MHA's road maps provide hospitals and health systems with evidence-based recommendations and standards for the development of topic-specific prevention and quality improvement programs, and are intended to align process improvements with outcome data. Road maps reflect published literature and guidance from relevant professional organizations and regulatory agencies, as well as identified proven practices. MHA quality and patient safety committees provide expert guidance and oversight to the various road maps.

Each road map is tiered into fundamental and advanced strategies:
- **Fundamental strategies** should be prioritized for implementation, and generally have a strong evidence base in published literature in addition to being supported by multiple professional bodies and regulatory agencies.
- **Advanced strategies** should be considered in addition to fundamental strategies when there is evidence the fundamental strategies are being implemented and adhered to consistently and there is evidence that rates are not decreasing and/or the pathogenesis (morbidity/mortality among patients) has changed.

**Operational definitions** are included to assist facility teams with road map auditing and identifying whether current work meets the intention behind each road map element.

**Resources** linked within the road map include journal articles, expert recommendations, electronic order sets and other pertinent tools which organizations need to assist in implementation of best practices.

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<td><strong>Team members</strong></td>
<td><strong>FUNDAMENTAL</strong> <em>(check each box if “yes”)</em>&lt;br&gt;☐ The facility has a process in place to designate perinatal patient safety program champions/team members/liaisons with clear roles and expectations.&lt;br&gt;  - A key role for program champions, team members and liaisons is to complete the perinatal road map at least annually and develop action plans to address elements of practice not currently in place. Action plans are most effectively addressed through engagement of an interdisciplinary team convened on a regular basis to review progress.</td>
<td>• ACOG’s Task Force on Collaborative Practice released the <a href="#">Collaboration in Practice: Implementing Team-Based Care report</a>, which outlines a framework for implementation of team-based care in order to improve quality, efficiency, and value of care for individuals and families.</td>
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<td><strong>ADVANCED</strong> <em>(check each box if “yes”)</em>&lt;br&gt;☐ The facility has a process in place to engage other team members as regular or ad hoc members in improvement work as appropriate.&lt;br&gt;  - Additional team members may include but are not limited to: purchasing, education, human resources, emergency department representatives, and patients/families.</td>
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| **FUNDAMENTAL** (check each box if “yes”) | The facility collects and regularly reviews the following perinatal process measures:  
☐ Percent of pregnant and postpartum women with severe hypertension receiving appropriate treatment within 60 minutes  
☐ Use and completion of a standardized tool and process to schedule both medically-indicated and elective inductions and C-sections  
  - The process includes a list of medical indication  
☐ All Early Elective Deliveries (EEDs) not meeting exclusion criteria | • MHA’s [encyclopedia of measures](#) details data specifications for perinatal process and outcome measures.  
• Following the correct procedure for inductions helps to ensure the best outcome for both the mother and baby. Consider using the ACOG induction checklist for scheduling these procedures.  
  - [ACOG Induction Checklist](#)  
• Following the correct procedure for C-sections helps to ensure the best outcome for both the mother and baby. Consider using the ACOG induction checklist for scheduling these procedures.  
  - [ACOG C-Section Checklist](#)  
• According to the Institutes for Healthcare Improvement (2017), “data shows that outcomes for newborns are greatly improved when gestation is longer than 39 weeks. Yet studies indicate that almost one-third of all babies delivered in the United States are electively delivered”. Consider using the IHI Oxytocin Bundle to improve outcomes and adherence to the Joint Commission 39-week measure.  
  - [IHI Oxytocin Bundle](#) |
| **ADVANCED** (check each box if “yes”) | The facility collects and regularly reviews the following perinatal process measures:  
  - All maternal ICU admissions or transfers, maternal stroke, eclampsia, transfusions ≥4. | |

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| Collect perinatal outcome data | **FUNDAMENTAL**  
*(check each box if “yes”)*  
- The facility has a process to ensure awareness of and compliance with the Minnesota Adverse Health Event Reporting Law, including maternal and neonatal care management events.  
The facility collects and regularly reviews the following perinatal outcome measures:  
  - PC-01- early elective deliveries, not meeting exclusion criteria  
  - Number of mothers who had a transfusion of more than 4 units of red blood cells  
  - Occurrence of severe sepsis among pregnant and postpartum patients  
  - Maternal mortality (case review and reporting per state law)  
  - PSI 17 birth trauma rate, injury to neonate  
  - PC-05- exclusive breast milk feeding rate  
  - Episiotomy rate  
  - OB readmissions within 30 days  
  - PC 02- Cesarean section rate  | - Minnesota’s [Adverse Health Events Reporting Law](#) requires hospitals and licensed ambulatory surgical centers to disclose when any of 29 serious reportable events occur; maternal and neonatal care management events are perinatal-specific events included in the reporting statute.  
  - [Minnesota’s 29 Reportable Adverse Health Events](#)  
  - [Adverse Health Event Reporting webinars](#)  
  - National Patient Safety Foundation’s [Root Cause Analysis and Action (RCA2) – Improving Root Cause Analyses and Actions to Prevent Harm](#)  
  - IHI [How-to Guide: Prevention Obstetrical Adverse Events](#)  |

| Perinatal patient safety interdisciplinary education | **ADVANCED**  
*(check each box if “yes”)*  
- PSI 18 obstetric trauma rate, vaginal delivery with instrument  
- PSI 19 obstetric trauma rate, vaginal delivery without instrument | - The Joint Commission provides [PC-01 measure](#) information, including a description, rationale, specifications, and a measure algorithm.  
- MHA’s [encyclopedia of measures](#) details data specifications for perinatal process and outcome measures.  
- [Minnesota statute 4615.0800](#) outlines procedures for required reporting of all maternal deaths to the Minnesota Department of Health within three days.  |

|  | **FUNDAMENTAL**  
*(check each box if “yes”)*  
- The facility provides onboarding and continuing education per local credentialing obligations for healthcare providers and nurses on training on individual communication skills and team collaboration, e.g., SBAR, TeamSTEPPS, briefs, debriefs, handoffs, simulation.  
- The facility provides onboarding and continuing education per local credentialing obligations for healthcare providers and nurses on electronic fetal monitoring using standard nomenclature. | - Clear communication between team members is crucial in ensuring patient safety. Consider the AHRQ TeamSTEPPS website for communication templates and overall resources.  
  - TeamSTEPPS |
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| Perinatal patient safety interdisciplinary education, cont. | □ The facility routinely conducts maternal/newborn team training (e.g. simulation exercises) on issues such as: shoulder dystocia, obstetric hemorrhage, emergency delivery, newborn resuscitation, hypertensive emergency.  
- Simulation training is interdisciplinary.  
□ The emergency department has the capability to manage obstetric emergencies, including eclampsia, obstetric hemorrhage, acute obstetric sepsis and hypertensive crisis. | • Electronic fetal heart rate monitoring can provide the care team with an understanding of how the fetus is doing during the antepartum period. For a greater understanding of fetal heart rate monitoring and its use, consider reviewing the ACOG practice bulletin 106  
  - ACOG Fetal Heart Rate Monitoring Information  
  - Category II Management case study learning module (users must enroll on the Absorb platform to access the module)  
• Simulation provides an opportunity for the team to practice and prepare for difficult clinical situations. In an article by Miller et al. (2008) the advantages of In Situ Simulation are discussed.  
• ACOG’s [Committee on Obstetric Practice Opinion #667](https://www.acog.org/emplibrary/obstetric-practice-opinions) recommends hospital-based obstetric units collaborate to establish guidelines for the triage of obstetric patients in emergency department and hospital ancillary service settings. The opinion text includes examples of validated obstetric triage acuity tools which may serve as a template for use in hospital obstetric units.  
• ACOG’s [Collaboration in Practice: Implementing Team-Based Care](https://www.acog.org/emplibrary/collaboration-in-practice) guide outlines a framework for implementation of team-based care in order to improve quality, efficiency, and value of care for individuals and families. |
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| Provide patient and family education | **FUNDAMENTAL** (check each box if “yes”)  
- The facility has a standardized process to provide patient and family education regarding risks, benefits and alternatives for maternal intra-partum procedures (e.g. informed consent).  
- The facility conducts newborn screening per the Minnesota Department of Human Services (DHS). | **ACOG Committee Opinion #439** reviews the purpose, ethics and historical context of the informed consent process. The opinion also describes two critical elements of ethical implementation of informed consent.  
- Newborn screening is mandated by MN statues 144.125-144.128, 144.966 and 144.1251. Visit the MDH newborn screening program website for further information on what testing is required.  
  - [Newborn Screening Program](#) |
| Early Elective Deliveries | **FUNDAMENTAL** (check each box if “yes”)  
- The facility has a hard stop policy in place to prevent elective deliveries < 39 weeks without medical indication.  
  - Hospital staff are authorized to deny a request to schedule an elective delivery before 39 weeks and 0 days of gestation.  
- The facility has developed, accepted and maintained a list of medical indications for delivery prior to 39 weeks.  
- The facility has a process to establish gestational age for all elective deliveries.  
  - Ultrasound measurement at less than 20 weeks gestation supports gestational age of 39 weeks or greater; fetal heart tones have been documented as present for 30 weeks by doppler/ultrasonography; it has been 36 weeks since a positive serum or urine hCG pregnancy test. | **According to the Institutes for Healthcare Improvement (2017), “data shows that outcomes for newborns are greatly improved when gestation is longer than 39 weeks. Yet studies indicate that almost one-third of all babies delivered in the United States are electively delivered”. To gain a deeper understanding of non-medically indicated early-term deliveries, consider reviewing the ACOG committee opinion 561.  
  - [ACOG Non-Medically Indicated Early-term Deliveries](#)  
- [MHA’s early elective deliveries toolkit](#) includes checklists, forms, practice bulletins and other resources to support facilities in development of a hard stop policy and maintaining a list of medical indications for delivery prior to 39 weeks. |
| Estimated fetal weight | **ADVANCED** (check each box if “yes”)  
- The facility requires that patients planning a vaginal delivery have estimated fetal weight documented within one week prior to delivery.  
  - Complete fetal weight estimation via Leopold’s maneuver or ultrasound. |  |
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| **Fetal heart rate and uterine activity** | **FUNDAMENTAL**  
*(check each box if “yes”)*  
- The facility requires provider/RN do a vaginal exam and document dilatation, effacement, station, presenting part prior to the induction/augmentation as clinically appropriate.  
- The facility follows an algorithm for management of Category II fetal heart tracings.  
- The facility has a policy in place that outlines the appropriate and safe administration of uterotonics relative to fetal heart rate assessment and implementation of intrauterine resuscitation relative to fetal heart rate assessment. | • Understanding how to manage Category II tracings is essential in providing safe patient care. Consider implementing the Clark Algorithm for Management of Category II EFM.  
- [Example Algorithm](#)  
- [Category II Management case study learning module](#)  
  ◦ (users must enroll on the Absorb platform to access the module) |
| **Hypertensive emergencies, pre-eclampsia and eclampsia** | **FUNDAMENTAL**  
*(check each box if “yes”)*  
- The facility has a protocol for early detection and treatment of hypertensive emergency based on ACOG guidelines.  
- The facility has a process that provides immediate access to medications required for hypertensive emergency and eclampsia.  
- The unit has an algorithm for eclampsia readily available.  
- The facility has a protocol for safe administration of magnesium sulfate for seizure prophylaxis and seizure management. | • Detecting and treating hypertension early is vital to ensuring safe maternal outcomes. Considering reviewing the resources below for information on treatment protocols:  
- [ACOG Emergent Therapy for Acute-onset, Serve Hypertension During Pregnancy and the Postpartum Period](#)  
- [CMQCC Preeclampsia Toolkit](#)  
| | **ADVANCED**  
*(check each box if “yes”)*  
- The facility has a process to support collaboration between the Emergency Department and OB in identification, evaluation and treatment of preeclampsia/eclampsia.  
- The facility uses an early recognition toolkit. | • Detecting and treating hypertension early is vital to ensuring safe maternal outcomes. Considering reviewing the CMQCC preeclampsia toolkit for information on treatment protocols.  
- [CMQCC Preeclampsia Early Recognition Tool (PERT)](#) |
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| Obstetric hemorrhage | **FUNDAMENTAL**  
(check each box if “yes”)  
- A hemorrhage risk assessment is done and documented for all patients on admission, throughout labor and at time of delivery.  
- The facility has a process in place for early detection and management of obstetric hemorrhage. The process includes:  
  - Communication of risk category.  
  - Identification of risk factors upon admission and throughout the intrapartum period.  
  - Ongoing team communication.  
  - Access to recommended medications and tamponade devices.  
  - Standardized protocols such as order sets and algorithms.  
  - Emergent care planning such as massive transfusions, surgical intervention or transfer to higher level of care based on facility resources.  
- The facility has a standardized protocol for the management of all women with cumulative blood loss ≥ 1000 mL.  | • “The [CMQCC OB Hemorrhage Task Force](https://www.cmqcc.org) developed the Improving Health Care Response to Obstetric Hemorrhage toolkit to help obstetrical providers, clinical staff, hospitals and healthcare organizations develop methods within their facilities for timely recognition and an organized, swift response to hemorrhage. The toolkit was initially released in July 2010, and was updated March 2015 to Version 2.0 with the latest evidence-based changes outlined in the Executive Summary section of the Toolkit (CMQCC, 2017)”  
  - [OB Hemorrhage Risk Factor Assessment](https://www.cmqcc.org/toolkit/ob-hemorrhage-risk-factor-assessment)  
| Obstetric hemorrhage | **ADVANCED**  
(check each box if “yes”)  
- The facility uses an OB hemorrhage tool kit.  
- The facility has a process for quantification of blood loss for all births.  | • The Council on Patient Safety in Women’s Health Care developed an [obstetric hemorrhage bundle](https://www.cmqcc.org/toolkit/obstetric-hemorrhage-bundle) which identifies resources to support readiness, recognition and prevention, response, and reporting/systems learning.  
• Allina Health’s [prebrief/debrief forms](https://www.cmqcc.org/toolkit/prebrief/debrief-forms) incorporate a post-partum hemorrhage risk assessment.  
• “The [CMQCC OB Hemorrhage Task Force](https://www.cmqcc.org) developed the Improving Health Care Response to Obstetric Hemorrhage toolkit to help obstetrical providers, clinical staff, hospitals and healthcare organizations develop methods within their facilities for timely recognition and an organized, swift response to hemorrhage. The tool kit was initially released in July 2010, and was updated March 2015 to Version 2.0 with the latest evidence-based changes outlined in the Executive Summary section of the Toolkit (CMQCC, 2017)”  
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| Cervical ripening  | **FUNDAMENTAL** (check each box if “yes”)  
- The facility has adopted evidence-based cervical ripening protocols utilizing the Bishop Score. | • There are several methods available to providers to assist with inducing labor. The ACOG labor induction overview and SOGC clinical practice guideline provide key resources to ensure favorable maternal and neonate outcomes.  
- [ACOG Labor Induction Overview](#)  
- [SOGC Clinical Practice Guideline, Induction of Labor](#) |
| Operative vaginal delivery | **FUNDAMENTAL** (check each box if “yes”)  
- The facility has standard practices in place for appropriate and safe performance of operative vaginal delivery. The guidelines may include:  
  - Alternative labor strategies  
  - Patient consent  
  - High probability of success (estimated fetal weight, fetal station and fetal position)  
  - Maximum number of application and pop-offs predetermined  
  - Exit strategy available (ensure surgical team/resuscitation team readiness)  
- The facility has a quality improvement process in place to review operative vaginal deliveries, including neonatal complications, that fall outside the facility’s standard practices. | • [IHI How-to Guide for Preventing Obstetrical Adverse Events](#). The IHI Vacuum Bundle begins on page 18 of the how-to guide with specific guidance on changes that result in improvement. |
| Surgical best practices | **FUNDAMENTAL** (check each box if “yes”)  
- The facility develops and maintains policies and procedures related to packed items, sharps and intentionally placed devices or packing procedures. This includes all of the following:  
  - The labor and delivery room has a designated basin for all used vaginal packing or sponges.  
  - The facility requires that two people perform the count – at least one is a licensed nurse.  
  - The facility requires that both individuals directly view and verbally count each item. | • Having a process in place to prevent retained items during vaginal deliveries and C-sections improves the maternal recovery period. Consider using the resources below to establish these policies and procedures:  
  - [MHA Roadmap to Preventing Retained Objects in Vaginal Deliveries](#)  
  - [MHA Roadmap to Preventing the Retention of Tucked and Packed Items](#)  
  - Institute for Clinical Systems Improvement – [Health Care Protocol: Prevention of Unintentionally Retained Foreign Objects During Vaginal Deliveries](#) |
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| Surgical best practices, cont. | - The facility has a process in place to perform a count immediately before delivery pack is used (baseline), at the end of delivery, prior to any team members leaving, any time there is concern about the accuracy of the count, and after a permanent staff change of L&D nurse during a case.  
- The facility has a process in place to account for all intentionally placed items, e.g., spiral electrodes, IUPC, tamponade balloon, hygroscopic dilators.  
- The facility has a process in place to perform and document a final visual inspection and ensuring counts are correct. | • Caissutti, et. al. conducted a systematic review and meta-analysis assessing the efficacy of vaginal cleansing prior to cesarean delivery in reducing postoperative endometritis.  
• Tita, et al. (2016) describe results of their evaluation of azithromycin-based extended spectrum prophylaxis for women undergoing nonelective cesarean section or after membrane rupture.  
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| Surgical best practices related to surgical site infections | **FUNDAMENTAL** *(check each box if “yes”)*  
- The facility has adopted the antibiotic dosing, normothermia, OR traffic control, preoperative bathing, postoperative wound care, and glycemic control elements of the MHA Surgical Site Infection road map. | • Surgical site infection (SSI) is the most common and costly health care-associated infection (HAI), occurring in up to 5 percent of patients undergoing inpatient surgery. Annual costs are estimated at $3.5 billion to $10 billion, and the emotional and physical costs patients are staggering, including lengthened hospital stays, readmission and death. Experts estimate that up to 60 percent of SSIs are preventable.  
  - [MHA Surgical Site Infection road map](#)  
  - Council on Patient Safety in Women’s Health Care - [Prevention of SSI after gynecologic surgery bundle](#) |
| VTE prevention | **FUNDAMENTAL** *(check each box if “yes”)*  
- The facility has a process in place for assessment and management of VTE prevention which includes mechanical prophylaxis for all C-sections, unless contraindicated and pharmacological interventions as appropriate, e.g., SCIP protocol. | • The Council on Patient Safety in Women’s Health Care developed a [maternal venous thromboembolism bundle](#) which identifies resources to support readiness, recognition & prevention, response, and reporting/systems learning.  
• The California Maternal Quality Care Collaborative developed the [Improving Health Care Response to Maternal Venous Thromboembolism toolkit](#) to support systematic VTE risk assessment implementation.  
• HealthEast Health System [presentation](#) on Maternal Venous Thromboembolism |
| Substance use & opioid prescribing | **FUNDAMENTAL** *(check each box if “yes”)*  
- The facility has a policy that defines opioid prescribing practices and participation in the prescription drug monitoring program.  
  - The policy follows the Minnesota Department of Human Services opioid prescribing guidelines and the Centers for Disease Control and Prevention’s Guideline for Prescribing Opioids for Chronic Pain.  
  - The policy addresses responsible opioid prescription at the time of Cesarean section or vaginal delivery. | • The [Minnesota Prescription Drug Monitoring Program](#) is a tool to support patient care management through tracking of prescription data. The program was implemented to help detect diversion, abuse and/or misuse of prescriptions for controlled substances.  
• National and state guidelines provide a framework for opioid prescribing to support pain management.  
  - [Minnesota Opioid Prescribing Guidelines](#)  
  - [CDC Guideline for Prescribing Opioids for Chronic Pain](#) |
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<td>Substance use &amp; opioid prescribing, cont.</td>
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<td>• <a href="#">ACOG Committee Opinion #742: Postpartum Pain Management</a> outlines recommendations for individualization of pain management strategies for women in the postpartum period, including women with identified opioid use disorder.</td>
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| Providing patient/family education on preventing newborn falls | **FUNDAMENTAL** (check each box if “yes”)  
☐ The facility has a standard process to provide patient/family education on preventing newborn falls. | • The Joint Commission’s [Quick Safety advisory on newborn drops and falls](#) includes risk factors and safety actions for hospitals to consider in the prevention of falls for all infants under their care. |
| Safe sleep practices | **FUNDAMENTAL** (check each box if “yes”)  
☐ Facility staff model and teach safe sleep practices per CDC/NIH SAFE to Sleep Campaign. | • Reduce the risk of sudden infant death syndrome by model and educating patient and families on safe sleep practices. Considering providing safe sleep information during the hospital stay and at discharge.  
  - [Safe Sleep Brochure](#)  
  - Minnesota Department of Health [Safe Sleep resource page](#) |