Institute for Healthcare Improvement

AIM
ALLIANCE FOR INNOVATION ON MATERNAL HEALTH

Cardiac Conditions in Obstetric Care Change Package

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Introduction

The Alliance for Innovation on Maternal Health (AIM) is a national data-driven maternal safety and quality improvement (QI) initiative. AIM works through state and community-based teams to align national, state, and hospital-level QI efforts to reduce preventable maternal mortality and severe morbidity across the United States.

The AIM Patient Safety Bundles are a core part of this work. To promote the successful implementation of these bundles, AIM partnered with the Institute for Healthcare Improvement (IHI) to create a series of associated change packages. This specific change package is designed to support Perinatal Quality Collaboratives (PQCs) and other state-based initiatives to leverage the AIM Cardiac Conditions in Obstetric Care Patient Safety Bundle more effectively.

Why is this important?

Cardiovascular disease (CVD) is the leading cause of maternal mortality and morbidity in the first year postpartum, and the leading indirect cause of maternal mortality, particularly in non-Hispanic Black and Hispanic birthing people.[1] Across all age groups and all causality, non-Hispanic Black women have a higher prevalence of pregnancy-related mortality than others.[2] Recent national data on maternal mortality by race confirms a statistically significant increase in deaths per 100,000 live births each year from 2018 to 2020. Furthermore, the rates are highest among non-Hispanic Black populations and women over the age of 40.[3] A California analysis of maternal deaths due to CVD found that the majority occurred in the postpartum period.[4]

There is an urgent need to mobilize resources to care for pregnant and postpartum birthing people with known and newly diagnosed CVD. This will involve developing multidisciplinary teams consisting of specialists in maternal-fetal medicine, cardiology, and anesthesia. This safety bundle and change package will provide guidance for establishing a system to manage the complex health of these pregnant and postpartum birthing people. The goal of this safety bundle and change package is to provide recommendations with associated examples and references to facilitate pregnancy cardiovascular risk assessment, appropriate diagnostic testing, early recognition of cardiac emergencies, and creation of a cardio-obstetrics team. The focus will be on checklists, protocols, and multidisciplinary management. The emphasis is on respectful care and a multidisciplinary approach at all levels of care.

What is a change package?

A change package is a document listing evidence-based or best-practice changes specific to a topic and is usually organized around a framework or model. The Cardiac Conditions in Obstetrical Care Change Package is structured around the AIM Cardiac Conditions in Obstetric Care Patient Safety Bundle.[5]

Changes packages are structured around the following components:

- **Primary Drivers**: Major processes, operating rules, or structures that will contribute to moving toward the aim. In this change package, the primary drivers are based on AIM's Five Rs Framework (Readiness, Recognition & Prevention, Response, Reporting/Systems Learning, and Respectful Care).
- **Change Concepts:** Broad concepts (e.g., "move steps in the process closer together") that are not yet specific enough to be actionable but that will be used to generate specific ideas for change. In this change package, the change concepts are represented by AIM Bundle Elements.
- **Change Ideas**: Actionable, specific idea for changing a process. Change ideas can come from research, best practices, or from other organizations that have recognized a problem and have demonstrated improvement on a specific issue related to that problem.

Taken as a whole, a change package has the potential to seem overwhelming. Based on the priorities of your state and community, we encourage you to start small by testing a couple of ideas connected to the aim you set. Through iterative tests of change (also known as Plan-Do-Study-Act (PDSA) cycles), you will have an opportunity to learn what works and what does not in your efforts to improve your processes. Initially, these cycles are carried out on a small scale (e.g., one patient on one day) to see if they result in improvement. Teams can then expand the tests and gradually incorporate larger and larger samples until they are confident that the changes will result in sustained improvement.

How to prioritize changes?

No team is expected to test all the listed change ideas. Consider this a menu of options from which you may choose what to tackle first. Each team will review their baseline data, progress to date, organizational priorities, and select an area(s) to prioritize. For example, some may start with one driver. Others may start by tackling one idea across all drivers. Start by choosing an area that you think could lead to an easy win.

You can also leverage the following tools to help you decide where to start:

1. Pareto chart: A type of bar chart in which the various factors that contribute to an overall effect are arranged in order according to the magnitude of their effect. This ordering helps identify the "vital few" — the factors that warrant the most attention.[6]
2. Priority matrix: A tool that can better help you to understand important relationships between two groupings (e.g., steps in a process and departments that conduct that step) and make decisions on where to focus.[7]
3. Impact-effort matrix: A tool that helps identify which ideas seem easiest to achieve (least effort) with the most effects (highest impact). The ideas identified via this tool would be a great place to start.[8]

Change Package

A Note on Symbols

Respectful, Equitable, and Supportive Care

In addition to having an independent section in this change package dedicated to the AIM Cardiac Conditions in Obstetric Care Patient Safety Bundle's fifth R (Respectful, Equitable, and Supportive Care), all change ideas in other sections that fall under this R are marked with a ◊ symbol.

Additional Considerations

It is understood that every team utilizing this change package will be at a different point in this work. If your organization is further along in your obstetrical cardiac conditions improvement work and has found reliability in some of the change ideas below, we suggest testing the additional considerations that are in *italics* and marked by the * symbol.

Readiness

Every Unit/Team

AIM Bundle Element	Change Idea	Key Resources and Tools
Train all obstetric (OB) providers to perform a basic Cardiac Conditions Screen	Determine which screening tool will be used and train providers to use it *A cardiac conditions screening tool should include:* * • *Patient history of cardiac conditions* • *Patient-reported symptoms* • *Vital signs* • *Physical examination*	California Maternal Quality Care Collaborative (CMQCC): Improving Health Care Response to Cardiovascular Disease in Pregnancy and Postpartum[9] California Cardiovascular Screening Tool: Findings from Initial Implementation[10] Screening for Cardiovascular Disease in Pregnancy: Is There a Need?[11]
	Include the Council on Resident Education in Obstetrics and Gynecology (CREOG) educational objectives on cardiac conditions in pregnancy in teaching curricula for obstetrics and gynecology residency programs	CREOG Educational Objectives: Core Curriculum in Obstetrics and Gynecology: 12th Edition[12]
	Conduct cross-training and observation among all health care providers (including nurses) within the fields of general OB-GYN, general cardiology, emergency medicine, and maternal-fetal medicine, with focus on echocardiogram (echo), electrocardiogram (ECG), and medication knowledge	Need for Better and Broader Training in Cardio-Obstetrics: A National Survey of Cardiologists, Cardiovascular Team Members, and Cardiology Fellows in Training[13] In cardio-obstetrics, clinicians must think 'outside the box' on CV issues in pregnancy[14]

		Management of Chronic and Gestational Hypertension of Pregnancy: A Guide for Primary Care Nurse Practitioners[15]
	During simulation drills, include scenarios to engage a team of learners from multiple disciplines in immediate recognition and treatment of a suspected cardiac event based on the combination of symptoms and abnormal vital signs	Simulation: Emergencies in Clinical Obstetrics (ECO)[16] Obstetric Emergency Drills Trainer's Manual[17] American College of Obstetricians and Gynecologists (ACOG): Preparing for Clinical Emergencies in Obstetrics and Gynecology: Committee Opinion 590[18] Hospital-wide cardiac arrest in situ simulation to identify and mitigate latent safety threats[19]
Establish a protocol for rapid identification of potential pregnancy-related cardiac conditions in all practice settings into which pregnant and postpartum people may present	In rural and other remote tertiary center settings, recognize that the lack or unavailability of a cardio-obstetrical team does not remove presentation of pregnant and postpartum patients Build in screening and obstetrical emergency readiness at points of entry and construct a pathway to mobilize a multidisciplinary team *Consider training within a health system including multiple disciplines**	LetsTalkPPCM[20] CMQCC: Improving Health Care Response to Cardiovascular Disease in Pregnancy and Postpartum[9]
	Develop and test protocol across care settings to affirm it is working as intended	Simulation training in obstetric practice[21]
	Offer support, resources, and referrals for patients who decide to terminate their pregnancy	Practice Bulletin No. 152: Emergency Contraception[22]

Develop a patient education plan based on the pregnant and postpartum person's risk of cardiac conditions	Emphasize occurrence of adverse obstetrical events based on the modified World Health Organization (WHO) Risk Criteria in Pregnancy, including those patients with known CVD, given that the normal cardiovascular changes in pregnancy can result in decompensation of CVD	2018 European Society of Cardiology (ESC) Guidelines for the management of cardiovascular diseases during pregnancy[23]
	Emphasize shortness of breath, tachycardia, and other chief complaints as a key issue and know when to prompt immediate consultation *Encourage providers to obtain a detailed history of present illness that includes more information about positive symptoms (e.g., how many blocks can you walk without shortness of breath?; how many pillows do you need to sleep comfortably at night without shortness of breath?)* *	ACOG Practice Bulletin No. 212: Pregnancy and Heart Disease[24] Pregnancy in the Woman With Preexisting Cardiovascular Disease[25]
	Inform and educate physicians and nurses to not presume that patients with adult congenital heart disease know the signs and symptoms of worsening cardiac conditions imposed by their pregnancy experience *Make available and known to providers risk screening tools that are specific for pregnant women with congenital heart disease* *	Addressing maternal mortality: the pregnant cardiac patient[26] Predictors of pregnancy complications in women with congenital heart disease[27] Prospective validation and assessment of cardiovascular and offspring risk models for pregnant women with congenital heart disease[28]
Establish a multidisciplinary "Pregnancy Heart Team" (PHT) or consultants appropriate to their facilities' designated Maternal Level of Care to design coordinated clinical pathways for people experiencing cardiac	Identify members of team with specified roles and responsibilities	Introduction to Building the Cardio-Obstetric Team[29] Table 4 in ACOG Practice Bulletin No. 212: Pregnancy and Heart Disease[24] Maternal Cardiac Teams[30]

conditions in pregnancy and the postpartum period	Run drills for team with scenarios in different hospital settings including in-situ, clinical settings, and operating room	Management of Pregnancy in Patients With Complex Congenital Heart Disease: A Scientific Statement for Healthcare Professionals From the American Heart Association[31] Cardio-Obstetrics: A Practical Guide to Care for Pregnant Cardiac Patients[32] Maternal Cardiac Teams[30]
	Run simulations for PHT with basic and high-risk perinatal and postpartum scenarios	Checklists, huddles, and debriefs: Critical tools to improve team performance in obstetrics[33]
	Educate nursing about when PHT should be consulted and how to contact them to come to bedside *Include PHT in drills to test systems, processes, team response, performance, and communication**	Interdisciplinary Team Huddles for Fetal Heart Rate Tracing Review[34]
	Establish a known code phrase (appearing on overhead page or in digital alerts) for cardiac emergencies so all disciplines develop situational awareness	Being prepared for a pregnant code blue[35] Does every code need a "reader?" improvement of rare event management with a cognitive aid "reader" during a simulated emergency: a pilot study[36]
Establish coordination of appropriate consultation, co-	Ensure access to blood pressure cuff of all sizes for home measurement and telehealth in rural settings ◊	Levels of Maternal Care: Obstetric Care Consensus Number 9[37]

management, and/or transfer to appropriate level of maternal or newborn care	Use hub-and-spoke model to increase access with predetermined referral and transport system with appropriate transport personnel	The Spoke-Hub-and-Node Model of Integrated Heart Failure Care[38]
Develop trauma-informed protocols in training to address health care team member biases to enhance quality of care	Train staff and providers about trauma-informed care and about implicit bias ◊	Hidden in Plain Sight — Reconsidering the Use of Race Correction in Clinical Algorithms[39] Part 12: cardiac arrest in special situations: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care[40]
Develop and maintain a set of referral resources and communications pathways between obstetric providers, community-based organizations, and state and public health agencies to enhance quality of care	Embed referrals in electronic health records (EHR)	
	Encourage site visits among health care settings, community-based organizations, and public health agencies to better understand systems and services ◊ *Resources should include:* ◊ * • *Specialist care* • *Social driver needs* • *Mental health supports* • *Substance use disorder treatment*	"Increasing Warm Handoffs: Optimizing Community Based Referrals in Primary Care Using QI Methodology"[41]

Recognition and Prevention

Every Patient

AIM Bundle Element	Change Idea	Key Resources and Tools
Obtain a focused pregnancy and cardiac history in all care settings, including emergency department, urgent care, and primary care	Staff triage (OB and emergency) with skilled nurses for identification of cardiac issues	
	Ensure that elements of cardiac history are understood beyond just pregnancy-related assessment	High-Risk Cardiac Disease in Pregnancy: Part I[42] High-Risk Cardiac Disease in Pregnancy: Part II[43]
	Educate providers about definition of maternal mortality and the health disparities associated with it ◊	Pregnancy-related mortality in the United States, 2006-2010[1] Recent Increases in the U.S. Maternal Mortality Rate: Disentangling Trends From Measurement Issues[44] Trends in Maternal Mortality by Sociodemographic Characteristics and Cause of Death in 27 States and the District of Columbia[2]
In all care environments, assess and document if a patient presenting is pregnant or has	Build inquiry into all entrance portals for care	Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN) Position Statement: Women's Cardiovascular Health[45]

been pregnant within the past year	Encourage and inquire about information associated with recent pregnancies to entire health care team including physicians and nurses.	Cardiovascular Considerations in Caring for Pregnant Patients: A Scientific Statement From the American Heart Association[46] AWHONN Position Statement: Advanced Cardiac Life Support in Obstetric Settings[47]
	Ensure gender inclusivity in assessment ◊	
Assess if escalating warning signs for a potential imminent cardiac event are present		
Utilize standardized cardiac risk assessment tools to identify and stratify risk	Utilize the four cardiac risk assessment tools: • mWHO • CARPREG I • CARPREG II • ZAHARA *Most cases ultimately are risk-assessed individually; however, the tools exist to provide guidance* *	mWHO: 2018 ESC Guidelines for the management of cardiovascular diseases during pregnancy[23] CARPREG I: Prospective multicenter study of pregnancy outcomes in women with heart disease[48] CARPREG II: Pregnancy Outcomes in Women With Heart Disease: The CARPREG II Study[49] ZAHARA: Predictors of pregnancy complications in women with congenital heart disease[27] Prospective validation and assessment of cardiovascular and offspring risk models for

		pregnant women with congenital heart disease[28] Pregnancy in congenital heart disease: risk prediction and counselling[50]
Conduct a risk-appropriate work-up for cardiac conditions to establish diagnosis and implement the initial management plan	Include "equity pause" to look at bias risk within multidisciplinary care planning and to ask, "What are considerations to ensure respectful care without discrimination?" ◊ *Consider race, ethnicity, language, gender identity, obesity, mental health issues, unplanned pregnancy and history of pregnancies, marital status, housing status, education level, etc. as potential areas of bias for providers* ◊ *	Improving Adherence to Essential Birth Practices Using the WHO Safe Childbirth Checklist With Peer Coaching: Experience From 60 Public Health Facilities in Uttar Pradesh, India[51] Resisting the politics of the pandemic and racism to foster humanity[52]
Screen each person for condition-associated risk factors and provide linkages to community services and resources	Consider use of a care coordinator or community health worker to facilitate connections with community resources ◊	From Policy Statement to Practice: Integrating Social Needs Screening and Referral Assistance With Community Health Workers in an Urban Academic Health Center[53] Integrating Social Needs Screening and Community Health Workers in Primary Care: The Community Linkage to Care Program[54]

Response

Every Event

AIM Bundle Element	Change Idea	Key Resources and Tools
Facility-wide standard protocols with checklists and escalation policies for management of cardiac symptoms	Develop protocol and escalation policy in accordance with maternal level of care with defined roles, triggers, treatment algorithms, and referral/follow-up plans *Create system-wide protocols as needed for transfer within a system** *Embed protocols in EHR **	TeamSTEPPS: Rapid Response System Instructor Slides[55] Cardiovascular Considerations in Caring for Pregnant Patients: A Scientific Statement From the American Heart Association[46]
	Involve patients with lived experience in development of protocol ◊	Emergence of power and complexity in obstetric teamwork[56]
	Create individualized plans for discharge from emergency department or postpartum using specific criteria and with follow-up plans	
	Designate provider to take lead on patient and family communication during a crisis and ensure use of interpreter when needed ◊	
Facility-wide standard protocols with checklists and escalation policies for management of people with known or suspected cardiac conditions	Develop protocol and escalation policy in accordance with maternal level of care with defined roles, triggers, treatment algorithms, and referral/follow-up plans *Create system-wide protocols as needed for transfer within a system **	
	Involve patients with lived experience in development of protocols ◊	
	Designate provider to take lead on patient and family communication during a crisis and ensure use of interpreter when needed ◊	Engaging patients, families and professionals at the bedside using whiteboards[57]

Coordinate transitions of care, including the discharge from the birthing facility to home and transition from postpartum care to ongoing primary and specialty care	Provide access to shared EHR across settings	Seizing the Window of Opportunity Within 1 Year Postpartum: Early Cardiovascular Screening[58]
	Maintain list of cardiologists willing to focus on pregnant and postpartum patients and OB/GYN and primary care providers (PCPs) who are comfortable with cardiac conditions	A multi-state analysis of postpartum readmissions in the United States[59] Postpartum preeclampsia or eclampsia: defining its place and management among the hypertensive disorders of pregnancy[60]
	Create treatment plans readily accessible in EHR	
	Standardize hand-off tools and communications for transitions of care	Impact of the communication and patient hand-off tool SBAR on patient safety: a systematic review[61]
Offer reproductive life planning decisions and resources, including access to a full range of contraceptive options in accordance with safe therapeutic regimens	Maintain understanding of how new laws may impact access to the full range of contraceptive care in your state	
	Engage people with lived experience about how to talk respectfully and equitably about contraceptive options and termination options ◊	
Provide patient education focused on general life-	Engage community-based organizations in development of culturally appropriate and language-specific materials ◊	

threatening postpartum complications and early warning signs, including instructions of who to notify if they have concerns, and time and date of a scheduled postpartum visit	Create educational materials that clearly specify when to call clinician, schedule an appointment, and go to emergency department	
	Ensure that materials are written at appropriate reading level and include what is and is not normal within pregnancy to help patients recognize when symptoms need attention ◊	
	Use teach-back to assess patient understanding of discharge communication	
	Use infographics to help educate all patients and their support network and include in discharge packet in each facility	

Reporting and Systems Learning

Every Unit

AIM Bundle Element	Change Idea	Key Resources and Tools
For pregnant and postpartum people at high risk for a cardiac event, establish a culture of multidisciplinary planning, admission huddles, and post-event debriefs	Have formal review following serious cardiac event to assess alignment with standard policies and procedures (with appropriate updates) and to identify opportunities for improvement (including identification of discriminatory practices) *Establish standardized briefing documentation to capture successes and determine actionable follow-up* * *Maintain awareness of how disparaging labels like "frequent flyer," "non-compliant," etc. can undermine care and trust in the system* * *Identify improvement champions in each setting* *	Obstetric Team Debriefing Form[62] Maternal Mortality Due to Cardiac Disease in Pregnancy[63] Integrated Approach to Reduce Perinatal Adverse Events: Standardized Processes, Interdisciplinary Teamwork Training, and Performance Feedback[64]
	Archive debriefing documentation for OB cardiac conditions events and review systematically with unit-specific and QI leadership teams *Establish unit-specific and QI leadership teams to review and address quality and safety issues* *	Preidentification of high-risk pregnancies to improve triaging at the time of admission and management of complications in labour room: a quality improvement initiative[65]
	Conduct huddles in conjunction with stage-based algorithm to be responsive to evolving clinical scenarios *Include patients and families in bedside huddles if they want to participate* ◊ *	Checklists, huddles, and debriefs: Critical tools to improve team performance in obstetrics[33]
	Have immediate post-event debrief (with equity lens) for support and learning ◊ *Establish standardized briefing documentation to capture successes and determine actionable follow-up* *	Improving situational awareness to reduce unrecognized clinical deterioration and serious safety events[66]

	Have more formal after-action review with designated leader and standardized content *Reflect on equity in case as part of review* ◊ *	Does racism impact healthcare quality? Perspectives of Black and Hispanic/Latino Patients[67]
	Include assessment of transfers to higher levels of care and multidisciplinary planning and treatment as part of review *Emphasize excellence in transferring patients and collaborating cross teams to help remove stigma for referral and transfer* ◊ *	National Partnership for Maternal Safety: Consensus Bundle on Support After a Severe Maternal Event[68] Severe Maternal Morbidity Reporting Forms[69]
Perform multidisciplinary reviews of serious complications (e.g., intensive care unit (ICU) admissions for reasons other than observation) to identify systems issues	Have formal review following care of those at highest risk (e.g., mWHO III or IV) and those who experienced complications to assess alignment with standard policies and procedures (with appropriate updates) and to identify opportunities for improvement (including identification of discriminatory practices) ◊ *Include Race, Ethnicity and Language (REAL) data to identify potential bias and need for systemic changes* ◊ * *Use reporting pathways to communicate and document consistent issues* *	
	Include involved providers (specialists and generalists) in review process with focus on ways to improve care *Include near-misses and establish system for reporting near-misses and unexpected outcomes* *	Racism and the Reproductive Health Experiences of U.S.-Born Black Women[70]
	Identify key processes and outcomes for quality improvement data collection; include staff training metrics among run charts *Align quality improvement data collection with a perinatal quality collaborative and with hospital quality committee/officer* *	AIM Data Resources[71]

Monitor outcomes and process data related to cardiac conditions, with disaggregation by race and ethnicity due to known disparities in rates of cardiac conditions experienced by Black and Indigenous pregnant and postpartum people	Collaborate with health information technology (HIT) or appropriate staff to modify EHR and automate data collection and reporting	Building U.S. Capacity to Review and Prevent Maternal Deaths: Report from Maternal Mortality Review Committees: A View into Their Critical Role[72]
	Set specific goals for closing identified disparities using the SMARTIE format (strategic, measurable, ambitious, realistic, time-bound, inclusive, and equitable) ◊	
	Collect and analyze REAL data ◊ *Hold staff training on importance of REAL data and respectful collection ◊ **	
	Review all process and outcome data disaggregated by REAL to assess for inequities with unit-specific and QI leadership teams ◊ *Engage leaders in messaging about destigmatizing discussion and identification of inequities to move toward action ◊ ** *Identify alternative strategies to integrate equity considerations into reporting and systems learning in settings where use of disaggregated data may cause potential patient identifiability or unstable data ◊ **	
	Assess quality of REAL data and develop processes for improved data collection ◊ *Identify a champion focused on inequalities ◊ **	

Respectful, Equitable, and Supportive Care*

Every Unit, Provider, and Team Member

AIM Bundle Element	Change Idea	Key Resources and Tools
Screen for structural and social drivers of health that might impact clinical recommendations or treatment plans and provide linkage to resources that align with the pregnant or postpartum person's health literacy, cultural needs, and language proficiency	Ensure that providers have information and resources to screen for social drivers of health ◊	Achieving Health Equity: A Guide for Health Care Organizations[73] ACOG Patient Pamphlets[74] • Postpartum Depression • Nutrition During Pregnancy • Exercises During Your Pregnancy and Exercises After Your Baby Is Born Tear Pad • Obesity and Pregnancy • Routine Tests During Pregnancy Health Literacy: The SHARE Approach: 5 Essential Steps of Shared Decision Making[75] Depression Screen: Edinburgh Postnatal Depression Scale[76]
	Educate clinicians on providing respectful care by engaging in the life-long learning of cultural humility, understanding that individuals cannot learn all aspects of any culture including their own ◊	Partnering in healthcare: A framework for better care and outcomes[77]
Engage in open, transparent, and empathetic communication with	Clarify goals and values for pregnancy that are essential to include in a patient's treatment plan ◊	Refusal of Medically Recommended Treatment During

pregnant and postpartum people and their identified support networks to understand diagnoses, options, and treatment plans		Pregnancy: Committee Opinion 664[78] New York City Standards for Respectful Care at Birth[79] Educational needs of adolescents with congenital heart disease: Impact of a transition intervention programme[80] Use of a modified reproductive life plan to improve awareness of preconception health in women with chronic disease[81] Experiences of women with cardiac disease in pregnancy: a systematic review and metasynthesis[82]
	Refer patients who have experienced significant cardiac events for trauma follow-up care and consider referral to a support group (such as SCAD Alliance) ◊	SCAD Alliance: Connect for Support[83]
	Include patient's support network contact information in EHR ◊	The Mother's Autonomy in Decision Making (MADM) scale: Patient-led development and psychometric testing of a new instrument to evaluate experience of maternity care[84]
Include each pregnant or postpartum person and their identified support network as respected members of and	Ensure that a qualified network of interpreters is identified and utilized to support and facilitate patient communication ◊	Respectful Maternity Care: The Universal Rights of Childbearing Women[85] City Birth Trauma Scale[86]

contributors to the multidisciplinary care team		The SHARE Approach: 5 Essential Steps of Shared Decision Making[75] Birth Place Lab[87] The Mothers on Respect (MOR) index: measuring quality, safety, and human rights in childbirth[88]

*Further respectful care change ideas are integrated throughout the previous primary drivers as well. They are indicated by the ◊ symbol.

Appendix

1. Creanga AA, Berg CJ, Syverson C, Seed K, Bruce FC, Callaghan WM. Pregnancy-related mortality in the United States, 2006-2010. *Obstetrics and Gynecology*. 2015;125(1):5-12. doi:10.1097/AOG.0000000000000564

2. MacDorman MF, Declercq E, Thoma ME. Trends in Maternal Mortality by Sociodemographic Characteristics and Cause of Death in 27 States and the District of Columbia. *Obstetrics and Gynecology*. 2017;129(5):811-818. doi:10.1097/AOG.0000000000001968

3. Reduce maternal deaths - MICH-04. Healthy People 2030. Accessed August 8, 2022. https://health.gov/healthypeople/objectives-and-data/browse-objectives/pregnancy-and-childbirth/reduce-maternal-deaths-mich-04

4. Hameed AB, Lawton ES, McCain CL, et al. Pregnancy-related cardiovascular deaths in California: beyond peripartum cardiomyopathy. *American Journal of Obstetrics and Gynecology*. 2015;213(3):379.e1-10. doi:10.1016/j.ajog.2015.05.008

5. Cardiac Conditions in Obstetrical Care. Alliance for Innovation on Maternal Health. Published April 5, 2022. Accessed August 8, 2022. https://saferbirth.org/psbs/cardiac-conditions-in-obstetrical-care/

6. Pareto Chart. Institute for Healthcare Improvement. Accessed April 13, 2022. http://www.ihi.org:80/resources/Pages/Tools/ParetoDiagram.aspx

7. Priority Matrix: An Overlooked Gardening Tool. Institute for Healthcare Improvement. Accessed April 13, 2022. http://www.ihi.org:80/education/IHIOpenSchool/resources/Pages/AudioandVideo/Priority-Matrix-An-Overlooked-Gardening-Tool.aspx

8. Impact Effort Matrix. American Society for Quality. Accessed April 13, 2022. https://asq.org/quality-resources/impact-effort-matrix

9. Cardiovascular Disease in Pregnancy Task Force. Improving Health Care Response to Cardiovascular Disease in Pregnancy and Postpartum. California Maternal Quality Care Collaborative. Published online November 2017. Accessed July 27, 2022. https://www.cmqcc.org/resources-toolkits/toolkits/improving-health-care-response-cardiovascular-disease-pregnancy-and

10. Blumenthal EA, Crosland BA, Senderoff D, et al. California Cardiovascular Screening Tool: Findings from Initial Implementation. *AJP Reports*. 2020;10(4):e362-e368. doi:10.1055/s-0040-1718382

11. Chambers ME, De Zoysa MY, Hameed AB. Screening for Cardiovascular Disease in Pregnancy: Is There a Need? *Journal of Cardiovascular Development and Disease*. 2022;9(3):89. doi:10.3390/jcdd9030089

12. CREOG Educational Objectives: Core Curriculum in Obstetrics and Gynecology: 12th Edition. The American College of Obstetricians and Gynecologists. Published online 2022. https://www.acog.org/-/media/project/acog/acogorg/files/creog/creog-educational-objectives-13th-edition.pdf?rev=53bf30ec0f144132a8d81d81549b2476

13. Bello NA, Agrawal A, Davis MB, et al. Need for Better and Broader Training in Cardio-Obstetrics: A National Survey of Cardiologists, Cardiovascular Team Members, and Cardiology Fellows in Training. *Journal of the American Heart Association*. 2022;11(8):e024229. doi:10.1161/JAHA.121.024229

14. Darlene Dobkowski, MA. In cardio-obstetrics, clinicians must think 'outside the box' on CV issues in pregnancy. Accessed July 27, 2022. https://www.healio.com/news/cardiology/20200708/in-cardioobstetrics-clinicians-must-think-outside-the-box-on-cv-issues-in-pregnancy?utm_campaign=trendcard&utm_medium=cpc&utm_source=trendmd

15. Spiro L, Scemons D. Management of Chronic and Gestational Hypertension of Pregnancy: A Guide for Primary Care Nurse Practitioners. *The Open Nursing Journal*. 2018;12:180-183. doi:10.2174/1874434601812010180

16. Emergencies in Clinical Obstetrics. American College of Obstetricians and Gynecologists. Accessed July 27, 2022. https://www.acog.org/en/education-and-events/simulations/eco

17. Obstetric Emergency Drills Trainer's Manual. Maternal Health Task Force. Published June 2, 2016. Accessed July 27, 2022. https://content.sph.harvard.edu/wwwhsph/sites/2413/2016/06/Obstetric-Emergency-Drills-Trainers-Manual-PowerPoint1.pdf

18. Preparing for Clinical Emergencies in Obstetrics and Gynecology. American College of Obstetricians and Gynecologists. Accessed July 27, 2022. https://www.acog.org/en/clinical/clinical-guidance/committee-opinion/articles/2014/03/preparing-for-clinical-emergencies-in-obstetrics-and-gynecology

19. Bentley SK, Meshel A, Boehm L, et al. Hospital-wide cardiac arrest in situ simulation to identify and mitigate latent safety threats. *Advances in Simulation*. 2022;7:15. doi:10.1186/s41077-022-00209-0

20. LetsTalkPPCM. Accessed August 11, 2022. https://letstalkppcm.org/home-1

21. Dickinson JE. Simulation training in obstetric practice. *The Australian & New Zealand Journal of Obstetrics & Gynaecology*. 2013;53(6):507-508. doi:10.1111/ajo.12163

22. Practice Bulletin No. 152: Emergency Contraception. *Obstetrics and Gynecology*. 2015;126(3):e1-e11. doi:10.1097/AOG.0000000000001047

23. Regitz-Zagrosek V, Roos-Hesselink JW, Bauersachs J, et al. 2018 ESC Guidelines for the management of cardiovascular diseases during pregnancy. *European Heart Journal*. 2018;39(34):3165-3241. doi:10.1093/eurheartj/ehy340

24. Moussa HN, Rajapreyar I. ACOG Practice Bulletin No. 212: Pregnancy and Heart Disease. *Obstetrics and Gynecology*. 2019;134(4):881-882. doi:10.1097/AOG.0000000000003497

25. Marla Mendelson, MD. Pregnancy in the Woman With Preexisting Cardiovascular Disease. The Global Library of Women's Medicine's. Published online 2008. Accessed July 27, 2022. https://www.glowm.com/section-view/heading/Pregnancy%20in%20the%20Woman%20With%20Preexisting%20Cardiovascular%20Disease/item/161#.YuGU1z3MI2w

26. Wolfe DS, Hameed AB, Taub CC, Zaidi AN, Bortnick AE. Addressing maternal mortality: the pregnant cardiac patient. *American Journal of Obstetrics and Gynecology*. 2019;220(2):167.e1-167.e8. doi:10.1016/j.ajog.2018.09.035

27. Drenthen W, Boersma E, Balci A, et al. Predictors of pregnancy complications in women with congenital heart disease. *European Heart Journal*. 2010;31(17):2124-2132. doi:10.1093/eurheartj/ehq200

28. Balci A, Sollie-Szarynska KM, van der Bijl AGL, et al. Prospective validation and assessment of cardiovascular and offspring risk models for pregnant women with congenital heart disease. *Heart (British Cardiac Society)*. 2014;100(17):1373-1381. doi:10.1136/heartjnl-2014-305597

29. Wolfe DS. Introduction to Building the Cardio-Obstetric Team. *Clinical Obstetrics and Gynecology*. 2020;63(4):791-798. doi:10.1097/GRF.0000000000000557

30. Maternal Cardiac Teams. University of Rochester Medical Center. Accessed July 27, 2022. https://www.urmc.rochester.edu/ob-gyn/maternal-fetal-care/maternal-care/maternal-cardiac-teams.aspx

31. Canobbio MM, Warnes CA, Aboulhosn J, et al. Management of Pregnancy in Patients With Complex Congenital Heart Disease: A Scientific Statement for Healthcare Professionals From the American Heart Association. *Circulation*. 2017;135(8):e50-e87. doi:10.1161/CIR.0000000000000458

32. Cardio-Obstetrics: A Practical Guide to Care for Pregnant Cardiac Patients. Routledge & CRC Press. Routledge & CRC Press. Accessed July 27, 2022. https://www.routledge.com/Cardio-Obstetrics-A-Practical-Guide-to-Care-for-Pregnant-Cardiac-Patients/Hameed-Wolfe/p/book/9781138317918

33. Trejo FE, Igel CM, Chuang M, Bajaj K, Bernstein PS. Checklists, huddles, and debriefs: Critical tools to improve team performance in obstetrics. *Clinical Obstetrics and Gynecology*. 2019;62(3):518-527. doi:10.1097/GRF.0000000000000464

34. Thompson L, Krening C, Parrett D. Interdisciplinary Team Huddles for Fetal Heart Rate Tracing Review. *Nursing for Women's Health*. 2018;22(3):240-249. doi:10.1016/j.nwh.2018.03.002

35. Dn F. Being prepared for a pregnant code blue. *The American journal of maternal child nursing*. 1998;23(5). doi:10.1097/00005721-199809000-00005

36. Burden AR, Carr ZJ, Staman GW, Littman JJ, Torjman MC. Does every code need a "reader?" improvement of rare event management with a cognitive aid "reader" during a simulated emergency: a pilot study. *Simulation in Healthcare: Journal of the Society for Simulation in Healthcare*. 2012;7(1):1-9. doi:10.1097/SIH.0b013e31822c0f20

37. Levels of Maternal Care. American College of Obstetricians and Gynecologists. Accessed July 27, 2022. https://www.acog.org/en/clinical/clinical-guidance/obstetric-care-consensus/articles/2019/08/levels-of-maternal-care

38. Huitema AA, Harkness K, Heckman GA, McKelvie RS. The Spoke-Hub-and-Node Model of Integrated Heart Failure Care. *The Canadian Journal of Cardiology*. 2018;34(7):863-870. doi:10.1016/j.cjca.2018.04.029

39. Vyas DA, Eisenstein LG, Jones DS. Hidden in Plain Sight — Reconsidering the Use of Race Correction in Clinical Algorithms. *New England Journal of Medicine*. 2020;383(9):874-882. doi:10.1056/NEJMms2004740

40. Vanden Hoek TL, Morrison LJ, Shuster M, et al. Part 12: cardiac arrest in special situations: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation*. 2010;122(18 Suppl 3):S829-861. doi:10.1161/CIRCULATIONAHA.110.971069

41. Sanderson D, Braganza S, Philips K, et al. Increasing Warm Handoffs: Optimizing Community Based Referrals in Primary Care Using QI Methodology. *Journal of Primary Care & Community Health*. 2021;12:21501327211023884. doi:10.1177/21501327211023883

42. Elkayam U, Goland S, Pieper PG, Silverside CK. High-Risk Cardiac Disease in Pregnancy: Part I. *Journal of the American College of Cardiology*. 2016;68(4):396-410. doi:10.1016/j.jacc.2016.05.048

43. Elkayam U, Goland S, Pieper PG, Silversides CK. High-Risk Cardiac Disease in Pregnancy: Part II. *Journal of the American College of Cardiology*. 2016;68(5):502-516. doi:10.1016/j.jacc.2016.05.050

44. MacDorman MF, Declercq E, Cabral H, Morton C. Recent Increases in the U.S. Maternal Mortality Rate: Disentangling Trends From Measurement Issues. *Obstetrics and Gynecology*. 2016;128(3):447-455. doi:10.1097/AOG.0000000000001556

45. Women's Cardiovascular Health. *Journal of Obstetric, Gynecologic & Neonatal Nursing*. 2018;47(5):722-723. doi:10.1016/j.jogn.2018.07.002

46. Mehta LS, Warnes CA, Bradley E, et al. Cardiovascular Considerations in Caring for Pregnant Patients: A Scientific Statement From the American Heart Association. *Circulation*. 2020;141(23):e884-e903. doi:10.1161/CIR.0000000000000772

47. Advanced Cardiac Life Support in Obstetric Settings. *Journal of Obstetric, Gynecologic & Neonatal Nursing*. 2017;46(1):117-118. doi:10.1016/j.jogn.2016.11.008

48. Siu SC, Sermer M, Colman JM, et al. Prospective multicenter study of pregnancy outcomes in women with heart disease. *Circulation*. 2001;104(5):515-521. doi:10.1161/hc3001.093437

49. Silversides CK, Grewal J, Mason J, et al. Pregnancy Outcomes in Women With Heart Disease: The CARPREG II Study. *Journal of the American College of Cardiology*. 2018;71(21):2419-2430. doi:10.1016/j.jacc.2018.02.076

50. Hagen IM van, Roos-Hesselink JW. Pregnancy in congenital heart disease: risk prediction and counselling. *Heart*. 2020;106(23):1853-1861. doi:10.1136/heartjnl-2019-314702

51. Delaney MM, Maji P, Kalita T, et al. Improving Adherence to Essential Birth Practices Using the WHO Safe Childbirth Checklist With Peer Coaching: Experience From 60 Public Health Facilities in Uttar Pradesh, India. *Global Health: Science and Practice*. 2017;5(2):217-231. doi:10.9745/GHSP-D-16-00410

52. Lee E, Johnstone M. Resisting the politics of the pandemic and racism to foster humanity. *Qualitative social work: QSW: research and practice*. 2021;20(1-2):225-232. doi:10.1177/1473325020973313

53. Fiori K, Patel M, Sanderson D, et al. From Policy Statement to Practice: Integrating Social Needs Screening and Referral Assistance With Community Health Workers in an Urban Academic Health Center. *Journal of Primary Care & Community Health*. 2019;10:2150132719899207. doi:10.1177/2150132719899207

54. Fiori KP, Rehm CD, Sanderson D, et al. Integrating Social Needs Screening and Community Health Workers in Primary Care: The Community Linkage to Care Program. *Clinical pediatrics*. 2020;59(6):547-556. doi:10.1177/0009922820908589

55. TeamSTEPPS: Rapid Response Systems. Agency for Healthcare Research and Quality. Published online September 2006.

56. Neuhaus C, Lutnæs DE, Bergström J. Emergence of power and complexity in obstetric teamwork. *PLOS ONE*. 2022;17(6):e0269711. doi:10.1371/journal.pone.0269711

57. Law S, Antonacci R, Ormel I, et al. Engaging patients, families and professionals at the bedside using whiteboards. *Journal of Interprofessional Care*. 2022;0(0):1-10. doi:10.1080/13561820.2022.2074379

58. Ackerman-Banks CM, Grechukhina O, Spatz E, et al. Seizing the Window of Opportunity Within 1 Year Postpartum: Early Cardiovascular Screening. *Journal of the American Heart Association*. 2022;11(8):e024443. doi:10.1161/JAHA.121.024443

59. Clapp MA, Little SE, Zheng J, Robinson JN. A multi-state analysis of postpartum readmissions in the United States. *American Journal of Obstetrics and Gynecology*. 2016;215(1):113.e1-113.e10. doi:10.1016/j.ajog.2016.01.174

60. Hauspurg A, Jeyabalan A. Postpartum preeclampsia or eclampsia: defining its place and management among the hypertensive disorders of pregnancy. *American Journal of Obstetrics and Gynecology*. 2022;226(2S):S1211-S1221. doi:10.1016/j.ajog.2020.10.027

61. Müller M, Jürgens J, Redaèlli M, Klingberg K, Hautz WE, Stock S. Impact of the communication and patient hand-off tool SBAR on patient safety: a systematic review. *BMJ Open*. 2018;8(8):e022202. doi:10.1136/bmjopen-2018-022202

62. Obstetric Team Debriefing Form. American College of Obstetricians and Gynecologists. Published online March 2019. https://www.acog.org/-/media/project/acog/acogorg/files/forms/districts/smi-ob-hemorrhage-bundle-debriefing-form.pdf

63. Knypinski J, Wolfe DS. Maternal Mortality Due to Cardiac Disease in Pregnancy. *Clinical Obstetrics and Gynecology*. 2020;63(4):799-807. doi:10.1097/GRF.0000000000000564

64. Riley W, Begun JW, Meredith L, et al. Integrated Approach to Reduce Perinatal Adverse Events: Standardized Processes, Interdisciplinary Teamwork Training, and Performance Feedback. *Health Services Research*. 2016;51(Suppl 3):2431-2452. doi:10.1111/1475-6773.12592

65. Kumari P, Singh M, Sinha S, et al. Preidentification of high-risk pregnancies to improve triaging at the time of admission and management of complications in labour room: a quality improvement initiative. *BMJ Open Quality*. 2022;11(Suppl 1):e001718. doi:10.1136/bmjoq-2021-001718

66. Improving situation awareness to reduce unrecognized clinical deterioration and serious safety events. *Agency for Healthcare Research and Quality*. Accessed July 28, 2022. https://psnet.ahrq.gov/issue/improving-situation-awareness-reduce-unrecognized-clinical-deterioration-and-serious-safety

67. Findling MG, Zephyrin L, Bleich SN, Tosin-Oni M, Benson JM, Blendon RJ. Does racism impact healthcare quality? Perspectives of Black and Hispanic/Latino Patients. *Healthcare*. 2022;10(2):100630. doi:10.1016/j.hjdsi.2022.100630

68. Morton CH, Hall MF, Shaefer SJM, et al. National Partnership for Maternal Safety: Consensus Bundle on Support After a Severe Maternal Event. *Journal of obstetric, gynecologic, and neonatal nursing*. 2021;50(1):88-101. doi:10.1016/j.jogn.2020.09.160

69. Severe Maternal Morbidity Review Form. Alliance for Innovation on Maternal Health. Accessed July 28, 2022. https://safehealthcareforeverywoman.org/council/patient-safety-tools/severe-maternal-morbidity-forms/

70. Treder K, White KO, Woodhams E, Pancholi R, Yinusa-Nyahkoon L. Racism and the Reproductive Health Experiences of U.S.-Born Black Women. *Obstetrics and Gynecology*. 2022;139(3):407-416. doi:10.1097/AOG.0000000000004675

71. Data for Maternal Morbidity Prevention. Alliance for Innovation on Maternal Health. Accessed August 8, 2022. https://saferbirth.org/aim-data/overview/

72. Building U.S. Capacity to Review and Prevent Maternal Deaths: Report from maternal mortality review committees: a view into their critical role. CDC Foundation. Published online 2017. https://www.cdcfoundation.org/building-us-capacity-review-and-prevent-maternal-deaths

73. Ronald Wyatt, Mara Laderman, Laura Botwinick, Kedar Mate, John Whittington. Achieving Health Equity: A Guide for Health Care Organizations. Institute for Healthcare Improvement. Published online 2016.

74. Patient Pamphlets. American College of Obstetricians and Gynecologists. Accessed July 28, 2022. https://www.acog.org/en/store/products/patient-education/pamphlets/pamphlets-search

75. The SHARE Approach. Agency for Healthcare Research and Quality. Accessed July 28, 2022. https://www.ahrq.gov/health-literacy/professional-training/shared-decision/index.html

76. Edinburgh Postnatal Depression Scale (EPDS) Calculator. Accessed July 28, 2022. https://perinatology.com/calculators/Edinburgh%20Depression%20Scale.htm

77. Horvart, L. Partnering in healthcare: A framework for better care and outcomes. Safer Care Victoria, State. Government of Victoria, Melbourne. Published online 2019. https://www.safercare.vic.gov.au/sites/default/files/2019-02/Partnering in healthcare framework 2019_WEB.pdf#:~:text=Partnering%20in%20healthcare.%20This%20framework%20is%20designed%20for,will%20do%2C%20to%20deliver%20outstanding%20healthcare%20for%20Victorians

78. Refusal of Medically Recommended Treatment During Pregnancy. American College of Obstetricians and Gynecologists. Accessed July 28, 2022. https://www.acog.org/en/clinical/clinical-guidance/committee-opinion/articles/2016/06/refusal-of-medically-recommended-treatment-during-pregnancy

79. New York City Standards for Respectful Care at Birth. NYC Health. https://www1.nyc.gov/assets/doh/downloads/pdf/ms/respectful-care-birth-brochure.pdf

80. Ladouceur M, Calderon J, Traore M, et al. Educational needs of adolescents with congenital heart disease: Impact of a transition intervention programme. *Archives of Cardiovascular Diseases*. 2017;110(5):317-324. doi:10.1016/j.acvd.2017.02.001

81. Mittal P, Dandekar A, Hessler D. Use of a modified reproductive life plan to improve awareness of preconception health in women with chronic disease. *The Permanente Journal*. 2014;18(2):28-32. doi:10.7812/TPP/13-146

82. Dawson AJ, Krastev Y, Parsonage WA, Peek M, Lust K, Sullivan EA. Experiences of women with cardiac disease in pregnancy: a systematic review and metasynthesis. *BMJ Open*. 2018;8(9):e022755. doi:10.1136/bmjopen-2018-022755

83. Connect for Support. SCAD Alliance. Published October 17, 2016. Accessed July 28, 2022. https://scadalliance.org/support/support-groups/

84. Vedam S, Stoll K, Martin K, et al. The Mother's Autonomy in Decision Making (MADM) scale: Patient-led development and psychometric testing of a new instrument to evaluate experience of maternity care. *PLOS ONE*. 2017;12(2):e0171804. doi:10.1371/journal.pone.0171804

85. Respectful Maternity Care: The Universal Rights of Childbearing Women. Maternal Health Task Force. Published August 20, 2014. Accessed July 28, 2022. https://www.mhtf.org/document/respectful-maternity-care-the-universal-rights-of-childbearing-women/

86. City Birth Trauma Scale. City, University of London. Published online 2016. https://blogs.city.ac.uk/citybirthtraumascale/

87. Birth Place Lab. Division of Midwifery at the University of British Columbia. Published February 1, 2016. Accessed July 28, 2022. https://www.birthplacelab.org/

88. Vedam S, Stoll K, Rubashkin N, et al. The Mothers on Respect (MOR) index: measuring quality, safety, and human rights in childbirth. *SSM - population health*. 2017;3:201-210. doi:10.1016/j.ssmph.2017.01.005