REDUCING RISK IN OBSTETRICS

Case Study in eLearning

Reducing the Knowledge Variation Among Clinicians that Causes Risk

amplifire

When Learning Matters

EXECUTIVE SUMMARY

PROBLEM

85% of OB/GYNs have been sued. Errors in clinical judgment were cited in 77% of more than 800 clinically coded obstetric malpractice cases.

THE STUDY

669 patient-facing OB nurses and doctors at a large east coast hospital were assigned four Amplifire courses covering critical aspects of obstetrics.

RISK REVEALED

- 56% of clinicians initially had confidently held misinformation regarding situations that require cord gas.
- 52% of clinicians were initially misinformed about the contribution of proteinuria in the diagnosis of preeclampsia and 35% were uncertain.
- 51% of clinicians initially had confidently held misinformation about the proper medications for a hemorrhaging patient.
- 47% of clinicians initially displayed confidently held misinformation about communication using the SBAR protocol.

DETECTED AND CORRECTED

- 38,567 instances of confidently held misinformation
- 24,926 instances of uncertainty

PROBLEM

OB has the highest legal risk

Childbirth is a natural process that usually ends with a healthy mother and baby. But severe complications can suddenly occur that require a timely, accurate response.

When things go wrong in obstetrics, the reasons are often unclear, but a lack of knowledge is often the root cause. Errors in clinical judgment were cited in 77% of more than 800 clinically coded obstetric malpractice cases according to CRICO Strategies[1], which offers clinical risk intelligence to 400+ hospitals and more than 180,000 physicians.

In a recent Medscape survey, surgeons and obstetricians suffer the highest risk of being sued in all of healthcare[2]. The survey discovered that 85% of OB-GYN and women's health practitioners have been entangled in malpractice lawsuits. And 62% of OB/GYN doctors have been sued between 2 and 5 times.

This study was designed to reveal the hidden variation in clinician knowledge that can lead to errors during childbirth. It used the Amplifire learning platform, which is based in cognitive science and proven in over three billion learner interactions.

85% of OB/GYNs have been sued

77% of cases originate in clinical errors

" Because there is rarely that standout 'single event,' it is absolutely paramount that OB practices understand how these missteps unfold, and then focus on education and training initiatives designed specifically to help clinicians avert those mistakes. "

—**Robert Hanscom**, former Senior Vice President, CRICO

1. CRICO strategies: Medical Malpractice Report
2. Medscape Ob/Gyn Malpractice Report 2017

STUDY DESIGN

310 Nurses and 192 Providers

Patient-facing OB nurses and OB doctors at a large east coast hospital received four Amplifire courses covering critical aspects of obstetrics:

- Reduce incidents and near-misses associated with the health and safety of pregnant women and their unborn children
- Reduce the financial burden of malpractice claims associated with obstetrics
- Address the most frequently seen rule-based, skill-based, and knowledge-based active and latent errors in obstetrics
- Target and reduce the most common system errors related to electronic fetal monitoring (EFM) including fear of conflict, knowledge deficits, and communication failures

The courseware titles are:

- ***Electronic Fetal Monitoring*** teaches EFM interpretation and management skills, while also solidifying learner understanding of key, fundamental principles that lead to proper interpretation and management.
- ***Hypertension in Pregnancy*** covers the various hypertensive disorders in pregnancy, including increasing understanding of classifications, proper diagnosis, management, and treatment options.
- ***Postpartum Hemorrhage*** teaches learners how to identify a patient's risk of postpartum hemorrhage, how to manage it, and how to communicate with the patient and care team.
- ***Shoulder Dystocia*** teaches the various maneuvers used to resolve shoulder dystocia and how to communicate during instances of shoulder dystocia.

AMPLIFIRE

How It Works

Amplifire first measures and classifies a clinician's knowledge in three categories:

Confidently Held Misinformation: When a learner is sure they are right, but they are actually wrong.

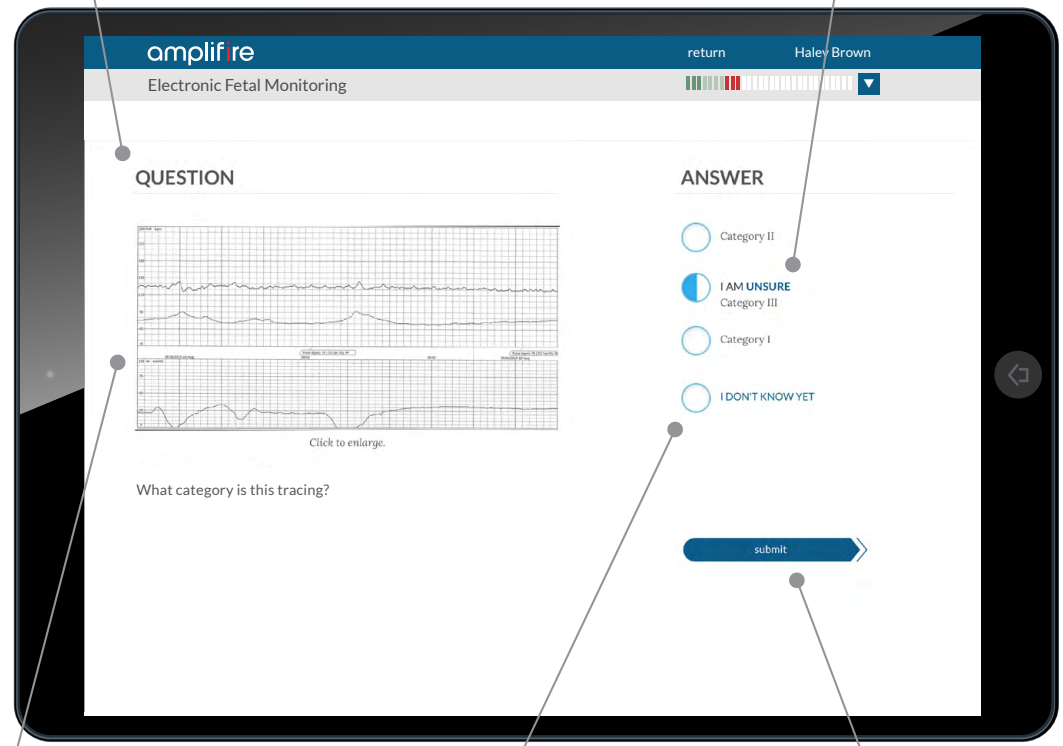
Uncertainty: When a learner is unsure.

Proficiency: When a learner is both confident and correct.

Once knowledge is categorized this way, the platform uses triggers from cognitive science to activate learning. It automatically customizes the course in real time for each learner, leading them to rapid proficiency across all topics.

Asking questions is a trigger that causes retrieval, curiosity, and attention—all drivers of lasting memory.

Asking about confidence causes metacognition (thinking about one's thinking), which drives long-term memory.



Images and interactives simulate real-life. Here, the learner is shown a line tracing from a fetal heart monitor.

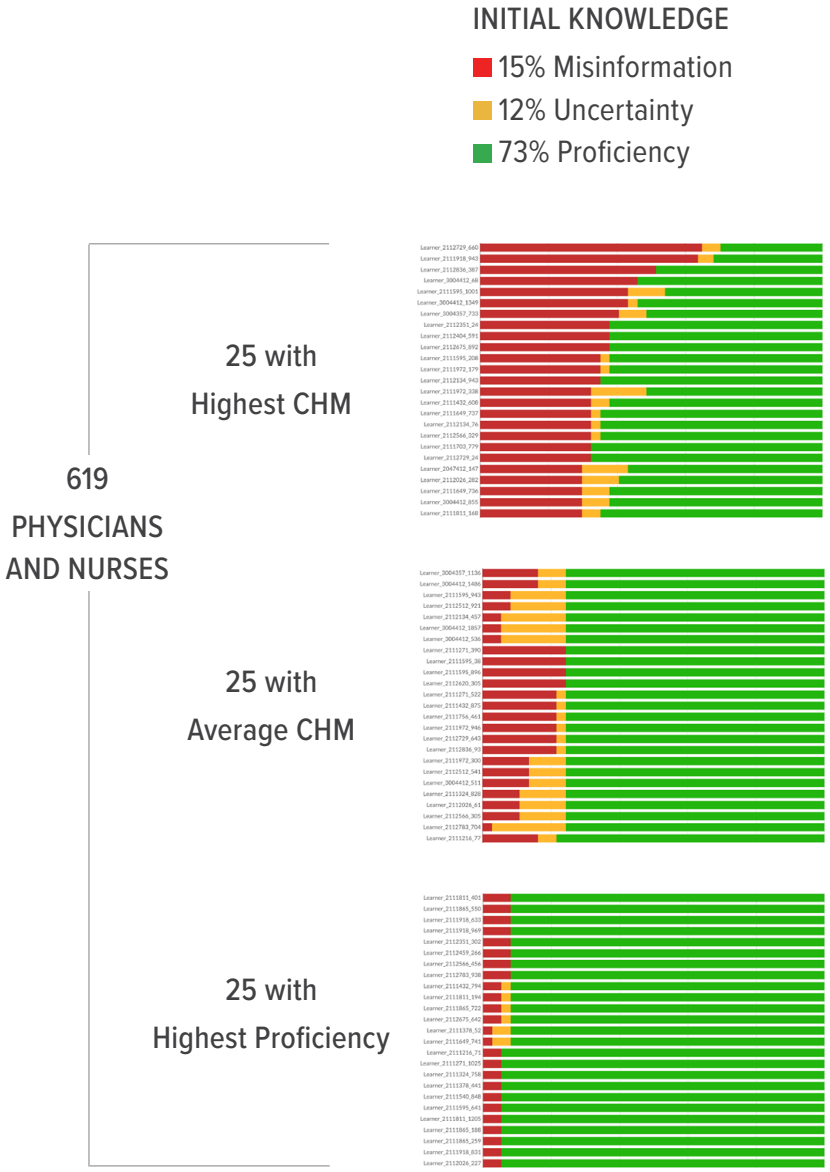
Learners can be honest, helping maintain the emotional state of "alert," which is optimal for learning.

Feedback will be delayed by a few minutes. This *spacing* boosts the durability of the learning.

Electronic Fetal Monitoring

INITIAL KNOWLEDGE VARIATION (prior to learning)

- 619 clinicians generated 22,903 data points
- 3,435 instances of Confidently Held Misinformation (CHM) were corrected. Misplaced confidence is perilous because confidence drives behavior and can result in adverse events.
- 2,748 instances of uncertainty were corrected
- By the end of the course, 100% of the clinicians were proficient (confident and correct) on all the material.



Risk Related to Electronic Fetal Monitoring: Cord Gas

CLINICAL TAKE-AWAY

Early recognition and early intervention are critical to prevent adverse neonatal outcomes. Rapid identification of a metabolic condition hinges on the clinician's ability to recognize at-risk neonates, obtain stat cord blood gases, interpret them, and start treatment.

■ 56% of clinicians initially had confidently held misinformation regarding situations that require cord gas.

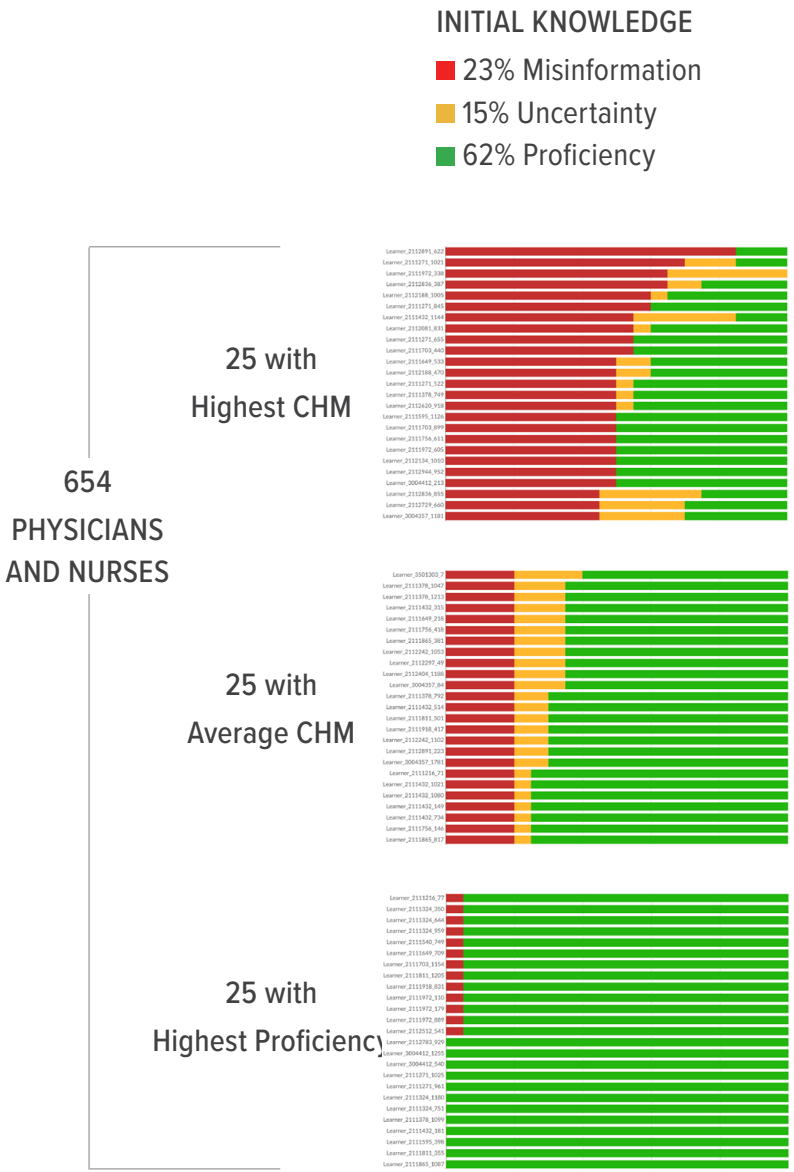
Clinical Implication: Cord blood gases provide excellent objective information to detect acid-base balance in neonates. High-risk conditions in which cord blood gas is warranted include category III fetal heart rate tracings, low Apgar scores, and maternal thyroid disorders.

Saneh H, Mendez MD, Srinivasan VN. Cord Blood Gas. In: StatPearls. Treasure Island, FL: StatPearls Publishing; 2021 Jan. https://www.ncbi.nlm.nih.gov/books/NBK545290/. Accessed May 13, 2021.

Postpartum Hemorrhage Risk and Management

INITIAL KNOWLEDGE VARIATION (prior to learning)

- 654 clinicians generated 13,080 data points
- 3,008 instances of confidently held misinformation were corrected. Misplaced confidence is perilous because confidence drives behavior and can result in adverse events.
- 1,962 instances of uncertainty were corrected
- By the end of the course, 100% of the clinicians were proficient (confident and correct) on all the material.



Postpartum Hemorrhage Risk and Management

CLINICAL TAKE-AWAY

Postpartum Hemorrhage is the leading cause of maternal death worldwide. Knowing which drugs should be given for postpartum hemorrhage is critical for proper treatment, and ultimately, for lives saved.

51% of clinicians initially had confidently held misinformation about the proper medications for a hemorrhaging patient.

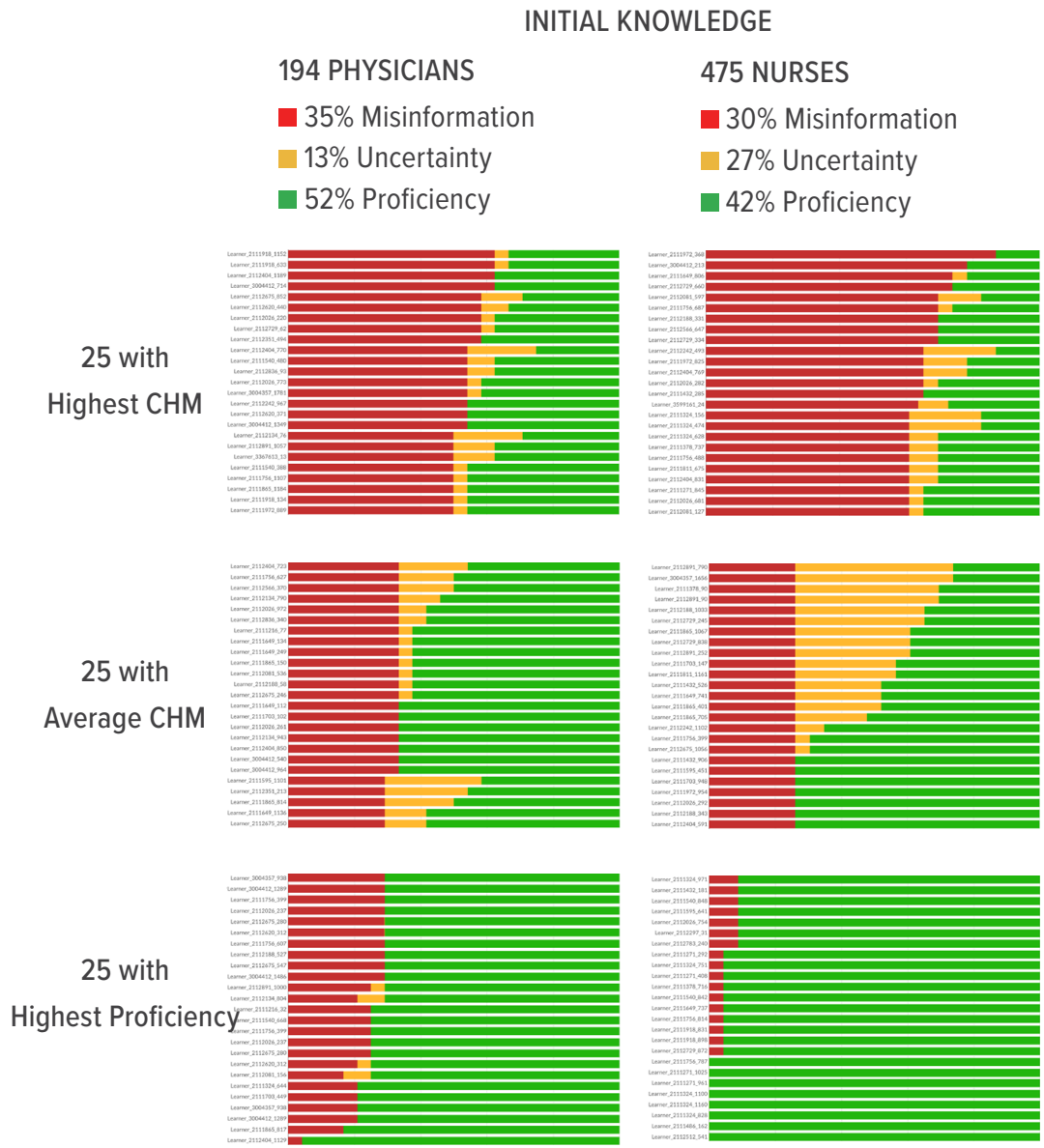
Clinical Implication: Pharmaceutical treatment for a patient with postpartum hemorrhage begins with first-line uterotonics such as oxytocin.

Parry Smith WR, Papadopoulou A, Thomas E, et al. Uterotonic agents for first-line treatment of postpartum hemorrhage: a network meta-analysis. Cochrane Database Syst Rev. 2020;11:CD012754. doi:10.1002/14651858.CD012754.pub2. Accessed May 14, 2021.

Hypertension in Pregnancy

INITIAL KNOWLEDGE (prior to learning)

- 194 physicians and 475 nurses generated 15,387 data points
- 4,838 instances of confidently held misinformation were corrected. Misplaced confidence is perilous because confidence drives behavior and can result in adverse events.
- 3,529 instances of uncertainty were corrected
- By the end of the course, 100% of the physicians were proficient (confident and correct) on all the material.



Hypertension in Pregnancy

CLINICAL TAKE-AWAY

While an elevation in urine protein is normal during pregnancy, there is a threshold at which the clinician should suspect a potentially severe pregnancy complication: Preeclampsia.

■ 52% of nurses and 84% of physicians were initially misinformed about the contribution of proteinuria in the diagnosis of preeclampsia.

Clinical Implication: Proteinuria is a strong indicator of preeclampsia, but it can also indicate other conditions unrelated to preeclampsia such as kidney disease. Proteinuria is the presence of 300 mg or more of protein in a 24-hour urine specimen.

Thadhani RI, Maynard SE. Evaluation of proteinuria in pregnancy and management of nephrotic syndrome. UpToDate https://www.uptodate.com/contents/evaluation-of-proteinuria-in-pregnancy-and-management-of-nephrotic-syndrome?topicRef=6814&source=see_link. Updated April 7, 2021. Accessed May 13, 2021.

Hypertension in Pregnancy

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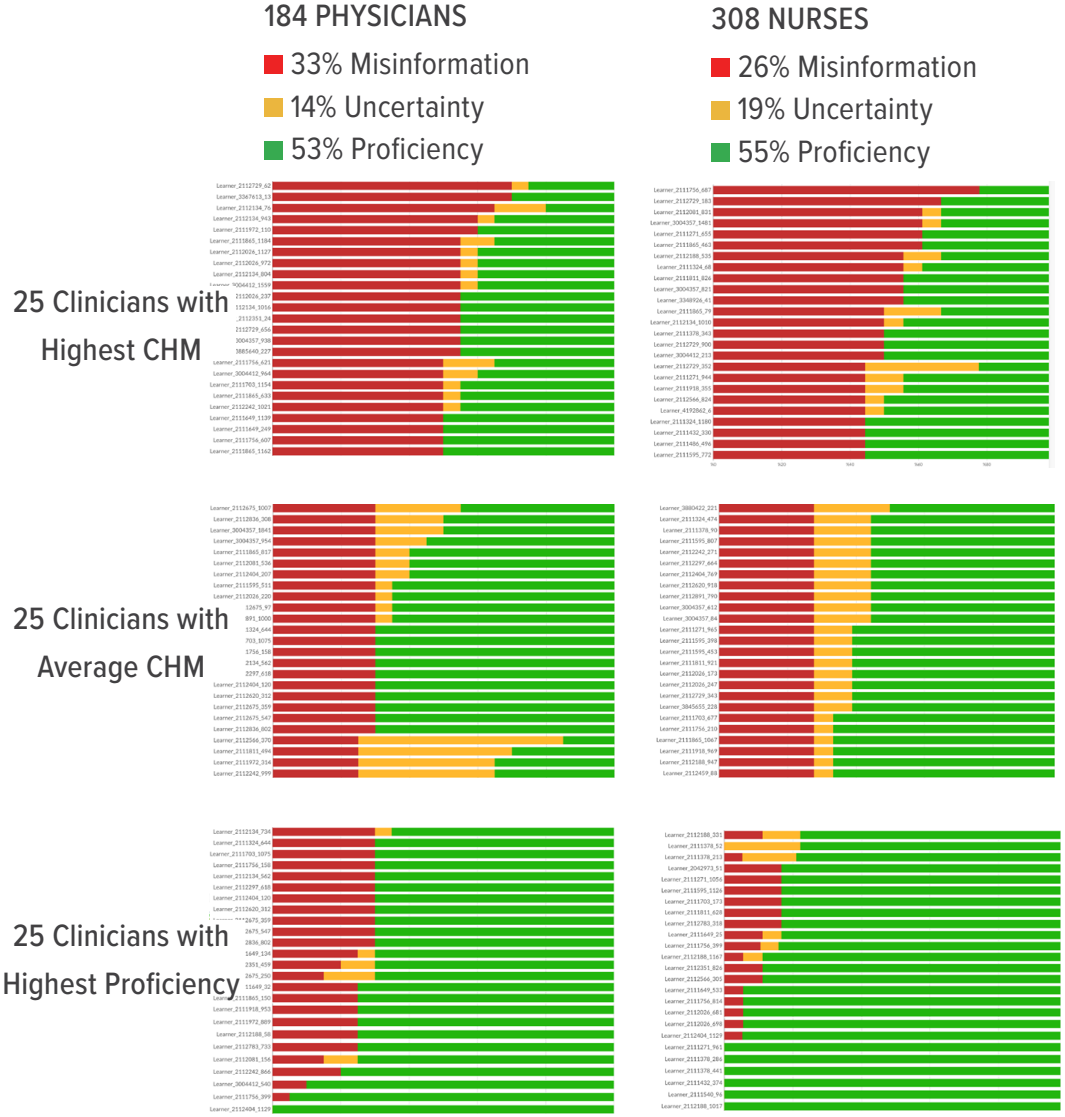
Shoulder Dystocia

INITIAL KNOWLEDGE (prior to learning)

- 184 physicians and 308 nurses generated 9,348 data points
- 2,674 instances of confidently held misinformation were corrected. Misplaced confidence is perilous because confidence drives behavior and can result in adverse events.
- 3,122 instances of uncertainty were corrected
- By the end of the course, 100% of the physicians were proficient (confident and correct) on all the material.



Shoulder Dystocia

CLINICAL TAKE-AWAY

Communication breakdown in practice can result in adverse events, while efficient and orderly communication between clinicians leads to positive patient outcomes.

34% of physicians and **54%** of nurses initially displayed confidently held misinformation about communication using the SBAR protocol.

Clinical Implication: Knowing and using the SBAR tool allows clinicians to relay information quickly in a predictable, logical manner, which increases patient safety and allows timely delivery of care.

Lippke S, Derksen C, Keller FM, et al. Effectiveness of Communication Interventions in Obstetrics-A Systematic Review. Int J Environ Res Public Health. 2021;18(5):2616. doi:10.3390/ijerph18052616. Accessed May 18, 2021.

RESULTS SUMMARY

ELECTRONIC FETAL MONITORING

38 minutes	**14%**	**21.47%**
Average Time to Completion	Average CHM	Average Struggle

HYPERTENSION IN PREGNANCY

34 minutes	**32.5%**	**14.58%**
Average Time to Completion	Average CHM	Average Struggle

POSTPARTUM HEMORRHAGE

19 minutes	**23%**	**6.86%**
Average Time to Completion	Average CHM	Average Struggle

SHOULDER DYSTOCIA

22 minutes	**29.5%**	**8.81%**
Average Time to Completion	Average CHM	Average Struggle

ABOUT AMPLIFIRE

Empirical data shows that caregivers in every healthcare organization posess knowledge gaps, doubts, and medical misconceptions. The Amplifire learning platform tackles these issues using discoveries from cognitive science and algorithms that adapt evidence-based content to the needs of each individual caregiver.

Healthcare organizations embrace Amplifire as a change management tool that transforms training from a rote activity, where administrators can only hope for results, into a strategic activity that delivers measurably better outcomes. Popular course libraries include:

- Clinical Safety and Quality
- Compliance
- EHR
- Obstetrics
- Opioids
- Pediatrics
- Revenue Cycle Management
- Safe Surgery

With more than three billion learner interactions, Amplifire continues to harness scientific research, advanced analytic techniques, and artificial intelligence. Learners experience a faster, more engaging path to proficiency so they can attain their highest potential.

> *“Amplifire is a tool that more accurately, completely, and rapidly loads complex clinical knowledge into expert minds. It gives us not only the ability to transmit knowledge, but the ability to measure how well we transmitted it and how well it stuck.”*

— Brent James, MD

Clinical Professor at the Clinical Excellence Research Center at Stanford University

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