early survey development, pilot studies, and exploratory factor analyses were conducted in four critical care sites in the USA. This resulted in six distinct factors. The final scale was validated with data from over 10,000 providers in over 200 clinical areas (including critical care units, operating rooms, inpatient settings, and ambulatory clinics) in the US, United Kingdom, and New Zealand.

Implementation: The SAQ has 60 items and can be administered in electronic or paper format. It takes about 10-15 minutes to complete. Each item is answered on a scale where users respond by selecting from Disagree Strongly, Disagree Slightly, Neutral, Agree Slightly, or Agree Strongly. Each response is given a value for scoring where 1 = Disagree Strongly, 2 = Disagree Slightly, 3 = Neutral, 4 = Agree Slightly, 5 = Agree Strongly. Negatively worded items must be reverse scored (i.e., 5 = Disagree Strongly, 4 = Disagree Slightly, 3 = Neutral, 2 = Agree Slightly, 1 = Agree Strongly).

Validity/Reliability: Reliability: Raykov's $\rho = .90$, indicating strong reliability
Validity: Model fit was satisfactory: $\chi 2(784) = 10{,}311.27$, $p < .0001$; CFI = .90, RMSEA = .03, SRMR (between clinical areas) = .17, and SRMR (within clinical areas) = .04 (from Sexton et al., 2006)

Evidence:

Botti, M., Bucknall, T., Cameron, P., Johnstone, M. J., Redley, B., Evans, S., & Jeffcott, S. (2009). Examining communication and team performance during clinical handover in a complex environment: the private sector post-anaesthetic care unit. *Medical Journal of Australia*, *190*, 157-160

Johnston, M. J., Arora, S., King, D., & Darzi, A. (2018). Improving the quality of ward-based surgical care with a human factors intervention bundle. *Annals of surgery*, *267*(1), 73-80.

O'Leary, K. J., Wayne, D. B., Haviley, C., Slade, M. E., Lee, J., & Williams, M. V. (2010). Improving teamwork: impact of structured interdisciplinary rounds on a medical teaching unit. *Journal of general internal medicine*, *25*(8), 826-832.

Profit, J., Etchegaray, J., Petersen, L. A., Sexton, J. B., Hysong, S. J., Mei, M., & Thomas, E. J. (2012). The Safety Attitudes Questionnaire as a tool for benchmarking safety culture in the NICU. *Archives of Disease in Childhood-Fetal and Neonatal Edition*, *97*(2), F127-F132.

Taylor, J. A., Dominici, F., Agnew, J., Gerwin, D., Morlock, L., & Miller, M. R. (2012). Do nurse and patient injuries share common antecedents? An analysis of associations with safety climate and working conditions. *BMJ Qual Saf*, *21*(2), 101-111.

Watts, B. V., Percarpio, K., West, P., & Mills, P. D. (2010). Use of the Safety Attitudes Questionnaire as a measure in patient safety improvement. *Journal of Patient Safety*, *6*, 206-209.

Gaps in it use: Intended to assess only attitudes about safety, uses unidimensional safety climate scale, includes components beyond safety that may or may not have safety implications (job satisfaction)

Link(s):
https://bmchealthservres.biomedcentral.com/track/pdf/10.1186/1472-6963-6-44

13. Safety Organizing Scale (SOS)

Purpose: Developed this measure of safety organizing that captures behaviors theorized to underlie a safety culture. It is a 9-item unidimensional measure of self-reported behaviors enabling a safety culture. Questions touch on topics such as: mapping team skills, talking about mistakes, discussing alternative solutions, discussing risks, utilizing skills, discussing error prevention, and pooling expertise in a crisis (Vogus & Sutcliffe, 2007).

Development: Developed to provide a reliable and valid self-report measure of safety culture that is grounded in concrete behaviors. Administered to over 1500 nurses from 125 nursing units in 13 Catholic Health System hospitals in California, Indiana, Iowa, Maryland, Michigan, and Ohio (Vogus & Sutcliffe, 2007). Been validated in three European languages (German, French, and Italian) as well in Swiss hospitals (Ausserhofer, Schubert et al., 2013). Ausserhofer, Anderson et al. (2013) also developed a Safety Organizing Scale – Nursing Home version (SOS-NH).

Implementation: Vogus & Sutcliffe (2007) used a mailed questionnaire to the nursing units in the United States. They provide the full list of questions along with the instructions (in the legend of the Appendix).

Validity/Reliability: Found to have high internal reliability, with a Cronbach's alpha for the SOS being 0.88 (Vogus & Sutcliffe, 2007). Also found to have high reliability in other languages, with alpha coefficients of 0.90 (German), 0.92 (French), and 0.79 (Italian; Ausserhofer, Schubert et al., 2013). Ausserhofer, Schubert et al. (2013) also have information about how the scale relates to medication errors and patient falls. Found that higher SOS scores correlated with supportive leadership and lower nurse-reported medication errors.

Evidence:

Ausserhofer, D., Anderson, R. A., Colón-Emeric, C., & Schwendimann, R. (2013). First Evidence on the Validity and Reliability of the Safety Organizing Scale–Nursing Home Version (SOS-NH). *Journal of the American Medical Directors Association*, *14*(8), 616-622.

Ausserhofer, D., Schubert, M., Blegen, M., De Geest, S., & Schwendimann, R. (2013). Validity and reliability on three European language versions of the Safety Organizing Scale. *International journal for quality in health care*, *25*(2), 157-166.

Vogus, T. J., & Sutcliffe, K. M. (2007). The Safety Organizing Scale: development and validation of a behavioral measure of safety culture in hospital nursing units. *Medical care*, 46-54.

Gaps in it use: Only 9 items and does not seem to touch on most of the factors in our framework. Mostly about employee skills and discussing risks and mistakes. Claims to be behavioral-based, but has questions that are not about behaviors.

Link(s): List of items in the SOS are presented in the Appendix (Vogus & Sutcliffe, 2007) as well as in Table 4 of Ausserhofer, Schubert et al. (2013).

14. Safety, Communication, Operational Reliability, and Engagement (SCORE) Survey

Purpose: Updated the *Safety Attitudes Questionnaire* based on job demands-resources theory. Assesses teamwork climate, safety climate, improvement readiness, local leadership, personal burnout, and burnout climate

Development: Compiled existing measures (select scales from SAQ, Maslach Burnout Inventory, and work-life climate scales). Tested in US hospitals.

Implementation: SCORE is administered via paper survey. Scoring is complex – more information and statistical software syntax for scoring is listed in the technical report (link below)

Validity/Reliability: Validity: RMSEA = .04, CFI = .916; TLI = .911; Website states SCORE has the "highest scientific validity measures of any survey in the field";
Reliability: learning environment (α=.93), local leadership (α=.96), work-life balance (α=.83), teamwork climate (α=.82), safety climate (α=.87), burnout climate (α=.90); technical report details various other metrics for reliability.

Evidence:

Sexton, J. B., Adair, K. C., Leonard, M. W., ... Frankel, A. S. (2018). Providing feedback following Leadership WalkRounds is associated with better patient safety culture, higher employee engagement and lower burnout. *BMJ Qual Saf, 27*, 261-270.

Gaps in it use: New, limited use reported in the literature. Same limitations as Safety Attitudes Questionnaire: Intended to assess only attitudes about safety, uses unidimensional safety climate scale, includes components beyond safety that may or may not have safety implications

Link(s):
https://www.safeandreliablecare.com/surveys
https://qualitysafety.bmj.com/content/27/4/261?utm_campaign=bmjqs&utm_term=1-A&utm_content=consumer&utm_medium=cpc&utm_source=trendmd#DC1
https://www.hsq.dukehealth.org/files/2019/05/SCORE_Technical_Report_5.14.19.pdf

15. SCOPE

Purpose: This measure was developed to evaluate the state of patient safety culture in Dutch general practice. This measure was called SCOPE, which is an acronym in Dutch for systematic culture inquiry on patient safety in primary care (Zwart et al., 2011). SCOPE includes 8 dimensions: handover and teamwork, support and fellowship, communication openness, feedback about and learning from error, intention to report events, adequate procedures and adequate staffing, overall perceptions of safety, and supervisor/manager expectations/actions.

Development: SCOPE was derived from Dutch-HSOPS (Zwart et al., 2011). Questions were adjusted for the primary care setting through an iterative process of independent assessments. Items were deleted based on discussion about face validity with professionals from general practice and seven new items were added. Another version of it was also validated for all Dutch primary care professions, termed the SCOPE-PC (Verbakel et al., 2013). Dutch primary care consists of different professions such as: general practice, dental care, dietetics, physiotherapy and midwifery.

Implementation: When developed, it was administered to 294 Dutch respondents from 72 practices (25% general practitioner, 60% medical-administrative assistant, 15% nurse; Zwart et al., 2011). It was administered in a web system for GP practice with 43 items (Zwart et al., 2011), but could also be administered via paper. It is scored such that negatively worded items are recoded so that high scores always reflect a positive response (Verbakel et al., 2013).

Validity/Reliability: Internal consistency (for every factor): $0.64 < \text{alpha} < 0.85$; Inter-item correlation (average): 0.37; Item-rest correlations: ranged from 0.28 to 0.78 (Zwart et al., 2011). Construct validity: respondents with higher patient safety grades scored higher than the other respondent for seven out of the eight factors of the SCOPE (Zwart et al., 2011).

Evidence:

Desmedt, M., Bergs, J., Willaert, B., Vlayen, A., Hellings, J., Schrooten, W., ... & Vandijck, D. (2018). The SCOPE-PC instrument for assessing patient safety culture in primary care: a psychometric evaluation. *Acta Clinica Belgica*, *73*(2), 91-99.

Verbakel, N. J., Zwart, D. L., Langelaan, M., Verheij, T. J., & Wagner, C. (2013). Measuring safety culture in Dutch primary care: psychometric characteristics of the SCOPE-PC questionnaire. *BMC health services research*, *13*(1), 354.

Zwart, D. L., Langelaan, M., van de Vooren, R. C., Kuyvenhoven, M. M., Kalkman, C. J., Verheij, T. J., & Wagner, C. (2011). Patient safety culture measurement in general practice. Clinimetric properties of'SCOPE'. *BMC family practice*, *12*(1), 117.

Gaps in it use: Derived from the HSOPS and may not be very different.

Link(s): Verbakel et al. (2013) provide all of the items for the SCOPE-PC.

16. TRAnsitional patient safety Climate Evaluation (TRACE) questionnaire

Purpose: Measure transitional patient safety climate from the perspective of general practitioners and hospital physicians. Transitional patient culture is considered by van Melle et al. (2018) as a meeting of the safety cultures that exist within two individual organizations. TRACE questionnaire consists of 20 items on transitional patient safety climate with three overarching themes: transitional collaboration, communication, and transitional patient safety. It also contains a section with 7 items on incident reporting and three questions on subjective assessment of patient safety in their own practice.

Development: Adjusted from existing questionnaires on patient safety culture (HSOPSC and SCOPE) and using an exploratory factor analysis (EFA). Developed in the Netherlands using over 700 physicians in 5 hospitals.

Implementation: Data collection for validation took place using a secure, online Net Questionnaire system (http://www.netqhealthcare.nl/en/). It could also be given via paper. For the validation study, individuals were invited via email, with two follow-up reminder emails, and data was automatically stored in an online system. There are positively and negatively worded items. Negatively worded items are recoded to make a higher score always a more positive response.

Validity/Reliability: Validation study done found internal consistency for individual factors to be acceptable, with Cronbach's alphas ranging from 0.71-0.77. More information about reliability and construct validity in van Melle et al. (2018).

Evidence:

van Melle, M. A., van Stel, H. F., Poldervaart, J. M., de Wit, N. J., & Zwart, D. L. (2018). Validation of a questionnaire measuring transitional patient safety climate indicated differences in transitional patient safety climate between primary and secondary care. *Journal of clinical epidemiology*, *94*, 114-121.

Gaps in it use: Relatively new and not used widely. Based off of previously existing measures discussed earlier (HSOPSC and SCOPE). This is not about one organizations safety culture, but about the merging of cultures from several organizations. Could be helpful if the goal is to touch on different organizations patient safety cultures and how they collaborate. They also have a couple questions on incident reporting and subjective assessment of patient safety.

Link(s): All items given in van Melle et al. (2018) in Table 2.

17. TWINS Patient Safety

Purpose: Consists of 8 dimensions with a total of 10 items (most dimensions are only represented with one item). Questions include topics such as: supervisor support, open communication, patient safety focus, and patient safety priority. Survey is a 5-point Likert scale of agreement and frequency.

Development: Unable to find information on the development of this set of items. It appears that Wagner et al. maybe have just created the set of items as a supplement to the HSPSC culture survey.

Implementation: (unable to find information)

Validity/Reliability: (unable to find information)

Evidence:

Wagner, A., Hammer, A., Manser, T., Martus, P., Sturm, H., & Rieger, M. (2018). Do Occupational and patient safety culture in hospitals share predictors in the field of psychosocial working conditions? Findings from a cross-sectional study in German university hospitals. *International journal of environmental research and public health, 15*(10), 2131.

Wagner, A., Rieger, M. A., Manser, T., Sturm, H., Hardt, J., Martus, P., ... & Hammer, A. (2019). Healthcare professionals' perspectives on working conditions, leadership, and safety climate: a cross-sectional study. *BMC health services research, 19*(1), 53.

Gaps in it use: Does not cover most of the factors in the framework. Very small list of items. Not widely used, information about how it was developed and used are not available.

Link(s): N/A

18. Victorian Safety Climate Survey (SCS)

Purpose: Designed to measure safety climate in organizations and to identify opportunities for improvement. The SCS includes 74 items, 42 items that form the six factor analysis-derived domains in the original SAQ and 32 items that are separate from those domains. Includes questions with the following domains: teamwork climate safety climate, stress recognition, job satisfaction, perceptions of management, and work conditions. Originally called the Victorian Pilot Patient Safety Climate Survey and then was later changed to just the Safety Climate Survey. More information can be found in Table 1 of Colla et al. (2005).

Development: The SCS was based on the SAQ and modified for the Victorian hospital context by the Victorian Managed Insurance Authority and Victorian Quality Control (2011). Developed and tested with a sample of over 1600 staff from six Victorian healthcare services in Australia.

Implementation: Detailed instructions and tools for how to run the Safety Climate Survey were developed and are provided by VMIA and the Victorian Quality Council (see link below). The link below provides both the full version of the survey (Tool A) as well as the short version of the survey (Tool B).

Validity/Reliability: No information about reliability or validity is publicly available and no psychometric testing results have been reported (Hodgen et al., 2017).

Evidence:

Bennett, P. N., Ockerby, C., Stinson, J., Willcocks, K., & Chalmers, C. (2014). Measuring hospital falls prevention safety climate. *Contemporary nurse*, *47*(1-2), 27-35.

Hodgen, A., Ellis, L., Churruca, K., & Bierbaum, M. (2017). Safety culture assessment in health care: a review of the literature on safety culture assessment modes. *Sydney: Australian Commission on Safety and Quality in Health Care*.

Gaps in it use: Not widely used. Several other studies use what they call "safety climate survey" or "safety climate scale" but it does not appear to be related to this version (more information about this in Hodgen et al., 2017, p. 11-12). Does not include items from all of the dimensions in the framework.

Link(s):

https://www.vmia.vic.gov.au/risk/risk-tools/patient-safety-climate

Index of Interventions for Safety Culture

Evidenced-based

(Strategies found in our literature search which have studied and shown to improve safety culture.)

- Crew Resource Management
- Comprehensive Unit Based Safety Program (CUSP)
- EWS (Early Warning Systems) / MEWS (Maternal Early Warning Systems)
- High Fidelity Simulation
- Huddles / Debriefings
- IHI Patient Safety Essentials Toolkit
- Low-Fidelity / In-situ Simulation
- Magnet Recognition Program
- Mindfulness-Based Stress Reduction Training
- Protocol Based Standardization of Practice
- Standardized Handoffs
- Surgical Safety Checklist
- TeamSTEPPS
- WalkRounds / Leadership Rounds

Consensus-based

(Tools developed through consensus by a panel of experts but may or may not have been rigorously tested in perinatal patients.)

- Action Planning for Safety Culture Assessment
- AHRQ Toolkit for Improving Perinatal Safety
- Anonymous Event Reporting System / Incident Reporting
- Code of Professionalism
- High-Reliability Organization Principles (HRO) / Just Culture
- Increasing Physician Presence in Units
- Obstetrics Patient Safety Committee / Quality Councils

Practical

(Tools are those have been used within our organization but not tested using safety culture as a measure.)

- Clinical Postpartum Pathway
- Multidisciplinary Discharge Rounds (MDDR)
- Obstetrics Patient Safety Nurse
- Patient Ambassador Program
- Patient and Family Advisory Council
- Patient Safety Dashboards
- Perinatal Nurse Navigator

Crew Resource Management

Purpose: Crew Resource Management (CRM) formally began in the aviation industry as a means to enhance communication and teamwork between flight crew and pilots by fostering a less authoritarian cockpit culture- one where questions to the captain were encouraged if mistakes were observed. CRM training concepts have been modified for use in industries where there are time-critical decisions, e.g. healthcare. Studies have shown that when communication barriers are reduced, especially in instances of hierarchy, problems can be solved leading to increased safety. CRM training also includes practice, formative feedback and tools to support transfer of training to everyday practice.

Implementation:

CRM aims to foster a climate or culture where authority may be respectfully questioned. This is done is a five-step assertive statement process that incorporates these steps:

- **Opening or attention getter**- Address the individual: "Doctor Smith," or "Bob," or whatever name or title will get the person's attention.
- **State your concern** - Express your analysis of the situation in a direct manner while owning your emotions about it. "I'm concerned that the patient's vital signs are dropping," or "I'm worried that she has increased pain."
- **State the problem as you see it** - "She has filled a pad with bright red blood," or "She is not getting adequate relief from her epidural."
- **State a solution** - "Let's assess her fundus and notify the surgeon of the blood loss," or "I think we should reposition her and call anesthesia."
- **Obtain agreement (or buy-in)** - "Does that sound good to you, Doctor?"

CRM techniques are designed to work when people are fallible. It incorporates safety tools such as checklists, briefings/debriefings, situational awareness, team monitoring, standardization, read back and care bundles. Examples in the perinatal environment include surgical safety checklists, standardization of oxytocin, reading back verbal orders and CLABSI bundles.

Some institutions have used CRM in classroom settings with lectures and role-playing and others have used it as part of on-site obstetrical simulations. CRM has also been used with multidisciplinary teams in conjunction with TeamSTEPPS and Human Factors Training.

Outcome measures used w/ implementation (Research): CRM training has been shown to improve non-technical and technical skills, patient outcomes and safety culture.

Johnson, H. L. & Kimsey, D. (2012). Patient safety: Break the silence. *AORN Journal, 95*(5), 591-601.

Marshall, D. (2009). Crew resource management: From patient safety to high reliability. Safer Healthcare Partners: Denver, Colorado

Pettker, C. M., Thung, S. F., Raab, C. A., Donohue, K. P, Copel, J. A., Lockwood, C. J., Funai, E. F. (2011). A comprehensive obstetrics patient safety program improves safety climate and culture. *American Journal of Obstetrics and Gynecology, 204:216*, e1-6.

Savage, C., Gaffney, F. A., Hussain-Alkhateeb, L., Ackheim, P. O., Henricson, G., Antoniadou, I.…Harenstam, K. P. (2017). Safer paediatric surgical teams: A 5-year evaluation of crew resource management implementation and outcomes. *International Journal for Quality in Healthcare, 29*(6), 853-860.

Gaps: CRM has been used to improve patient safety and culture. However, ongoing assessment is necessary to determine and sustain status.

Link(s): https://ww2.mc.vanderbilt.edu/crew_training/

https://bmjopen.bmj.com/content/bmjopen/9/2/e025247.full.pdf

CUSP (Comprehensive Unit Based Safety Program)

Purpose: Developed by Johns Hopkins Hospital and endorsed by AHRQ, the Comprehensive Unit Based Safety Program (CUSP) was designed to improve the culture climate in specific clinical areas in the hospital. The purpose of CUSP is to work with providers to identify hazards, learn from defects, partner with executive leadership, and implement communication and teamwork at the unit level.

Implementation:

Training modules and tools for CUSP are available online at www.safercare.net.
This is an overview of the training:

1. Educate Staff in the Science of Safety:
   Interactive discussions and learning modules with staff.

2. Safety Hazard Identification:
   Identify sources that document unit-based hazards (e.g. incident reporting, quality councils.)
   Next make a list of hazards and the team prioritizes which hazards pose the greatest risk.

3. Engage Senior Executives:
   Executives facilitate resources and provide support and accountability. They meet with the team and unit staff monthly.

4. Learn from Defects:
   Team is trained to identify, and problem solve hazards. Team summarizes what happened, why it happened, what was done to reduce risk and how they know risk was reduced.

5. Implement Communication and Teamwork Tools:
   Team identifies and implements tools to improve communication and teamwork.

Case Studies: https://www.ahrq.gov/professionals/education/curriculum-tools/cusptoolkit/videos/00_nurse/index.html

https://www.ahrq.gov/professionals/education/curriculum-tools/cusptoolkit/videos/00_doctor/index.html

https://www.ahrq.gov/professionals/quality-patient-safety/cusp/cusp-success/index.html

CUSP is frequently used as a partner with TeamSTEPPS.

Outcome measures used w/ implementation (Research): The CUSP has been proven to reduce and sustain change projects, such as the TJC patient safety imperatives CLABSI and CAUTI.

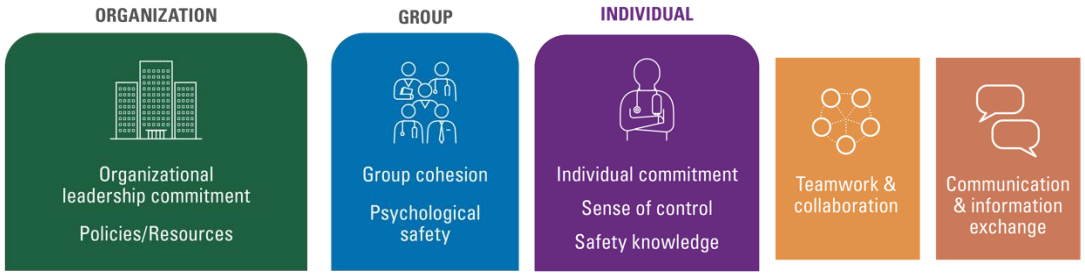
Paine, L. A., Rosenstein, B. J., Sexton, J. B., Kent, P., Holzmueller, C. G. & Pronovost, P. J. (2011). Republished paper: Assessing and improving safety culture throughout an academic medical center: A prospective cohort study. *Postgraduate Medical Journal, 87,* 428-435.

Verschoor, K. N., Taylor, A., Northway, T. L., Hudson, D. G., Van Stolk, D. E., Shearer, K. J….Miller, G. (2007). Creating a safety culture at the children's and women's health centre of British Columbia. *Journal of Pediatric Nursing, 22*(1), 81-86.

Gaps: Bedside nurses play a key role in changing unit culture. Research suggests that supportive conditions are not always in place to promote conversations and problem solving for them in a psychologically safe environment.

Link(s): https://www.ahrq.gov/professionals/education/curriculum-tools/cusptoolkit/index.html

EWS (Early Warning Systems) / MEWS (Maternal Early Warning Systems)



Purpose: Early Warning Systems (EWS) and Maternal Early Warning Systems (MEWS) were developed to provide an early warning system to alert care providers of impending critical illness and thus improve safety and outcomes. These warnings capture deterioration from a broad spectrum of conditions (e.g. hemorrhage, thromboembolism, and hypertension) in a timely manner to provide consistent care.

Implementation:

For optimal implementation of EWS/MEWS these steps should be followed:

1. Decide which criteria/trigger system to be adopted (e.g. MEOWS, MEWT, MERC)
2. Obtain multilevel and interdisciplinary coordination and buy-in
3. Educate all members of the health care team (e.g. RN, CNA, MD)
4. Implement EWS/MEWS
5. Assess success of system implementation and restructure as needed
6. Provide sustainment
    a. Coach and integrate
    b. Monitor the plan
    c. Continuous improvement

Outcome measures used w/ implementation (Research): The Joint Commission (2010) as part of a sentinel event alert to prevent maternal death strongly recommended using a MEWS system in obstetric units. Preliminary outcomes as the MEWS criteria evolves has been very promising in decreasing maternal morbidity.

Kacmar, R. M. (2017). Safety interventions on the labor and delivery unit. *Obstetric and Gynecological Anesthesia, 30*(3), 287-293.

Friedman, A. M., Campbell, M. L., Kline, C. R., Wiesner, S., D'Alton, M. E., Shields, L E. (2018). Implementing obstetric early warning systems. *American Journal of Perinatology, 8*(2), 79-84.

Hanley, D., Abele, D., Alley, A. J., Smith, K., Gaden, N. W. & Bittner, N. P. (2106). Creating a culture of safety through integration of an early warning system. *Journal of Nursing Administration, 46*(2), 63-68.

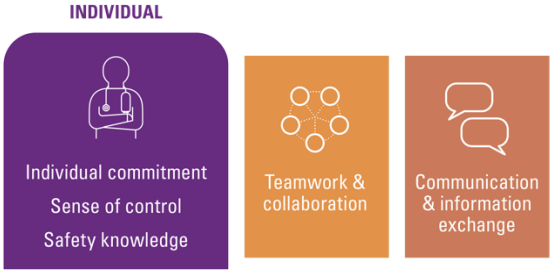
Singh, A., Guleria, K., Vaid, N. B. & Jain, S. (2016). Evaluation of maternal early obstetric warning system (MEOWS chart) as a predictor of obstetric morbidity: A prospective observational study. *European Journal of Obstetric and Gynecological Reproductive Biology, 207*, 11-17.

Gaps: EWS/MEWS is very dependent of situational awareness, escalation procedures and hospital culture. Successful implementation requires timely identification and multidisciplinary coordination and buy-in. There is no packaged program or tool kit that can be applied to this intervention.

Link(s): Implementing Obstetric Early Warning Systems

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5910060/

High-Fidelity Simulation



Purpose: High-fidelity simulation requires interaction with an interactive computerized manikin in a realistic environment, often is a simulation center. These simulations occur in a room set up as a normal working environment (e.g. labor room, operating room) with a full component of working equipment and staff. The manikin is realistic with pulses, oxygen saturation, breath sounds, fetal heart sounds etc. Situations are programmed into the computer and the staff are provided with a "real-life" experience.

Implementation:

For best overall results, a multidisciplinary team should be involved in the development of the simulation scenarios and the role-playing in the obstetrical emergency scenarios.

1. Build scenarios appropriate to the needs of the unit
2. Provide team with didactic training around the intent of the scenario
3. Run the simulation/drill in the actual environment with the appropriate staff
4. Debrief with team on the effectiveness of the simulation/drill and the outcome
5. Rapid-cycle follow-through with any process improvements noted
6. Repetition to reinforce skills and create sustainability

Outcome measures used w/ implementation (Research): The primary advantage of simulation is that it provides practical real-time feedback to real life situations. It has been widely reported that simulation improves patient safety by providing staff with technical and nontechnical skills and developing self-efficacy.

Birnbach, D.J. & Salas, E. (2008). Can medical simulation and team training reduce errors in labor and delivery? *Anesthesiology Clinics, 26,* 159-168.

Kacmar, R. M. (2017). Safety interventions on the labor and delivery unit. *Obstetric and Gynecological Anesthesia, 30*(3), 287-293.

Meurling, L., Hedman, L., Sandahl, C., Fellander-Tsai, L. & Wallin, C. J. (2013). Systematic simulation-based training in a Swedish intensive care unit: A diverse response among critical care professionals. *BMJ Quality and Safety, 22,* 485-494.

Riley, W., Davis, S., Miller, K., Hansen, H., Sainfort, F. & Sweet, R. (2011). Didactic and simulation nontechnical skills team training to improve perinatal patient outcomes in a community hospital. *The Joint Commission Journal on Quality and Patient Safety, 37*(8), 357-364.

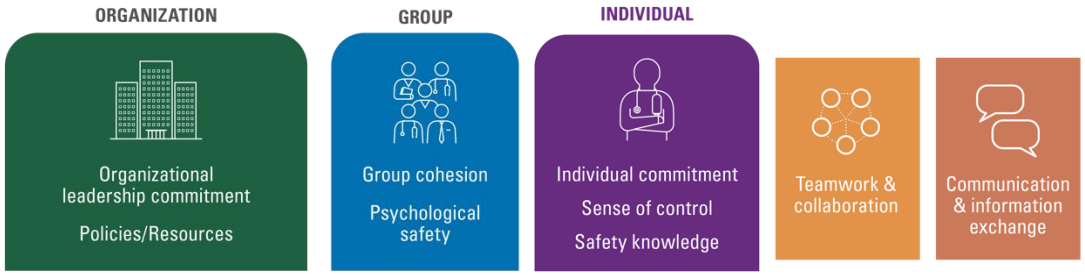
Gaps: High-fidelity manikins are expensive and therefore cost prohibitive for some institutions. Unless the manikin is mobile, these scenarios also usually require staff to be off the unit simultaneously which can prove to be logistically difficult. If simulations are held off-site, the atmosphere of the training environment should replicate the staff's working environment as closely as possible.

Link(s): **NLN Simulation Innovation Resource Center**

California Maternal Quality Care Collaborative- Obstetric Hemorrhage

Preeclampsia

Huddles/Debriefings



Purpose: Briefings or huddles and post-procedure debriefings have been shown to be valuable across a wide variety of medical and surgical environments. A brief or a huddle is a meeting session designed to reinforce plans that are already in place. This allows for on-the-spot assessment, reassessment, and consideration of whether there is a need to adjust plans and how to make any needed changes. Debriefings are reviews and/or information sharing sessions that reviews the actions taken and is intended to improve team performance and effectiveness. Benefits of huddles and debriefings include improved patient safety, decreased incidence of preventable errors, increased efficiency, and promotion and continued development of a multidisciplinary care team model of patient care.

Implementation:

Huddles: Takes place among providers shortly before the start of a procedure and is a tool for communicating adjustments to a plan of care that is already in place.

1. Identify when, why, and where huddles might be conducted as well as who should lead and who should participate.
2. Develop a checklist for guiding the huddle
3. Discuss critical issues and emerging events
4. Anticipate outcomes and likely contingencies
5. Assign resources
6. Express concerns

Debriefings: A brief review that occurs at the conclusion of an operation facilitated by the team leader that focus on performance improvement.

1. The leader should facilitate the discussion by asking questions related to team performance.
2. Develop a checklist to ensure that all information is discussed.
3. Recap the situation, background, and key events that occurred.
4. Summarize lessons learned and set goals for improvement.

Outcome measures used w/ implementation (Research): Direct observation of completion and participation

1. Determine perceptions of safety using the OR version of the Safety Attitudes Questionnaire
2. Conduct individual confidential interviews

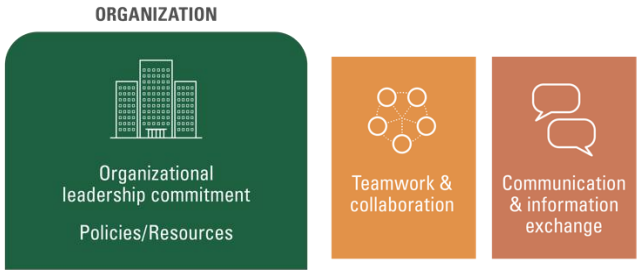
Khoshbin, A., Lingard, L., Wright, J. G. (2009). Evaluation of preoperative and perioperative operating room briefings at the Hospital for Sick Children. Canadian Journal of Surgery, 52(4), 309–315.

McQuaid-Hanson, E. & Pian-Smith, M. C. (2017). Huddles and debriefings: Improving communication on labor and delivery. Anesthesiology Clinic, 35(1), 59-67.

Gaps: In certain cases, there may be some resistance for physician buy-in to the collaborative and anti-hierarchical nature of the huddle and hesitancy to speak-up amongst staff members.

Link(s): The agency for Healthcare Research and Quality (AHRQ)-TeamSTEPPS fundamentals course: Module 4. Leading Teams: https://www.ahrq.gov/teamstepps/instructor/fundamentals/module4/igleadership.html#im11

IHI Patient Safety Essentials Toolkit



Purpose: This toolkit was designed to aid in improving teamwork and communication so that there are fewer errors made and more reliable care provided to the patient.

Implementation:

Components of the toolkit include:

- The SBAR (Situation-Background-Assessment-Recommendation) technique, which provides a framework for communication between members of the health care team about a patient's condition.
- Action Hierarchy, a component of RCA2 that will assist teams in identifying which actions will have the strongest effect for successful and sustained system improvement.
- A daily huddle agenda, which gives teams a way to proactively manage quality and safety.
- Failure Modes and Effects Analysis: Also used in Lean management and Six Sigma, FMEA is a systematic, proactive method for identifying potential risks and their impact.

The toolkit consists of nine downloadable tools.

- Patient Safety Essentials Toolkit (all of the tools)
- Action Hierarchy / RCA2 (Root Cause Analyses and Action "squared"- a trademark of the IHI)
- Ask Me 3- (A low literacy patient education tool designed to insure that patient's understand:
  1. What is my main problem?
  2. What do I need to do?
  3. Why is it important for me to do this?
- Cause and Effect Diagram- (Examples and a template for Cause and Effect or Ishikawa Diagrams)
- Developing Reliable Processes- (Examples and templates for standardizing, simplifying and creating a back-up plan when developing reliable processes.)
- 5 Whys: Finding the Root Cause of a Problem- (Guides you through how to ask the 5 Whys when investigating an issue. Includes examples and a template.)
- Flowchart-(Provides instruction and a template on how to complete a flowchart or process map.)

- Failure Modes and Effects Analysis (FMEA) Tool- (a tool for conducting a systematic, proactive analysis of a process in which harm may occur.)
- Huddles- (Provides instructions and a template on how to develop a huddle/team meeting ensure that quality and safety and process improvements are maintained.
- SBAR (Situation-Background-Assessment-Recommendation) Tool- (The SBAR technique provides a framework for communication between members of the health care team about a patient's condition. This tool provides education and a template.)

Outcome measures used w/ implementation (Research): the website includes experiences shared from health care institutions that have tested and implemented change, including lessons learned, using their instruments.

Whittington, J. W., Nolan, K., Lewis, N. & Torres, T. (2015). Pursuing the triple aim: The first seven years. *The Milbank Quarterly, 93*(2), 263-300.

Gaps: The tools are mostly designed to be utilized in a healthcare institution, with physicians and nurses as the major focus. The tools are applicable to driving patient safety but they have not been directly linked to changing safety culture.

Link(s): http://www.ihi.org/resources/Pages/Tools/Patient-Safety-Essentials-Toolkit.aspx

Low-Fidelity / In-situ Simulation

Purpose: Low-fidelity simulation, also referred to as drills, are often conducted on-site, in-situ, in the staff's own environment (e.g. labor and delivery, postpartum.) Training in a familiar environment best prepares staff to learn to identify risk factors and interventions in the event of a true obstetric emergency. The purpose of these simulations/drills is to best prepare staff for an emergent event in their working environment by practicing in controlled situations. Low-fidelity simulation is useful when supplementing clinical /technical skills with nontechnical skills (e.g. interpersonal communication.)

Codes and postpartum hemorrhage are low frequency, high-severity events that are major patient safety events in the acute care setting. We performed low-fidelity in-situ simulation training to create competence for all health care providers in these emergent situations.

Implementation: For best overall results, a multidisciplinary team should be involved in the development of the simulation scenarios and the role-playing in the obstetrical emergency scenarios.

1. Build scenarios appropriate to the needs of the unit
2. Develop a didactic training around the learning objectives and outcomes of the participants using multidisciplinary team including an educator.
   For example:
   i. Define signs to recognize the emergency
   ii. Describe roles to support.
   iii. Describe equipment and use.
   iv. Define the communication needed.
3. Run the simulation/drill in the actual environment with the appropriate staff and evaluator.
4. Debrief with team on the effectiveness of the simulation/drill and the outcomes.
5. Rapid-cycle follow-through with any process improvements noted.
6. Repetition of the simulation to reinforce and create sustainability of skills proficiency.

Outcome measures used w/ implementation (Research): The primary advantage of simulation is that it provides practical real-time feedback to real life situations. It has been widely reported that simulation improves patient safety by providing staff with technical and nontechnical skills and developing self-efficacy. It is used frequently in conjunction with TeamSTEPPS.

Birnbach, D.J. & Salas, E. (2008). Can medical simulation and team training reduce errors in labor and delivery? *Anesthesiology Clinics, 26,* 159-168.

Earle, D., Betti, D. & Scala, E. (2017). Development of a rapid response plan for intraoperative emergencies: The circulate, scrub, and technical assistance team. *The American Journal of Surgery, 213*, 181-186.

Kacmar, R. M. (2017). Safety interventions on the labor and delivery unit. *Obstetric and Gynecological Anesthesia, 30*(3), 287-293.

Meurling, L., Hedman, L., Sandahl, C., Fellander-Tsai, L. & Wallin, C. J. (2013). Systematic simulation-based training in a Swedish intensive care unit: A diverse response among critical care professionals. *BMJ Quality and Safety, 22*, 485-494.

Riley, W., Davis, S., Miller, K., Hansen, H., Sainfort, F. & Sweet, R. (2011). Didactic and simulation nontechnical skills team training to improve perinatal patient outcomes in a community hospital. *The Joint Commission Journal on Quality and Patient Safety, 37*(8), 357-364.

Gaps: It is felt by some that low-fidelity simulation does not provide the required ‘‘real-life’’ experience necessary for training complex hands-on required scenarios.

Example of a Postpartum Hemorrhage Management Simulation:

We developed various scenarios to be run in Antepartum, Labor and Delivery, OR and Postpartum with interdisciplinary participation.

Implementation included:

1. Education committee developed scenarios based on case studies from past patient situations.
2. Reviewed scenarios with charge nurses, nursing leadership and physicians for input.
3. Staff training on accurate measurement of EBL (estimated blood loss.)
4. Scenarios run first at designated times and then unannounced.
5. Training designed to hit different shifts, different units and staff with various levels of experience.
6. Debriefing occurs after simulation scenarios.

Outcome measures used w/ implementation (Research): As the staff became more familiar with the scenarios, we found increased attendance and confidence in assessing and performing in these high-risk situations. On observation, communication and teamwork improved and staff evaluations stated that the simulation experience was educational and worthwhile.

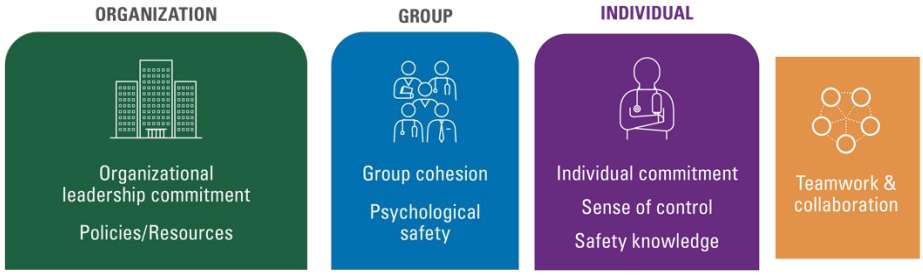
Gaps: As we continue to run these simulation scenarios, we plan to evaluate success/change in culture.

Link(s): **NLN Simulation Innovation Resource Center**

California Maternal Quality Care Collaborative- Obstetric Hemorrhage

Preeclampsia

Magnet Recognition Program



Purpose: The Magnet Recognition Program (MRP) was developed almost 40 years ago to improve workplace culture and improve patient outcomes. Unlike most programs, the MRP used both top-down and bottom-up methods because leadership personnel are equally as involved as nurses at the bedside.

Implementation: To be a part of the MRP, an institution needs to apply and undergo a designation process. Leadership buy in and staff support are key when acquiring and maintaining Magnet status.

Outcome measures used w/ implementation (Research): There are several ways to determine if Magnet accreditation is effective. A common method is using a survey before and after MRP has been obtained.

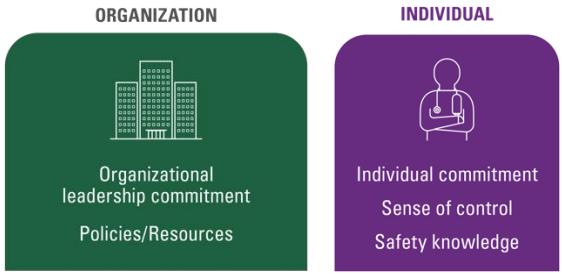
Moss, S. (2017). Creating a culture of success- Using the magnet recognition program as a framework to engage nurses in an Australian healthcare facility. *The Journal of Nursing Administration, 47* (1), 116-122.

Gaps: Using a validated survey to verify having a Magnet Recognition Program is essential. Leadership is vital when introducing and implementing the MRP.

Link(s): Facts about the Magnet Recognition Program

https://www.nursingworld.org/globalassets/organizational-programs/magnet/magnet-factsheet.pdf

Mindfulness-Based Stress Reduction Training



Purpose: The Mindfulness-Based Stress Reduction (MBSR) training program is an evidence-based intervention designed to reduce stress, burn out, anxiety, depression, chronic pain etc. in order to decrease occupational injuries and improve emotional health in healthcare professionals.

Implementation: The MBSR training program is an eight-week training program taught by an instructor. The course includes eight 2.5-hour weekly sessions and one 7-hour session. The course includes guided instruction in mindfulness meditation focusing on breathing, gentle stretching and yoga, and group discussions about improving awareness. The effect of MSBR can be measured using a 15-item Mindfulness Attention Awareness Scale (MAAS), a self-reported Likert scale survey that measures mindfulness.

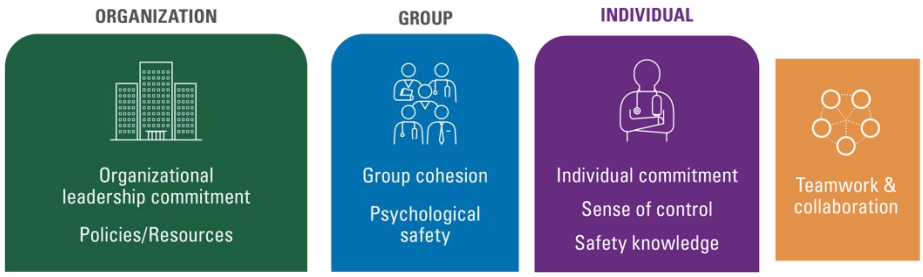
Outcome measures used w/ implementation (Research): MSBR training improves overall workplace outcome among healthcare professionals. These outcomes include cognitive failures and safety compliance that occur when working.

Valley, A. M. & Stallones, A. L. (2017). Effect of mindfulness-based stress reduction training on health care worker safety: A randomized waitlist controlled trial. *Journal of Occupational and Environmental Medicine*, *59*(10), 935-941.

Gaps: Measurement of outcome of MSBR is self-reported data, which is disposed to reporting and recall bias. To determine the validity of the MSBR outcomes, more objective measures such as healthcare professional injury and/or safety compliance in the workplace should be measured.

Link(s): MBSR "At a Glance"
https://palousemindfulness.com/MBSR/ataglance.html

Protocol Based Standardization of Practice



Purpose: Standardization of practice reduces variability in processes and tools at the system level; thereby, improves patient safety and outcomes. Standardization improves communication, teamwork and reduces medical errors and adverse events.

Implementation:

1. Identify the variability in the process of clinical practices and select an area in which to promote best practices.
2. Set up a multidisciplinary team and develop consensus based standard operating protocols (SOPs).
3. Adopt the necessary SOPs to reflect the local practice.
4. Educate and train clinical teams about the new SOPs.
5. Perform audits and provide feedback to teams involved in patient care around status of SOPs.
6. Develop hospital-based policy, if appropriate, reflecting the new SOPs.

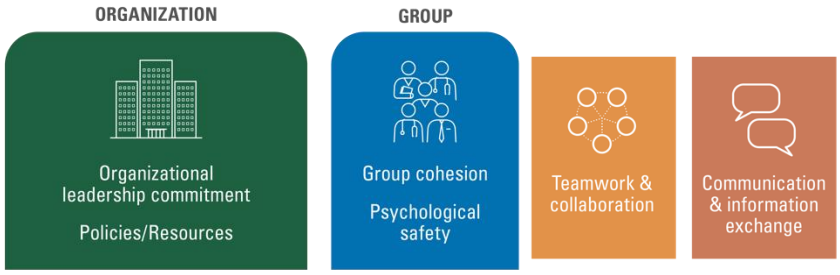
Outcome measures used w/ implementation (Research): Development and implementation of standard operating protocols will reduce medical errors and improve patient safety.

Leotsakos, A., Zheng, H., Croteau, R., Loeb, Jerod, M., Sherman, H., …, Munier, B. (2014). Standardization in patient safety: the WHO High 5s project. *International Journal for Quality in Health Care*, *26*(2), 109-116.

Gaps: Periodic monitoring and auditing of protocol based standardized operating protocols are necessary due to staff turnover.

Link(s): Clinical Guidelines and Standardization of Practice to Improve Outcomes
https://www.acog.org/Clinical-Guidance-and-Publications/Committee-Opinions/Committee-on-Patient-Safety-and-Quality-Improvement/Clinical-Guidelines-and-Standardization-of-Practice-to-Improve-Outcomes?IsMobileSet=false

Standardized Handoffs



Purpose: Standardized hand off is the process of transferring information and responsibility of patients from one person/team to another in a consistent manner in order to maintain continuum of patient care.

Implementation: The following are the steps to implement the I-PASS (Illness severity, patient summary, action list, situation awareness and contingency plans and synthesis by receiver), one specific type of handoff bundle.

1. Modify, if needed, I-PASS hand off bundle to suit your organization/service/unit needs.
2. Conduct a staff workshop to teach TeamSTEPPS teamwork and communication skills and I-PASS hand off technique.
3. Role playing and simulation sessions should occur post workshop for practicing handoffs.
4. Make a computer module available for self-learning.
5. Faculty will need a separate development program.
6. Provide to staff results from direct observations and provide feedback.
7. As processes change so should there be a culture change campaign.

Outcome measures used w/ implementation (Research): Following implementation of a standardized process will improve team communication, continuum of care of patients and likely reduce medical errors.

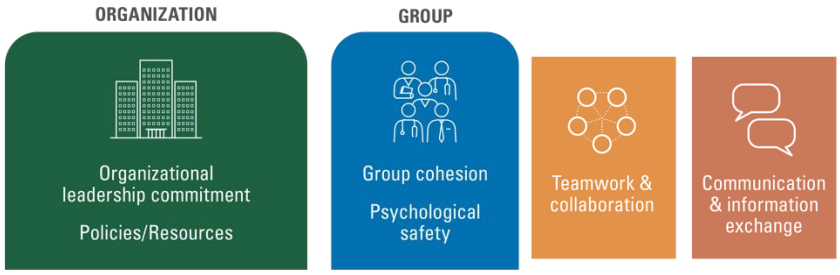
Starmer, A. J, Spector, N. D., Srivastava, R., West, D.C., Rosenbluth, G. A., Allen, A.D., …, Landrigan, C. P. (2014). Changes in medical errors after implementation of a handoff program: I-PASS study group. *New England Journal of Medicine*, *371*(19), 1803-1812.

Gaps: Standardized hand off should be implemented at service/unit level and audited periodically. If there is deviation in the hand off process staff education and/or training is needed.

Link(s): AHRQ PSNet : Hand offs and Sign outs
https://psnet.ahrq.gov/primers/primer/9/Handoffs-and-Signouts

I-PASS Better Hand offs Safer Care
http://www.ipasshandoffstudy.com/home

Surgical Safety Checklist



Purpose: Initiated by WHO because of poor patient safety records in operating rooms, the Surgical Safety Checklist is a tool designed to improve the safety of surgical procedure by bringing together teams including surgeons, anesthesia providers, nursing staff and other care providers, to perform key safety checks during the vital phase of perioperative patient care: prior to the induction, skin incision and debriefing.

Implementation:

1. The implementation committee (a multidisciplinary team including surgeons, anesthesia providers and nursing staff) develops a safety checklist with input from all multidisciplinary teams.
2. The Surgical Safety Checklist is tested in the operating room and modified using PDSA (Plan-Do-Study-Act) cycles until a final surgical safety checklist is created.
3. Staff are educated on how to use the Surgical Safety Checklist, including role play with all health care disciplines.
4. The Surgical Safety Checklist is implemented in a patient environment with feedback given to all participating by quality and education specialists.

Outcome measures used w/ implementation (Research): There is a strong link between using the surgical safety checklist and attitudes about safety.

Following the implementation in our hospital, we found that the surgical safety checklist was used in all the cases in the operating room and there was improvement in checklist adherence, increased communication and improved safety culture as witnessed by safety culture questionnaires.

Allard, J., Bleakley, A., Hobbs, A. & Coombes, L. (2011). Pre-surgery briefings and safety climate in the operating theatre. *BMJ Quality and Safety, 20,* 711-717.

Haynes, A. B., Weiser, T. G., Berry, W. R., Lipsitz, S. R., Breizat, A. S., Dellinger, E. P., …, Gawande, A. A. (2010). Changes in safety attitude and relationship to decreased postoperative morbidity and mortality following implementation of a checklist-based surgical safety intervention. *BMJ Quality and Safety*, *20*, 102-107.

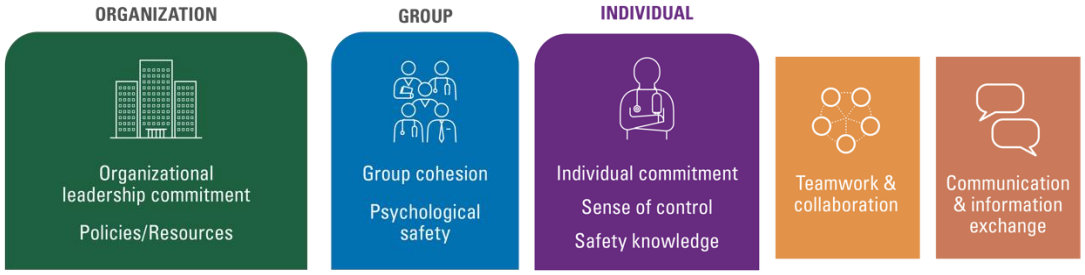
Gaps: It is essential for success that all staff are trained in how to use the Surgical Safety Checklist. It won't be successful if there isn't full acceptance of its use on every case. After it is launched, we

recommend using a formalized PDSA cycles with clear outcome measure to assess patient safety culture change/improvement.

Links: WHO Surgical Safety Checklist Implementation
https://www.who.int/patientsafety/safesurgery/checklist_implementation/en/

Safe Surgery Checklist Implementation guide
http://www.safesurgery2015.org/uploads/1/0/9/0/1090835/safe_surgery_implementation_guide__092515.012216_.pdf

TeamSTEPPS



Purpose: TeamSTEPPS was developed in collaboration by AHRQ and the Department of Defense and is an evidence-based patient safety-training program designed to improve communication and teamwork among health care professionals by promoting a culture of team driven care. The program establishes interdisciplinary team training systems to serve as the foundation for a patient safety strategy. Teamwork has been found to be one of the key initiatives within patient safety that can transform the culture within health care.

Implementation:

Following AHRQ recommends the following steps should be implemented:

1. Phase 1: Assessment
   Readiness assessment will help your institution understand its level of readiness to initiate the TeamSTEPPS program https://www.ahrq.gov/teamstepps/readiness/index.html
2. Phase 2: Planning, training and implementation
   Staff training can occur in several different types of formats. AHRQ's Publications Clearinghouse provides available online teaching alternatives. The TeamSTEPPS 2.0 Core Curriculum consists of three main components:
   a. Essentials Course
   b. Fundamentals
   c. Supplemental
3. Phase 3: Sustainment
   a. Coach and integrate
   b. Monitor the plan
   c. Continuous improvement

Many institutions have adapted the TeamSTEPPS curriculum to meet their needs for both content and length of time. Some of the most successful testimonials have come from those who have added simulation to their didactic training.

Case Studies: https://www.ahrq.gov/teamstepps/case-studies/index.html

Outcome measures used w/ implementation (Research): There is clear evidence that attributes TeamSTEPPS training to increasing staff perceptions of patient safety culture.

Johnson, H. L. & Kimsey, D. (2012). Patient safety: Break the silence. *AORN Journal, 95*(5), 591-601.

Riley, W., Davis, S., Miller, K., Hansen, H., Sainfort, F. & Sweet, R. (2011). Didactic and simulation nontechnical skills team training to improve perinatal patient outcomes in a community hospital. *Joint Commission Journal on Quality and Patient Safety, 37*(8), 357-364.

Weaver, S. J., Rosen, M. A., DiazGranados, D., Lazzara, E. H., Lyons, R., Salas, E., …King, H. B. (2010). Does teamwork improve performance in the operating room? A multilevel evaluation. *The Joint Commission Journal on Quality and Patient Safety, 36*(3), 133-142.

Gaps: TeamSTEPPS can be utilized to improve culture and then reach a point of sustaining culture. However, there are many extraneous factors that can affect patient safety culture, so ongoing assessment is necessary to determine and sustain status.

Link(s): AHRQ about TeamSTEPPS
https://www.ahrq.gov/teamstepps/about-teamstepps/index.html

WalkRounds/Leadership Rounds

Purpose: Patient Safety Leadership WalkRounds is designed as a means for senior leaders to demonstrate their organization's commitment to building a culture of safety. It provides an informal way for leaders to talk to front line staff about safety issues in the organization and show support for staff reported errors. This tool is designed to assist hospital leaders in implementing mechanisms for promoting safety, keep them informed about the concerns of front-line providers, support appropriate accountability concepts, and allocate resources to areas of greatest risk.

Implementation:

1. An identified individual, and probably the patient safety manager or director, should participate in all the WalkRounds
2. Another person should perform the function of scribe during the WalkRounds and document:
    a. Location
    b. Who participated
    c. Topics discussed
    d. Other factors that may be pertinent to context when reviewing comments
3. Administrative and clinical leaders should participate in WalkRounds on a rotating basis
4. Organizations should decide whether to announce, or not announce the time and place of WalkRounds, and the decision should be agreed upon by senior leaders and managers.
5. Concerns expressed by all individuals should be heard sympathetically but attempts should be made to lead the conversations to correlate the concerns with specific episodes of patient or provider harm or potential harm.
6. WalkRounds should be performed in all locations that affect clinical care, including laboratories, radiology, pharmacy, emergency departments, and all patient care floors.
7. Senior leaders should commit to conducting WalkRounds at a minimum of once per week, for a minimum of one year, with no cancellations.

Outcome measures used w/ implementation (Research):

1. Response to cultural survey of front-line workers and managers (process measure)
2. Number of errors reported per month from voluntary reporting systems (outcome measure)
3. Number of safety-based changes made by managers per year
4. Percent of changes in overall surveillance data (for example, infection rates)

Measurement tools:

- SCORE (Safety, Communication, Operational Reliability, and Engagement) Survey
- Safety Climate Survey

Frankel, A., Grillo, S. P., Baker, E. G., Huber, C. N., Abookire, S., Grenham, M., …, Gandhi, T. K. (2005). Patient safety Leadership WalkRounds at Partners Healthcare: learning from implementation. *Joint Commission Journal on Quality and Patient Safety*, *31*(8), 423-437.

Schwendimann, R., Milne, J., Frush, K., Ausserhofer, D., Frankel, A., Sexton, J. B. (2013). A closer look at associations between hospital Leadership WalkRounds and patient safety climate and risk reduction: A cross-sectional study. *American Journal of Hospital Quality*, *28*(5), 414-421.

Sexton, J. B., Sharek, P. J, & Thomas, E. J., Gould, J. B., Nisbet, C. C., Amspoker, A. B., …, Profit, J. (2014). Exposure to Leadership WalkRounds in neonatal intensive care units is associated with a better patient safety culture and less caregiver burnout. *BMC Health Services Research*, *23*(10), 814–822.

Thomas, E. J., Sexton, J. B., Neilands, T. B., Frankel, A., Helmreich, R. L. (2005). The effect of executive walk rounds on nurse safety climate attitudes: A randomized trial of clinical units. *BMC Health Services Research*, 5(28), 1-9.

Gaps: The relationship between WalkRounds and caregiver assessments of patient safety culture, and healthcare worker burnout is unknown.

Link(s): IHI Patient Safety Leadership WalkRounds™
http://www.ihi.org/resources/_layouts/download.aspx?SourceURL=%2fresources%2fKnowledge+Center+Assets%2fTools+-+PatientSafetyLeadershipWalkRounds%e2%84%a2_5e0fde3a-4aa4-403c-9b9a-9948af5f544e%2fPatientSafetyLeadershipWalkRoundsTool.pdf

Action Planning for Safety Culture Assessment

Purpose: AHRQ provides a list of 10 questions to help organizations prepare for starting patient safety and quality initiatives. To begin an initiative like assessing safety culture, these questions can be a helpful guide to consider the type and scope of your assessment. Answers to these questions can be added to the Action Plan Template (attached below) to create steps for completing your safety culture assessment goals.

Defining your goals:

1. What areas do you want to focus on for this assessment?
2. What are your goals for assessing safety culture?
3. What will this initiative look like?

Planning your initiative:

4. Who will be affected and how?
5. Who will lead the initiative?
6. What resources will be needed?
7. What are possible barriers, and how can they be overcome?
8. How will you measure progress and success?
9. What is the timeline?

Communicating your action plan:

10. How will you share your action plan and with whom?

Disseminating results: (additional ideas)

11. How will you communicate results to participants and leaders?
12. How will results drive improvements?
13. How will participants be engaged in developing solutions?

Links:

Action Planning Questions

https://www.ahrq.gov/sops/resources/planning-tool/develop-plan.html

AHRQ Facility Action Plan

https://www.ahrq.gov/professionals/quality-patient-safety/quality-resources/tools/cauti-ltc/modules/resources/tools/implement/action-plan.html

AHRQ Facility Action Planning Template

Purpose: Guide users in identifying opportunities, strategies and steps for conducting an improvement initiative. Choose goals that are specific, measurable, achievable, realistic and time oriented to successful completion.

Here is an **example** of using this tool to prepare for assessing safety culture within an organization.

Activity: *Understand the safety culture of the direct care staff including all bedside clinicians, physicians, and ancillary staff of our hospital (Who are direct care staff? Do part-time staff participate?)*

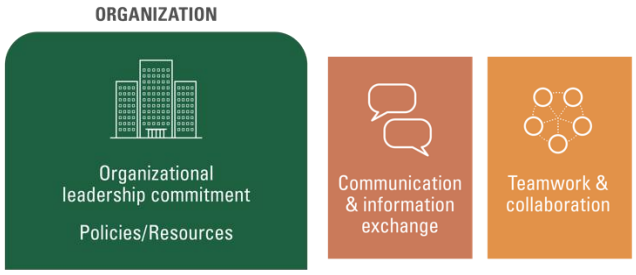
Challenges Identified: *How will all staff be invited to participate? Do we have access to survey physician partners? What and when are other competing surveys done with staff? How will we evaluate results by unit or by department?*

Considerations: Length of time the survey will be administered; if third party administration of the survey is needed to promote sense of confidentiality among staff; how leaders and those with unique titles or job descriptions will be anonymized; how to motivate staff to participate.

What does success look like? ***Specific, measureable, realistic and time oriented***
i.e. *At least 50% of staff including physician partners will complete the survey and results will be disseminated to units/departments for action plan development within 3 months of survey completion.*

Steps	**How will this happen?** [Be specific and include important steps to make the idea/activity happen.]	**Who will make this happen?** [Be specific for each task.]	**How do I know to move to next step and by when?** [What does success look like? How will you track your progress?]	**What other information do I need to make this happen?**	**Tools or resources to use**
1					
2					
3					
4					
5					

AHRQ Toolkit for Improving Perinatal Safety



Purpose: The Agency for Healthcare Research and Quality (AHRQ) developed this toolkit "to improve the patient safety culture of labor and delivery (L&D) units and decrease maternal and neonatal adverse events resulting from poor communication and system failures". The toolkit is built on three program pillars: ***1) Teamwork and Communication Skills, 2) Perinatal Safety Strategies, and 3) In Situ Simulation Training***.

Implementation: AHRQ convened a national team of perinatal and patient safety experts to expand their existing Comprehensive Unit-based Safety Program to give hospitals an approach to eliminate patient safety failures within L&D obstetric care processes. A summary report of the project outlines details of development, implementation and evaluation of this toolkit.

Evaluation: The toolkit was evaluated in 46 L&D units across 10 states. All units implemented pillars on teamwork and communication and in situ simulation. Each unit selected at least two of the four patient safety practices to implement over 10 months. Both increases and decreases in adverse events were reported across units. The largest improvement was a 24% decrease in obstetric trauma without instruments and 6% decrease in primary cesarean delivery rate. Staff reported a cultural shift from a hierarchical model to a team-based approach noting empowerment of nurses to challenge authority, physician engagement and more peer-to-peer support.

Outcome measures used w/ implementation (Research): Elements within the patient safety strategies of this toolkit were overlapping yet helpful in reinforcing learning outcomes. The CUSP Team Checkup Tool used was helpful to identify subtle unit-based safety culture changes. The scenarios within in situ simulations demonstrated the most value for units.

Gaps: Development of measures for implementation are needed especially in tracking contextual factors of the organization such as staff turnover, competing regulatory priorities and differences in how units implemented their interventions. Differences in EHRs complicate adverse event tracking. A comparison or control group and longer follow-up period would have been helpful in evaluating findings in this study.

Links: https://www.ahrq.gov/professionals/quality-patient-safety/hais/tools/perinatal-care/index.html

Anonymous Event Reporting System/Incident Reporting

Purpose: The purpose of the anonymous event reporting system is to allow any hospital employee to report any harmful or unsafe episode to a patient or staff member. Having this technology available shows the support to error and incident reporting while maintaining confidentiality. It also serves as a method to help leaders learn from a unit's mistake.

Implementation: An anonymous, electronic reporting system is installed on hospital computers, accessible to all staff members.

Outcome measures used w/ implementation (Research): A decrease number in events reported would be an outcome associated with the reporting system.

Pettker, C. M., Thung, S. F., Raab, C. A., Donohue, K. P, Copel, J. A., Lockwood, C. J., Funai, E. F. (2011). A comprehensive obstetrics patient safety program improves safety climate and culture. *American Journal of Obstetrics and Gynecology, 204:216,* e1-6.

Gaps: Having the appropriate team in place to review the reports and take ownership to figure out how to prevent the same errors from occurring is essential. Additionally, ensuring anonymity and maintaining it is another key factor to sustaining the reporting system.

Code of Professionalism

Purpose: Implementing a multidisciplinary Code of Professionalism can improve the safety culture in a hospital. When physicians and staff are held to the same standards by leadership, it can lead to improvements in an organization's safety culture and can serve as the foundation for delivery of safer care.

Implementation:

1. Clinical and Quality Improvement leadership within the organization should conduct small group sessions to identify issues of professionalisms
2. Create a code of professionalism based upon the results of these sessions consisting of statements, shared values and mechanism for reporting, intervention and feedback.
3. Obtain approval on the Code of Professionalism by employee and nursing union leadership (if applicable.)
4. Violations of the Code of Professionalism should be reported through a mechanism chosen by the organization (ex. intranet, telephone or in person)
5. Create the Code of Professionalism committee with four members consisting of physician and nursing leadership.
6. The committee should review code violations and conduct interventions according to the organization's policies.
7. Leadership should present the Code of Professionalism in educational sessions
8. Provide visual cues to highlight the Code of Professionalism on each unit

Outcome measures used w/ implementation (Research):

1. Use anonymous surveys to measure dimensions of teamwork within units, organizational learning and management support
2. Measure impact of the Code of Professionalism on reporting events and increase reporting by reviewing dimension of frequency of events reported

Capitulo, K. L. (2009). Addressing disruptive behavior by implementing a code of professionalism to transform hospital culture. *Nurse Leader, 7*(2), 38-43.

Dupree, E., Anderson, R., McEvoy, M. D. & Brodman, M. (2011). Professionalism: A necessary ingredient in a culture of safety. *The Joint Commission Journal on Quality and Patient Safety*, *31*(10), 447-55.

Gaps: In some instances, it may be unclear whether a behavior should be considered for disciplinary action.

High-Reliability Organization Principles (HRO)/ Just Culture

Purpose: High reliability means consistent excellence in quality and safety across all services maintained over long periods of time. The Joint Commission created a framework for healthcare organizations to use to accelerate their progress in achieving the goal of zero harm. This framework focuses on three domains of change: leadership commitment to zero harm, organizational safety culture (all staff can speak about the negative things that can affect the organization), and an empowered workforce (one that addresses improvement opportunities found by employees to drive significant and lasting change.)

Implementation: Implementing Just Culture can be accomplished in four steps:

1. Planning for change: Careful planning is the first step in transition towards becoming HRO. The leadership team should designate a multidisciplinary team to work on implementing the process. All processes and guidelines should be created and should receive approval from Human Resources /Legal teams if applicable.
2. Communication with staff: Staff should be informed about the background and transition to Just Culture. If required, a town hall meeting can be organized for open discussion with staff addressing their concerns and questions they may have.
3. Implementing the process: In this phase process improvement is rolled out. To encourage staff to report their mistakes, near misses etc. a reward or token of thanks should considered. The goal is to avoid a punitive culture and to steer people to a Just Culture where reporting of errors, near misses/good catches is encouraged. If possible, quarterly town-halls should be held with rewards and recognition of staff, to promote Just Culture and make the program more successful.
4. Evaluating the program: Post implementation of Just Culture, the program should be evaluated periodically. This can be in the form of comparing the error rate between different units, tracking the trends of errors, near misses/good catches etc. Over time, the trends in errors, near-misses etc. should decrease and there should be in improvement in patient safety.

Outcome measures used w/ implementation (Research): Post implantation of Just Culture, the error, near-misses' rates should decrease.

Shepard, L.H. (2011). Creating a foundation for a just culture workplace nursing. *NURSE*, *41*(8), 46-8.

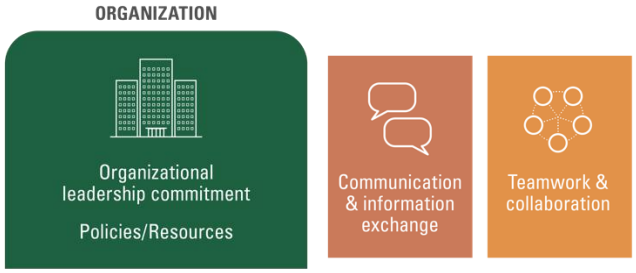
Gaps: Staff change is inevitable in any organization. There should be continuous communication and training of new staff, to maintain the Just Culture in the organization.

Links: AHREQ PSNet
https://psnet.ahrq.gov/primers/primer/31/high-reliability

The Joint Commission for Transforming Healthcare
https://www.centerfortransforminghealthcare.org/high-reliability-in-health-care

High Reliability Healthcare Maturity Model
https://www.centerfortransforminghealthcare.org/high-reliability-in-health-care#f7ab0394b63f4b468d7231ccee1c1efe_c589bf1a3b3249d0ae0de1c99a5a9fe3

Increasing Physician Presence in Unit



Purpose: To improve patient safety by increasing the amount of time senior physicians are present and available on the unit.

Implementation: There are various methods to implementation depending on the size of the unit. One suggestion is to have an on-call attending physician 24 hours, 7 days a week. If that is not an option to your facility, perhaps increasing the number of hours the attending physician is on the unit or designate a senior resident to be assigned only to a specific unit for the day. Having the most experienced physicians available to nurses and resident physicians for a longer amount of time, or more often, will create opportunities to ask questions and prevent errors. This will also provide for more teachable moments for residents and nurses, creating group cohesion and increasing confidence in one another as well as self-confidence.

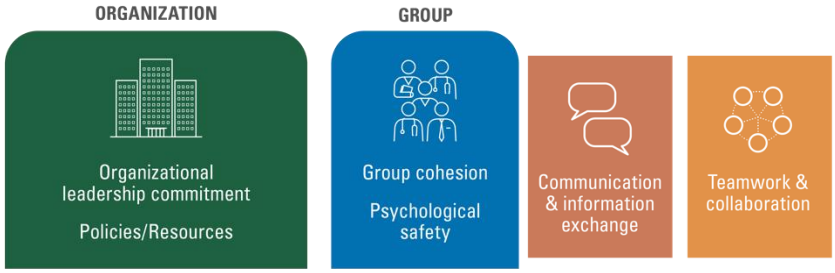
Outcome measures used w/ implementation (Research): Patient outcomes and the number of adverse events on the unit related to not having an attending present would be a few of the outcomes measured. Surveying the nurses and residents before and after the change would help see if there are changes in safety culture.

Pettker, C. M., Thung, S. F., Raab, C. A., Donohue, K. P, Copel, J. A., Lockwood, C. J., Funai, E. F. (2011). A comprehensive obstetrics patient safety program improves safety climate and culture. *American Journal of Obstetrics and Gynecology, 204:216,* e1-6.

Johnston, M., Arora, S., King, D. & Darzi, A. (2018). Improving the quality of ward-based surgical care with a human factors intervention bundle. *Annals of Surgery, 267*(1), 73-80.

Gaps: Not every hospital has the physician numbers to have an on-call attending to spend additional time on the unit. Not all attending physicians may want to take a 24-hour call or spend more time on the unit. Showing that this change is for patient safety and to improve safety culture should help persuade them.

Obstetric Patient Safety Committee/Quality Councils



Purpose: Patient safety committees and quality councils are created to improve safety and quality assurance.

Implementation: Patient safety committees can include former patients, providers, or a combination of these two groups. Meetings take place weekly or monthly, depending on the topics addressed and the committee members' availability.

An example of the Memorial Hermann OB Service Line Quality Collaborative is seen below.

1. The quality improvement collaborative is an organized, multifaceted approach that includes teams from multiple healthcare sites coming together to learn, apply and share improvement methods, ideas and data on service performance for a given healthcare topic.
2. Objectives for the Quality Collaborative include:
    a. To create an interprofessional team designed to work on common goals to improve patient outcomes.
    b. Elements of collaborative practice include responsibility, accountability, coordination, communication, cooperation, assertiveness, autonomy and mutual trust and respect.
    c. Involvement of both hospitals and clinicians is critical to establishing effective team-based care, an approach promoted by ACOG and other professional societies to improve patient safety and quality.
    d. Develop system standards and best practice guidelines to mitigate risk, improve patient outcomes and decrease cost.
3. The collaborative model consists of members from the OB Clinical Practice Committee (MDs), Women's Council (Operational Leadership), program managers, QI personnel, bedside RN champions and ancillary representatives.
4. Action Plan:
    a. Create project charter and complete project initiation plan.
    b. Obtain approval from leadership and MH Quality and Safety.
    c. Identify champions and stakeholders.
    d. Provide member education as needed based on IHI Breakthrough model.
    e. Develop data report cards for performance and project identification.
    f. Create implementation roadmaps.
5. Initial Project Focus:
    a. Texas AIM Hemorrhage Bundles

    b. Texas AIM Hypertension Bundles
    c. MEWS Protocol
    d. Data Curation and Report Development
    e. Primary Cesarean Section Rate Reduction
    f. Standardize guidelines, protocols and policies.
6. Develop a timeline.
7. Outcome metrics:
    a. Severe maternal morbidity rates
    b. Safety event rate
    c. Primary Cesarean Section rate
    d. Maternal mortality rate
    e. Newborn trauma rate
    f. Cost per case

Outcome measures used w/ implementation (Research): Resolving issues presented at the safety committees and quality councils will be an indication that these organizations are effective. It is important to maintain sustainability of these groups and move forward on new projects as others are completed.

Pettker, C. M., Thung, S. F., Raab, C. A., Donohue, K. P, Copel, J. A., Lockwood, C. J., Funai, E. F. (2011). A comprehensive obstetrics patient safety program improves safety climate and culture. *American Journal of Obstetrics and Gynecology, 204:216*, e1-6.

Gaps: Ideally, committee members would be from different subspecialties, hold different roles, and in the case of patients, be from different backgrounds with various patient experiences. Leaders that listen and are actively engaged in these groups is vital for their success.

Clinical Postpartum Pathway

Purpose: The "standard" elements of clinical care that need to be completed are often missed, with subsequent patient care and potential safety consequences to both mother and baby. Further, many discharge activities could be spread throughout the hospital stay, decreasing reliance on completion of all tasks on the morning or day of discharge. Barriers to patients achieving clinical milestones prevents timely discharge and can lead to delays in further plan of care.

Memorial Hermann staff nurses worked with the Six Sigma team to develop a mechanism to improve communication with a complete milestone pathway checklist. This pathway checklist was then integrated into Multidisciplinary Discharge Rounds (MDDR) to review plan of care and identify barriers to clinical care and discharge.

Implementation: Initially there was an extensive literature review and sharing of lessons learned from system campus teams.

1. We created a multidisciplinary team to determine patient discharge needs and the timing for involved clinicians to complete the tasks.
2. Agreed this would be filled out and discussed upon every shift at handoff.
3. Frontline stakeholders developed the pathway at a System workshop.
4. Pathway piloted at TMC (Texas Medical Center) and SL (Sugar Land) campuses.
5. Pathway validated with 78% of patients following pathway
6. Staggered implementation across MH system (11 campuses total)
7. Pathway implemented into MDDR rounds daily.
8. Lessons learned reported out at Women's' Council & CPC
9. Report out occurred at System steering and executive meetings

See a complete listing of documents:

Form 1: Clinical Pathway Hand-off sheet

Form 1 Clinical Pathway Hand-off sheet

OB Milestone Pathway

PATIENT DEMOGRAPHICS

Room Number: _____ Name _____ Age _____ Infant M/F _____

Gestational Age_____ Actual Length of Stay (LOS): _____ Birth date/time _____

Expected Discharge Date _____ Type of Delivery (C/S Vag)

Birth – 6 Hrs. (00:00)	7-12 Hrs. (00:00)	13-24 Hrs. (00:00)	24-30 Hrs. (00:00)
☐☐ Vaccine Screenings (Mom)	☐☐ Ambulate ad lib (Mom)	☐☐ Birth certificate paperwork complete	☐☐ TCB (Baby)
☐☐ Initiate Social Work consult if indicated (Mom)	☐☐ Labs (H&H/CBC, Rhogam) (Mom)*	☐☐ Social Work and Case Management as needed	☐☐ Newborn screen
☐☐ Eyes and Thighs (Baby)	☐☐ Birth certificate paperwork (Mom)	☐☐ Immunization administration (Mom)	☐☐ CCHD
☐☐ Notify pediatrician	☐☐ F/U with Social Work as appropriate	☐☐ Rhogam (Mom)	☐☐ Hearing screening
☐☐ Initiate lactation	☐☐ Educate on car seat, car seat challenge	☐☐ Infant exam	☐☐ Circumcision
☐☐ Introduce Itinerary	☐☐ Identify if circumcision desired	☐☐ Infant void/stool	☐☐ Car seat challenge
	☐☐ Identify if photos are desired	☐☐ Newborn Care Discharge education	☐☐ Discharge order
	☐☐ Identify ride home	☐☐ Newborn photos	☐☐ Discharge packet completed
	☐☐ Review Itinerary	☐☐ Review Itinerary	☐☐ Complete Itinerary

Transportation Plan	
☐ Family/Friend/Guardian	☐ 3rd Part (Bus, Limo, Cab)_____

Clinical Barriers	
Baby	Mom
☐ Elevated Bili	☐ Hemodynamics – HR/Rhythm/BP
☐ Failed Car seat challenge	☐ Pain control
☐ Weight loss	☐ Wound concern – draining/hematoma/infection
☐ Failed CCHD Screening	☐ IV Antibiotics
☐ Lab results _____	☐ Lab results _____
☐ Other _____	☐ Other _____

Other Barriers/Needs	
☐ Surgery/Procedure_____ Planned Date_____	☐ Pending Rx_____
☐ Consults Pending_____	☐ Question for MD
☐ Radiology Pending_____	☐ Pending Alternative Placement_____
☐ Echo/Card Pending_____	☐ Other_____

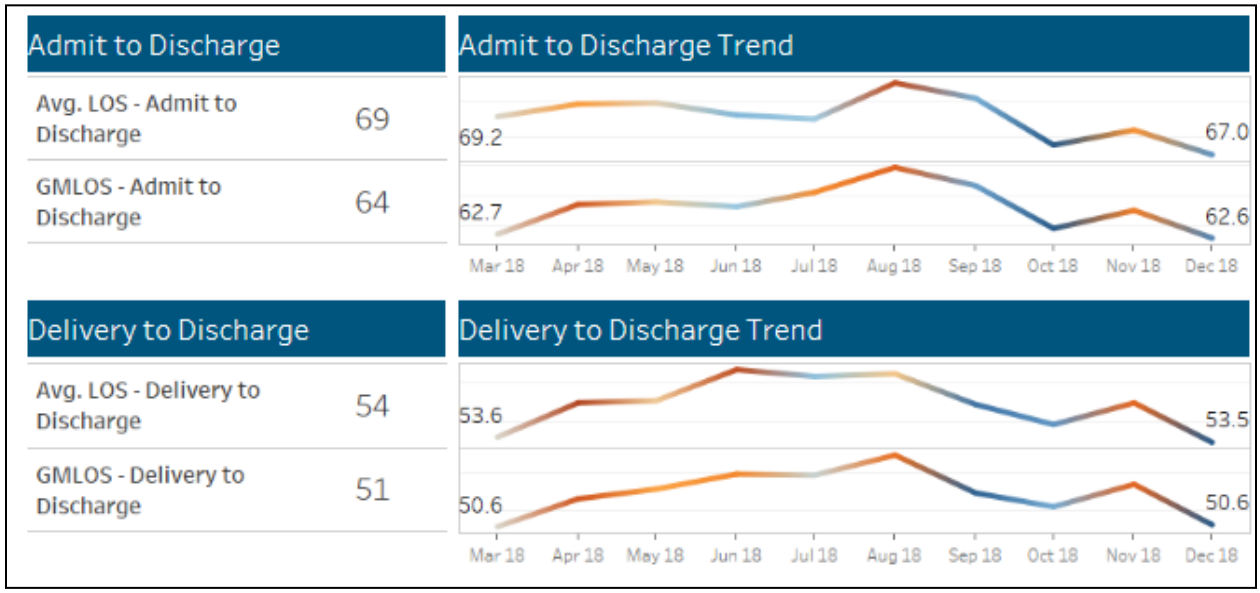
FOLLOW UP ITEMS

(Check off when completed)

☐ _____ ☐ _____

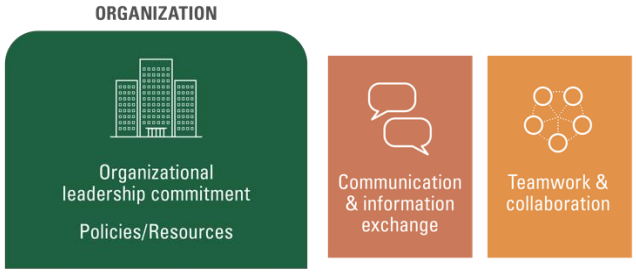
Outcome measures used w/ implementation (Research): The results of the implementation of the Clinical Pathway in combination with MDDR were outstanding.

- Decreased Overall LOS from 4.7-2.6 days
- Decreased safety events due to omitted tasks
- Total savings of $1.46 million



Gaps: As we continue with the Clinical Pathway, there has been change management opportunities to ensure compliance with pathway utilization. Next steps include integration of patient input/itinerary, after approval from the patient advisory council.

Multidisciplinary Discharge Rounds (MDDR)



Purpose: Multidisciplinary Discharge Rounds (MDDR) are a component of the daily model of care in which multidisciplinary team members (physicians, nurses, case managers, ancillary personnel, etc.) meet at a single location to have focused, structured communication, highlighting barriers to discharge and progression through medical milestones.

MDDRs differ from clinical and or teaching rounds in that discussions are in a standardized format and directed to the concise review of all patients on the nursing unit with the objectives of:

- Identifying barriers to patient progression
- Identifying possible resource utilization issues
- Identifying possible discharge needs
- Initiating interventions to prevent complications and delays in discharge
- Coordinating plan of care among disciplines
- Managing patient care for quality and utilization improvement opportunities

The rounds are intended to improve team communication and enhance accountability for a clear effective patient plan of care. At the conclusion of rounds for each patient, all participants should clearly understand their own action items for the next 24 hours as well as the overall plan for the day and plan for the stay, including key clinical goals, facilitating patient discharge plan, recognizing outstanding procedures/ lab tests, and steps to remove barriers to care progression.

Implementation: Our implementation method was called High Touch implementation. High Touch implementation is a comprehensive process that requires the change agents to work closely with their units on a daily basis for 2-6 weeks to assist in the effective adoption and sustainability. With implementation of MDDRs, unit teams and change agents collaborated using rapid cycle improvement to develop solutions to barriers and make adjustments to the initial MDDR model, so that it fit their unit and patient characteristics. Any issues should be resolved as quickly as possible, in most cases before the next day's MDDR, so that staff are not discouraged or frustrated with processes that may not currently work for them.

Feedback loops are established so that both sponsors and unit team members are dealing simultaneously with the real information on the progress of implementation. The following communication points are recommended:

- Daily implementation debriefs with change agents and unit directors (30 min)
- Daily post MDDR and Touchpoint debriefs with the unit leads (15 min)
- Weekly executive sponsor updates (30-60 min)
- Weekly or bi-weekly unit staff updates (10-15 min)

Outcome measures used w/ implementation (Research): With our first quarter, we found increased attendance, a number of good clinical quality care catches, increased communication, and improved safety culture scores.

See Figure 1 Outcome measurement tools

Gaps: As we roll this out to other institutions within our system, we recommend using a formalized PDSA with clear outcome measures to evaluate success/change in culture.

Link(s):

Figure 1 Outcome measurement tools

MHHS CARE PROGRESSION Multidisciplinary Discharge Rounds (MDDR)

Quality Audit Tool

Hospital:	Unit:
Facilitator:	Case Manager:
Date:	MDDR Start Time:

Quality Indicators	Score: Needs Improvement (Score = 0)	Score: Acceptable (Score = 1)
One person was clearly the active facilitator of the MDDR		
• Kept MDDR focused, paced well and closely aligned with script	☐	☐
• Managed participation and elicited missing information	☐	☐
• Clarified/restated confusing topics	☐	☐
• Assignments were clearly stated for all follow-up items	☐	☐
Team Preparedness - For every patient:		
• Discussed pertinent changes to plan of care	☐	☐
• Discussed the estimated date of discharge (EDD), revised, as needed	☐	☐
• What does the patient need to accomplish clinically to be ready for the EDD?	☐	☐
• Discussed today's clinical goal for each patient	☐	☐
• Barriers to discharge discussed i.e. transportation, placement, etc.	☐	☐
• Anticipated discharge dispositions other than home were discussed	☐	☐
• Proactively challenged LOS opportunities (actual versus expected)	☐	☐
• Identified key points to be communicated to the patient & family	☐	☐
• Used effective critical thinking and problem solving	☐	☐
• Every participant was prepared to review their patient	☐	☐
• Started and Ended MDDR on time in the designated location	☐	☐
• Avoidable days, level of care variances and care facilitation delays in care are discussed and noted	☐	☐
Afternoon Touch Point:		
• Key players (Facilitator and CM) are on time	☐	☐
• New patients are added to the MDDR board and discussed	☐	☐
• All follow-ups and next steps for every patient are discussed	☐	☐
• Facilitator has received report from nursing staff and can address all follow-up	☐	☐
Clinical Pathways (when available)		
• Discussed all relevant patient care pathways	☐	☐

Add up responses in the Score columns for the total
Needs Improvement = 0 Point; Acceptable = 1 Point

Score: _____
Total Possible Score = 20 or 21

Who attended the MDDR:

Comments:

Revision 12/2017

Obstetrics Patient Safety Nurse

Purpose: The Obstetrics (OB) Patient Safety Nurse is responsible for data collection and education, is the director of an anonymous event reporting system, and the leader of adverse event reviews. This position helps to lead the charge on improving patient safety.

Implementation: Creating a full-time nursing role whose main responsibility is to improve and uphold patient safety measures. A certification or masters in patient safety/healthcare risk management are preferred. Being able to analyze and evaluate practices is also important for a patient safety nurse.

Outcome measures used w/ implementation (Research): Measuring adverse events related to patient safety after hiring a patient safety nurse would be a good place to begin evaluating the effectiveness of this role. The number of projects that have improved patient safety is another way to measure if the patient safety nurse has followed through with their objectives.

Pettker, C. M., Thung, S. F., Raab, C. A., Donohue, K. P, Copel, J. A., Lockwood, C. J., Funai, E. F. (2011). A comprehensive obstetrics patient safety program improves safety climate and culture. *American Journal of Obstetrics and Gynecology, 204:216*, e1-6.

Gaps: Not every OB department has enough employees or the funding to hire someone for this position. Leadership needs to understand the role and responsibility a patient safety nurse has and how it will benefit patients.

Patient Ambassador Program

Purpose: The Patient Ambassador is a designated person whose position is responsible for acting as liaison between patients/families and the hospital, through Human Resources management /administrative staff, thus providing a specific channel through Human Resources by which patients can seek solutions to concerns, issues and unmet customer expectations. They assist patients in interpreting hospital policies and procedures and actively seek resolutions to identified problems and concerns of the patients/families.

Implementation: This position was implemented five years ago in Memorial Hermann's Women's Services and was so successful it quickly spread to every unit in the hospital.

Principle Accountabilities:

Serves as a designated liaison between patients, their families, the hospital staff, and physicians in the resolution of patient concerns.

Interprets and explains to patients and families, policies and procedures that affect his/her care and treatment.

Investigates and actively seeks resolution to difficult problems and concerns identified by patients/families.

Ensures safe care to patients, adhering to policies, procedures, and standards, within budgetary specifications, including time management, supply management, productivity, and accuracy of practice.

Promotes individual professional growth and development by meeting requirements for mandatory/continuing education, skills competency, supports department-based goals which contribute to the success of the organization; serves as preceptor, mentor, and resource to less experienced staff.

Outcome measures used w/ implementation (Research): After implementation of this position it was noted that patient satisfaction improved as witnessed in Press Ganey scores.

Gaps: There is a dependency on staff to rely on that position to fill gaps and they are not available 24/7.

Patient and Family Advisory Council

Purpose: Create an avenue to involve the patient and family voice as a partner with the clinical teams in quality improvement and patient safety initiatives within the perinatal department.

Implementation: At Memorial Hermann we used a 5-step process to implement a patient and family advisory council.

1. Identify Women's Services liaision(s).
    a. At least 3 clinical leaders of critical areas within perinatal nursing and medical services. (Perinatal Navigator, Clinical Specialist, Physician liaison for OB Quality Improvement)
    b. A patient who has received care within Women's Services in the past year who is articulate, has an impactful story they are willing share and will lead the initiation of the PAC including interviewing other patient and family participants.

2. Identify scope for PFAC participation and time commitment needed.
    a. PFAC will provide feedback to Women's Services on the development and implementation of quality improvement and patient safety initiatives in Women's Services.
    b. Time commitment for parents will be 1-3 hours per month.
        i. Monthly PFAC meetings, January to October (10/year), for 60-90 minutes.
        ii. Women's Services Quality Council meetings, once per month.
        iii. Additional Quality Improvement project consultation.
    c. Develop a charter for the council. (See Appendix 1)

3. Obtain leadership and organizational support for PFAC.
    a. What other parent advisory groups are currently in place at our hospital?
    b. Are there other persons/groups who should be involved in the development and implementation of the PFAC?
    c. We will track all time, expenses and support to be able to build a business plan for ongoing support after this initial trial of two years is complete.

4. Recruit and select advisors
    a. We will recruit 10 to 12 parents, to select 8 parent advisors and 2 alternates.

b. Criteria considerations for selection of advisors representing Women's Services should include patients and family:
    i. At least 12 months post-admission
    ii. Delivered infants with varying gestational ages:
        1. Full-term (39 weeks +)
        2. Late preterm (34 -36 6/7 weeks)
        3. Pre-term (27-33 weeks)
        4. ELBW (26 weeks and below)
    iii. Patients experiencing status:
        1. Long term Antepartum
        2. Short term Antepartum
        3. Normal SVD
        4. Scheduled C/S
        5. Emergent C/S (from labor)
        6. Instrument delivery (forceps or vacuum)
        7. Induction (with or without cervical ripening)
        8. Spontaneous labor
        9. Epidural
        10. Natural delivery
        11. High-risk pregnancy
        12. Low-risk pregnancy
        13. Multiples
        14. Transfer-in from other facilities
        15. More than 1 delivery at CMHH
    iv. Diagnostic/status of infant:
        1. Well baby
        2. NICU baby
        3. Fetal demise/Newborn death
    v. Demographics/SES at the time of admission to Women's Services
        1. Under 20 years, unmarried, lower SES, Medicaid
        2. Stay at-home mom, middle class
        3. Working mom, middle class
        4. Upper SES, professional, Engineer
        5. Caucasian (non-Hispanic)
        6. Hispanic (bilingual)
        7. African American
        8. Father
        9. Grandparent (of teen parent)
c. Recruitment of parents through:
    i. Perinatal Nurse Navigator
    ii. Antepartum Unit (APU)
    iii. High Risk Clinic
    iv. Discharge planning coordinators

v. Women's Services nurses who maintain contact with parents to nominate

d. Composition of the PFAC, minimum of 8 members, with at least 6 per meeting.
   i. Four members with 3 year terms
   ii. Four members with 2 year terms
   iii. In year two add two parents, one 3 year term and one 2 year term.
   iv. Ask parents to agree to not miss more than two meetings year. Parents missing more than two meetings will be asked to rotate off of the PFAC.
   v. Maintain a waiting list of Women's Services parents who may be interested in participating at the time of their discharge for contact at the 10 month time frame.
   vi. Choose a Chair and co-chair for the PFAC of persons agreeing to 3 year terms.
   vii. PAC meetings also attended by Women's Services liaison and admin support person.

e. Logistics of interviewing/choosing parents
   i. Create a list of interview questions. (See Appendix 2)
   ii. All parents identified will be asked to read and sign confidentiality agreement page which lists responsibilities and expectations.
   iii. Interviews will be done of all candidates. Who should participate?
   iv. Eight parents will be selected with two alternates who agree to step in if needed and who could rotate to serve in year 2.
   v. Meeting dates will be established by checking with parents; current preference is evenings, Thursday's 1st or 3rd week.

5. Convene first advisory group meeting (define a date) at least 3 months later.

Links: Institute for Patient and Family-Centered Care https://www.ipfcc.org/

AHRQ Patient and Family Engagement
https://www.ahrq.gov/professionals/systems/hospital/engagingfamilies/index.html

Appendix 1: PFAC Charter

Purpose:	The Perinatal (Women's Service) Patient and Family Advisory Council (PPFAC) will: 1. Work in partnership with the health care team of Children's Memorial Hermann Hospital (CMHH) Women's Services and UT Health Reproductive Medicine to promote the core concepts of family-centered care including: a. Respect and dignity b. Information sharing c. Participation d. Collaboration 2. Work in partnership with CMHH Women's Services staff to improve the quality and safety of care provided to mothers, infants and their families in Women's Services 3. Act as an advisory resource to CMHH leadership and staff in the planning and evaluating of programs and services as they relate to research, quality and safety in Women's Services 4. Act as an advisory resource to CMHH leadership and staff to teaching documents, generated by the hospital, which apply to mothers, infants and families in Women's Services 5. Contribute to ongoing education of patients, families and health care staff in Women's Services
Scope of Council:	The Perinatal Patient and Family Advisory Council will provide family perspectives to the development and implementation of research initiatives, programs, policies and practices that are applicable to Women's Services. **PFAC Charter (Page 1 of 5)**

Givens or Boundaries:	CMHH Women's Services is committed to working in a mutual partnership with the PPPFAC. CMHH Women's Services will: 1. Collaborate with the PPFAC in the planning and evaluating of programs and services 2. Ensure CMHH leadership is available when appropriate 3. Share hospital and Women's Services strategies and priorities 4. Receive and respond to recommendations provided by PPFAC with transparency and clear communication 5. Offer orientation to new PPFAC members 6. Provide a meeting space for PPFAC meetings 7. Provide support for the preparation and distribution of meeting minutes, agendas and other PPFAC communication. 8. Provide parking and additional financial support to PPFAC members as appropriate. 9. Incorporate technology to foster virtual family participation when applicable. 10. Incorporate PPFAC participation into leadership opportunities. 11. Demonstrate sensitivity in using non-medical terms to promote family understanding. 12. Provide language interpretation as necessary to foster communication.
Agenda Setting Process:	The PPFAC chair, chair-elect and Women's Services staff delegate will compile meeting agendas: 1. Any PPFAC member is encouraged to propose ideas prior to the meeting. 2. Known future agenda items will be communicated by the PPFAC chair in advance to promote sensitivity to experiences of all members. 3. Each meeting agenda will reserve a time allotment to follow up previous projects or agenda items 4. The agenda will be sent out to all members one week prior to meeting and will include the minutes from the previous meeting. 5. Minutes will be recorded by a designated member of the PPFAC, reviewed by the PPFAC chair and Women's Services staff delegate prior to distribution to PPFAC members. **PFAC Charter (Page 2 of 5)**

PPFAC Membership Qualities:	The PPFAC is comprised of members who: 1. Have delivered a child(ren) in Women's Services at CMHH 2. Have the ability to consider the perspectives of other patients and families and staff in Women's Services at CMHH 3. Maintain respect for oneself and each member of the PPFAC 4. Value diversity 5. Value compromise 6. Utilize effective communication 7. Commit to contribution to the group by attending at least eight of the ten scheduled meetings per year 8. Commit to quality and safety in Women Services at CMHH 9. Have the ability to assist in program development and problem solving 10. Maintain confidentiality in regards to patients and families
PPFAC Membership:	The PPFAC is comprised of ten to twelve members who have delivered a child(ren) in Women's Services at CMHH and at least one Women's Services clinician leader. The council welcomes all families and strives to encompass diverse backgrounds to represent a variety of issues related to care provided in Women's Services. Patients interested in serving on the PPFAC will be interviewed for their readiness to serve and selected as members by the current PPFAC. Members will serve two to three years terms to allow for continuity of goals and projects of the council. There is an option of renewing membership at the end of the term (if a position is vacant). Election of PPFAC chair will take place annually. The chair position will require a three year commitment: 1. Year one: Chair elect 2. Year two: Chair 3. Year three: Past chair In addition to family members, CMHH Women's Services staff, hospital administration, physicians and other ad hoc members may be included in meetings. These will be non-voting members of the group.
Meetings:	1. The PPFAC will meet once per month for about 2 hours, (excluding November and December) at CMHH. 2. Meetings are open to PPFAC members, stakeholders and visiting potential members. Stakeholders include CMHH staff and leadership, and UT Health McGovern Medical School physicians, nurse practitioners and allied health staff and any invited guests. 3. PPFAC members will be reimbursed for parking and allotted a stipend for their contribution to the group. **PFAC Charter (Page 3 of 5)**

	4. The PPFAC recognizes the members may have restrictions to attending each meeting; therefore each member will be expected to attend at least eight meetings per year. 5. Representatives from PPFAC will be asked to attend weekly Women's Services quality council or other activities to provide input on an as needed basis.
Role of PPFAC Chair:	The PPFAC chair will be a member of the PPFAC and serve a three year term (one year as chair-elect, chair and past chair). The chair will have at least one year experience serving on a patient advisory committee. The roles of the PPFAC chair include: 1. Assist in selection of PPFAC members. 2. Formulate meeting agenda with chair elect and Women's Services staff delegate. 3. Facilitate monthly PPFAC meeting. 4. Summarize meeting outcomes (who, what, when) and set the next meeting date. 5. Approve meeting minutes prepared by administrative support. 6. Appoint PPFAC representative to attend applicable Women's Services quality meetings. 7. A PPFAC chair-elect will be elected annually by the PPFAC. 8. In the absence of the chair, the past chair (first choice) or chair-elect (second choice) will assume the role of the chair.
Role of PPFAC Members:	The members of the PPFAC will be selected from an interview process conducted by the PPFAC chair, members and Women's Services clinical liaison to serve either two or three year terms. Roles of the PPFAC members will include: 1. Attend all PPFAC monthly meetings (10 per year). 2. Participate in the work of the PPFAC. 3. Comply with ground rules for the PPFAC. 4. Reconsider ability to participate if missing more than two PPFAC meetings.
Role of Administrative Support	The roles of administrative support staff will include: 1. Secure meeting site; notify PPFAC members of time and location of meetings. 2. Attend PPFAC meetings. 3. Record meeting minutes. 4. Deliver meeting minutes to PPFAC chair for review and approval. 5. Deliver approved meeting minutes and other correspondence to PPFAC members. **PFAC Charter (Page 4 of 5)**

Ground Rules for PPFAC Meetings:	These ground rules are to be followed by all PPFAC members participating in any CMHH meeting(s) in which he/she is representing the group. 1. Manage time according to agenda unless the group decides otherwise 2. One person speaks at a time 3. Each member will listen to others 4. No side conversations 5. Value each members opinions and knowledge 6. Maintain confidentiality 7. Brainstorm ideas 8. Work towards consensus 9. Ensure stakeholders and decision makers are present and prepared prior to discussion 10. Members will notify the chair at least 48 hours in advance if unable to attend the meeting
Decision-Making Process:	Decision making is by consensus which is defined as: 1. Agreement in the judgment or opinion reached by the PPFAC group as a whole 2. Consideration for all perspectives 3. Clarifications will be provided as necessary to facilitate understanding 4. If consensus cannot be reached, the PPFAC chair and staff delegate will consider all information and make a decision which will be communicated to the PPFAC members. **PFAC Charter (Page 5 of 5)**

Appendix 2: Interview Script for Perinatal Parent Advisory Council Candidates

Thanks for your interest in our perinatal parent/family advisory council for Children's Memorial Hermann Hospital. We are looking forward to beginning this council to help make improvements in our perinatal care.

The goal of this council is to include family members as we work to improve the quality and safety of the care given to the babies/families in our perinatal units. Your role as an advisor will be to provide unique insights from the parent/family perspective.

As areas for improvement are identified, the perinatal parent and family council will be asked to provide recommendations to help guide these improvements and research projects involving the perinatal area. The council will convene to discuss ideas presented and to make recommendations as a group to the perinatal clinicians.

While the perinatal units are striving to improve the experiences of our families, at this time, the council will not be involved as a parent/family support group for the units. The purpose of our call to you today is to interview you as a potential member of this council. Do you have any questions before we start the interview?

Questions:

1. Why would you like participate in the council?
2. What strengths would you add to the council?
3. Can provide an example of a situation, personal or professional or as part of a group where there was a difference of opinion among those present? How did you work toward resolution of this situation?
4. There will be multiple members in this council, with different backgrounds and opinions. How do you feel about listening to and considering others' opinions as part of a group discussion?
5. The council will meet once/month for 10 months each year. The initial council members will be asked to serve on the council for 2-3 years and be available for at least 8 meetings/year (allowing for some flexibility for each individual). We recognize that each council member has other responsibilities including family and work. At this time, are you able to make this commitment to the council?
6. Would you be interested in the role of chair-elect? This would require an additional time commitment to fulfill an additional 2 years as chair.
7. If you are available to be part of the council, which meeting time would best suit your schedule: (pick times that work for you) <u>6 – 7:30PM</u> or <u>7 PM to 8:30 PM</u>

    b. What day of the week would work best for you?
8. Do you have any questions/concerns you would like to address?

Thank you for taking the time to talk with us today. After we interview all of the potential candidates, we will meet with the selection committee to choose a final group of parent council members. If you are selected you will receive a letter in the mail along with a commitment letter to return to us. So far we are planning our first meeting to occur week of (projected date of first meeting).

Patient Safety Dashboards

Purpose: Memorial Hermann designed dashboards to visually display unit-based trends in safety and clinical effectiveness outcomes and to benchmark these outcomes against national quality standards and system standards. They improve information sharing of quality metrics for unit leaders across Women's Services by showing customized data specific for Patient Safety outcomes, Women's Services Clinical pathway, Perinatal Core Measures, and OB Milestone Pathway.

Implementation:

Initiation Phase: Charter development includes scope, deliverables, stakeholder analysis, business requirements and determines relevant metrics. This includes a well-defined problem with analysis of the objectives. Proper metrics are established to drive the performance improvement opportunities needed to improve the safety and quality outcomes.

Planning Phase: Data mapping, data validation, security access lists are done through partnership with project manager, smart analytics team, and physician and RN champions.

Implementation Phase:

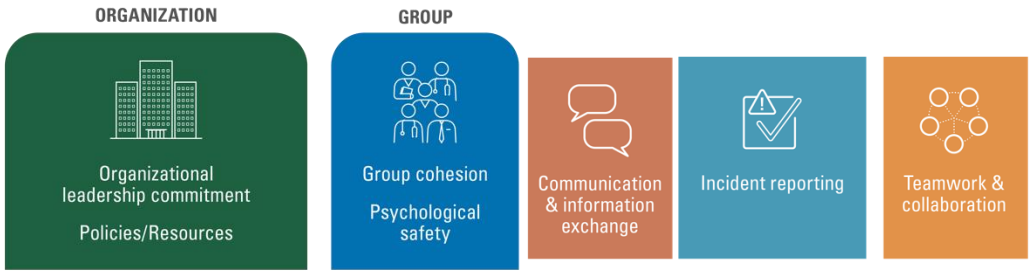
1. Testing, pilot site implementation with PDSA and development of operational integration occurs first.
2. Operational Data updates every Monday morning, while safety and core measure outcomes are updated monthly.
3. Weekly calls and in person demonstrations are done to ensure proper utilization and understanding of the technology.
4. Specific performance improvement projects are developed at campuses based on dashboard data.
5. Access is provided to physician directors, operational leadership and clinical nurse leaders.

Outcome measures used w/ implementation (Research): Dashboards are the outcome measurement tools based on ICD codes and severe morbidity triggers. We developed evaluation of the integration into the Monthly Operational Report and council updates. Changes and new requirements are assessed and prioritized based on resources and the impact of the metrics. With our first quarter, we identified significant opportunities based on outlier data. Specific campuses were identified based on the recognized trends over time and we customized interventions, such as for birth trauma and CLABSI

(Center Line and Blood Stream Infection). This led to improved outcomes related to LOS (Length of Stay), antenatal steroid administration, and CLABSI.

Gaps: Further education is needed for operational and nursing staff regarding the use of data and analytics to drive trends**.** A**s** we continue to spread this concept to other institutions within our system, we recommend using a formalized PDSA with clear outcome measures to evaluate success/change in culture.

Perinatal Nurse Navigator



Purpose: The Perinatal Nurse Navigator is a person in the position to conduct appropriate clinical assessments of patient referrals and present assessment information to physicians; participate in marketing hospital services and continuous quality improvement with external referral sources, social workers, discharge planners, case managers, healthcare professionals, families and patients. The Perinatal Nurse Navigator is responsible for increasing the utilization of clinical services offered by the hospital.

Implementation: This position was implemented five years ago in Memorial Hermann's Women's Services and has been incremental in increasing communication, continuity of care and safety between hospital staff and the patient to improve the patient experience.

Principle Accountabilities:

- Conducts clinical assessment of patient referrals and presents assessment to physicians for admission.
- Participates in ongoing process improvement efforts related to the admissions process.
- Serves as a resource to directors to identify processes that hinder referral source's ability to use the hospital as their facility of choice.
- Demonstrates a complete and thorough understanding of programs and can effectively market services.
- Participates in hospital marketing programs, events, conferences or in-services.
- Interpersonal skills necessary in order to interact effectively with external referral sources, including social workers, discharge planners, case managers, other healthcare professionals, families and patients; Develops strong working relationships with external referral sources and internal staff including Admissions, physicians, Outpatient Clinic, Marketing staff and other departments; and ability to adhere to confidentiality rules.
- Performs duties in a manner to promote quality patient care and customer service/satisfaction, while promoting safety, cost efficiency, and a commitment to the CQI process.
- Ensures safe care to patients, staff and visitors; adheres to all hospital policies, procedures, and standards within budgetary specifications including time management, supply management, productivity and quality of service.
- Promotes individual professional growth and development by meeting requirements for mandatory/continuing education and skills competency; supports department-based goals

which contribute to the success of the organization; serves as preceptor, mentor and resource to less experienced staff.

Outcome measures used w/ implementation (Research): After implementation of this position it was noted that patient satisfaction improved as witnessed in Press Ganey scores. There was also increased communication between patients, physicians and nurses that resulted in increased patient safety.

Gaps: There is a dependency on staff to rely on that position to fill the gaps and they are not available 24/7.

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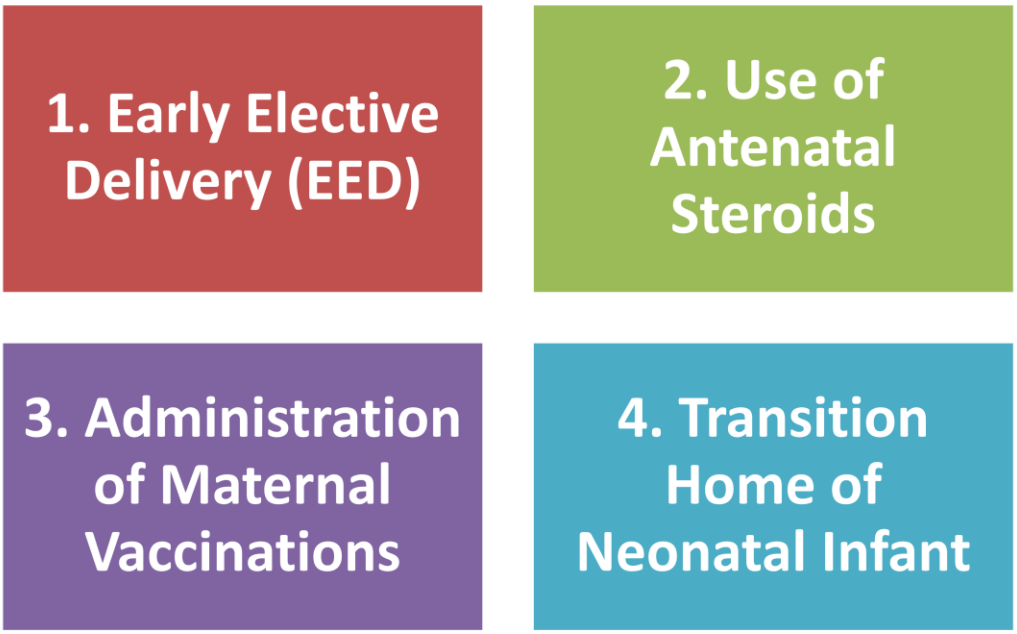
Appendix:
Lessons Learned in Perinatal Safety Culture through four focused areas of maternal/infant care

One of the ways we examined safety culture through case studies of lessons learned in our organization as we explored four quality areas important to maternal and infant outcomes.

Each focus area was selected based on its impact to quality and current state of successful implementation within our system.

1. ***Quality metric below national/ recommended levels,***
2. ***Quality metric meeting national benchmarks,***
3. ***Emerging evidence of a quality metric in obstetric care,***
4. ***Outcome with unknown metrics related to obstetric care***



1. Early Elective Delivery (EED)

Quality metric below national/ recommended levels

Early Elective Delivery puts both mother and baby at significant risk and potential complications while offering no benefits. According to the American Journal of Obstetrics and Gynecology, 10-20 percent of all deliveries are induced labor or C-section before 39 weeks that are not medically required[1]. Multiple national quality organizations, including The Joint Commission (TJC), National Quality Forum (NQF), and The Leapfrog Group (LFG), identified elective deliveries prior to 39 weeks (induction of labor and cesarean section) as a key quality indicator for obstetric hospital care.

Unless medically necessary, elective delivery of an infant before 39 weeks gestation period is discouraged since, the last few weeks are critical to a baby's health and organ development. Elimination of early elective deliveries requires efforts on behalf of both physicians, nurses and hospital leaders[2]. Successful implementation of a 39-week induction program can only come from a commitment to providing care that is patient centered and safe. Suggested strategies for lowering the rate of EEDs include reducing demand and availability through education and implementation of policy. Implementation of a policy to decrease the rate of non-medically indicated deliveries before 39 weeks of gestation can decrease the numbers of these deliveries and improve neonatal outcomes. Clinician and patient education and increased awareness of the risks involved can lower demand and requests for convenience or early elective delivery[3].

The joint commission recommends the following for improving elective delivery performance measures:

- Adopt a hospital wide policy that establishes criteria for performing early term medical and cesarean sections.
- Require a review of all requests that do not meet the established criteria.
- Obtain clear, concise documentation from clinicians about important information (such as gestational age at the time of delivery and any medical complications) to help coders identify conditions.
- Provide updated coder education as needed.

Lessons learned at Memorial Hermann Healthcare System

Regarding investigation of elective deliveries prior to 39 weeks, our dashboard reported that we were at 20% for elective deliveries <39 weeks. However, this is summarized data taken from a random sampling of patients, we felt that this was an inaccurate number (too high) and did not take into account the high risk patients that are seen in our hospital who have legitimate reasons for delivery prior to 39 weeks. Thus, step 1 was to investigate if a compliance issue truly existed. We surveyed 1-month data at Children's Memorial Hospital (CMHH) for January 2018. The charts were reviewed by a Maternal Fetal Medicine (MFM) specialist. Of 460 deliveries that month, 184 were non-spontaneous <39 weeks. 176 (96%) fit under approved JACHO guidelines for medically indicated deliveries. 8 (4%) did not fit under guidelines but were special circumstances for which delivery was approved by MFM specialists. Only 1 case (0.5%) had poor documentation that did not support the need for delivery <39 weeks.

Looking at the each of the enabling factors in the framework and definitions, we identified the following gaps, barriers and/or facilitators that have led to success, failures and lessons learned:

I. Organizational:

a. Leader commitment & prioritization of safety

The Memorial Hermann System has made avoidance of elective delivery <39 weeks a priority. The hospital reviews indications for delivery, and if the indication is not on the approved list, further clarification is necessary, and commonly, a note from MFM is needed as to why the delivery is indicated. The hospital is committed to compliance of this guideline, and it has been successful due to the implementation of a structured and uniform method of scheduling indicated deliveries. However, this is also a barrier for indicated deliveries <39 weeks that may not fall under traditional guidelines. Physicians may have an indication for delivery <39 weeks, but because the indication does not fall under the general umbrella of approved indications, the physician may have push back at the organizational level to proceed with delivery.

b. Policies and resources for safety

The policies in place for scheduling an indicated delivery and the review process have been successful in catching deliveries that don't meet indication for delivery <39 weeks before they are scheduled and the patient arrives to labor and delivery.

II. Group:

a. Cohesion

Originally there was not cohesion between the hospitals in the Memorial Hermann System, and that each hospital was working in its own silo. The relationships between hospitals has improved due to 2 factors:

1) The Maternal Levels of Care is now being implemented in the State of Texas. Each hospital involved in deliveries must apply for a designation I-IV (I representing a hospital taking care of basic, low-risk obstetrics, with IV being a hospital that can care for the high risk gravida and can provide MFM and subspecialty care). This is akin to the levels of care assigned to trauma units or NICU. One of the requirements in the Maternal Levels of Care for level IV institutions is that they are involved in outreach with hospitals of low designations, which has fostered teamwork amongst hospitals.

2) The Texas Aim Collaborative is a working group of 204 hospitals throughout the State of Texas working to decrease maternal morbidity and mortality. These quarterly workshops along with weekly-monthly phone calls help to keep clinicians from different hospitals in touch and improve cohesion.

b. Psychological safety

There seems to be a lack of psychological safety among physicians regarding the 39 week rule in a way that perhaps was not intended. Physicians are reluctant to deliver women <39 weeks, even if a medical indication exists for fear of punitive action from the hospital.

III. Individual:

a. Safety knowledge & skills

Physicians as well as patients now recognize that delivery <39 weeks that is not indicated may not be safe, due to public publicity as well as explanations by medical personnel.

b. Sense of control

Physicians do recognize that the action of an unindicated delivery <39 weeks can lead to increased risk of NICU and neonatal morbidity.

c. Individual commitment & prioritization of safety

Physicians are committed to safe delivery practices and most are motivated to practice within the framework of the 39-week rule.

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2. Use of Antenatal Steroids

Quality metric meeting national benchmarks

The use of antenatal corticosteroids has been well established for decades as an intervention to minimize morbidity for neonates delivered preterm. Until spring of 2016, the utility of administration of ACS was not thought to be significant after 34 weeks, or the late preterm period. A multi-center randomized controlled trial to assess this question was published that demonstrated a statistically significant reduction in morbidity when administered to steroid naive singleton pregnancies with anticipated preterm delivery after 34 weeks.

Clinical suspicion arose at Memorial Hermann that the new guidelines were not being implemented in practice, even in an academic medical center. We examined one year of late preterm births after publication of the ALPS data and found that the rate of administration was only 40%, with the majority of patients between 36 and 37 weeks not receiving antenatal corticosteroids when they met criteria. Furthermore, 15% of patients received ACS inappropriately. These findings prompted us to evaluate our compliance not only with the Perinatal Core Measures (which was 100% for patients less than 34 weeks) but also with the evolving recommendations and how we could improve administration of ACS after 34 weeks.

Approval is pending from the MHHS (Memorial Hermann Hospital System) for the construction and implementation of an electronic medical record tool, or flowsheet, that incorporates the inclusion and exclusion criteria utilized in the evidence-based protocol, in order to adhere to safest practice. Any changes to the EMR requires committee approval from all departments and disciplines impacted. After we gain all approvals and launch the new process, we will compare the before and after data in order to measure impact.

Looking at the each of the enabling factors in the framework and definitions, we identified the following gaps, barriers and/or facilitators that have led to success, failures and lessons learned:

Lessons learned at Memorial Hermann Healthcare System

I. Organizational:

a. Leader commitment & prioritization of safety

The MHHS has made compliance with core measures a priority. While compliance with ACS prior to 34 weeks has always been successful, the adoption of new guidelines has lagged. In recent months, as dashboards have expanded across the system, satellite hospitals have begun analyzing their data for late preterm steroid administration, demonstrating physician and leaderships expanded commitment to the practice of evidence-based medicine.

b. Policies and resources for safety

Policy is in place for the ordering of ACS for premature infants (25-33 6/7 weeks.) With the results of the ALPS data, best practice now includes infants 34-36 6/7 weeks. MHHS data showed that this new guideline was not uniformly adopted.

Antepartum, PTL and PPROM admission order sets have traditionally included orders as part of the MPP (Master Power Plan) for antenatal steroids. These order sets are often utilized for late preterm patients as well; however, if they are admitted with a specific indication that necessitates delivery, they may be admitted under a different MPP that may not include antenatal steroids as an option, thus necessitating a separate order from the catalog. Further, when the order is generated from the catalog, the appropriate obstetric dosing is amongst all available dosing. The order is available as an opt in, and this leaves the possibility for it to be inadvertently omitted. Thus the impetus to change the MPP to reflect current best practice in a convenient and safe manner for the ordering physician.

Part of the institutional commitment to safety involves committee approval at the level of physicians and nurses in order to ensure that all concerns are addressed. This approach has had the unintended consequence of delaying the start of the initiative as institutional personnel and processes were modified after our initial submission and all committees and disciplines must have approval.

II. Group:

a. Cohesion

As the results from our previous study and the intentions for the current initiative have been shared with other hospitals in the MHHS and with various physician groups we have been met with enthusiasm and approval.

b. Psychological safety

Physicians are more apt to administer ACS rather than withhold due to the potential neonatal ramifications of inadvertent administration. This leads to "indication creep", or the administration to late preterm steroids for women in whom there may be less benefit rather than gain, for example women with diabetes, multiple gestations, or delivery at 37 weeks.

III. Individual:

a. Safety knowledge & skills

ALPS has been presented at national perinatology meetings and academic societies published committee opinions on the issue. However, they stopped short of recommending the practice, rather advised clinicians to just consider late preterm steroids. Due to the lack of strong recommendations, physicians may not be aware of the guidelines for implementation and there may be a learning gap.

b. Sense of control

Physicians may not recognize that the unnecessary administration of ACS when unindicated may lead to unintended consequences, such as neonatal hypoglycemia.

c. Individual commitment & prioritization of safety

Physicians are committed to safe practices and are motivated to adopt new practices that are evidence-based and of benefit to their patients.

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3. Administration of Maternal Vaccinations

Emerging evidence of a quality metric in obstetric care,

Immunization against vaccine-preventable diseases is an essential, recommended component of women's primary and preventive health care. Despite clear guidance from public health agencies, maternal vaccination rates lag behind national goals. At the beginning of the project only ~44% of women admitted to Children's Memorial Hermann Hospital (CMHH) were vaccinated against pertussis prior to delivery.

Our project has focused on 3 primary areas: 1) accurate linkage of data from new Tdap screening tool to report, 2) development of a dashboard to display Tdap screening tool reports and 3) further analysis of the maternal survey.

Lessons learned at Memorial Hermann Healthcare System

Looking at the each of the enabling factors in the framework and definitions, we identified the following gaps, barriers and/or facilitators that have led to success, failures and lessons learned:

I. Organizational:

a. Leader commitment & prioritization of safety

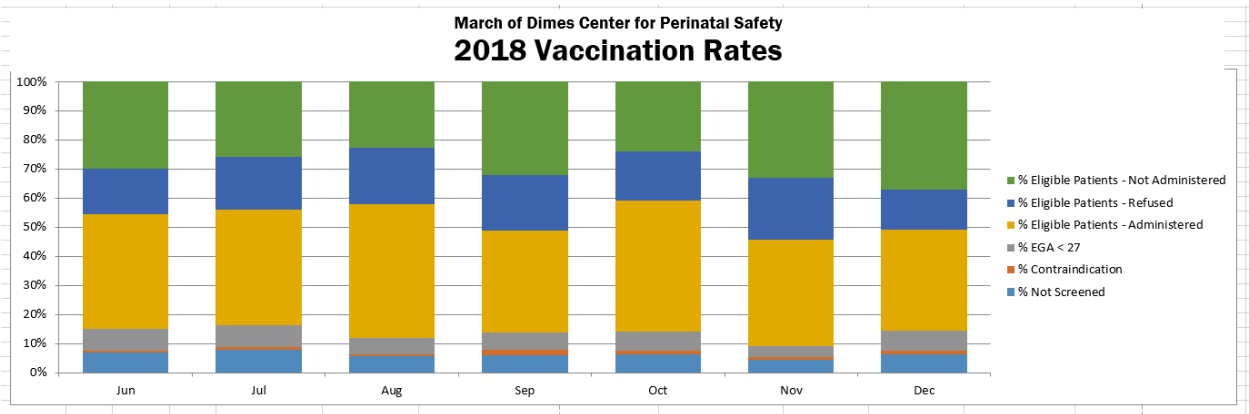
There is high leadership commitment to vaccinations delivery across the hospital system. Policies exist for how to implement effective vaccination screening and delivery; however, they are variable within the institution and by vaccine (Tdap vs influenza vaccine). Because screening for influenza vaccine status is mandated, there is greater organizational monitoring and accountability for influenza screening rates. In contrast, Tdap vaccine screening is not mandated and reflects a lower accountability at an organizational level.

b. Policies and resources for safety

Policies exist for how to implement effective vaccination screening and delivery; however, they are variable within the institution (eg, CMMH antepartum vs CMMH postpartum units) and by vaccine (Tdap vs influenza vaccine). At this time, screening for influenza vaccine status is mandated. Therefore, there is greater organizational monitoring and accountability for influenza screening rates as manifested by daily monitoring, reporting and assessment of influenza vaccine screening fall-outs. In contrast, Tdap vaccine screening is not mandated and reflects a lower accountability at an organizational level.

The organization was supportive in updating the Tdap vaccine screening form to reflect national guidelines through various committee approvals (see prior progress report) but it was clearly not a MHHS priority. It took close to a year to be accomplished. Similarly, it has taken close to a year to develop tools to accurately monitor Tdap vaccine screening and delivery based on the updated screening form. We met with the MHHS IT analytics team in May 2018 and discussed our requirements to automate the maternal immunization vaccination report and dashboard based on the new Tdap vaccine screening form. Throughout June and July 2018, we held multiple conference call meetings with the MHHS IT analytics team to discuss and clarify requirements around developing the maternal

vaccination report and dashboard. Although a draft of the report was initially developed in mid-August 2018, technical errors were discovered immediately. Throughout August and September 2018, there were multiple conference calls with the MHHS IT analytics team to troubleshoot and fix those technical errors. This took longer than anticipated due to analyst's other work related commitments. Finally, in October 2018, it was decided to split the effort of automating the maternal vaccination report and dashboard development in order to engage two analysts to speed up the project. However, due to resourcing issues, by January 2019, a second analyst from MHHS IT was still not engaged. With a second analyst on-boardeded in mid-January 2019, the work on report automation finally began. Following the report development, throughout February and March 2019, there were several rounds of data validation. During the process of data validation, we found discrepancies between the Tdap screening data of patients seen at UT Physicians and other private providers, due to mismatching in the patient's medical records. A follow- up with the MHHS IT analytics team found that the process that maps the medical record number (MRN) of patients from UT Physicians and other private providers to the MHHS MRN had been put on hold. The MHHS IT interface team and analytic team met and developed a plan of action for updating/mapping the MRNs from UT and private providers with MHHS MRNs. We are still waiting for the IT interface team to complete this update/mapping so that we can resume validating the automated maternal vaccination report data. In the meantime, we attempted to create our first Tdap dashboard as shown in the figure below.



Admit Month	Total Patients	Total Patients not Screened for TDAP	TDAP Not Screening Rate	Count_Contraindication	Rate_Contraindiction	Count_EGA Less than 27	Rate_EGA_less than27	Total patients eligible for vaccine and vaccine administered	% of patients eligible for vaccine and vaccine administered	Total patients eligible for vaccination but refused	% of patients eligible for vaccination but refused	Total patients eligible for vaccination but not administered	% of patients eligible for vaccination but not administered
Jun	380	31	8.16%	2	0.57%	31	8.88%	86	46.49%	34	18.38%	65	35.14%
Jul	391	36	9.21%	4	1.13%	32	9.01%	88	47.57%	40	21.62%	57	30.81%
Aug	457	29	6.35%	3	0.70%	28	6.54%	109	52.15%	46	22.01%	54	25.84%
Sep	427	30	7.03%	8	2.02%	28	7.05%	79	40.72%	43	22.16%	72	37.11%
Oct	415	31	7.47%	5	1.30%	30	7.81%	98	52.41%	37	19.79%	52	27.81%
Nov	415	20	4.82%	4	1.01%	17	4.30%	77	40.10%	45	23.44%	70	36.46%
Dec	417	31	7.43%	6	1.55%	31	8.03%	76	40.64%	30	16.04%	81	43.32%

In February 2018, Memorial Hermann Hospital System incorporated vaccination status into their newly implemented Mother Baby Unit (MBU) Multidisciplinary Discharge Rounds (**MDDR**), a

program designed to improve communication and eliminate barriers of patient throughput through the Obstetric Service Line. MDDR are part of a larger system effort to implement OB Milestone Clinical Pathways that focus on clinical efficiency with tasks assigned on a timeline. For example, vaccination screening not completed by 6 hours from admission would result in immediate action. Patients refusing vaccination are to be identified and follow-up rounding added to the action board for the charge nurse or manager to be completed by 4pm daily. After issues of non-compliance of utilization of the OB Milestone Pathway were identified (e.g., vaccination status not always reviewed), a pilot utilizing an MDDR coordinator was implemented in June 2018. This role solely focused on the completion of the pathway and addressed any barriers or missed tasks by nursing. Analysis of the intervention is in progress.

II. Group:

a. Cohesion

Within UT and MH, there are several groups to consider; outpatient OB (UT, MHMG and other private physician groups) practices that refer patients for delivery as well as groups within MH-TMC (postpartum and antepartum). Outpatient OB practices are variable in how they screen and deliver vaccines and then report information to MH-TMC at the time of delivery (see prior progress report). Ideally, practices forward vaccine status information similarly to prenatal labs. Additional groups include those within Memorial Hermann (postpartum and antepartum unit). At the time we updated our Tdap screening form, we opted (with input from stakeholders) to expand screening to include both Antepartum and Labor and Delivery nurses (i.e., screening form could be started by antepartum / L&D nurse and then completed by postpartum nurse with any needed vaccine given by postpartum nurse). Prior to this change, only postpartum nurses were screening. This change has resulted (at least anecdotally) in confusion among nurses as to: 1) whom is responsible for screening, and 2) postpartum nurses no longer completing the form. Ownership of the process also has been variable due to OB nurse manager staff turnover. We are currently reaching out to nurse managers to obtain input in how to address this variability in screening.

b. Psychological safety

Physicians and Nurses have had on an individual level contradicting beliefs about the administration of vaccinations, with them not having full acceptance of the need for the Tdap and influenza vaccination during pregnancy and postpartum. However, it has been openly discussed and personal beliefs have not influenced patients being offered and receiving the vaccinations.

III. Individual:

a. Safety knowledge & skills

Several individuals are important to consider in vaccine screening and delivery (providers, nurses and patients). Most physicians endorse antenatal Dtap vaccination but not all of their clinics are capable of providing the vaccine. For those that do not provide the vaccine in their offices they refer the patients to other venues (e.g. Walgreens). Among OB nurses at MH-TMC, there was task delineation confusion about the Tdap vaccine with the assessment process change. We attempted to address this by updating our Tdap vaccine screening form to more clearly

delineate recommendations depending on whether patient was antepartum and postpartum in 2018. Reeducation on the vaccination process has occurred.

Our survey of postpartum mothers provided some insight into their knowledge (see prior progress report). In total, the majority of postpartum women spoke English [153 (79.8%)] and had received prenatal care [185 (95.9%)], and 121 (62.7%) reported having received the Tdap vaccination at their OB's office [80 (66.6%0]. Among women not vaccinated [65 (65.3%)], common reasons for not being vaccinated included "healthcare provider did not recommend" or "did not know I needed". There were 30 (15.0%) EHR vaccination screening forms that did not match our survey results (e.g. form stated mother vaccinated when was not or vice versa).

We conducted inferential data analysis of the surveys we collected and found no significant difference between patients receiving Tdap vaccine at their OB office prior to admission at CMMH and following admission to CMMH. We also stratified the data based on the provider's practice type (i.e. UT and non-UT(private)) and also did not find any significant difference in the Tdap vaccination rate.

In November 2017, we presented to the Perinatal Parent Family Advisory Council (see prior progress report) and it gave us insight on parent's knowledge about vaccines. Parents were very receptive to information about vaccinations and expressed support to more education about vaccines during pregnancy. They appreciated details regarding infections among pregnant women, dynamics of immunologic response to vaccine, and transplacental transfer of immunoglobulin.

b. Sense of control

We have not directly assessed sense of control among providers among individuals (providers, nurses and patients); however, there remains a conviction among many of the nurses that they are contributing to the safety of the newborn by vaccinating the mother. Currently, ~ 10% of pregnant women are not getting screened for Tdap vaccine status during their admission, this could reflect the assessment process change (now being done in L&D vs Postpartum) or it could reflect a low sense of control among some OB nurses. Similarly, patients presenting to CMHH not having received Tdap vaccination (48.5%) could reflect a low sense of control among OB providers.

c. Individual commitment & prioritization of safety

Individual commitment and prioritization of safety varies by provider with some having more than others have. Physicians and nurses are committed to safe practices around vaccinations to protect mother and baby.

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4. Transition Home of Neonatal Infants

Outcome with unknown metrics related to obstetric care

While infant mortality has substantially decreased in the US, the US still lags behind other wealthy nations with a current infant death rate of 6.1 per 1,000 live births. The cause is multifactorial but in large part it is due to the high rate of preterm and very low birth weight (VLBW) births in the US compared to other developed countries.

While infant mortality rates are well described, very limited information on post-discharge infant mortality for preterm and VLBW infants suggests estimates ranging from 7.5 to 22.5 deaths per 1,000 discharged.[1,2] Furthermore, it is well-documented that health care resource utilization including rehospitalization, primary care visits, and specialty service needs is greatly increased in high-risk compared to healthy infants.[3-8] Rehospitalization rates are as high as 50% for high-risk infants discharged from neonatal intensive care units (NICU).[3,4] In addition, these patients often require frequent primary care (20-29 visits in first year)[7] as well as specialist services (74%).[8] Thus, the care of high-risk infants following discharge to home results in significant health care expenditures. It is estimated that the average health care costs for the first year of life after discharge to home are approximately $32,000 for preterm infants versus $3000 for full term infants.[9]

We completed the data collection and analysis of all infants discharged NICU within the Memorial Hermann healthcare system over a 3 month period and determined the incidence of unplanned post-discharge healthcare utilization (unplanned clinic visits, emergency department visits and hospital readmissions) by these infants. We found that nearly one-quarter of our patients had at least one unplanned healthcare visit within 90 days of discharge and 8% required re-admission. We also created a model to predict those infants at greatest risk of unplanned healthcare visits after discharge to home from the NICU. In our patient population, minority race/ethnicity was the strongest predictor of unplanned healthcare visits after discharge. Other important contributing factors included the need for durable medical equipment (DME) at discharge, prior surgery, and other medical comorbidities. The results of this work will enable us to identify infants at greatest risk and target this at-risk population as we develop interventions to minimize healthcare utilization following discharge from the NICU with the goal of keeping high risk infants at home and healthy.

Lessons learned at Memorial Hermann Healthcare System

Looking at the each of the enabling factors in the framework and definitions, we identified the following gaps, barriers and/or facilitators that have led to success, failures and lessons learned:

I. Organizational:

a. Leader commitment & prioritization of safety

The Memorial Hermann System has made unplanned post discharge readmission a priority. Auditing of institutional data revealed readmission issues with patients. It was found that nearly one-quarter of our patients had at least one unplanned healthcare visit within 90 days of discharge and 8% required re-admission. Minority race/ethnicity was the strongest predictor of unplanned healthcare visits after discharge. Other important contributing factors

included the need for durable medical equipment (DME) at discharge, prior surgery, and other medical comorbidities. Interviews of parents and clinicians reveal gaps and lack of parent-centered approaches to discharge. MHHS is committed to making change occur to lower readmission.

b. Policies and resources for safety

Policies exist for scheduling arranging for DME, parent/family education and orderly process for all NICU discharges.

II. Group:

a. Cohesion

As the results from our studies have been shared with staff and physicians there has been an impetus to work as a team to improve our readmission rates. Committees that include parents from the Patient Advisory Council have been initiated to address this problem.

b. **Psychological safety**

There seems to be a lack of psychological safety among staff and parents regarding speaking up to make sure that patient's needs are met.

III. Individual:

a. Safety knowledge & skills

Interviews of parents and clinicians reveal gaps and lack of parent-centered approaches to discharge. The barriers identified were multifactorial and included lack of standardized discharge processes, poor communication and coordination among providers and parents, disconnect between EHR system and no formal parental training of DMEs. In addition to healthcare providers, parents are important stakeholders in caring for infants at home post NICU discharge and their perspective is crucial to successful transition to home of NICU graduates.

b. Sense of control

We have not directly assessed sense of control among providers among individuals (providers, nurses and patients); however, there remains a conviction among many of the staff that they are contributing to the safety of the newborn by educating the parents/families.

c. Individual commitment & prioritization of safety

Individual commitment and prioritization of safety varies by staff with some having more commitment than others. Introducing a more streamlined approach to patient discharge will enable more commitment.

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