

**Implementing Plain Language Emergency Alerts within Neonate Population at Claremore
Indian Hospital: An Evidence-Based Practice Project**

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Executive Summary

There is little or no room for confusion or misunderstanding in an emergency situation. When a patient under your care needs help, time is of the essence. The Claremore Indian Hospital has a reputation for delivering high-quality evidence-based care. As executive leadership, the continued positive reputation of the organization rests in your hands. Avoiding a reportable sentinel event can be as easy as changing the language used when emergency codes are paged overhead. Rather than using codes such as “Code Blue ” or “Code Purple” to identify a respiratory or cardiac arrest, using plain language can reduce code confusion, improve response times and ultimately save lives.

Federal agencies such as The Centers for Medicare and Medicaid Services (CMS), The Joint Commission (TJC), and state Hospital Associations now recommend plain language alerts be used by all healthcare and emergency response partners. Although the Oklahoma Hospital Association has not taken a stance on the use of plain language emergency alerts, 23 states have moved forward with this initiative (Winger, 2022). The purpose of emergency notification is to communicate the emergency quickly and to mobilize expert assistance. The adoption of plain language emergency alerts promotes transparency increases patient, visitor, and staff safety, and aligns with national initiatives.

The problem identified by the Claremore Indian Hospital that drove this EBP project was recent events of code confusion in the Labor and Delivery Unit. Medical staff responded to an overhead page and did not know if they were responding to an adult, pediatric, or neonate code. Therefore, multiple code teams responded to one location. This led to confusion and traffic congestion in the L&D Unit and left patients and staff on other units short-handed and vulnerable to negative events.

From this problem, The UMary Student Team gathered internal data, developed recommendations, and developed an implementation plan and a project measurement plan. After collecting data from medical staff in the L&D Unit through a questionnaire, a knowledge gap was identified. Many employees did not understand the meaning of the different code colors or understand their responsibility when a code was paged overhead.

Unfortunately, the risk of using color codes outweighs the benefits. Recommendations The UMary Student Team has for the Claremore Indian Hospital is to transition from colors to plain language by removing “Code Purple” and replacing it with “Medical Alert + Neonatal + Location (Room 300),” incorporate safety bundles, develop a policy and procedure to support change and set a goal to reduce emergency response times to 5 minutes or less. For sustainability purposes, The UMary Student Team recommends running mock drills quarterly, documenting response times, and documenting correct personnel responding to the emergency alert. In addition, the policy and procedure should be reviewed annually by all staff, and plain language emergency alerts should be a part of new employee orientation.

Plain language is communication your employees can understand the first time they hear it. People know what actions are required based on the information they receive. By supporting this change, the executive leadership of Claremore Indian Hospital will be in compliance with national safety recommendations, increase the transparency of communications and safety protocols, eliminate code confusion, reduce errors in the identification of alert meanings and reduce response times in critical life-threatening situations.

Implementing Plain Language Emergency Alerts within Neonate Population at Claremore Indian Hospital: An Evidence-Based Practice Project

Healthcare organizations use emergency color code systems to notify healthcare staff of emergency situations needing immediate action. Every emergency code used is only as effective as the staff's understanding of their proper response and responsibilities when a code is activated (Ashworth et al., 2015). The system to notify healthcare staff of an emergency situation can vastly vary between facilities. The variation of code color systems causes confusion and/or misunderstanding with response to events. Granted, healthcare systems exercise an array of overhead alerts, and employees can become confused during an emergent circumstance when time is of the essence (Prickett, 2018). Confusion can lead to delays in the initiation of and reaction to emergent circumstances (Winger, 2022). Staff must memorize new emergency code colors with changes in employment. The confusion may result in a delay of care, unsafe patient events, or even negative outcomes. The standardization of emergency codes is needed to regulate the number of staff responding and enhance response time. The standardization would include the experienced staff with knowledge of the treatment needed to be present and assist in emergency events. Hospital organizations from multiple states have recommended the standardization of emergency codes, and some have campaigned to remove the confusing color codes and implement plain language alerts (Wallace, 2015). The UMary Student Team, in partnership with Claremore Indian Hospital, will identify an EBP project to enhance response time, role, and responsibility clarity for organizational employees. By standardizing and implementing plain language emergency alerts, organizational employees will respond immediately and comprehend their responsibilities in life-sustaining interventions.

Problem Statement: Scope of Clinical Problem from a Global Perspective

Ideally, response times would improve during a medical emergency using plain language, reducing employee and patient confusion while increasing transparency among its patients and visitors compared with the current color-coded emergency code system. Healthcare associations such as the Institute of Medicine (IOM) and the Joint Commission recommend using plain language in emergency code alerts as it is easy to understand, uses simple terms, and is direct (Prickett & Williams-Prickett, 2018).

Claremore Indian Hospital is a small rural healthcare organization that uses a color-coded system in an emergency. Response time is delayed during emergencies in the Labor and Delivery (L&D) unit at Claremore Indian Hospital. Many healthcare employees are unsure who is supposed to attend and which specialty is needed. Providers are confused since they do not know if the mother is in distress or the baby; consequently, too many employees arrive unnecessarily and disrupt life-sustaining interventions.

Additionally, since there are more workers at the emergency site, their respective patients are vulnerable to injuries or adverse events since they are not being looked after. Using plain language during emergency codes would resolve these issues at Claremore Indian Hospital as it would reduce confusion, therefore, improving response times (Wallace & Finley, 2015).

Significance of Clinical Problem at the Organizational Level

At Claremore Indian Hospital, a committee formed of individuals from multiple departments and various disciplines tasked with integrating evidence-based safety practices along with the color-coded system used at the service unit. This committee worked diligently to develop standing orders, protocols, and procedures aligned with the current guidelines within emergency medicine of adult and pediatric care. The committee did not anticipate the problems

of using universal color codes related to code confusion when responding to emergency situations. It was identified that using the overhead page of “code blue” for numerous emergencies in relation to adults, pediatrics, and newborns would lead to confusion about which individuals would respond, causing a delay in response. The number of employees responding also caused an interruption of life-saving interventions. Another setback the organization identified was that the code activators struggled with alerting the correct team, which caused delays in activation.

PICOT Question

Using a query focusing on a Population, an Intervention, a Comparison, an Outcome, and a Timeframe is a PICOT question. A PICOT is invaluable in an EBP project as it leads to an effective unbiased search of data. It is a question relevant to a patient population, such as the L&D unit in Claremore Indian Hospital. The combination of using a PICOT question with EBP will help The UMary Student Team integrate clinical expertise, patient values, and sound evidence to help attain accurate outcomes in the project. The team has developed the following PICOT inquiry:

In healthcare workers in the Labor and Delivery unit at Claremore Indian Hospital, how would implementing plain language emergency codes ("Medical Alert" + Descriptor + Location"), compared to color emergency codes ("Code Blue"), improve response times and employee knowledge in three months?

Purpose Statement

The focus of this project will be to implement the plain language code system through education, running drills, assessing knowledge, and incorporating it into the hospitals' policies. However, before implementation, this assignment will examine whether using plain language reduces response time in providers' calls to action during an emergency alert at Claremore Indian Hospital as opposed to their current system of using a color-coded system. The UMary Student Team will determine if employees and providers know the colors used in the current system if they understand what each color indicates, how they should respond accordingly, and what subsequent roles they play during an emergency alert. Additionally, this report will determine if using plain language causes less confusion among staff members versus using the current code system since colors help prevent language barriers for employees and patients (Lee & Lee, 2018).

Review of Literature

Literature Search

For healthcare workers, the term "communication is king" has never been truer when faced with an emergent situation. It has been a standard across the country for organizations to rely on color codes instead of plain language to alert staff, patients, and visitors of a threat or emergency; in doing so, a hospital may introduce ambiguity into a potentially life-threatening situation (Dauksewicz, 2018). The UMary Student Team completed a comprehensive literature search to find a rationale to support the EBP project. Considering the identified PICOT question, the following keywords were used for the external data search: plain language, emergency codes, code blue, response times, code confusion, and standardized (see Table 1: External Data). The

keywords were searched individually and in combination across three databases CINAHL, Medline, and Cochrane. All searches were conducted using Boolean/phrase, filtered by date range 2015 -2022, and all articles were peer-reviewed.

Other strategies utilized to identify relevant literature were reviewing bibliographies and abstracts of articles, searching for primary source studies, using other search engines such as PubMed and Google Scholar, and utilizing the Cochrane Database of Systematic Reviews. The UMary Student Team felt it was necessary to use the Cochrane Database because systematic reviews are considered the "gold standard" in knowledge synthesis. "Compared to a simple literature review, a systematic review involves the rigorous development of, and adherence to, a protocol with explicit rules for gathering data from primary studies" (Polit & Beck, 2021, p. 655).

Due to the complexity of a systematic review, fewer hits were obtained during the external data search, as evidenced in Table 1. Table 2 represents the studies that were used in the literature synthesis. Although there were many hits during the search for literature related to this topic, there was an apparent lack of studies that fit the study design of the Johanna Briggs Level of Evidence. However, several journal articles supported the studies and were relevant to the literature synthesis.

Table 1*External Data*

	CINAHL	MEDLINE	COCHRANE
1. Plain Language	365	1,136	2
2. Emergency Codes	33	82	0
3. Code Blue	26	38	0
4. Response Times	1,431	8,927	2
5. Code Confusion	5	16	0
6. Standardized	1	1	1
7. 1 and 2	419	2	2
8. 1 and 3	383	1,209	1
9. 1 and 4	436	2	3
10. 2 and 3	2	2	2
11. 2 and 4	427	1	0
12. 3 and 4	2	1	0
13. 6 and 2	1	1	1
14. 1, 2, and 3	629	2,005	10
15. 1, 2, and 4	476	1,685	3
16. 1, 2, 3, and 4	1,016	2,952	10

Table 2*Literature Matrix Grid*

Full APA Reference Citation	Research Purpose	Study Design	Sample Setting	Data Collection/Measure	Analysis/Outcomes	Strength/Limitations	Johanna Briggs Level of Evidence	Study Quality
Ashworth, I., El Dali, A., ElDeib, O., Altoub, A., Pasha, F., & Butt, T. (2015). Variability of emergency color-codes for critical events between hospitals in Riyadh. <i>Annals of Saudi Medicine</i> , 35(6), 450–455. https://doi.org/10.5144/0256-4947.2015.450	The purpose of this study was to evaluate the emergency codes used in hospitals in Riyadh City, Saudi Arabia	Cross-sectional study	A total of 24 secondary and tertiary-care hospitals took part in the study	Semi-structured questionnaires were completed by the Quality/Safety Department of each hospital	All the Statistical analysis of data was done using the software package SAS version 9.4. Descriptive statistics for the categorical variables were summarized as frequencies and percentages and continuous variables are summarized as mean and standard deviation. Over 78% of the color codes had at least two different meanings, and the median	Four areas of variance between emergency codes were identified supporting the use of plain language. The use of plain language in a healthcare setting has been demonstrated to improve patient safety outcomes. Limitations of this study are that it was only conducted in Riyadh City and the actual training and competence of hospital staff in the use of emergency codes were not recorded.	Level 4	Fair

					number of meanings a color code could have was 3.5.			
Harris, C., Zerylnick, J., McCarthy, K., Fease, C., & Taylor, M. (2022). Breaking the code: Considerations for effectively disseminating mass notifications in healthcare settings. <i>International Journal of Environmental Research and Public Health</i> , 19(18). https://doi.org/10.3390/ijerph191811802	This study sought to assess the ability of clinical and non-clinical employees across the State of Georgia to correctly identify their facility's emergency codes, assess employee's opinions of emergency alert systems, and identify significant predictors of emergency code identification accuracy	Quantitative	There were 304 participants across five Georgia facilities including two level I trauma facilities, one level II facility, and two acute care facilities	Using a convenience sampling strategy, a survey was conducted anonymously via electronic format.	Analysis was performed using R Statistical Software. Significance levels were set to 0.05. A paired-t-test, Cohen's d, and ANOVA tests were conducted. Tukey's Honestly Significant Difference post hoc test was conducted for variables that had a significant difference in the group means. Participants correctly identified the emergency codes with 44.37%	Strengths include large sample size and collection methods. Limitations include the generalizability of the study as it was only conducted on healthcare workers in five Georgia hospitals. Response bias was also identified as a limitation.	Level 4	Fair

					accuracy on average. This study showed that both clinical and non-clinical employees have limited accuracy in identifying their hospital's emergency codes.			
Lee, H.-J., & Lee, O. (2018). Perceptions of hospital emergency color codes among hospital employees in Korea. <i>International Emergency Nursing</i> , 40, 6–11. https://doi.org/10.1016/j.ienj.2018.03.005	The purpose of this study was to identify perceptions of emergency color codes among hospital employees in Korea.	Descriptive Study	Between October 25 and November 30, 2016, from four general hospitals in Seoul and Gyeonggi-Do, Korea 295 questionnaires were distributed and 266 of	A 12-color spectrum and emergency situations were selected from the standardized emergency color codes used in the US and Canada. Participants were selected via convenience sampling	Analysis of the data was not defined by the Authors. 73.7% of the participants said that they used color codes during an emergency in the hospital. However, 16.9% of them did not know about the emergency codes through all the sampled hospitals.	Strengths of this study include sample size. Limitations include lack of information given to the reader, such as how the data was analyzed, and limitations were not brought forward by the authors.	Level 4	Low

			them were analyzed					
Prickett, K. J., & Williams-Prickett, K. (2018). Plain language emergency alert codes: The importance of direct impact statements in hospital emergency alerts. <i>Journal of Emergency Management</i> , 16(2), 73–79. https://doi.org/10.5055/jem.2018.0356	The purpose of this study was to determine how responsive individual hospitals and healthcare organizations would be to the adoption of plain language emergency alert codes.	Non experimental	108 hospitals participated in this study. 34 were located in rural areas while 74 identified as being located in metro locations . Hospitals from across the United States participated in this study with 25 being	The data in this study was collected using a 15 question survey. An online survey platform was used from August 20 to September 30, 2016.	The data were compared using descriptive analysis (M). Data from the national survey revealed that most respondents found the current facility-specific emergency code systems in use in many states to be antiquated and not in line with current healthcare emergency preparedness trends. The survey also revealed a fear that the plethora of emergency code variations in existence across the nation and even within	Strengths include sample size and generalizability of the study. There is a good representation of hospitals from across the country. There is also a good mixture of small and large facilities. The authors recognized one limitation as being in its infancy, and as a result, it was impossible to capture all relevant data during the first iteration of research.	Level 5	Low

			from the Northwest, 33 being from the Southeast, 26 from the Midwest, six from the Northwest, 14 from the Southwest, and two from Canada		the healthcare coalition groups could lead to code confusion among healthcare providers who work in multiple facilities.			
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Synthesis of Current Literature

Emergency alert codes are used in hospitals throughout the United States and worldwide with the universal intent of relaying emergent information to the proper first responders to initiate a swift and efficient response. However, emergency alert code systems are only as effective as healthcare workers are familiar with the code system (Prickett & Williams-Prickett, 2018). This was never more apparent when tragedy struck a southern California hospital. On September 14, 1999, a shooting occurred at the West Anaheim Medical Center (WAMC); the hospital announced "Code Gray," the hospital's code for an aggressive patient. This alert drew staff members toward the shooter, who ultimately killed three employees (Dauksewicz, 2018).

This example of code confusion served as the impetus behind the support for using plain language emergency alerts. From the backing of the National Incident Management System (NIMS), the Federal Emergency Management Agency (FEMA), the Department of Health and Human Services (DHHS), and ten state Hospital Associations (Colorado, Florida, Iowa, Kansas, Minnesota, Missouri, North Carolina, South Carolina, Texas, and Wisconsin) great strides have been made to use plain language emergency alerts. However, more than two decades after the WAMC tragedy, the variability of emergency code meanings among hospitals across the United States remains an issue (Winger, 2022; see also, Dauksewicz, 2018; Prickett & Williams-Prickett, 2018). This issue remains primarily due to a lack of consensus among hospital associations across the US; 25 of the 50 states have recommended introducing a standardized set of emergency codes; however, there is a divide between standardization and the use of plain language. Of the 25 states, 12 have advocated for plain language codes in hospitals, while the remaining 13 focused on standardized codes.

NIMS initiated plain language emergency alerts in 2004. In 2015, the DHHS recommended supporting NIMS initiatives referencing plain English communication standards or, as it's known today, plain language emergency alerts. NIMS was established in 2003 as a directive from President Bush following the aftermath of 9/11. The confusion and chaos that ensued from this tragedy primarily resulted from the lack of communication and a multi-agency response that worked in silos. Plain language emergency alerts first started with federal agencies under NIMS or FEMA. After the DHHS endorsement, Hospital Associations around the country began to support the change to plain language alert (Dauksewicz, 2018).

Support for plain language over code standardization

There is a difference between code standardization and plain language alerts. A code refers to using colors, numbers, or keywords only meant for trained personnel to understand. Examples of a code include "Code Gray," "Code 12," and "Code Manpower," all of which can mean an alert to identify a combative person. This example would be announced in plain language alerts as "security assistance requested + location + action required." Table 3 shows recommendations for plain language alerts from the Iowa Hospital Association (IHA) (Iowa Hospital Association [IHA], 2014).

Table 3*Example of plain language alerts*

EVENT TYPE	PLAIN-LANGUAGE CODE
Facility	
Evacuation	Evacuation + location + action required
Fire	Fire alarm + location + action required
Weather	
Severe weather	Weather alert + descriptor + action required
Security	
Abduction or elopement	Missing person + descriptor + action required
Acts of violence	Active shooter + location + action required Violent intruder + location + action required
Bomb threat	Bomb threat + location + action required
Combative patient/person or show of force	Security assistance requested + location + action required
Disaster (internal or external) (e.g., hazardous agent, chemical spill, power outage)	Internal emergency + descriptor + activate incident command system External emergency + descriptor + activate incident command system
Medical	
Mass casualty	Mass casualty + descriptor
Medical emergency	Medical emergency + location
Obstetrics (OB) team activation	OB team + location
Rapid response team activation	Rapid response team + location
Stroke team activation	Stroke team + location
Trauma team activation	Trauma team + location

Source: Iowa Hospital Association. Plain language emergency codes: implementation guide [online]. [cited 2014 Jun 19]. <http://www.ihaonline.org/iMIS15/Images/IHAWebPageDocs/publications/Plain%20Language%20Document.pdf>

Both the IHA and the Minnesota Hospital Association (MHA) have published plain-language implementation guides. "Kirk Norris, president and chief executive officer of IHA, states that alerts like "code blue," "code pink," and "code yellow" have been in existence for many years, but there is no uniform standard as to what they mean, and this can cause confusion" (Wallace & Finley, 2015, p. 4).

Four main objectives must be met for an emergency alert to be effective. First, the message must reach the target audience; second, the alert must capture the target audience's attention; third, it must ensure comprehension of the risk and necessary actions; and finally, it must lead the audience to respond appropriately (Harris et al., 2022). Within a hospital, the target

audience may only include a subset of personnel and visitors, or it may include everyone in the building.

The UMary Student Team reviewed several studies to support Mr. Norris' statement related to code confusion and support for the use of plain language alerts. A study by Wallace and Finley (2015) reviewed the Pennsylvania Patient Safety Authority database and conducted surveys across hospitals in Pennsylvania (PA). The study found that 80 codes in 37 categories were used across PA healthcare facilities. In addition, these codes were used in 154 combinations of terminology and intended meanings.

A study by Lee and Lee (2018) was conducted to identify perceptions of emergency color codes among hospital employees in Korea. Of the 266 participants, the highest consistency in the association between emergency images related to colors and emergency code color images associated with emergency situations in the following cases: "red for fire," "blue for adult cardiopulmonary resuscitation (CPR)," "yellow for pediatric CPR," orange for external disaster," "pink for infant/child abduction," "white for deactivation," and "black for violent/combatative person." The most confusing colors were purple, gray, and silver. This study also referenced Puerto Rico as using Code Green for cardiac arrest, thus challenging that, globally, Code Blue is associated with CPR (Lee & Lee, 2018).

A third study by Ashworth et al. (2015) evaluated the variability of emergency codes for different critical events in 24 hospitals across Riyadh City, Saudi Arabia. The authors found that thirty-four different codes were used across hospitals. The codes with the most variability were yellow (10 meanings), orange, black, green (7 meanings each), and gray (5 meanings), while the most consistently used code was "Code Red" for fire in 75% of hospitals. Over 78% of the color codes had at least two different meanings, and the median number of meanings a color code

could have was 3.5 (Ashworth et al., 2015). Through this literature review, the authors of this report consistently came across a theme of a wide variability amongst code colors and their meaning, thus showing a lack of standardization across the US and globally. For this reason, many studies and journal articles supported plain language emergency alerts.

Code confusion

Emergency codes are often developed independently by each hospital, leading to variability and code confusion. Many of the staff who work in these facilities are temporary or may work in more than one healthcare facility. In 2018 it was estimated that 75% of hospitals utilize temporary staff or travel nurses to fill vacancies and 30% of total nursing hours across the nation are being filled by temporary staff (Prickett & Williams-Prickett, 2018; also see Dauksewicz, 2018; Harris et al., 2022; Winger, 2022). This number is undoubtedly much higher after the COVID-19 pandemic, further complicating code confusion and making communication among healthcare workers a significant challenge. Prickett and Williams-Prickett (2018) provided a first-hand example of a travel nurse in Atlanta who reported that she responded to a "Code Pink" overhead page which she thought was an infant abduction; however, the actual emergency was an infant cardiac arrest. Code confusion in this scenario can have an enormous potential for patient harm from delays in care or incorrect response team activation.

To add to the code confusion theme, natural disasters, active shooter situations, and terrorist attacks immediately trigger a multiagency, multijurisdictional, and multidisciplinary response. Undoubtedly healthcare organizations are part of this multi-agency response. It has become commonplace in the post-9/11 era that agencies work together to eliminate or reduce immediate threats to human life, thus requiring Police, Fire, EMS, FEMA, and Hospitals to work together. For this reason, DHHS, FEMA, and hospital regulatory agencies such as The Joint

Commission (TJC) and the Centers for Medicare & Medicaid Services (CMS) recommend plain language emergency codes. Currently, no legislative requirements mandate the use of plain language in the daily operations of individual organizations such as healthcare. However, TJC and CMS emergency preparedness regulations recommend that healthcare facilities' communications plans comply with all federal and state laws; thus, it could be argued that plain language emergency alerts within hospitals are now a mandated step in the emergency communication plan (Centers for Medicare & Medicaid Services [CMS], 2016).

Privacy and Ethics

In addition to code confusion for healthcare providers, patients and visitors are even more vulnerable to confusion, fear, and anxiety when hospitals use codes, as it removes any situational awareness from patients and visitors (Weikel, 2017). Evoking fear and anxiety among patients and visitors was a common theme across The UMary Student Team literature review. Many of the studies and articles chosen for this report reference participants agreeing that plain language alerts improve hospital effectiveness and communication in an emergency situation; however, participants were concerned that the use of plain language alerts will cause heightened anxiety and, depending on the situation, chaos amongst patients and visitors. Moreover, participants also felt that maintaining confidentiality and discretion related to the location of the code was important. For example, a patient room number was another primary reason to retain a code-based system (Prickett & Williams-Prickett, 2018; also see Dauksewicz, 2018; Harris et al., 2022; Wallace & Finley, 2015; Winger, 2022). Current research suggests that plain language codes could reduce uncertainty and anxiety by reducing an individual's propensity to experience fear caused by the perceived absence of information (Carleton, 2016; also see Omori et al., 2017; Weikel, 2017). To explain the privacy concerns of the participants' Harris et al., 2022 reference

federal regulations that plain language alerts, particularly those regarding medical emergencies for specific patients, do not violate the Health Insurance Portability and Accountability Act (HIPAA), as these alerts do not include any of the 28 identifiers. HIPAA even allows for identifiers to be included in communications in the case of an emergency (Code of Federal Regulations, 2022a; also see Code of Federal Regulations, 2022b).

Summary

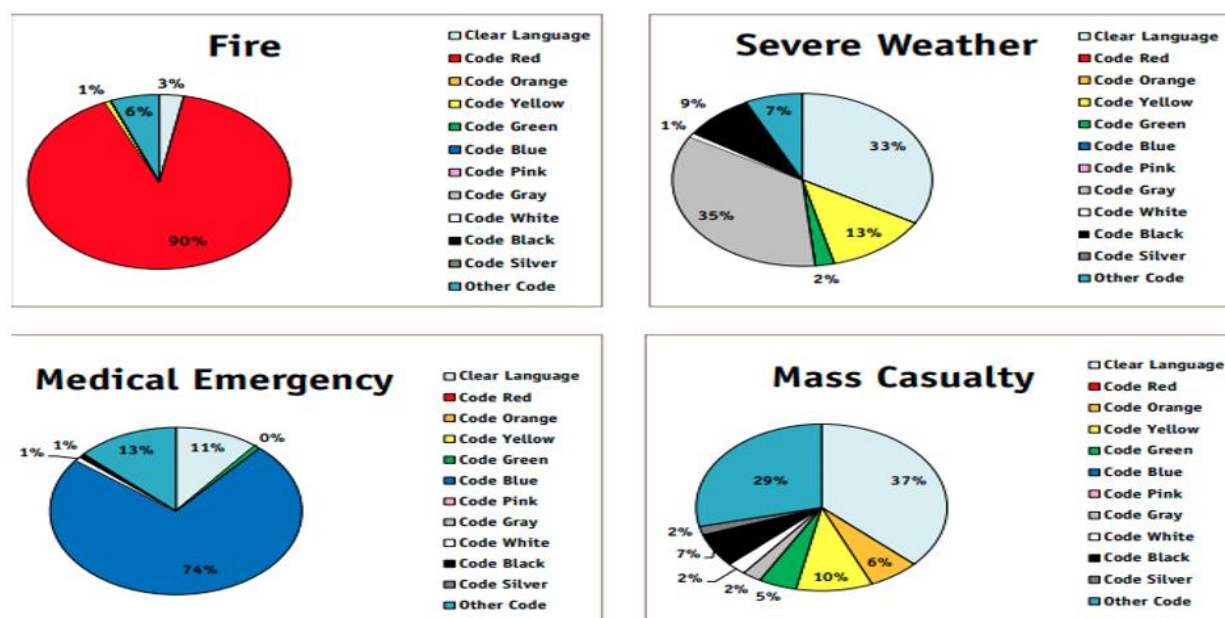
From the literature review, the Claremore Indian Hospital, in partnership with The UMary Student Team, developed recommendations, an implementation plan, and an outcomes measurement plan to ensure the successful completion and sustainability of the EBP project. This project aims to improve response times and staff knowledge related to neonatal emergencies through clear communication and plain language alerts. With collaborative efforts between organizational leadership and The UMary Student Team, two recommendations surfaced. First, identify gaps in knowledge, provide education, and implement practice drills. Secondly, policies and procedures were developed to promote transparency, guidance for staff based on evidence, and increase patient safety. After organizational stakeholders were identified, the implementation plan was developed. The UMary Student Team utilized the Plan-Do-Study-Act (PDSA) cycle to develop a step-by-step process to fulfill project objectives. Outcomes were measured by interviewing staff and performing drills to assess response time. Unexpected events or setbacks were communicated with our mentor, and a second PDSA cycle, if necessary, may ensue to remedy the problem. Implementation and outcomes measurement for the EBP project occurred in early 2023. After carefully reviewing the literature, The UMary Student Team and organizational leadership from the Claremore Indian Hospital educated themselves to implement a solid plan and understand the background and evidence behind plain language alerts.

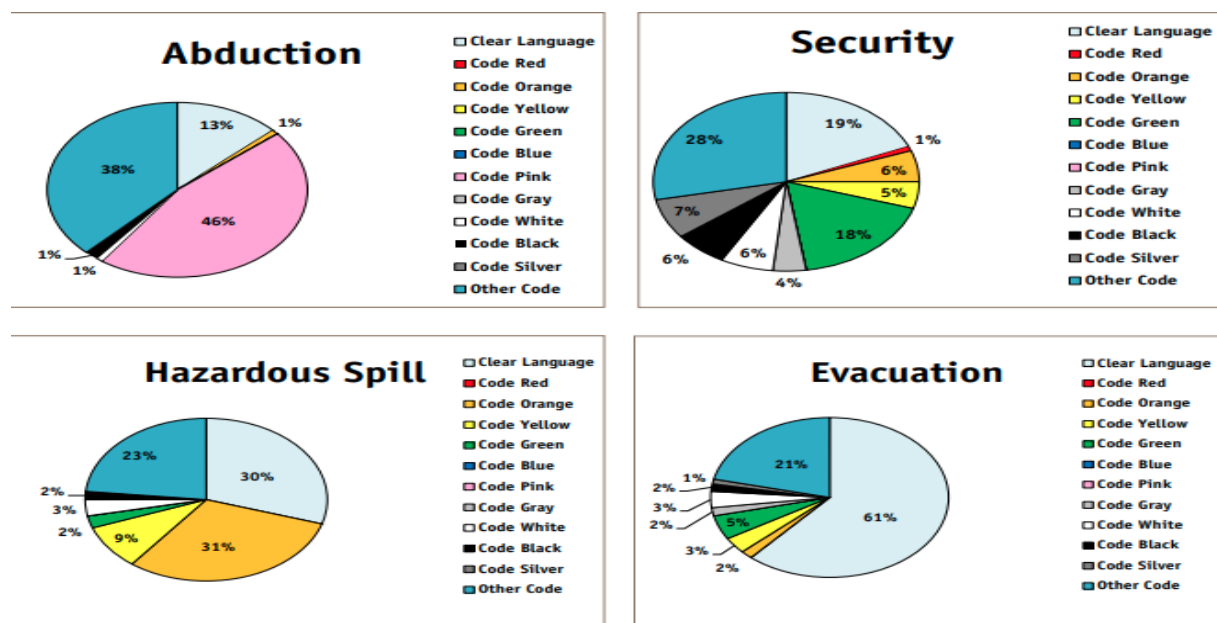
Project Problem Identification

In emergencies, when nurses are asked to make quick decisions based on limited and scant information, knowledge is power. Responding with intent and accurate team members is related to positive clinical outcomes. Staff who are new or work at multiple hospitals may not recall unique code classifications, resulting in an adverse action. Nursing staff rely on each other to work together, which depends significantly on their communication ability. There is a significant variation of color codes across organizations, which leads to confusion among healthcare providers and, in some instances, harm to patients (Dauksewicz, 2019). Unfortunately, the risk of using color codes now outweighs the benefits. Figure 1 below illustrates the differences among major emergency color codes in 134 different hospitals (Missouri Hospital Association, 2021).

Figure 1

Difference in major emergency codes within 134 hospitals





(Missouri Hospital Association, 2021)

Hospitals have also received feedback from patients and visitors stating that color codes increased stress levels (Dauksewicz, 2019). Commonly expressed concerns addressing plain language may cause panic or confusion; research suggests that plain language does not create additional fear among patients and visitors (Dauksewicz, 2019). In fact, it may decrease uncertainty among patients and visitors. They want to be informed and have asked hospitals for transparency.

Internal Evidence

Internal evidence data is generated within the organization, from quality improvement projects to the electronic medical record (Melnyk & Fineout-Overholt, 2019). At the organizational level, internal evidence data improve clinical practice and patient outcomes (Melnyk & Fineout-Overholt, 2019). Within The UMary Student Team project, the internal data includes the nursing education department, administration, employee interviews, and the clinical health systems to give valuable information in the research of the PICOT question.

The Nursing Education Department provides statistics on drills performed, current response times, and response members. Administration offers any patient complaints, social media comments, or complaints from other departments within the organization. Employee interviews present the knowledge of the current staff, what they are responsible for during specific emergencies, and what emergency is called via color code. Interviewing staff on whether they know the code color emergency and their responsibility offers evidence to support the effectiveness of plain language emergency codes. Clinical health systems, as in electronic health records, allow researchers to assess the percentage of emergencies within a department or organization. In addition, the electronic health record may provide patient outcomes before and after implementation.

Table 4

Internal Data Grid

Data need	Special Considerations	Source
Current response time to codes	Response times may differ depending on time of day and location.	Electronic Health Record Nursing Educator
Who responds to codes	Code documentation differs between each type of code	Code documentation Nursing Educator
# of complaints about code response	Information may come from departments or patients	Administration/ Patient advocate/ Employee Relation
# of staff who recognize and identify emergency codes by color	In-person interviews will provide most authentic answers, without employees depending on others for answers.	Employee Interviews Annual competency test Simulated Drills
# of staff who communicate appropriate responsibilities during color codes	In-person interview will provide most authentic answers	Employee Interviews Annual competency test Simulated Drills
Percentage of emergencies within the OB department		Electronic Health Record Code documentation forms.

External Evidence

External data is developed from the comprehensive literature review and from national professional organizations. The quality of the research assessed reflects the strength of evidence to determine the impact made by the research (Melnyk & Fineout-Overholt, 2019). Multiple databases are available to organize a search to obtain external evidence about the PICOT question on implementing plain language emergency codes compared with color emergency codes to increase response time and nurse knowledge. Quality research can be gained from government and private data sources, such as NIH, CINAHL, MEDLINE, and Cochrane Database, including professional websites American Nurses Association (ANA), National Database for Nursing Quality Indicators (NDNQI), and CMS (Melnyk & Fineout-Overholt, 2019). Creating a search strategy for evidence is vital in gathering the research favoring the proposed PICOT question. Keywords, subject headings, and truncated phrases involving the PICOT question are all appropriate for finding the evidence available (Melnyk & Fineout-Overholt, 2019). When searching for evidence within CINAHL, MEDLINE, and Cochrane, truncated phrases were used in plain language standardization, rapid response, and standardized emergency codes. Keywords were also linked together for emergency patient outcomes, evidence-based practice, and delays in care or incorrect response team activation. The various combinations narrowed the search to pertinent articles to the PICOT question.

In addition to using databases to extract external evidence, best practices and validated implementation toolkits from hospital associations such as the Missouri Hospital Association were used to guide our recommendations, implementation plan, and measurement plan. The strategy utilized in the Missouri Hospital Association toolkit recommends that hospital leadership evaluate and consider each transition from color codes to plain language as a separate

intervention, which aligns with our implementation strategy (Missouri Hospital Association [MHA], 2021). The focus of this project is to start small by changing the Code Blue emergency alert for neonates to plain language, then spreading this change to other emergency codes across the hospital. The external data used for the literature review in this report supports the need for change in the identified clinical problem, and internal data gathered from the Claremore Indian Hospital will show a need for change through employee interviews, response time data from the quality department, and data gathered from the electronic health record.

Project Recommendations

Every health system uses an emergency alert system that makes employees and other providers aware of an event that needs immediate response but in an efficient manner. For this EBP endeavor, The UMary Student Team has developed two recommendations to determine if using plain language for emergency alerts shortens response times and causes less confusion among staff members. Furthermore, the recommendations will focus on implementing this new alert system in Claremore Indian Hospital.

Healthcare organizations throughout the country are committed to offering high-quality care. In emergent situations, they try to use effective communication to relay information to ensure the safety of their patients. However, the need for more standardization in a color-coded emergency alert system has created various variations in their symbolization, even in hospitals within the same state. For example, a code yellow could mean "combative person," and a code red could be for "fire" in one hospital, while another facility could use the same two colors but mean the reverse (Winger, 2022).

Color-coded emergency alerts are only successful if every healthcare worker understands what each color symbolizes. Nonetheless, a color-coded system causes an issue when a hospital has staff that works in multiple sites and has short-term per diem nurses, travel nurses, resident physicians, and fellows. Therefore, plain language for emergency alerts must be in all healthcare institutions throughout the country (Winger, 2022). Based on the teams' EBP review, there are two recommendations for Claremore Indian Hospital.

Recommendation One - Assessing Gaps in Knowledge

The goals for the EBP project will be completed by the spring semester and will include testing staff knowledge and skills in their response times using the plain language emergency alert system. As a nurse leader, Mandy Anderson will help find gaps among employees in their understanding of the current emergency code system and how plain language can mitigate confusion among staff members.

The nurse leader will help to measure nurses' knowledge of using plain language during emergency alerts by creating and managing a questionnaire on the new system and the required call to action. With Mandy's guidance, the team will also develop safety bundles that require collaboration among co-workers to run through drills of the new system, coinciding with the guidelines set in place for the L & D unit. These drills will focus on response times and who are the correct members to be present during these types of emergency alerts.

Recommendation Two - Simulations

The drills placed by Mandy will ensure that participants will respond to an emergency using the plain language system in less than five minutes by the end of April 2023. Mandy and her team will track the response times, debrief participants after every drill, and identify areas of improvement. Additionally, with Mandy's assistance, the education provided, the drills set in

place, and the accompanying tests, the participants will be able to successfully describe the roles and responsibilities during an L & D code.

Project Implementation Plan

During medical emergencies within the L & D unit, healthcare employees may become unsure of who is to respond and what their responsibilities entail. Color codes may not identify the correct type of patient, confusing providers on who is in distress, the mother or the baby; consequently, too many employees arrive unnecessarily and disrupt life-sustaining interventions.

For solutions, the partnering organization should consider developing a sound constructed policy and implementation strategy to decrease implementation time and increase the time available for initiating the change. Current committees at the organization may be modified to create plain language alerts (Dauksewicz, 2018). Organizational Emergency Operations staff will need to attend any meetings in the development of emergency alerts to correspond with the Emergency Operations Plan and Continuation of Operations within Claremore Indian Hospital. Education will be dispensed to all hospital staff, explaining the new plain language emergency codes, along with skill assignments, and drills for practice. (Dauksewicz, 2018). The UMary Student Team may suggest the organization reflect on decreasing the number of overhead pages by using alternative communication. Through the research of literature numerous studies show that paging overhead announcements cause an excessive amount of stress and anxiety secondary to fear of the unknown and that plain language alerts may decrease this stress (Winger, 2022).

The organizational committee tasked with incorporating the evidence-based response practices has already identified that code confusion is adversely affecting their efforts. This committee could outline a proposal to change current practices and policies that include the

specific language variations identified for a successful response to emergencies. The UMary Student Team would be included in initial discussions with executive leadership and members of the organizational committee.

Once organizational leadership agrees with the proposed policy and procedure. An implementation team would be developed to align recommendations from The UMary Student Team with restructuring verbiage of emergency alerts. Developing an implementation team would be crucial, as this team would be utilized in the training of staff about practice change. Since plain language emergency alerts are implemented to reduce confusion and provide more precise and prompt information to staff, education related to the activation of the alert should be the chief focus.

Change Theory

The healthcare field is full of multiple frameworks to implement change within an organization. Selecting a framework to guide planned change will enhance the success of any evidence-based practice project. The partnering organization Claremore Indian Hospital has adopted the PDSA method, which is commonly used for quality improvement measures (Plan-do-study-act [PDSA] Directions and Examples, 2020). The PDSA method proposes changes in small cycles within a four-step model (Polit & Beck, 2021). The four steps guide the process of change, dividing tasks into steps, evaluating outcomes, improving results, and repeating again for greater success (PDSA Directions and Examples, 2020). The PDSA method fits the evidence-based project suggested of implementing plain language alerts due to limiting the change to emergency responses to neonatal medical situations. This is one cycle of the change to view implementation, outcomes, and improvements.

The first step within the PDSA cycle is planning. In the planning step, the organizational improvement team creates a precise written statement of what, when, why, where, who, and how the project is to occur. During the planning period, data collection is completed to determine the improvement measure and the reason for improvement. The time period for completing the project is set. The department or location of improvement is designated, and the stakeholders involved are determined. (Polit & Beck, 2021). The results will be structured in a visual format that reflects baseline performance for the three months before the change and monthly performance for three months after the change. The PDSA model illustrates improvement through graph representation starting post-implementation of practice change. The second step of the cycle is Do. This is where the plan is initiated. Administration and the organizational improvement team will observe the actions that transpire. Challenges and successes will be assessed. Documentation of the reactions of all stakeholders is recorded to compare with the plan, and modifications are discussed towards the plan (PDSA Directions and Examples, 2020). In the third step of the cycle, Study, results are reviewed. Did the plan meet the goal? Discussions will occur to analyze previous performance against current data (PDSA Directions and Examples, 2020). Learnings from the project are recorded and documented. The fourth and final step is Act. The plan developed is evaluated. Data from the study step is evaluated and adopted into practice, altered, or discarded depending on the results. Organizations may alter the plan, which creates a second cycle of PDSA. The four steps are initiated all over again. This model of improvement cycle is ongoing in building fundamental knowledge and enabling improvement.

Key Stakeholders

Key stakeholders that would be impacted by this practice change would be the hospital operators (who call codes overhead), the safety officer and security (who respond to all codes), the nurse educator, staff within designated departments, and members of the quality department including the Survey Readiness Officer who ensures compliance with The Joint Commission standards. Buy-in from the stakeholders would be contingent on inclusion in developing the plan and identifying and removing any barriers their team may encounter. The UMary Student Team should meet with representatives from each group and assess the impact of the change on their workflow. It would be important to crosswalk the department-specific policies and procedures to ensure inter-policy alignment with the change. The pure simplicity of the change and the goal to improve patient safety ensures that the idea will be widely accepted throughout the facility.

Barriers and Facilitators/Drivers and Resistors to Change

Facilitating factors and drivers of The UMary Student Team EBP project are the science and data-driven approach to using plain language emergency alerts. The use of plain language is recommended by regulatory and accrediting bodies such as The Joint Commission (Daukiewicz, 2019). This by itself can be a major driver to change; however, as the largest group of healthcare workers, nurses play a key role in ensuring EBP guidelines are initiated and implemented. Common barriers to the implementation of EBP are staff members who are resistant to change, inadequate EBP knowledge, weak beliefs about the value of implementing an EBP project, lack of mentors, social and organizational influences, or financial restrictions (Melnik & Fineout-Overholt, 2019).

Business Impact

The short-term impact of introducing plain language in codes would be an expensive endeavor for a hospital. Hospitals must consider many expenses, such as planning, implementation, educational, and training costs. Within these areas, hospital administrators must consider policy, quality, and safety changes, execute drills, and notify the public of the new plain language system.

The long-term impact of using plain language may reduce confusion and create a more efficient means of communication among staff members, patients, and visitors. Hospitals that use a color system for various codes confuse providers since many work in multiple healthcare settings; moreover, it decreases transparency with patients and visitors (Prickett & Williams-Prickett, 2018).

The Joint Commission, Health and Human Services, FEMA, American Hospital Association, and Homeland Security recommend that all hospitals use plain language for emergency codes. These agencies recommend using plain language since it is easy to understand, reduces delays in response time, and provides clarity among healthcare workers. Plain language has a positive impact as it promotes public safety and helps relay more specific information (Winger, 2022).

Plain language can have a positive business impact in hospitals as it aids the emergency response team to act on situations quickly; therefore, it can assemble help and resources immediately. Plain language creates uniformity in emergency situations, reducing response time by eliminating the need for interpretation; furthermore, it increases the safety of patients and visitors (Winger, 2022).

There are several other ways simple language has a business impact regarding risk management. Plain language improves compliance, reduces enforcement costs, decreases waste of time, reduces harm to patients and visitors, and decreases liability (Winger, 2022).

Organization Planning Process

At Claremore Indian Hospital, the implementation of a plain language emergency alert correlates to the mission of promoting all levels of health to the highest degree for American Indians and Alaskan Natives. The implementation plan assures comprehensive health care to individuals in emergency events. The project facilitates partnerships to ensure effective and efficient operations within the healthcare facility. Relationships built among the stakeholders develop communication and coordination of care. Claremore Indian Hospital may reduce spending to increase funding levels within planned performance results.

During the implementation of this measure, data collection will be completed and validated through comparison to data extracted by the quality department prior to implementation, which should eliminate any potential data bias and help the project maintain fidelity (Polit & Beck, 2021). This will also validate the data by measuring the interrater reliability of the data collected (Polit & Beck, 2021).

The results will be structured in a visual format that reflects baseline performance for the three months before the change and monthly performance for three months after the change. Data collected from the emergency documentation form, drills, and staff interviews will be evaluated by The UMary Student Team and presented similarly; however, it will have only one baseline data set collected before initiation and then new data sets collected every month for a total of three months post-implementation. The plan to see improvement is represented in each graph starting post-implementation of practice change.

Implementation Action Plan

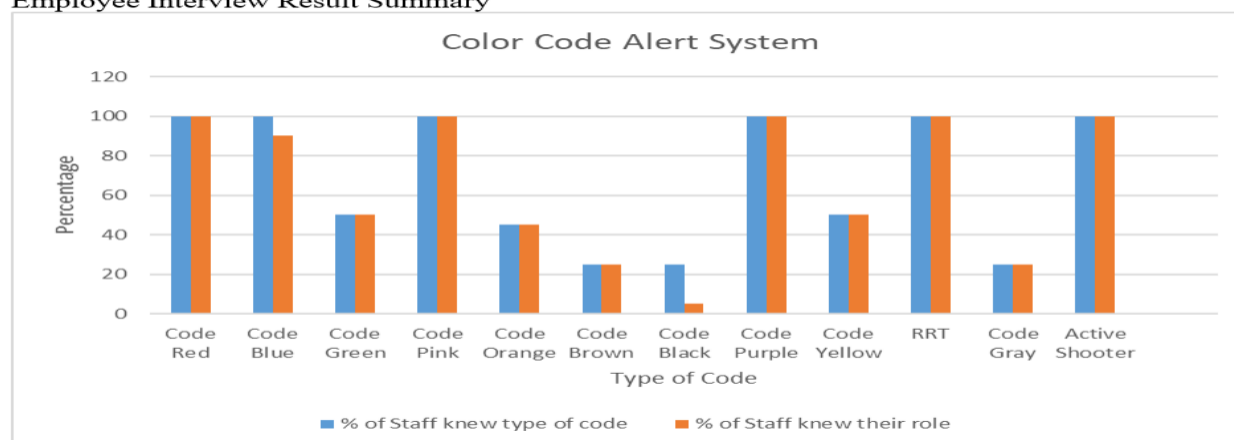
The purpose of this EBP Project is to increase response times and recognition of codes involving neonatal medical emergencies within the partnering organization. The UMary Student Team's plan during implementation will utilize the PDSA cycle methodology. Claremore Indian Hospital is an acute care hospital licensed for 62 beds, with clinical offices within the building. The UMary Student Team would implement the change in the L & D unit prior to exploring plain language for all codes within the facility. The frontline nursing staff of Labor and Delivery will be the starting participants. Since the change would only affect a subgroup of the facility at this time, some efforts are streamlined in the process.

Plan

Before change is formulated, organizations need to discover where they are. Interviewing the labor and delivery staff will provide important data on how they perceive the current color code alerts and their responsibilities during the response. Figure 2 below delivers the baseline data to analyze for change. Encouraging staff to share their opinions, concerns, or ideas about the change creates an open, frank, and respectful environment to accept the change in practices. Organizational leaders are obligated to listen and be prepared for resistance.

Figure 2

Employee Interview Result Summary



Also, during the "planning" step, a team will be created of the stakeholders, such as unit-specific nursing staff, respiratory therapy, pharmacy staff, organizational leadership, and consultation from The UMary Student Team. For process improvement plans to be successful, goal or aim statements are developed. The aim statements for this project are as follows:

1. All staff will be knowledgeable in Neonatal Code Team roles and responsibilities by February 1, 2023.
2. All (100%) Neonatal Code Team staff will respond to neonatal codes within 5 minutes or less by April 28, 2023.

Recognition of the current process is established as color-code emergency alerts (Code Blue, Code Purple) announced overhead paging systems with color code and location. The problem with the process defined and what to accomplish from process improvement. The accomplishment or goal of the plan is to improve response times and staff knowledge of neonatal emergencies who deliver at CIH. Fast response times improve patient outcomes and prevent adverse complications. The need for resuscitation of a neonatal cannot always be anticipated nor predicted. Therefore, with each birth, the radiant warmer and team must be prepared to resuscitate. When planning for a change in resuscitation, verifying all areas of resuscitation are supplied with the appropriate equipment and supplies. Figure 3 demonstrates the proper location to start resuscitation.

Figure 3*Proper Supplies for Resuscitation*

Development of a neonatal code form to improve documentation that will include response times, members present, and interventions performed. This form will assist in the auditing of performance more accurately. Accurate documentation is necessary for ethical and legal reasons, along with improvement measures. Create the plain language alert nomenclature, previously mentioned “Medical Alert + Neonatal + Location (Room 300)”.

Do

The "Do" step is when the action plan implementation occurs. This step refers to the development of a sound structured policy and procedure; in Appendix A is the Neonatal Medical Emergency policy. This is a lengthy step; each staff member will read and acknowledge the policy, have neonatal resuscitation program certification, and verbally and physically demonstrate their role and responsibility during the neonatal medical emergency. The policy, along with the record form for electronic health record documentation, has approval and was sent out to all organizational staff for reading and acknowledgment. The Organizational Nurse Educator and Obstetrical Department Leadership performed drills to authenticate staff knowledge and response to the alert system. The facility as a whole will have notification of the code change by reading and acknowledging the policy through the organization's policy stat

system, which houses all facility policies and procedures. A learning curve could present itself; individual staff may require re-education. Leadership and management will give constant re-enforcement of the project's intent along with evidence-based practices.

Study

During the "Study" step, the organization will infer current data of responses since implementation, interview staff for roles and responsibilities, and evaluate the results of information obtained. The organization will also document any unexpected events or problems with the plan. The project will be evaluated for success or failure. This step is crucial to the overall process. The response team responded during drills within five minutes and all appropriate staff attended drills. Each response team member performed appropriate skills without prompting.

Act

During the "Act" step, the organization reflects on the outcomes, with either success to standardize improvement or failure, with the need to develop a new plan and restart the improvement cycle. This step establishes a new mindset and understanding of the principles required to improve outcomes. Staff will be adapting to change, and leadership is present to coach and mentor staff in a positive way. The facility's process improvement process continues with monitoring the progress through the PDSA in Appendix B. The UMary Student Team and organizational management will track response times through medical record documentation, staff interviews, and drills on neonatal medical emergencies using plain language.

Project Measurement Plan

The measurement plan for The UMary Student Team's EBP project will consist of data reporting and accomplishing goals set within the EBP project. A team must develop a standardized plain language term for various emergency alerts throughout Claremore Indian Hospital. The L & D nurse manager, Mandy Anderson, will report the data found in our EBP to the Executive Leadership members, the Department Manager of Pharmacy, the Respiratory Therapist, the Nursing Education Department, the Quality Department, the Safety Officer, and the Security Team. Mandy will report the responses in the interviews and the questionnaires' results. She will also supply the data from the current response times with the color-coded system and the times using the plain-language emergency alert system.

Alonna Adair will be the lead person to help with the education and implementation of the pilot program using plain language at Claremore Indian Hospital in the maternal and neonatal unit. The data collected will be completed by a nurse leader, and the information will be given to The UMary Student Team. The team will analyze this data to see if using plain language during emergency alerts reduces response times, causes less confusion among employees, and decreases the number of unnecessary providers reacting to the code. The leadership team and Alonna will assist in implementing plain language and ensure all personnel are committed to using the system accurately and that proper education, training, marketing materials, policies, and procedure are all in place for success (Wallace & Finley, 2015).

Human Subject Protection Statement

To ensure that human subjects are adequately protected from unreasonable risks and properly informed of potential harms and benefits from their participation in research, Claremore

Indian Hospital and participants must comply with the Department of Justice regulations and be approved by the International Review Board (IRB). The IRB is a team of committees throughout the United States that analyzes various research projects and evaluates ethical standards in studies, including all participants. The IRB is tasked to ensure that all organizations hosting a research study are ethically compliant and that all parties involved in the project are protected from risks; furthermore, the IRB certifies that surveys are transparent, honorable, and just (Center for Drug Evaluation and Research, 2019). All participants will also be protected according to the policies and procedures set by Claremore Indian Hospital.

The UMary Student Team completed the University of Mary IRB application required on December 6, 2022. On December 19, 2022, the application was approved to move forward after making the requested revisions by Dr. Billie Madler. After all members of The UMary Student Team signatures were completed, the final version of the application was submitted. After submitting the application to the University of Mary IRB, The UMary Student Team received a response regarding the EBP on January 17, 2023. The response stated that the University of Mary IRB has reviewed our project and determined that the study does not meet the definition of human subjects research under 45 CFR 46. The IRB acknowledges that it does not have oversight authority over projects which are not human subjects research.

Implementation and Measurement

Implementation

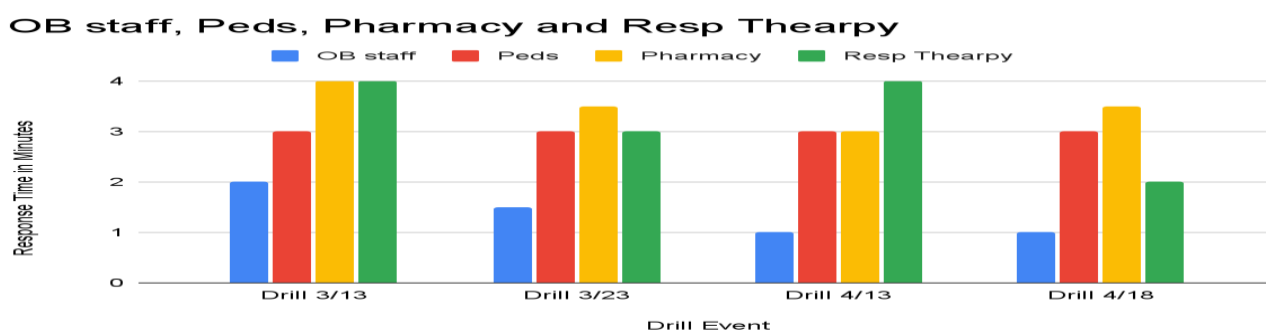
Medical chart reviews of past neonatal codes were conducted in an attempt to get a baseline for neonatal code staff response time. No information was found due to not using standardized documentation from staff. A policy and procedure were developed and approved by

departmental and executive leadership on February 15, 2023. A code documentation form was created and designated as the neonatal code form hospital-wide attached to the policy. The form will allow for accurate documentation and auditing of drills and actual events. The policy and procedure were sent out to all staff in the hospital for reading and acknowledgement; all staff have read and acknowledged the policy and procedure as of March 31, 2023. All neonatal radiant warmers are supplied with the appropriate items needed to perform Neonatal Resuscitation (NRP), and all team members of the neonatal code have performed the test and skill competency to become NRP certificated as of March 20, 2023. Obstetrical inpatient staff, pharmacy staff, and respiratory therapy staff have accomplished the education within the process and procedure of the appropriate name for neonatal emergency code medical alert- neonatal, confirmed members of team knowledge of response, assigned roles and duties during a neonatal code, and required documentation.

Project Outcome Measurements

At this time, four drills have been performed on March 13th, 23rd, April 13th, and 18th, 2023, where response time is less than five minutes for all team members. Figure four below illustrates the response times by each department in minutes. A fifth drill is scheduled for May 18th, 2023.

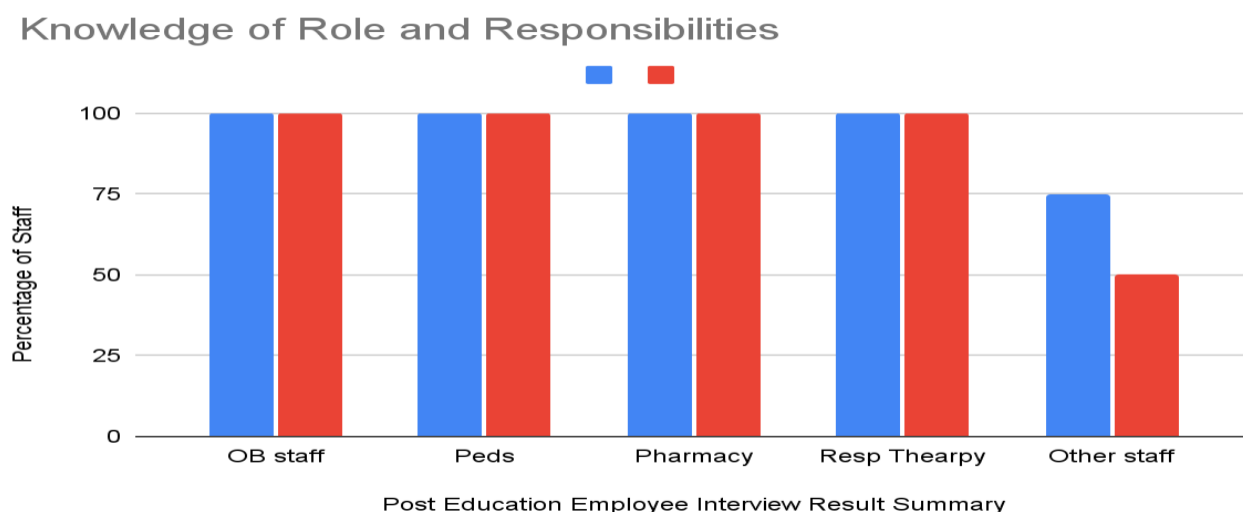
Figure 4 Response Time



Appropriate documentation of the code form was utilized along with team members verbalizing and demonstrating appropriate roles and responsibilities with competency. Drills will continue to be performed throughout the year and for each quarter to maintain skills and competency since neonatal codes do not occur every month. All hospital staff were interviewed about the role and responsibility during medical alert-neonatal. Displayed below in Figure 5 illustrates the results of post-education from staff.

Figure 5

Post Education Employee Interview Result Summary



It would seem that staff respond well to education, and continuous reminders and drills are necessary to maintain competency. Those members of the response team are competent in their role and responsibility. Other hospital staff will need education and continued reminders of role and responsibility. This could be considered a weakness since repeating measures seems redundant and can cause alarm fatigue. The strength is highlighted as plain language alerts continue to benefit patients, staff, and visitors by reducing confusion and anxiety along with transparent communication.

Hand-off Plan

The members of The UMary Student Team and Claremore Indian Hospital met to discuss the results of the EBP and create a hand-off and sustainability plan. The purpose of the meeting was to analyze and review the data collected during the implementation period of the project, to determine if the project will be implemented in other units within the hospital, and if any other changes should be made according to the findings of the data.

After reviewing the data, it shows The UMary Student Team was able to achieve the goal of reducing response times to an emergency alert using plain language in under five minutes; therefore, Claremore Indian Hospital will continue to do quarterly drills to maintain competency. Sustaining competency requires the hospital to update and maintain its policies and procedures guidelines; additionally, all key players must uphold any certificates required. To meet compliance, any new incoming employees will need to participate in drills for emergency alerts using plain language during their orientation period.

As a result of the success of the project, Claremore Indian Hospital decided to implement using plain language during emergency alerts in other units and added The UMary Student Team's EBP to their hospital-wide quality assurance organizational presentation, held on April 17, 2023. The expansion of the EBP into other units will be spearheaded by the Safety Officers of the hospital, and Mandy Anderson will be guiding them through the process over the next year. This integration process will include helping nurse leaders within various departments and collaborating together on educating the nurses and the multidisciplinary team on using the plain language emergency alert system. Additionally Mandy and the nurse educator will work together with leadership on the implementation action plan for each unit including assigning roles and responsibilities, scheduling and performing drills, and ensuring continuing education is in place.

Conclusion

In conclusion, The UMary Student Team believes this emergency alert system will benefit the goals Claremore Indian Hospital has outlined in reducing response time during a code. The UMary Student Team believes that identifying gaps, providing recommendations, having an implementation plan, educating, and executing drills that make use of plain language during emergency alerts will reduce response times and decrease confusion among staff members. This project will aid in having the right team respond to an emergency appropriately in the L & D Unit.

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Appendix A

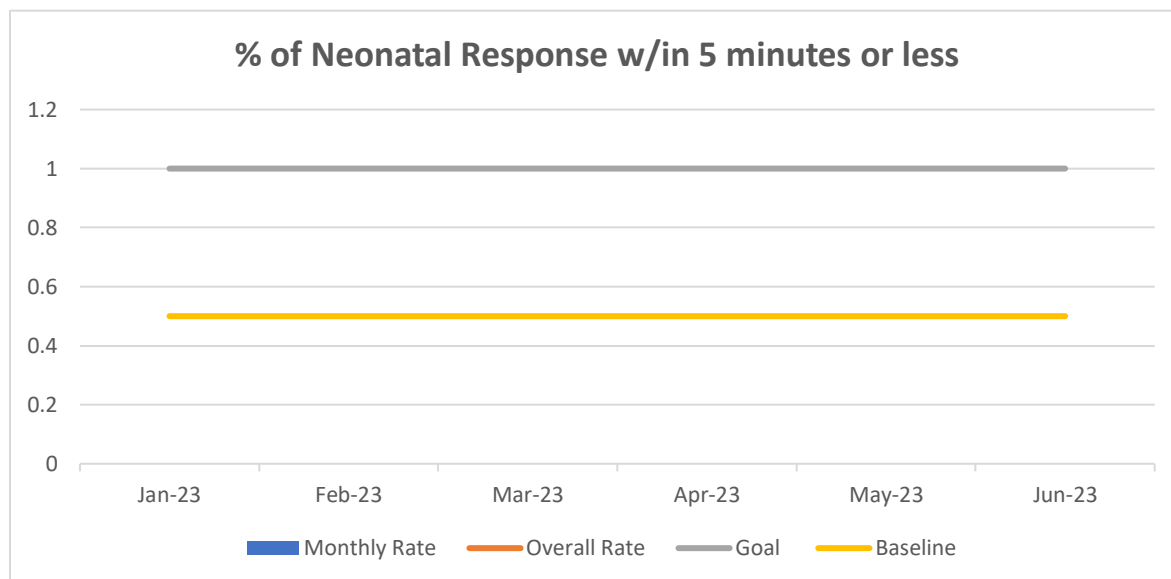
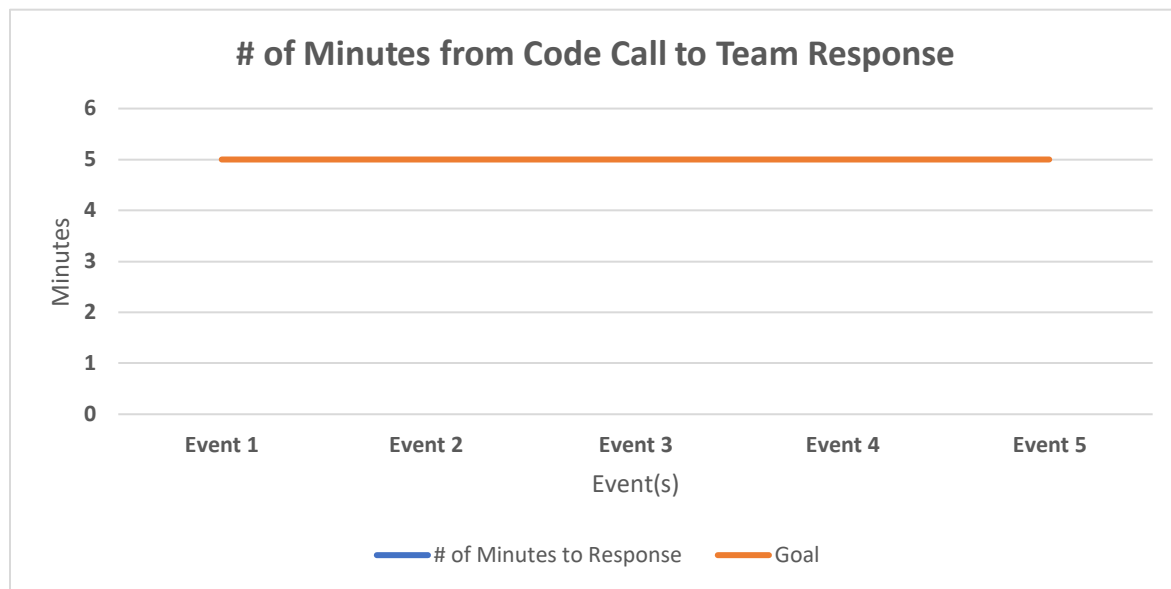
Plain Language Neonatal Emergency Codes

01/01/2023

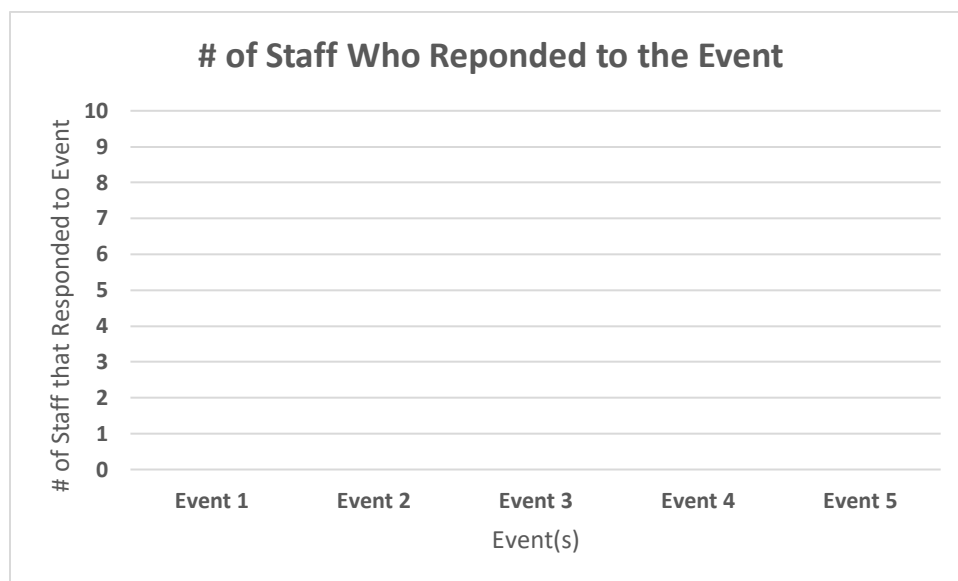
Department/Team:	OB inpatient unit, Pediatrics, Respiratory Therapy, and Pharmacy
Owner:	OB/WC Nurse Manager
Project Name:	Plain Language for Neonatal Emergency Codes
Date PI was initiated:	01/01/2023
Frequency of Reporting:	Monthly
Sampling size	All infants delivered at Claremore Indian Hospital requiring neonatal resuscitation.
Reason this PI measure was selected:	To improve response times and staff knowledge of neonatal emergencies who deliver at CIH. Fast response times improve patient outcomes and prevent adverse complications.
Measure #1: AIM Statement	All (100%) Neonatal Code Team staff will respond to neonatal codes within 5 minutes or less by April 28, 2023.
How data is tracked/monitored/gathered	Chart Reviews and code documentation form
Numerator definition:	The number of cases the Neonatal Code Team responded to within 5 minutes or less.
Denominator definition:	All neonatal emergency events requiring resuscitation.
Measure #2: AIM Statement	All staff will be knowledgeable in Neonatal Code Team roles and responsibilities by February 1, 2023.
How data is tracked/monitored/gathered	Survey and manual tracking of data
Numerator definition:	The number of Neonatal Code Team staff who successfully can describe the roles of responsibilities during a neonatal emergency.
Denominator definition:	All members of the Neonatal Code Team (who take the survey)

Initial Plan:

1. Conduct chart review of past Neonatal Codes in an attempt to get a baseline for Neonatal Code Staff response time.
2. Create a Neonatal Code sheet to improve Neonatal Code documentation that will include Neonatal Code Response Times to be audited more accurately.
3. Starting 01/01/2023, Educate OB staff and Neonatal Code team staff with the appropriate name for neonatal emergency code, members of the team required to respond, assigned roles and duties during a neonatal code, and required documentation.
4. Perform monthly emergency drills for competency. (suggest tracking times and debriefing after mocks to identify areas of improvement)
5. Will track and report on the number of neonatal emergency events and response times monthly. How many neonatal codes/events do we have? I assume not many, so are we going to include mock times in data collection?

Statistics:

AIM Measure 1							
% of Neonatal Response Team responded w/in 5 minutes or less							
<u>Baseline</u>	<u>Jan 2023</u>	<u>Feb 2023</u>	<u>March 2023</u>	<u>April 2023</u>	<u>May 2023</u>	<u>June 2023</u>	<u>OVERALL %</u>
N = 0							
D = 0							
0 %	%	%	%	%	%	%	%



AIM Measure 2		
% of Staff who can successfully describe the Roles and Responsibilities during a Neonatal Code (survey)		
<u>Baseline</u>	<u>March 2023</u>	<u>June 202</u>
N = 0		
D = 0		

Monthly Analysis:

As your project progresses and you implement your interventions, you need to analyze your results.

Change/Plan of Action

What are you going to do next month?

Appendix B

Neonatal Medical Emergency Policy

Status Draft PolicyStat ID 12582829



Owner

Mandy Anderson:

Nurse Manager -
OB

Policy Area Nursing - OB

Neonatal Medical Emergency

PURPOSE

The purpose of the policy is to establish guidelines for staff in order to provide prompt and appropriate emergency medical interventions to newborns in the Obstetric Department at Claremore Indian Hospital.

POLICY

The Neonatal Medical Emergency policy is designed to outline the training, roles and responsibilities of the response team, the procedure for activation, and the restocking process for emergency carts throughout the obstetric inpatient unit.

Neonatal Medical Emergency may be initiated by any provider or nursing staff who recognizes the need for appropriate medical interventions in a neonatal emergency.

Neonatal Medical Emergency activation can occur by the following triggers, including, but not limited to, respiratory distress, cardiac distress, or any other life-threatening events not covered by Code Blue in cases where additional personnel support is needed.

Neonatal Medical Emergency ends when progression to Code Blue occurs or when the code director determines that the patient has been stabilized from their medical emergency.

PROCEDURES

A. Activating Neonatal Medical Emergency:

1. For neonatal medical emergency situations, dial 26500, inform the operator "Neonatal Medical Emergency" and provide the location.

B. Neonatal Medical Emergency Response Team

1. Response Team will immediately respond to all neonatal emergency events and will consist of:
 - a. Pediatrician if not available, Emergency Department physician after hours
 - i. Emergency Department physicians will direct the situation until the Pediatrician arrives to lead.
 - b. Primary OB Nurse
 - c. Respiratory Therapy
 - d. Pharmacy
 - e. Nurse Manager/ House Supervisor
 - f. Designated response team nurse from OB
 - g. Security (if crowd control is needed)
2. Additional Support Personnel (the following departments should remain available upon activation of page) Secondary Responders: the following departments should be available to assist (remain on alert and readily available upon activation of overhead page):
 - a. Anesthesia
 - b. Radiology
3. All Response Team Members will respond to the call immediately. All Response Team Members outside the facility will call into the code site in acknowledgment of the page. Team members must also notify the code site of any expected delays.

C. Operation of a Neonatal Medical Emergency

1. Code Director:
 - a. The Pediatrician will be responsible for the direction of the response team. The Emergency Department Physician will assume the director duty, until the Pediatrician arrives, if not present.
 - b. The Emergency Department Physician will be for guidance and intubation if needed.
2. The Response Team Director must approve all orders to avoid confusion and multiple/duplicate medications or procedures.
3. All Neonatal Medical Emergencies will follow American Academy Pediatrics (AAP), and Neonatal Resuscitation Program (NRP) standards.
4. The Response Team Director, with assistance from the supervisory nurse or OB nurse, will assign personnel to the following functions:
 - a. Airway management
 - b. Vital Signs monitoring/documentation

- c. IV placement and management
- d. EKG monitor
- e. Drug administration
- f. Recording
- g. Supplies
- h. Patient's family liaison – contact, update, information exchange.

D. Nursing Responsibilities

1. A nurse from OB will be designated the Code Nurse at the beginning of each shift.
2. A Supervisory Nurse may alter routine nursing functions.

a. Primary Nurse (OB)

- i. Ensure equipment is available and ready for use.
 - a. IV access, IV fluids, and supplies
 - b. Airway Management
 - c. Ensure any resuscitation medications are available
- ii. Place monitoring equipment (if not in place on arrival)
- iii. Assess IV input and urine output
- iv. Push medications as ordered and needed
- v. Monitor IVs and venous access
- vi. Assess cardiac and respiratory status and repositioning of the patient if needed.

b. Respiratory Therapy

- i. Complete or assist in intubation:
 - a. Laryngoscope
 - b. Set up oxygen
- ii. Assist with oxygenation of the patient via bag valve mask

c. Secondary Nurse (Code OB nurse)

- i. Document on flow sheet
- ii. Observe monitor/vital signs
- iii. Assisting Code Director with event times and recommendations
- iv. Placement of physician orders (i.e., labs, radiology exams, etc.) in the Electronic Health Record (E.H.R.)
- v. Obtain needed equipment/supplies not readily available
- vi. Call for additional help as needed
- vii. Assist with contacting a person to phone outside facilities (i.e., Transfer Coordinator, medical records, etc.)

d. Nurse #3 or Nursing Supervisor

- i. Liaison to patient's family
- ii. Crowd control
- iii. Assign ancillary staff as needed
- iv. Ensure safety/care of other patients on unit
- v. Will assume nursing roles a, b, or c needed/indicated
- vi. Will gather all medical records/documents and place them in the chart in OB for the OB nursing manager to review and report to Critical Care Committee

E. Anesthesia Responsibilities (If available or Respiratory Therapist not on site)

- 1. Provide and monitor the respiratory function of the patient during the code and draw blood gases as required.

F. Pharmacy Responsibilities

- 1. Calculate dosage, mix, and provide medications during the code.

G. Lab and Radiology Responsibilities

- 1. Be on standby outside of the room until needed for relevant tests/procedures as ordered by the Code Director.

H. Security

- 1. Will arrive on the unit upon announcement of the code and provide assistance with door management and directing respondents to the proper location.
- 2. Will also supervise the security of the unit and its occupants during the emergency response.

I. Telephone Operator/GMS after-hour Switchboard Coverage

- 1. Responds immediately to Neonatal Medical Emergency Calls
- 2. Verifies location of response team
- 3. Overhead pages response code with location (3 times)
- 4. Announce Neonatal Medical Emergency over the two-way radio (3 times)

EVALUATIONS

- A. Each Neonatal Medical Emergency response will be critiqued immediately after each incidence, using an obstetric emergency reporting tool to allow for the recording of events shortly after the occurrence, with a team debriefing, followed by later review and recommendations. [Obstetrical Internal Review Policy](#)
- B. All neonatal emergency events will be reviewed by the OB Nurse Manager and Pediatric Department Chair or their designee. Events requiring obstetric review will be assessed by the Obstetric Department Chair or their designee.
- C. All neonatal emergency events will have a final review by the Director of Quality or their designee.
- D. The Critical Care Committee will evaluate the effectiveness of all neonatal emergency events,

including drills, at scheduled meetings.

NEONATAL MEDICAL EMERGENCY DRILL

- A. At least one unannounced neonatal medical emergency drill will be performed annually, per Joint Commission standards.
- B. The Pediatric Department Head and/or OB Nurse Manager are responsible to ensure code drills are performed.
- C. The Neonatal Medical Emergency Drill will be debriefed, reviewed, and assessed for areas of improvement.

EMERGENCY SUPPLIES

- A. Location of Emergency Kit/Cart
 - 1. Neonatal Medication Kit: Omnicell (should be present during every delivery)
 - 2. Neonatal Medical Emergency Supplies are located in each radiant warmer with checklist
 - 3. Cardiac and Respiratory monitoring system located in Newborn Nursery
 - 4. Neopuff respiratory assistance system (CPAP) (should be present at each delivery)
- B. PPE for Emergent Use
 - 1. Located in the hallway next to the blanket warmer.
- C. Crash Cart Coverage
 - 1. OB Crash Cart – located in OB Inpatient Department
- D. Contents – See attachment "Radiant Warmer Checklist"
- E. Maintenance of Emergency Carts/Supplies
 - 1. OB Nursing Manager, in collaboration with Nursing Staff, will be responsible for the maintenance of emergency supplies in the radiant warmer.
 - 2. The radiant warmer checklist will be utilized before delivery and when restocking, along with monthly for expired/outdated supplies.
 - 3. This will be documented by a checklist in the radiant warmer and signed off.
 - 4. Following a neonatal medical emergency, OB nursing staff will replace any used supplies.

TRAINING

- A. Orientation – All new employees will be oriented to their specific roles and responsibilities.
- B. Annual Training – will consist of an annual policy review to ensure that all staff members remain familiar with roles and responsibilities and any change in the Neonatal Medical Emergency policy.

PANDEMIC CONSIDERATIONS

- A. Personal Protective Equipment will be required to be donned before entering the area where resuscitation efforts are being performed.
- B. Neonatal Medical Emergency events will be conducted in a negative pressure room when possible and in a room with a viral air scrubber when a negative pressure room is not available.
- C. Vaginal Delivery is considered an aerosolizing event. Any Neonatal Medical Emergency response around the time of delivery should include full contact and respiratory PPE prior to entering the patient's room
- D. Staff will clearly communicate the presence of infectious disease (i.e., COVID-19) to any new providers before their arrival on the scene or receipt of the patient when transferring to a second setting.
- E. Personal Protective Equipment (PPE) cart will be brought outside the room.

References

American Academy of Pediatrics (AAP), American Heart Association. "Neonatal Resuscitation (NRP), Eighth Edition." *American Academy of Pediatrics; Eighth edition* July 1, 2021.

Root, L., Van Zanten, H. A., Den Boer, M. C., Foglia, E. E., Witlox, R. S., & Te Pas, A. B. (2019). Improving guideline compliance and documentation through auditing neonatal resuscitation. *Frontiers in pediatrics*, 7, 294.

Attachments

[Obstetric Emergency Summary and Debriefing](#)

[PDF.pdf Radiant Warmer Equipment Check](#)

[V2.jm.docx](#)

Approval Signatures

Step Description

Approver

Date

History

Cloned by Anderson, Mandy: Nurse Manager - OB on 10/26/2022, 3:29 PM EDT

Appendix C

IRB Determination - Not Human Subjects Research

2225122222

IRB Protocol Number

Implementing Plain Language Emergency Alerts within the neonatal population: An EBP Project
Project Title

01/17/2023

Dear Mandy Anderson,

The University of Mary Institutional Review Board (IRB) has reviewed the above-referenced project. The IRB has determined that this study does not meet the definition of human subjects research under 45 CFR 46. The IRB acknowledges that it does not have oversight authority over projects which are not human subjects research.

If no changes in protocol are made that would shift this project into human subjects research; this project is able to proceed without a further review from the IRB. However, if changes in protocol are made which may affect the human subjects research status of this project, then resubmission to the IRB is required prior to the implementation of those changes.

While IRB oversight has been determined not to apply to this project, be aware that you are still subject to any and all university policies, research site policies, or legal regulations which may apply to this project. Project investigators, along with project advisors, are responsible for making sure that studies are conducted according to the protocol and for all actions of the staff and sub-investigators with regard to the protocol. If you have any questions or concerns about this project's assessment as non-human subjects research, please contact the IRB Office through the contact information below.

Sincerely,
Dr. Jenna Herman
Electronic Signature

Chair, Institutional Review Board
University of Mary
7500 University Dr.
Bismarck, ND 58504
irb@umary.edu

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