

STUDY PROTOCOL

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Evaluating a train-the-trainer approach for implementing obstetric life support in diverse healthcare contexts throughout Arizona: a mixed methods protocol

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Abstract

Background Most medical responders are not adequately trained to recognize and treat maternal medical emergencies, including maternal cardiac arrest, and national credentialing standards do not exist. Obstetric Life Support (OBS) is a validated simulation-based curriculum designed to equip prehospital and hospital-based healthcare workers (HCWs) with the knowledge and skills necessary to prevent, recognize, and manage maternal medical emergencies. Widespread implementation of OBS could enhance patient safety and reduce disparities in maternal morbidity and mortality. However, research is needed to develop strategies that ensure sustained and equitable access for HCWs across diverse healthcare settings. This paper presents a protocol for evaluating a train-the-trainer approach to implement OBS in hospitals, freestanding birthing centers, and prehospital contexts across Arizona.

Methods This multisite, mixed-methods study is being conducted in collaboration with the Arizona Perinatal Trust, a regional perinatal health system that encompasses 38 in-hospital birthing centers and Level I-IV hospitals across Arizona, and the Arizona Emergency Medical Systems LLC, which coordinates 85 emergency medical services agencies statewide. A Steering Committee comprising local, regional, and national stakeholders provides guidance and oversight for all study activities. To promote rapid learning, two consecutive OBS implementation and evaluation cycles will be conducted, with the second cycle incorporating feedback and lessons learned from the first. HCWs from 16 implementation sites (8 per cycle) serving areas with high maternal vulnerability indexes will be trained as OBS instructors. These instructors will train at least 160 HCWs (80 per cycle) within their respective or nearby institutions. Outcomes to be assessed include reach (proportion and representation of institutions offering OBS, instructors trained, and HCWs participating), effectiveness (impact of OBS on knowledge and clinical competencies, presence of code carts containing OBS cognitive aids and resuscitative cesarean delivery kits in hospitals, and the use of an OB Arrest Alert in prehospital settings), adoption (allocation of resources for OBS), implementation (number of courses

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completed, fidelity of the training delivery), and maintenance (extent to which training becomes integrated into routine practice and policy).

Discussion Findings from this statewide study will be used to promote the scale-up and sustainability of OBLs, ultimately enhancing maternal healthcare quality and equity.

Keywords Healthcare workers, Implementation science, Maternal health, Simulation training, Train-the-trainer

Background

The United States (US) continues to have the highest maternal mortality rate among developed countries, with 22.3 deaths per 100,000 live births in 2022 [1]. Stark racial disparities persist, with Black women 2.6 times more likely than White women to die from pregnancy-related causes [1]. Cardiovascular disease is one of the leading causes of pregnancy-related deaths, and maternal cardiac arrest (MCA) often serves as a common pathway contributing to maternal deaths from other causes such as hemorrhage, amniotic fluid embolism, and sepsis [2].

Despite the preventable nature of over 80% of maternal deaths [3], most medical responders are not proficient in recognizing and treating maternal medical emergencies such as MCA [4–6]. This gap exists across medical specialties, even among specialists trained in Advanced Cardiovascular Life Support (ACLS) [7]. The importance of training for maternal medical emergencies, including maternal cardiac events, is widely recognized by major medical associations such as the American College of Obstetricians and Gynecologists, American Heart Association, and the Society for Obstetric Anesthesia and Perinatology for its potential to improve patient outcomes [8–10]. Increasingly, federal agencies and state legislatures are incentivizing or mandating hospitals to provide this education and training [10–14]. Nonetheless, the implementation of evidence-based education for maternal medical emergencies remains inconsistent across health systems in the US, and national credentialing standards do not exist.

Approximately 60% of maternal deaths occur postpartum, underscoring the critical role that HCWs in non-obstetric settings play in recognizing and managing these emergencies [15–17]. A 2021 survey of 1,700 US emergency medical service (EMS) providers regarding the care of pregnant and postpartum patients during emergencies revealed a pressing need for continuing education in the prehospital environment, particularly for conditions such as peripartum cardiomyopathy, acute myocardial infarction, and venous thromboembolism [18]. Moreover, fewer than half of the respondents felt they had adequate knowledge of the altered physiology of postpartum patients, and nearly 75% did not routinely ask if patients had been pregnant within the past year. This highlights the need for greater awareness of urgent

maternal warning signs that indicate pregnancy-related complications during the 12-month postpartum period.

Simulation-based education utilizing mastery-learning approaches that prepare learners for real-life scenarios has been shown to improve patient outcomes and reduce healthcare costs in both obstetric and adult emergencies. For example, the Practical Obstetric Multi-Professional Training (PROMPT) program, a simulation-based education initiative in England, demonstrated significant improvements over 12 years of sustained training, including the elimination of obstetric brachial plexus injuries and cost savings exceeding one billion dollars for the National Health Service [19]. Similarly, a recent study by Bohmann et al. reported that “simulation-experienced stroke teams” achieved a 5-minute reduction in time from admission to intravenous thrombolysis and a 21-minute reduction in time from admission to endovascular therapy, underscoring the impact of simulation-based training on enhancing the speed and effectiveness of emergency care [20].

OBLs is a validated, interdisciplinary simulation-based curriculum designed to train prehospital and hospital-based HCWs in the prevention, recognition, and management of maternal medical emergencies that can lead to cardiac arrest and death [21, 22]. The curriculum covers: (1) common causes of maternal death; (2) recognition of early warning signs of maternal deterioration and prevention of further decompensation; (3) interdisciplinary management of maternal cardiac arrest and post-arrest care; and (4) best practices related to teamwork, debriefing skills, and communication with family members following a critical maternal event. Results from a randomized controlled trial demonstrated significantly higher cognitive, skills, and self-efficacy scores among participants who completed OBLs compared to those in the control group [22]. Course pass rates are based on passing both the cognitive and megacode (a simulated medical emergency scenario leading to MCA) assessments. Fewer than 10% of HCWs in the control group passed the course, compared to 90% of those who completed OBLs, despite most having current or prior certification in basic and advanced life support [22]. Widespread implementation of OBLs could improve patient safety and reduce inequities in maternal morbidity and mortality. However, best practices for this implementation are not yet established.

Currently, OBLs relies on a small cadre of “master trainers” to provide training and consultation on the simulation curriculum. Train-the-trainer models, designed to increase the number of potential trainers for an evidence-based intervention, have shown preliminary effectiveness for workforce development across various fields, and are increasingly being used in limited-resource settings as a mechanism to disseminate resuscitation knowledge and skills among providers [23–25]. In these models, master trainers train locally embedded staff, who then lead subsequent training sessions. This approach not only expands training capacity and program reach but also allows trainees more direct access to the groups they are training and a better understanding of contextual issues that affect the application of the training [24].

The objective of this project is to evaluate a train-the-trainer approach for implementing OBLs in diverse healthcare settings throughout Arizona. The specific aims are to:

1. Identify and train HCWs from Arizona hospitals, freestanding birthing centers, and prehospital settings as OBLs instructors, prioritizing areas with high maternal vulnerability indexes.
2. Implement OBLs in hospital and prehospital settings across the state, with the training led by local instructors.
3. Evaluate OBLs implementation outcomes, including reach, effectiveness, adoption, implementation, and maintenance.

Building capacity within local institutions to lead and sustain OBLs implementation is crucial for enhancing and ensuring equitable access for all HCWs who may encounter maternal medical emergencies, particularly those serving the most vulnerable populations.

Methods

Study context and partners

The study will be conducted across a variety of healthcare settings in Arizona. Arizona’s pregnancy-associated mortality ratio (PAMR) is 99.1 deaths per 100,000 live births, with American Indian/Alaska Native women experiencing the highest PAMR, at 233.9 deaths per 100,000 live births [26]. Additionally, six of Arizona’s 15 counties have limited or no access to maternal care, and 50% have a high maternal vulnerability index [27].

The Arizona Perinatal Trust (APT) and the Arizona Emergency Medical Systems (AEMS) network are collaborating on this initiative. APT, a nonprofit incorporating public-private partnerships regional perinatal health system recognized by the Centers for Disease Control and Prevention (CDC) as Arizona’s Perinatal Quality Collaborative and a participant in the National Network of

Perinatal Quality Collaboratives (NNPQC), is dedicated to improving maternal and neonatal health in Arizona. APT focuses on three main components: certification, perinatal education, and advocacy. Through its Voluntary Certification Program (VCP), APT partners with hospitals to provide a system of regionalized perinatal/neonatal levels of care, aligning hospital capabilities with established guidelines. Currently, 38 trust-certified hospitals, including in-hospital birthing centers and Level I-IV centers, participate in Arizona’s regionalized perinatal system. APT continuously enhances this system by reviewing and updating guidelines for both perinatal and freestanding care centers, expanding the reach of the regional network, and collaborating with state agencies and organizations, including the Arizona Department of Health Services, the March of Dimes Arizona Chapter, and the Arizona Healthcare Cost Containment System.

AEMS is a nonprofit, community-based volunteer organization dedicated to enhancing EMS and trauma care across Central Arizona. As the Central Arizona Regional EMS Coordinating System, AEMS plays a vital role in unifying and coordinating 95 EMS provider agencies and hospitals, bringing together a diverse network of first responders, emergency medical providers, and trauma care professionals. Representing the state’s largest EMS region, including Maricopa, Pinal, and Gila counties, AEMS works on behalf of the Arizona Department of Health Services’ Bureau of Emergency Medical Services and Trauma System (BEMSTS) to ensure coordinated emergency care through collaboration, training, and system improvements. AEMS also partners with the state’s three other EMS regions - Western Arizona Council of Emergency Medical Services/WACEMS (39 agencies), Southeastern Arizona Emergency Medical Services/SAEMS (41 agencies), and Northern Arizona Emergency Medical Services/NAEMS (45 agencies) - to support EMS and trauma care statewide. This collaboration fosters improved emergency care and patient outcomes, while also providing a unified voice to advocate for the needs and advancement of EMS systems at the state level.

Following best practices for community-based participatory research, a Steering Committee comprising local, regional, and national stakeholders, including HCWs and leaders in maternity care, resuscitation, and EMS, is providing guidance and oversight for all study activities. This diverse committee includes representatives from key organizations such as the APT, AEMS, the American College of Obstetricians and Gynecologists, Alliance for Innovation in Medicine, American Hospital Association, the Association of Women’s Health, Obstetric and Neonatal Nursing, International Association of Fire Chiefs, and the National Association of Emergency Medical Technicians, as well as certified midwives and doula

support networks and organizations serving Indigenous communities in Arizona.

Intervention

OBLS consists of two distinct simulation-based curricula: one for hospital and urgent care settings and another for prehospital settings. The hospital curriculum is intended primarily for clinicians, nurse midwives, Emergency Medicine, Intensive Care Units, and Labor & Delivery nurses, and those assigned to an RRT or code team in these areas. The prehospital curriculum, tailored to both basic and advanced life support, is intended primarily for paramedics, EMT-Basics and -Intermediates, EMS Medical Directors, Coordinators, and Educators, ambulatory clinic workers in federally qualified health clinics, public safety first responders, and BLS-certified doulas.

The primary components of the OBLS curricula include: (1) four hours of self-guided prework; (2) six hours of instructor-led, simulation-based rapid cycle deliberate practice using a custom-designed, mobile, low-cost maternal simulator; and (3) a post-course assessment that evaluates a participant's performance as an interdisciplinary "team leader" during a simulated megacode for a common maternal medical emergency. Topics covered include normal and abnormal pregnancy physiology, common etiologies of maternal medical emergencies, recognition of maternal deterioration and impending cardiopulmonary arrest, modifications to cardiopulmonary resuscitation for pregnant and postpartum patients, special procedures for diagnosing and treating maternal medical emergencies tailored to the setting (e.g., point of care ultrasound, resuscitative cesarean delivery, extracorporeal cardiopulmonary resuscitation), treatment of trauma/stroke during pregnancy, and postpartum maternal medical emergencies. Additionally, participants engage in role-playing scenarios: debriefing processes (both settings), communication with the command center (prehospital setting only), and effective team communication (both settings). All training and testing megacodes are based on the most common medical emergencies encountered during pregnancy and postpartum, covering both reversible and irreversible causes of maternal cardiopulmonary arrest.

Study design and guiding frameworks

Figure 1 depicts the study's conceptual framework. The study will utilize a mixed-methods approach informed by the Consolidated Framework for Implementation Research (CFIR) [28] and the RE-AIM framework [29–32]. CFIR integrates various implementation theories to identify barriers and facilitators that influence targeted outcomes across multiple levels. It encompasses five domains including intervention characteristics (e.g., complexity), outer setting (e.g., external policies and

incentives), inner setting (e.g., leadership engagement, readiness), individual characteristics (e.g., HCWs' self-efficacy, knowledge, beliefs), and implementation process (e.g., planning, champions) [30]. The RE-AIM framework [33, 34] will be used to evaluate OBLS implementation by defining outcomes to be assessed at both individual and organizational levels [31, 32]. This combined approach will help identify barriers and facilitators to OBLS implementation through a train-the-trainer model, while assessing the program's reach, effectiveness, adoption, implementation, and maintenance, at the implementation sites.

Sixteen implementation sites will be selected across the entire chain of survival comprising 8 hospitals or birthing centers and 8 prehospital settings, such as EMS agencies, fire stations, police stations, and ambulatory health centers. Selection criteria will prioritize diversity in size, public versus private status, and location, with a particular focus on areas with high maternal vulnerability indices. Drawing on the literature on Comprehensive Dynamic Trials, which involve iterative cycles of implementation and adaptation, [2] two cycles of OBLS implementation and evaluation will be conducted (8 sites per cycle) [29]. The second cycle will be refined based on lessons learned and feedback from the first cycle. This approach emphasizes the importance of feeding information gained during an intervention back into the process to dynamically refine and enhance its performance [35, 36].

Training of local OBLS instructors

The training of local OBLS instructors will occur in two phases, modeled after the Society of Critical Care Medicine's (SCCM) hosted training program for Fundamentals of Critical Care Support (FCCS) courses [37]. The SCCM-hosted training model promotes sites to be self-sustaining in their delivery of the courses by connecting first-time sites with an SCCM consultant for course planning and management, and providing all necessary materials for implementation and evaluation. In the first phase, 2–3 HCWs from each selected implementation site will be invited to participate in the OBLS course at one of four regional hubs located in Phoenix, Flagstaff, Tucson, and Yuma, Arizona, ensuring easy access from various parts of the state. Participants who successfully pass the course and receive a recommendation from an experienced OBLS instructor will be eligible to participate in the train-the-trainer course.

The OBLS train-the-trainer course is a comprehensive 4-hour virtual program led by experienced OBLS instructors. The course thoroughly prepares participants to deliver the OBLS curriculum and to evaluate and support their trainees. Key training components include facilitating rapid cycle deliberate practice to master resuscitation skills, reflective checklist debriefs, and role-play exercises

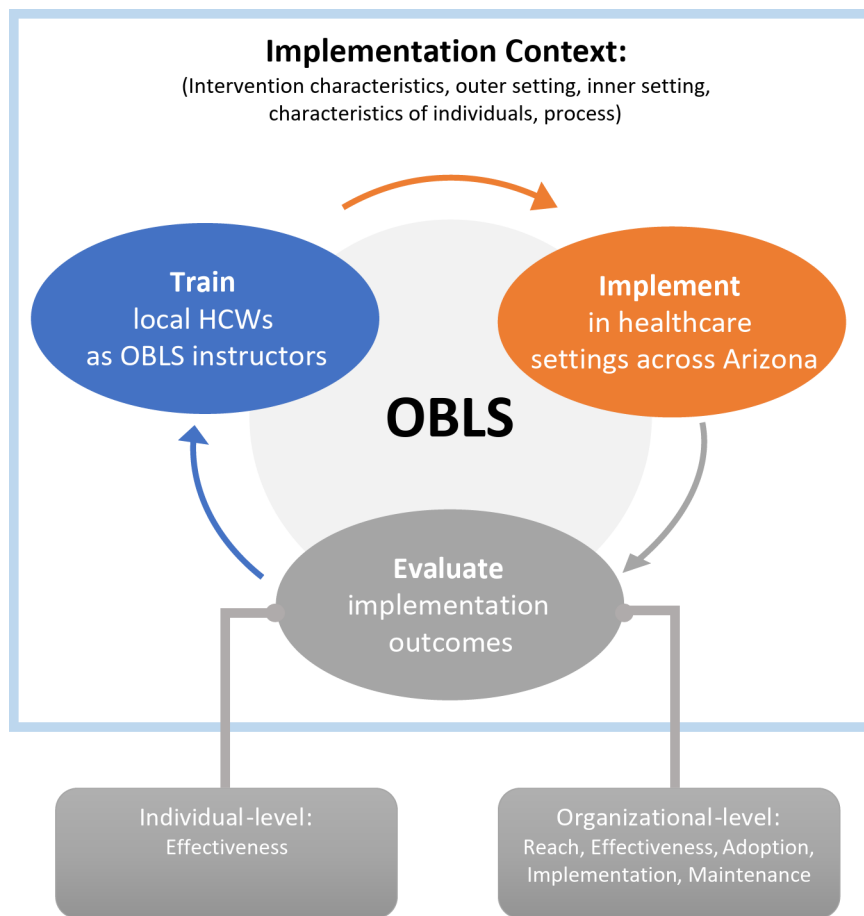


Fig. 1 Conceptual framework for the study

for delivering difficult news to family members. For participants in prehospital settings, the course also emphasizes coordination with receiving facilities. Participants also engage in an in-depth review of OBLS scenarios and calibrate megacode checklists by comparing their evaluations with expert-assessed, video-recorded scenarios.

Each implementation site will designate a Course Director from among the graduates of the train-the-trainer course. The Course Director will receive an OBLS Course Implementation package, which includes detailed instructions for conducting interdisciplinary OBLS courses at their institution. Each site will also be assigned an experienced OBLS sponsor who will provide guidance throughout the implementation process. This sponsorship will involve frequent check-ins and in-person oversight during the initial set of courses (a minimum of 3 but no more than 6 courses over 2–3 days), during which the sponsor will evaluate the new instructors. If the evaluations are satisfactory, the site will proceed to independently run subsequent courses. The sponsor will remain available throughout the implementation phase but will not be required to attend subsequent courses in person. If any Course Director or instructor receives a “needs

improvement” or “unsatisfactory” evaluation, they will be given feedback and have the opportunity to instruct another mentored course until they receive a “satisfactory” evaluation.

Implementation of OBLS led by local instructors

The new local OBLS instructors will be responsible for training a minimum of 160 participants across the 16 implementation sites over a six-month period. To ensure the program’s sustainability, HCWs at the implementation sites who successfully complete OBLS and meet the eligibility criteria to become instructors will be invited to participate in the train-the-trainer course. This approach aims to build a robust cadre of local trainers capable of continuing the program beyond the study period.

The OBLS website (<https://uchc.tovuti.io/>) will serve as a comprehensive resource for both participants and instructors, featuring a “Participant Hub” with course schedules and registration options, and an “Instructor Hub” containing essential course information. Specialized toolkits, containing all the necessary materials for OBLS, will be distributed to each implementation site. Hospital and birthing center toolkits will include a

Table 1 OBLS implementation outcomes

Outcome	Measure
Reach	- Proportion and representativeness of institutions that offer OBLS, train-the-trainer course completers, and HCWs that participate in courses offered by the newly trained instructors
Effectiveness	- Impact of training on OBLS participants' knowledge and clinical competencies - Number of code carts containing OBLS cognitive aids and resuscitative cesarean delivery kits in each implementation site (hospital) - Number of sites using an OB Arrest Alert (prehospital)
Adoption	- Allocation of resources for OBLS such as staff time and space
Implementation	- Number of OBLS courses completed - Fidelity of the training delivery
Maintenance	- Extent to which training becomes integrated into routine practice and policy

custom simulator, training defibrillator, cardiopulmonary resuscitation (CPR) rhythm generator, training code carts with simulated medications, intravenous and arterial lines, airway equipment, artificial blood, and a resuscitative cesarean delivery kit. Prehospital OBLS toolkits will include a custom simulator, training automated external defibrillator with pads, and a GoBag containing resuscitation equipment, simulated medications, and artificial blood. Additionally, each toolkit will be equipped with two tablets for quality CPR monitoring and rolling stands to hold the tablets.

Evaluation of OBLS implementation outcomes

Table 1 lists the outcomes to be assessed. Reach, adoption, implementation, and maintenance will be assessed at the organizational level, while effectiveness will be assessed at both individual and organizational levels. Data for organizational-level outcomes will be collected from the study tracking database and checklists completed by the Course Director prior to and at the end of the 6-month implementation period at each site. Changes in OBLS participants' knowledge and clinical competencies will be assessed using validated online instruments administered pre- and post-course, and at a 6-month follow-up [38, 39]. Participant satisfaction with the training will be measured post-course using the validated Satisfaction with Simulation Scale (SSES), which has been modified with permission [40]. The six-month follow-up survey will also include newly developed items to assess the extent to which trainees have applied the knowledge and skills acquired from the course. Informed consent will be obtained from participants prior to collecting any survey data, and participants who complete the 6-month follow-up survey will be entered into a raffle for a chance to receive a free tablet.

A critical component of OBLS is the completion of an expert-validated megacode (e.g., skills mastery) scenario by each participant. Participants will be assessed on their performance as team leaders throughout the scenario, including their ability to recognize and respond to maternal deterioration, manage team performance during a maternal cardiac arrest, and lead a debriefing on post-arrest care. Data on implementation fidelity will be captured through observations documented on standardized case review forms and training session evaluations completed by each instructor.

Following each of the two OBLS training-of-trainer cycles and the subsequent 6-month implementation periods at sites with newly trained instructors, one-hour focus groups will be conducted via videoconference with instructors and participants. These focus groups will explore actionable factors within the implementation contexts that may have influenced outcomes. A discussion guide will be developed using the interview guide tool from the CFIR website [41]. Focus group participants will each receive a \$50 gift card as compensation.

Statistical analyses

Descriptive statistics, including frequencies and measures of central tendency, will be computed for each outcome. Longitudinal data approaches will be employed to analyze participant-level effectiveness outcomes from pre- and post-course surveys, as well as follow-up surveys. Covariates of interest, such as gender or participant status (e.g., EMS personnel vs. firefighters), will be explored as predictors using MIXED or GENMOD procedures in SAS for numeric and binary outcomes, respectively.

Pre- and post-cognitive scores will be compared using general linear mixed models, with results reported as mean change (95% Confidence Interval [CI]) with p-values. McNemar's test will be used to compare changes in self-efficacy scores. Megacode scores will be reported as mean pass rates \pm standard deviation, along with the number of critical fails. Knowledge retention at 6 months will be assessed by comparing the difference between the 6-month follow-up and pretest performance with the difference between the pretest and post-test performances, thereby quantifying the amount of new knowledge retained. Least squares mean values will be calculated using generalized estimating equations to account for repeated measures across the three time points. All statistical tests will be two-tailed, and the level of significance is set to 0.05.

Qualitative analyses

The focus group sessions will be recorded, transcribed, and analyzed using directed content analysis [42]. A deductive approach will be employed, with a codebook

created prior to analysis based on key CFIR elements. MAXQDA (VERBI Software, Berlin, Germany) will be used to manage, organize, and examine patterns in the data, following recommended steps for content analysis. These steps include: (1) reading the transcripts multiple times, (2) identifying and coding meaning units, (3) analyzing data that cannot be coded with initial codes to determine if they represent new categories or subcategories, (4) sorting codes into categories, and (5) forming themes by grouping two or more categories together [43, 44]. Targeted analyses will examine data consistency within sites and identify distinctions in coded themes between high-performing and low-performing implementation sites.

Dissemination plans

The results of this project will be shared through various channels, including the annual APT meeting, national scientific and professional conferences, and publications in peer-reviewed journals. Additionally, findings will be presented at the annual virtual Continuing Medical Education (CME) conference on OBLs. Insights gained from the study will be disseminated broadly to stakeholders in Arizona, aiming to promote the integration of OBLs into standard training protocols and improve care outcomes across the state.

Discussion

Evidence suggests that enhancing cardiac-response processes through training in BLS, ACLS, and systems of care improves patient outcomes [28, 45–47]. It is therefore reasonable to anticipate similar benefits when standards for MCA-simulation training and related hospital and prehospital processes are implemented across the medical sector. Despite the critical need to reduce maternal morbidity and mortality and to expand the availability of evidence-based practices for MCA response, there are currently no widely available, low-cost interdisciplinary training programs focused on the recognition, prevention, and treatment of maternal medical emergencies [10, 15, 33, 48].

Existing national obstetric training platforms, such as Emergencies in Clinical Obstetrics, Advanced Life Support in Obstetrics, Fundamentals of Critical Care Support-OB, and Critical Care Obstetrics Course, are primarily designed for obstetricians, family practice physicians, or critical care specialists. These courses generally lack broad applicability to other specialties, EMS personnel, or interdisciplinary teams. Additionally, they do not employ mobile platforms, use team-based simulation drilling with deliberate practice, or require a passing score on simulation testing with a megacode as a course completion requirement. These programs also demand substantial resources, including teaching

faculty, expensive simulators, and well-equipped simulation centers, and are not tailored for the prehospital sector. Though existing prehospital education programs typically include a module on maternal and postpartum emergencies, a prehospital course dedicated to this topic currently does not exist. In contrast, OBLs is unique in its approach. It utilizes simulation-pedagogies, focuses on the recognition, prevention, and treatment of maternal medical emergencies, including MCA, and incorporates a team-based simulation approach. This approach includes hospital-based medical responders most likely to be involved in a rapid response team called to a maternal medical emergency or MCA event, such as providers in Obstetrics, Emergency Medicine, Intensive Care, Family Practice, Anesthesiology, Neonatal Intensive Care, Pediatrics, and General/Trauma/Vascular Surgery. OBLs also features a curriculum specifically designed for prehospital and community-based first responders, such as paramedics, EMTs, firefighters, and ambulatory health-care workers.

This research effort aligns directly with the Arizona Department of Health Services Maternal Mortality Review Committee's (MMRC) "Prevention Recommendation #8," which calls for ensuring that facilities have adequate infrastructure, protocols, and procedures to improve readiness, prevention, recognition, and response to obstetric emergencies and to expedite care coordination with a multidisciplinary team of healthcare providers [26]. By addressing gaps in the availability of standardized, low-cost, and interdisciplinary training programs, this protocol aims to fulfill the MMRC's call for improved response systems. Implementing OBLs statewide is a key step toward fostering collaboration within and across hospital and prehospital settings, ultimately reducing maternal morbidity and mortality in Arizona.

There is a paucity of dissemination research in the field of simulation education for medical professionals [34]. By applying implementation science frameworks and processes to evaluate a train-the-trainer strategy for statewide OBLs implementation in Arizona, this study can serve as a model for using these approaches to enhance and ensure equitable access to simulation-based education for health professionals across the US and beyond.

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Authors' contributions

S.D.C. and A.S. conceptualized, designed, and secured funding for the study. R.R.C., L.S.W., M.B., P.B., C.K.R., L.R.B., B.T., V.M., J.V., J.P., B.S., and J.J.G. are co-investigators and/or significant contributors who provided input on the study design and methods. M.M. and K.A.B. contributed to the grant proposal submission and provided project management support. S.C. drafted the manuscript. All authors reviewed, edited, and approved the final manuscript.

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Data availability

No datasets were generated or analysed during the current study.

Declarations**Ethics approval and consent to participate**

This research study was reviewed and determined to be exempt by Advarra® and the UConn Health Institutional Review Board using the Department of Health and Human Services regulations found at 45 CFR 46.104(d)(1). Participants in the OBLS trainings at each implementation site will provide informed consent to prior to participating in the study.

Consent for publication

Not applicable.

Competing interests

Dr. Andrea Shields, Dr. Brook Thomson, and Dr. Jacqueline Vidosh are members of Varda5, LLC which owns exclusive sublicense to the Obstetric Life Support curriculum licensed under Baylor College of Medicine. None of the other authors have any competing interests to declare.

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