



Low-Dose Aspirin for Preeclampsia Prevention:

Implementation Guide for Clinical Teams



LOW DOSE
BIG BENEFITS™

CMQCC

California Maternal
Quality Care Collaborative

This guide is considered a resource, but does not define the standard of care in California or elsewhere. Readers are advised to adapt the guidelines and resources based on their local facility's level of care and patient populations served and are also advised to not rely solely on the guidelines presented here.

CMQCC Inclusive Language Notice

Currently recognized identifiers such as *birthing people, mother/mom, maternal, they, them, she, her, and pregnancy-capable person* are used in reference to a person who is pregnant or has given birth. We recognize that not all people who become pregnant and give birth identify as mothers or women and will use the above-recognized terms interchangeably to represent all those receiving care for pregnancy services. All persons deserve respectful patient-centered care.

The term *family* is used to refer to any persons the pregnant or postpartum patient designates as such, which may include partners, husbands, wives, support persons, loved ones.

The term *clinician* is used to denote nursing and medical staff, whereas the term *provider* refers to a clinician with diagnosing and prescribing authority.

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Executive summary

Preeclampsia is a multi-system disorder of pregnancy characterized by abnormal placentation, vascular changes, and inflammation, often diagnosed based on new onset hypertension and proteinuria.^[1] It is part of the constellation of hypertensive disorders of pregnancy, and affects one in 25 pregnancies in the US^[2], accounting for more than 20% of severe maternal morbidity, and a significant proportion of maternal death, nationally.^[3] In California, hypertensive disorders of pregnancy accounted for 4.9% of maternal deaths between 2019 and 2024. Complications from preeclampsia, such as preterm birth, can affect fetal, infant, and child health.^[5] Preeclampsia is also associated with increased health risks over the life course for both mother and offspring, including elevated risk of cardiovascular disease.

Preventing and treating preeclampsia is a priority for maternal and child health. Studies show increases in the proportion of deliveries complicated by preeclampsia in recent decades and in the prevalence of risk factors for preeclampsia.^[2] Non-Hispanic Black women experience preeclampsia at more than twice the rate of white women and are more likely to develop severe disease and to experience preeclampsia-related maternal and infant morbidity and mortality than other racial and ethnic groups.^[1,6] Preeclampsia contributes to a higher proportion of pregnancy-related deaths among Black and American Indian/Alaska Native women compared with white women^[3], highlighting the importance of preventing preeclampsia to decrease disparities and inequities in maternal and infant morbidity and mortality. Health exposures influenced by structural racism contribute to these inequities.^[7-12]

Low-dose aspirin (LDA) prescribed prenatally for patients at risk of preeclampsia is an underutilized preventive measure that can save lives, reduce morbidity, and lower healthcare costs. The United States Preventive Services Task Force (USPSTF), Society for Maternal Fetal Medicine (SMFM), and the American College of Obstetricians and Gynecologists (ACOG) recommend the use of LDA (81 mg/d) as preventive medication after 12 weeks of gestation in

This guide aims to support clinical teams and learning collaboratives in the following endeavors:

1. Implement clinical team best practices including preeclampsia risk screening, patient education, LDA prescription, and support for LDA adherence, to increase patient uptake of LDA for preeclampsia prevention;
2. Increase patient and community engagement to overcome barriers to LDA uptake and foster a context of respectful, equitable care;
3. Execute an implementation project that includes a community engagement approach and the use of data to support continuous quality improvement. Such projects can start small and build capacity for future work.

women at elevated risk for preeclampsia based on clinical criteria.^[13-15] **In clinical trials, low-dose aspirin (60-150 mg) reduced the risk for: preeclampsia by 15%, preterm birth by 20%, intrauterine growth restriction by 18%, and perinatal mortality by 20%.**

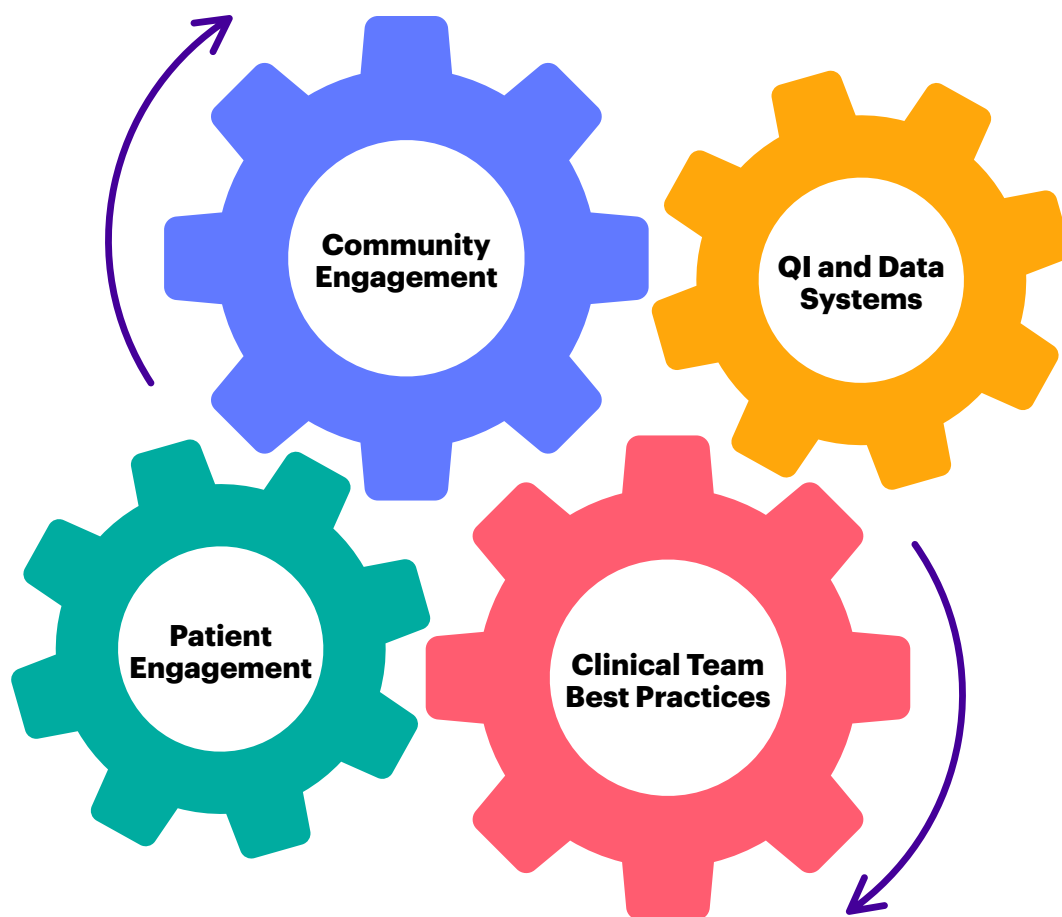
^[5] Estimates indicate the adoption of the USPSTF recommendations could save \$377.4 million in direct medical care costs annually in the US.^[16]

Despite recommendations, LDA remains underused in clinical practice, indicating an important quality improvement opportunity. Multiple studies have documented LDA use by less than 50% of patients with high-risk factors, and less than 25% of patients with multiple moderate-risk factors.^[17-20] Studies identify a range of barriers to LDA uptake, including lack of effective clinical team practices for risk factor screening, patient counseling, prescription of LDA, and support for adherence; systems barriers to obtaining the medication; and individual barriers such as concerns about medications in pregnancy and challenges taking a daily medication.

There is precedent for coordinated and effective work to reduce the harms from preeclampsia. In California, the rate of maternal mortality due to hypertensive disorders of pregnancy declined significantly between 2011 and 2019, opposing national trends.^[4,21] The decline coincided with coordinated, systematic efforts to address major drivers of severe maternal morbidity (SMM), with the response to hypertensive crisis, a complication of preeclampsia, as a major focus. These efforts have been characterized by significant engagement with hospitals and clinicians, the promotion of toolkits that support reliable implementation of evidence-based best practices, and learning collaboratives to build capacity for high functioning teams and continuous quality improvement (QI).^[22] Applying this robust approach to increase LDA uptake for preeclampsia prevention is a natural next step.

Distinct from high acuity inpatient interventions, the success of the LDA intervention relies heavily on patient actions, and requires a daily behavior sustained over a prolonged period. This underscores the importance of trust in the care team, understanding of recommendations, and logistical and personal capacity and support. In this context, an emphasis on patient and community engagement integrated with clinical team best practices and data are essential to ensure success (figure 1). An integrated approach also provides the opportunity to draw on the strengths of community-based settings, which often have strong connections with the communities they serve, and to build capacity for further community-centered QI work to address upstream drivers of adverse outcomes.

Figure 1. CMQCC’s model for increasing LDA uptake integrates multiple key elements.





Each clinician, practice, collaborative group, or health system undertaking efforts to increase uptake of LDA for preeclampsia prevention will have different starting points, needs, capacities, and resources. We've endeavored to make this guide usable for a range of teams, including those that are relatively new to quality improvement and community engagement. It's not expected that all teams will undertake all elements described, but rather that each team will use what makes sense for them.

Below we've summarized key points from the narrative guide related to the aims:

1. Implement clinical team best practices:

- **Screen all patients for risk of preeclampsia early in pregnancy.** USPSTF and ACOG recommend LDA for patients with one or more high-risk factors, and two or more moderate-risk factors. The guidelines from USPSTF emphasize that race is a risk factor because "these factors are associated with increased risk due to environmental, social, and historical inequities shaping health exposures, access to health care, and the unequal distribution of resources, not biological propensities."
- **Provide universal, culturally and linguistically appropriate patient education materials.** Employ strategies for patient-centered shared decision-making and be prepared for respectful discussion of risks patients may perceive as stigmatizing, such as race and income. Consider additional touchpoints outside of provider visits, such as nurse visits, to provide sufficient time to answer patients' questions. The action guide has resources for patient-facing materials co-developed with patients, as well as resources to increase skills for respectful discussion of risk.
- **Prescribe LDA to all eligible patients who accept the medication.** LDA may be initiated between 12 and 28 weeks, optimally before 16 weeks. ACOG recommends the 81 mg dose. An electronic prescription may facilitate access and increase ease of tracking project success.
- **Support medication adherence.** LDA effectiveness is influenced by adherence. Workflow elements that can support adherence include pre-visit huddles, medication reconciliation, and visit templates that prompt inquiry about adherence. Offer support for use of patient self-management strategies such as action plans, reminders, and pill boxes.

2. Increase patient and community engagement:

Patient and community engagement are essential to efforts to increase uptake of LDA for preeclampsia prevention, to understand barriers and solutions, and to create a context of respectful and equitable care. The following are examples of recommendations within the guide that support clinical teams to embrace patient and community engagement:

- Inclusion of patient perspectives in the implementation team.
- Consideration of patient and community engagement in the baseline assessment and plan development.
- Emphasis on patient materials and education that are culturally and linguistically appropriate.
- Emphasis on shared decision making and respectful discussion of risk.
- Inclusion of strategies to support adherence that emphasize collaboration and patient agency.
- Attention to health-related social needs.
- Inclusion of a plan for community-centered promotion of LDA.
- Stratify data to drive better health outcomes.
- Inclusion of community partners in the evaluation, sustainability, and dissemination phase.
- Support for connections and collaboration across the continuum of perinatal healthcare, for example between outpatient clinics and hospitals to share data and improve care transitions; between clinics and pharmacists to ensure alignment in education and prescription of LDA; and between medical providers and doulas to foster collaboration and trust.

3. Execute an implementation project that includes the use of data to support project planning, implementation, evaluation, sustainability, and spread. Engage in thoughtful team development and planning to ensure engagement and build capacity for future work.

- In the project planning phase, identification of a champion to lead the work, and thoughtful attention to team creation and gaining buy-in from providers, staff, and administrators will ensure project success and support community engagement.
- Early involvement with the information technology department can help understand how the electronic record can meaningfully support clinical team practices and data monitoring.
- A baseline assessment should include population characteristics; existing clinical team practices; patient, provider, and staff perspectives; and the current status of community engagement efforts, to help inform project planning.
- The Institute for Health Improvement (IHI) model can be applied to define goals and initial steps.
- Consideration of the purpose of data at each phase of the project and of available resources can support selection of appropriate process and outcome measures.
- The guide provides resources for all stages of project development, including team building, project planning, implementation, sustainability, and spread.
- The guide provides case examples from academic and community settings, and describing CMQCC's LDA learning collaboratives, to demonstrate how LDA projects can unfold in different settings.

Methodology

This guide has been created by California Maternal Quality Care Collaborative (CMQCC), with funding from March of Dimes, and draws on known evidence, experience from two collaborative cohorts of clinical teams working to improve LDA uptake, and input from clinical experts and community stakeholders.

March of Dimes' Low Dose, Big Benefits™ initiative aims to amplify awareness among health professionals and individuals of childbearing age on the risk factors for preeclampsia, the use of low-dose aspirin to mitigate

the adverse impacts of preeclampsia, and to diminish healthcare disparities by promoting equitable access to information for all pregnant patients. The initiative is separate from this action guide, but tools from the initiative are referenced throughout.

For more information about the CMQCC approach and methodology of this toolkit, see Appendix A.



How to use this document

The **intended audience** for this guide includes:

- **Outpatient clinical teams** who aim to improve their patients' uptake of LDA for preeclampsia prevention;
- **Groups, such as perinatal quality collaboratives, hospital systems, or health plans**, who are positioned to support collaborative work among multiple clinical sites; or are positioned to support large scale quality improvement projects;
- **Anyone across the continuum of perinatal care who is positioned to support patients' uptake of LDA.** This includes clinical sites such as family planning, primary care, cardiology, and pediatric clinics, as well as members of the expanded care team, such as pharmacists, doulas, and community health workers, and public health and community partners, who are key touchpoints for patients before, during, and after pregnancy, and all of whom are touchpoints for patients who may benefit from LDA.

Each team undertaking work in this area will have different needs, goals, capacity, and quality improvement experience. It's not expected that every team will complete all aspects of the project described in the implementation guide; rather, teams can use the information provided in the way most helpful in charting their own path.

To get the most out of this document, we recommend the following.

1. Scan the table of contents and content headers to understand what the guide content includes and the order of presentation. Some readers may choose to read the guide all at once, but others will identify shorter sections of particular use.
2. Consider your current needs and identify sections or tools that you may utilize in the short term.
3. Identify any topics that may be knowledge gaps for you and your team.
4. Pick your starting point. This may be a section of the document, or one of the "Quick Start" project examples below.
5. Utilize the colored tabs at the top of this page to easily navigate to important sections.

As you go through your quality improvement (QI) work to address LDA uptake, we recommend you consult the guide as needed to support your content knowledge and implementation efforts, while balancing your team's needs, resources, and ongoing project efforts.



Quick start: Clinical team best practices

Clinical team best practices for increasing LDA uptake and adherence are straightforward on a small scale, allowing for small, immediate improvement. Spread and sustainability of standardized improvements require longer term planning. If you're a provider who wants to improve your care today, we recommend these steps and tools.

Goal: To improve clinical care today, with potential to expand work in the future.

While it's recommended to utilize the QI best practices, community engagement, and patient engagement approaches as listed in this guide, this small clinical practice change is a reasonable place to start.

We encourage you to continue to consider how this preliminary work may be expanded. Some prompting questions include:

- Can you share these clinical recommendations with another provider or clinician?
- Does a gap in practice exist within the organization more broadly?

Figure 2. Recommended clinical best practices

Screen for preeclampsia risk

Use a screening tool to screen for preeclampsia risk and identify if the patient is a candidate for LDA.

Resources: [16/17](#). CMQCC, [18/19](#). March of Dimes, [6. SMFM Screening Tools](#)



Educate each patient on preeclampsia, risk, and LDA

Educate the patient about their preeclampsia risk, LDA recommendations, and general preeclampsia education.

Utilize shared decision making approaches to support LDA uptake.

Resources: [28. CMQCC](#) and [29. March of Dimes](#) patient education materials, [33. LDA sample scripts](#)



Prescribe LDA

An LDA prescription will allow the patient to utilize their insurance and can help with data tracking.

Resources: [35. Pharmacy letter](#)



Support adherence

Address barriers to adherence. Additional self-management tools, such as pill boxes and reminders, and community engagement, such as reminders from others along the continuum of care, can support adherence.

Upon return visits, ask if patient is taking LDA. This can be done through a medication reconciliation process.

Resources: [37. LDA adherence aid](#), [38. LDA adapted SMAQ](#)

Small project quick start

Who is this for? A site that is small, has limited resources, or has limited QI experience may choose to start with a small LDA project, with potential to expand the work in the future.

Example: A resident starts an LDA QI project with conducting a small baseline assessment, locally piloting a new workflow, and tracking progress through manual chart auditing.

Patient engagement is addressed through improved patient-centered education.

Below are tools that will support implementation efforts, though each team should select which tools work best for them. Additional content about each concept and tool can be found in the narrative guide.

Figure 3.

Small project		
Planning	Implementation	
Team building and project building Sections: 2.1, 2.2 • 8. Team Building and Infrastructure Worksheet • 10. Current Clinical Practices • 46. Project Charter	Implementation Section: 2.3.1, 2.4.1 • 42-44. Workflow Development • 48, 68. PDSA Tools	Prescription Section: 2.3.1 • 35. Pharmacy Letter
Clinical team education Section: 1: Key Background • 21. Mini grand rounds • 22. March of Dimes E-learning Module • 32. CMQCC Patient Provider Videos	Preeclampsia risk factor screening Section: 2.3.1 • Use a hard-copy version of screening • 6. Provider administered screening • 16, 18. Patient administered screening	Adherence assessment Section: 2.3.1 • Utilize existing medication reconciliation process • 37. Added support through Adherence Workflow Aid
Data planning Section: 2.3.3 • 52. LDA Data Plan Worksheet • 53. LDA Measures Quick Sheet • 55. Structure Measure Bundle • 57. Manual Chart Audit Tools	Patient education Section: 2.3.1 • 28. CMQCC Patient Education • 29. March of Dimes Patient Education • Print materials to have them ready to hand out	Spread and sustainability Section: 2.4.2, 2.4.3 • 69. Spread Strategy Worksheet • 70. Sustainability Plan Worksheet
Community engagement Section: 2.3.4 • 61. FindHelp.org • 62. Tool 2: Brainstorming Partnerships • Reach out to 1-3 community organizations for relationship building		

Medium project quick start

Who is this for? An organization with interest in implementation at multiple sites, with QI experience, or clinical and leadership buy in may decide to begin a medium-sized LDA project.

Example: A clinical leader with interest in preeclampsia prevention works with the QI team to assess baseline clinical

team best practices, develop a new workflow with EHR integration, and to increase community engagement.

Below are tools that will support implementation efforts, though each team should select which tools work best for them. Additional content about each concept and tool can be found in the narrative guide.

Figure 4.

Medium project	
Planning	Implementation
Team building and project building Sections: 2.1, 2.2 • 8. Team Building and Infrastructure Worksheet • 9. Guide to Baseline Assessment Worksheet: completion of some sections • 10. Current Clinical Practices and/or • 11. Current Clinical Practices Survey • 46. Project Charter	Implementation Section: 2.3.1, 2.4.1 • 42-44. Workflow Development • 48, 68. PDSA Tools
Clinical team education Section: 1: Key Background • 20. Detailed grand rounds with clinical and project leads • 21. Mini grand rounds with support teams • 22. March of Dimes E-learning Module • 23-26. Role Specific Information Sheets • 27. CMQCC Discussing Risk Respectfully Webinar • 32. CMQCC Patient Provider Videos • 33. Communication Scripts	Preeclampsia risk factor screening Section: 2.3.1 • Start with hard-copy screening, transition to EHR integrated workflow • See 2.6 Case Examples for EHR integration ideas • 6. Provider administered screening • 16, 18. Patient administered screening • 41. EPIC LDA EHR tools
Data planning Section: 2.3.3 • 52. LDA Data Plan Worksheet • 53. LDA Measures Quick Sheet • 55. Structure Measure Bundle • 56. Process Measure Excel Tool, supported with • 57. Manual Chart Audit Tools • 58. Outcome Measure Definitions, depending on capacity	Patient education Section: 2.3.1 • 28. CMQCC Patient Education • 29. March of Dimes Patient Education • Print materials to have them ready to hand out
Community engagement Section: 2.3.4 • 61. FindHelp.org • 62. Tool 2: Brainstorming Partnerships • 63. Tool 6: Becoming Clear about Purpose • Appoint a Community Engagement Champion	Prescription Section: 2.3.1 • 35. Pharmacy Letter
	Adherence assessment Section: 2.3.1 • Utilize existing medication reconciliation process • 37. Added support through Adherence Workflow Aid
	Spread and sustainability Section: 2.4.2, 2.4.3 • 68. Rapid Cycling Tool • 69. Spread Strategy Worksheet • 70. Sustainability Plan Worksheet
	Postpartum best practices Section: 2.5 • Improve patient education materials • 73. CMQCC Cardiovascular Risk Assessment • 74-76. Preeclampsia Foundation materials • 80, 81. CDC Urgent Maternal Warning Signs • 82, 83. CMQCC Risks after Pregnancy

Large project quick start

Who is this for? An organization with multiple departments, significant QI and data capacity, significant clinical and leadership buy in, or interest in sharing project results with external stakeholders may decide to start a large LDA project.

Example: Clinical leadership identifies gaps in important LDA clinical team best practices and subsequently establishes a QI project team. They integrate an updated workflow into the

EHR with the ability to pull data reports for assessment. They formally work with patient and community representatives throughout the project.

Below are tools that will support implementation efforts, though each team should select which tools work best for them. Additional content about each concept and tool can be found in the narrative guide.

Figure 5.

Large project	
Planning	Implementation
Team building and project building Sections: 2.1, 2.2 • 8. Team Building and Infrastructure Worksheet • 9. Guide to Baseline Assessment Worksheet: completion of some sections • 10. Current Clinical Practices and/or • 11. Current Clinical Practices Survey • 46. Project Charter	Implementation Section: 2.3.1, 2.4.1 • 42-44. Workflow Development • 48, 68. PDSA Tools • 69. Rapid Cycling Tool
Clinical team education Section: 1: Key Background • 20. Detailed grand rounds with clinical and project leads • 21. Mini grand rounds with support teams • 22. March of Dimes E-learning Module • 23-26. Role Specific Information Sheets • 27. CMQCC Discussing Risk Respectfully Webinar • 32. CMQCC Patient Provider Videos • 33. Communication Scripts • 34. Motivational Interviewing for LDA	Preeclampsia risk factor screening Section: 2.3.1 • Start with hard-copy screening, transition to EHR integrated workflow • See 2.6 Case Examples for EHR integration ideas • 6. Provider administered screening • 16, 18. Patient administered screening • 41. EPIC LDA EHR tools
Data planning Section: 2.3.3 • 52. LDA Data Plan Worksheet • 53. LDA Measures Quick Sheet • 55. Structure Measure Bundle • 56. Process Measure Excel Tool, supported with • 57. Manual Chart Audit Tools • 58. Outcome Measure Definitions	Patient education Section: 2.3.1 • 28. CMQCC Patient Education • 29. March of Dimes Patient Education • Print materials to have them ready to hand out
Community engagement Section: 2.3.4 • 61. FindHelp.org • 62. Tool 2: Brainstorming Partnerships • 63. Tool 6: Becoming Clear about Purpose • 64. Tool 7: Checklist- Readiness for CBO Partnership • Consider strategy for thorough integration of community engagement in project plan • Appoint a Community Engagement Champion	Prescription Section: 2.3.1 • 35. Pharmacy Letter
	Adherence assessment Section: 2.3.1 • Utilize existing medication reconciliation • 37. Added support through Adherence Workflow Aid
	Spread Section: 2.4.2 • 68. Rapid Cycling Tool • 69. Spread Strategy Worksheet Evaluation and dissemination Section: 2.4.4 and 2.4.5 • 71. Evaluation Worksheet • Dissemination section of guide
	Postpartum best practices Section: 2.5 • Improve patient education materials • 73. CMQCC Cardiovascular Risk Assessment • 74-76. Preeclampsia Foundation materials • 80, 81. CDC Urgent Maternal Warning Signs • 82, 83. CMQCC Risks after Pregnancy

Section 1:

Key background information

1.1 Preeclampsia and its effects on health

This section includes:

- 1.1.1** A priority for maternal and child health
- 1.1.2** Pathophysiology
- 1.1.3** Diagnosis and treatment of preeclampsia

Preeclampsia is a multi-system disorder of pregnancy characterized by abnormal placentation, vascular changes, and inflammation, often diagnosed based on new onset hypertension and proteinuria.^[1] It is part of the constellation of hypertensive disorders of pregnancy, and affects one in 25 pregnancies in the US^[2], accounting for more than 20% of severe maternal morbidity (including stroke, organ failure, unanticipated surgery, ICU admission) and a significant proportion of maternal death, nationally.^[3] In California, hypertensive disorders of pregnancy accounted for 4.9% of maternal deaths between 2019 and 2021.^[21]

Complications from preeclampsia, such as preterm birth, intrauterine growth restriction, maternal stroke, and placental abruption, can affect fetal, infant, and child health.^[23] Most cases of preeclampsia occur after 34 weeks, but perinatal morbidity and mortality are greatest for early onset disease.^[24] Preeclampsia has been estimated to contribute to 6 percent of preterm births and 19 percent of medically indicated preterm births.^[25]

In the long term, preeclampsia is associated with increased risks for mental health conditions, cerebrovascular disease, and cardiovascular disease (CVD), for the mother.^[6,26,27] Cardiovascular disease is the leading cause of death for females nationally^[28], and the leading cause of maternal mortality in California.^[4] Preterm preeclampsia poses a more pronounced increase in risk of future cardiovascular morbidity and mortality.^[29] Preeclampsia is associated with elevated risk of cardiovascular, metabolic, and neurological diseases for offspring.^[30]

1.1.1 A Priority for maternal and child health

Preventing and addressing hypertensive disorders of pregnancy, including preeclampsia, has been identified as a priority for improving maternal mortality and addressing inequities in perinatal health.^[31] Current rates of adverse birth outcomes in the US, including preventable morbidity and mortality related to preeclampsia, are unacceptable for all birthing people and disproportionately impact certain populations.^[32] Studies show increases in the proportion of deliveries complicated by preeclampsia in recent decades, and in the prevalence of risk factors for preeclampsia.^[2] Non-Hispanic Black women experience preeclampsia at more than twice the rate of white women and are more likely to develop severe disease and to experience preeclampsia-related maternal and infant morbidity and mortality than other racial and ethnic groups.^[1,6] Preeclampsia contributes to a higher proportion of pregnancy-related deaths among Black and American Indian/Alaska Native women compared with white women^[3], highlighting the importance of preventing preeclampsia to decrease disparities in maternal and infant morbidity and mortality.

Health exposures influenced by structural racism^[7,8] contribute to these disparities. Examples include increased exposure to toxic chemicals and inadequate housing^[7], psychosocial stress associated with experiencing historically based social factors and unequal treatment that results in oxidative stress, epigenetic changes, and other physiological processes associated with increased allostatic load^[8,9], decreased access to and lower quality of medical care^[8], and racial bias within the healthcare system.^[10] Disparities in birth outcomes for Black women persist in the absence of, and are not sufficiently explained by, disparities in education, insurance coverage, and socioeconomic status. According to USPSTF, “sources of inequity that cause or exacerbate hypertensive disorders of pregnancy and pregnancy outcomes include structural racism and interpersonal racism.”^[33] Black women are more likely to enter pregnancy with chronic hypertension^[10] than white women, and to have undiagnosed^[11] or uncontrolled^[12] chronic hypertension.

Place-based inequities in incidence of preeclampsia have also been identified, with patients living in rural areas and in the Southern and Midwestern United States being more likely to experience new onset hypertensive disorders of pregnancy.^[34]

1.1.2 Pathophysiology

The pathophysiology of preeclampsia is incompletely understood but is known to involve complex interactions between the maternal vascular, renal, and immune systems, and the placenta. At the core of preeclampsia is abnormal trophoblast invasion of the uterine spiral arteries, leading to impaired placental perfusion. This results in endothelial dysfunction, oxidative stress, and inflammatory responses that contribute to systemic vasoconstriction and hypertension. As the disease progresses, reduced placental blood flow and the release of anti-angiogenic and pro-inflammatory factors exacerbate endothelial damage, further elevating blood pressure and leading to complications such as organ dysfunction, fetal growth restriction, and preterm birth.^[1] The cardiovascular and inflammatory underpinnings of the disease are in line with its association with cardiovascular, neurodegenerative, and mental health conditions in later life.

1.1.3 Diagnosis and treatment of preeclampsia

Preeclampsia is a disorder of pregnancy characterized by new-onset hypertension, usually after 20 weeks gestation, often accompanied with proteinuria. In 2013, ACOG revised diagnostic criteria such that proteinuria is no longer required to make the diagnosis when other evidence of severe disease is present.^[35] Appendix B summarizes the ACOG diagnostic criteria for preeclampsia.

Treatment for preeclampsia depends on gestational age and disease severity, and includes delivery and supportive care. Supportive care may consist of magnesium sulfate for seizure prevention, antihypertensive therapy, and treatment of any additional associated maternal, fetal, or neonatal complications. Most preeclampsia occurs before birth, but postpartum preeclampsia can also occur and may be associated with a higher risk of maternal morbidity.^[36]

Resources:

For more information on the diagnosis and treatment of preeclampsia:

1. [ACOG: Practice Bulletin Number 222: Gestational Hypertension and Preeclampsia](#)
2. [CMQCC: Improving Health Care Response to Hypertensive Disorders of Pregnancy toolkit](#)
3. [CDC Million Hearts Campaign Hypertensive Disorders of Pregnancy Change Packet](#)



1.2 Low-dose aspirin is recommended for preeclampsia prevention in patients at elevated risk

This section includes:

- 1.2.1** Identification of patients at elevated risk
- 1.2.2** Mechanism of action
- 1.2.3** Safety
- 1.2.4** Side effects
- 1.2.5** Importance of adherence
- 1.2.6** Contraindications
- 1.2.7** Dosing

The USPSTF, SMFM, and ACOG recommend the use of low-dose aspirin (81 mg/d) as preventive medication after 12 weeks of gestation in women who are at elevated risk for preeclampsia.^[11-13]

In developing its recommendations, the USPSTF found adequate evidence of reduction in risk for preeclampsia, preterm birth, and intrauterine fetal growth restriction (IUGR) in women at increased risk for preeclampsia who received low-dose aspirin (Grade B recommendation). In clinical trials, low-dose aspirin (60-150 mg) reduced the risk for: preeclampsia by 15%, preterm birth by 20%, IUGR by 18%, and perinatal mortality by 20%.^[14] In addition, multiple studies suggest that LDA is particularly effective in preventing preterm preeclampsia^[37], which is associated with an increased risk of adverse perinatal events and future cardiovascular disease.^[29,38]

The USPSTF recommends that LDA be initiated between 12- and 28-weeks gestation. A 2021 Practice Advisory from ACOG and SMFM emphasizes that LDA should optimally be started before 16 weeks gestation, and continued until delivery.^[15] Placentation is completed at approximately 16 weeks gestation, thus early initiation of LDA may improve outcomes by providing benefit during the time of placental development.^[39]



Resources:

Low-dose aspirin guidelines can be found here:

4. [USPSTF: Aspirin Use to Prevent Preeclampsia and Related Morbidity and Mortality](#)
5. [ACOG: Committee Opinion Number 743: Low-dose Aspirin Use During Pregnancy](#)
6. [SMFM: Special Statement: Checklists for preeclampsia risk-factor screening to guide recommendations for prophylactic low-dose aspirin](#)

1.2.1 Identification of patients at elevated risk

Table 1 provides a full list of the risk factors included in the task force recommendation.

Table 1. Clinical risk assessment for preeclampsia^a

Risk level	Risk factors	Recommendation
High ^b	- History of preeclampsia, especially when accompanied by an adverse outcome - Multifetal gestation - Chronic hypertension - Pregestational type 1 or 2 diabetes - Kidney disease - Autoimmune disease (e.g., systemic lupus erythematosus, antiphospholipid syndrome) - Combinations of multiple moderate-risk factors	Recommend low-dose aspirin if the patient has ≥1 of these high-risk factors
Moderate ^c	- Nulliparity - Obesity (i.e., body mass index >30) - Family history of preeclampsia (i.e., mother or sister) - Black persons (due to social, rather than biological, factors)^d - Age 35 years or older - Low income^d - Personal history factors (e.g., low birth weight or small for gestational age, previous adverse pregnancy outcome, >10-year pregnancy interval) - In vitro conception	Recommend low-dose aspirin if the patient has ≥2 moderate-risk factors Consider low-dose aspirin if the patient has 1 of these moderate-risk factors
Low	Prior uncomplicated term delivery and absence of risk factors	Do not recommend low-dose aspirin

^a Includes only risk factors that can be obtained from the patient medical history.

^b Includes single risk factors that are consistently associated with the greatest risk for preeclampsia. Preeclampsia incidence would likely be at least 8% in a population of pregnant individuals having 1 of these risk factors.

^c These factors are independently associated with moderate risk for preeclampsia, some more consistently than others. A combination of multiple moderate-risk factors may place a pregnant person at higher risk for preeclampsia.

^d These factors are associated with increased risk due to environmental, social, and historical inequities shaping health exposures, access to health care, and the unequal distribution of resources, not biological propensities.

US Preventive Services Task Force. Aspirin Use to Prevent Preeclampsia and Related Morbidity and Mortality: US Preventive Services Task Force Recommendation Statement. JAMA. 2021;326(12):1186–1191.

According to the recommendation, LDA is indicated for women with one or more high-risk factors, such as a history of preeclampsia, chronic hypertension, or diabetes; or two or more moderate-risk factors, such as a history of adverse pregnancy outcomes, maternal age >35 years old, obesity, and Black race. LDA may be considered for patients with one moderate-risk factor. The recommendations emphasize that Black race and lower income are associated with increased risk due to environmental, social, and historical inequities shaping health exposures, access to healthcare, and the unequal distribution of resources, rather than biological propensities.^[14]

A 2021 Practice Advisory from ACOG and SMFM^[15] notes that for some institutions and practices, the majority of patients may be at high- or moderate-risk for preeclampsia and would therefore be candidates for low-dose aspirin prophylaxis. In these instances, universal implementation (offering low-dose aspirin to all patients within such practices or institutions) may be medically reasonable.

1.2.2 Mechanism of action

At doses lower than 300 mg, aspirin selectively inactivates the COX-1 enzyme, suppressing production of the prostaglandin thromboxane and inhibiting platelet aggregation.^[40] Proposed mechanisms of action of aspirin for preeclampsia prevention include improved placentation, inhibition of platelet aggregation, and general antithrombotic effects leading to endothelial stabilization and decreased placental infarction and inflammation.^[39]

1.2.3 Safety

USPSTF found no evidence of maternal, perinatal, or developmental harms.

In its review of evidence, the USPSTF did not find evidence of harms from LDA for preeclampsia prevention. The task force considered 21 randomized controlled trials of average and increased-risk pregnant individuals to assess for maternal, perinatal, and developmental harms. Pooled results from the trials did not demonstrate increased risk for placental abruption, maternal hemorrhage, or fetal intracranial bleeding. Evidence related to long-term child developmental outcomes in offspring from in utero exposure to low-dose aspirin, though limited, showed no differences in congenital anomalies or malformations, or physical or developmental outcomes based on prenatal aspirin exposure.^[11–13]

A 2020 Food and Drug Administration recommendation to limit or avoid the use of NSAIDs in pregnancy makes an explicit exception for the use of the 81 mg dose of aspirin for certain pregnancy-related conditions at any point in pregnancy under the direction of a healthcare professional.^[41] Of note, multiple studies included in the USPSTF analysis used doses of 150 mg and 162 mg,^[5] and illustrate the selective inactivation of the COX-1 enzyme characteristic of LDA occurs at doses lower than 300 mg.^[40]

1.2.4 Side effects

Though approximately 10% of women receiving LDA for preeclampsia prevention in randomized controlled trials report gastrointestinal side effects, no other major side effects have been confirmed.^[39]

1.2.5 Importance of adherence

Several studies have shown that the efficacy of aspirin in preventing preeclampsia is significantly influenced by maternal adherence to the prescribed regimen.^[17–19] The Combined Multimarker Screening and Randomized Patient Treatment with Aspirin for Evidence-Based Preeclampsia Prevention (ASPRE)^[20] trial found that better compliance with aspirin therapy (>90% of planned doses) led to a greater reduction in the incidence of preterm preeclampsia. Non-adherence, on the other hand, diminishes the benefits of aspirin, underscoring the importance of patient education, consistent monitoring, and support systems to improve uptake.



1.2.6 Contraindications

There are few absolute contraindications to LDA. The ACOG statement on LDA for preeclampsia prevention^[13] reports the following:

Absolute contraindications to LDA:

- History of aspirin allergy (e.g., urticaria) or hypersensitivity to other salicylates or NSAIDs
- Nasal polyps
- History of aspirin-induced bronchospasm

Relative contraindications:

- History of gastrointestinal bleeding
- Active peptic ulcer disease
- Other sources of gastrointestinal bleeding
- Severe hepatic dysfunction

Consider LDA on case-by-case basis in the presence of obstetric bleeding or risk factors for obstetric bleeding. LDA is not a contraindication to neuraxial anesthesia.^[42]

1.2.7 Dosing

The current ACOG recommended dose of LDA for preeclampsia prevention is 81 mg daily.^[13] Worldwide, recommended LDA doses range from 60-150 mg daily. The ASPRE trial results showed the effectiveness of LDA in prevention of preterm preeclampsia with a dose of 150 mg.^[43] No trials to date have compared the 81 and 150 mg doses, though at least one trial is underway comparing 75 mg and 150 mg doses.^[44] Both the USPSTF and ACOG have continued to recommend 81 mg, pending further studies. Some providers use a dose of 162 mg, though evidence is limited.^[45] There is some evidence that LDA is more effective when taken at night.^[46]



Understanding race as a risk factor for preeclampsia

The 2021 USPSTF statement emphasizes that preeclampsia's associations with race and other social factors are not a result of biological propensities, but are rather due to environmental, social, and historical inequities that shape health exposures, access to healthcare, and unequal distribution of resources, and are largely related to historical and current manifestations of structural racism.^[14]

Socioeconomic factors and health behaviors such as education, income, health insurance coverage, and smoking do not fully explain racial disparities in obstetrical outcomes. Researchers have identified exposures, including racism and chronic toxic stress compounded by socioeconomic challenges, such as unemployment, neighborhood deprivation, and unstable housing, as some of the reasons for the racial disparities in health outcomes.^[47–50] Other potential drivers occur within the clinical domain, including disrespectful care, conscious and unconscious bias, perceived unequal treatment, and inequitable administration of treatments.^[51–53] Physiologic mechanisms through which unequal treatment contribute to poor health outcomes include epigenetic changes and oxidative stress that contribute to allostatic load, a dysregulated stress response, and premature deterioration of health.^[8,9]

LDA is one tool that may contribute to improvements in perinatal health inequities.^[54] To achieve this potential, using a respectful and collaborative process to equitably deploy LDA as part of the broader work of addressing unequal treatment and disparities in outcomes is essential. Strategies that teams can use include:

- Addressing racial bias within healthcare
- Standardizing clinical team best practices
- Ensuring teams can discuss risks respectfully, so that patients feel heard and encouraged

- Establishing mechanisms for informed shared decision-making, such as:
 - Through the provision of informational materials co-developed with patient advisors
 - Through offering multiple options to address patient questions or concerns, such as health educator or nurse visits in addition to provider visits
- Engaging patients and communities in the development and deployment of systems, processes, and educational messages and materials, with the intention of collaboration and earning and building trust
- Adopting a trauma-informed, respectful approach to care
- Using data wisely to identify and address inequities

CMQCC and March of Dimes offer several resources, including educational modules for clinical teams about respectful discussion of risk, creating an environment of respectful care, and patient and community engagement. They also offer patient-facing educational materials developed in collaboration with patients and communities.

The following resources can further aid in addressing race as a risk factor and discussing risk respectfully.

Resources:

16. and 17. CMQCC Patient Screening Tools, [English](#) and [Spanish](#)
18. and 19. March of Dimes Screening Tools, [English](#) and [Spanish](#)
22. [March of Dimes E-learning module](#)
27. [CMQCC Webinar: Discussing Risk Respectfully](#)
28. [CMQCC LDA Patient Education Materials](#)
29. [March of Dimes Patient Education Materials](#)
32. [CMQCC Videos of Patient/Provider Conversations](#)
66. [CMQCC Webinar: Doula Roundtable](#)
67. [CMQCC Webinar: Clinic and Community Connections](#)

1.3 A quality improvement opportunity: The gap between evidence and practice

Despite recommendations, LDA remains underused in clinical practice. Multiple studies have documented LDA use by less than 50% of patients with high-risk factors, and less than 25% of patients with multiple moderate-risk factors, indicating an important quality improvement opportunity.^[15–19]

In some cases, LDA underuse occurs because eligible patients do not receive a prescription. For example, in one study examining LDA prescription rates among nearly 1,100 eligible patients at an urban safety-net hospital, only 40% of the women meeting high-risk eligibility criteria and only 10% of women meeting moderate-risk eligibility criteria were provided with prenatal low-dose aspirin prescriptions.^[20]

Patients do not always take their LDA, even when prescribed. Patients may have concerns specifically related to bleeding because they have a preexisting understanding of aspirin as a blood thinner,^[55] or may not understand that aspirin has differing effects depending on the dose, and may derive their understanding from non-medical sources.^[55]

Beyond concerns about bleeding, patients may be confused, ambivalent, or mistrustful of LDA. Reasons for this include absent or ineffective counseling; perception of stigma, lack of identification with, or lack of motivation to take medication with respect to risk factors such as Black race, low income, and obesity; concerns about taking any medication in pregnancy, and mixed messages about the safety of aspirin in pregnancy, including from medical providers and pharmacists. Patients may intend to take LDA and not take it due to logistical or financial challenges obtaining the medication, or because they forget to take it.^[18,19,21,22]

The gap between evidence and practice surrounding LDA for preeclampsia prevention indicates a clear quality improvement opportunity. **Systematic approaches to standardize materials and workflows have demonstrated effectiveness. Clinical team best practices to close this guideline-practice gap include**

risk factor screening, education, prescription, and support for adherence. Strategies and tools for implementing each of these elements are detailed in section.^[56–58]

However, adoption of clinical team best practices around screening, education, prescription, and support for adherence to LDA is necessary but not sufficient to address this gap because multiple influences outside the clinical space affect LDA uptake. Figure 6 illustrates multiple influences across the continuum of prenatal care. Patient and community engagement are necessary to understand these influences with the goal of improving LDA uptake and better supporting patients to achieve improved outcomes.

Care bundles and toolkits have demonstrated utility for addressing preeclampsia-related maternal morbidity and mortality, such as hypertensive crisis.^[59–62] Learning collaboratives, where groups of teams work in concert to address a single problem across settings and receive data and quality improvement support, can further enhance success.^[22] This action guide builds on that work by addressing an upstream cause of the high-acuity clinical scenarios that successful toolkits have previously targeted.

However, unlike addressing high acuity clinical scenarios in hospital settings, successful execution of the interventions here depends heavily on patient actions, and requires a daily behavior sustained over a prolonged period, with supports and impediments distributed across healthcare settings and throughout the community. Accordingly, we've emphasized patient and community engagement alongside core clinical team practices, and considered how teams can incorporate all of these into data-driven quality improvement, across varying conditions of experience and resources.

The next section provides an overview of patient and community engagement and how they can be incorporated into quality improvement efforts to support LDA for preeclampsia prevention.

Figure 6. Multiple touchpoints across the continuum of care highlight influences on patients and opportunities for engagement to support LDA uptake.

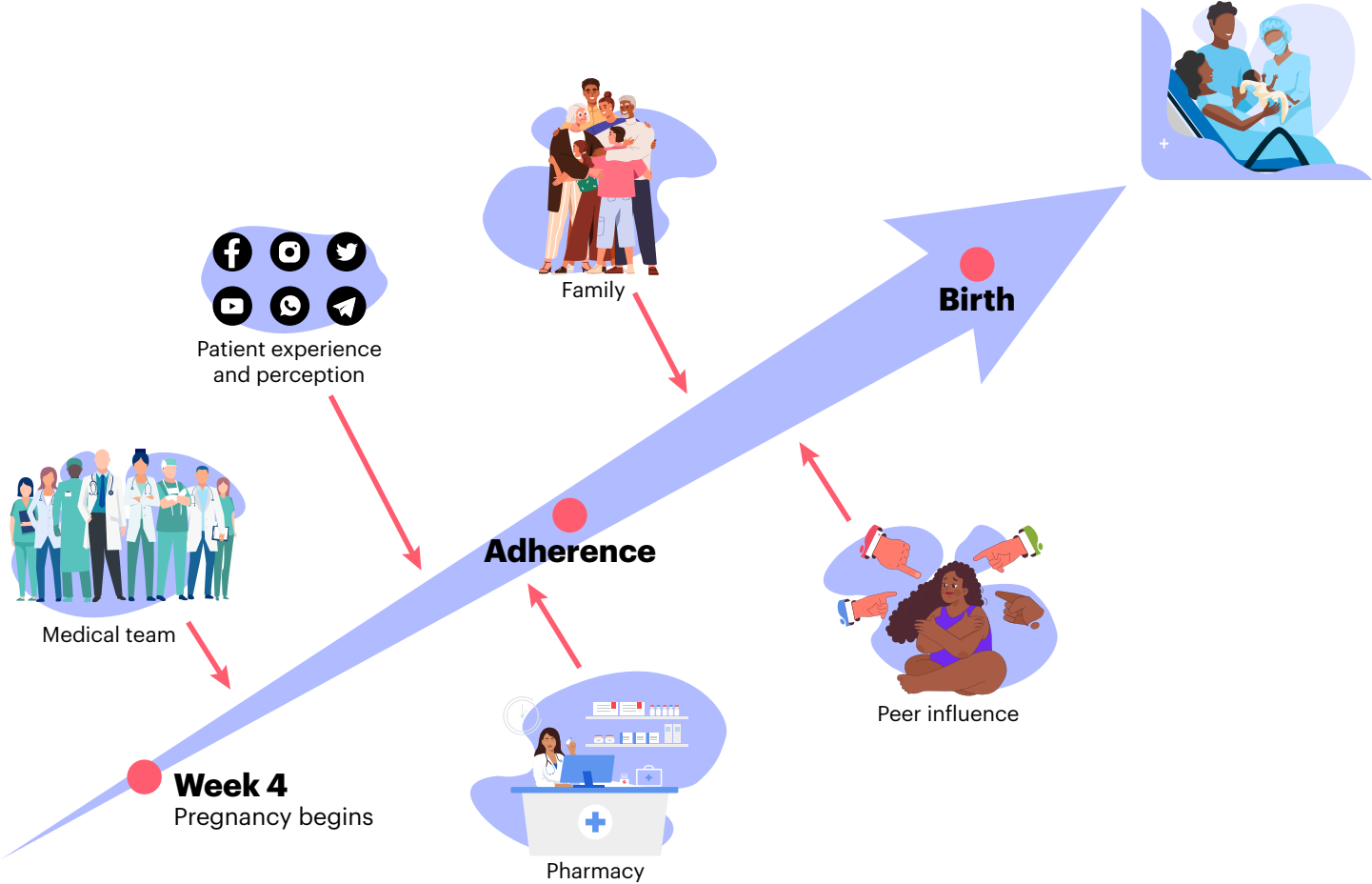


Table 2. At a glance: What contributes to suboptimal LDA uptake, and how can it be overcome?

Barrier to LDA uptake:	This barrier can be addressed by:
Lack of prescription • Due to lack of provider recommendation • Advisement to obtain LDA over the counter: This may increase barriers to obtaining medication including cost and logistics	Implementing a systematic clinical approach to standardize best practices, including standardizing workflows for: • Preeclampsia risk factor screening • Patient education • LDA prescription • Assessment of adherence
Intentional non-adherence • Confusion due to ineffective counseling or information overload • Hesitancy or mistrust of recommendations due to safety concerns or mixed messages • Reluctance to take medication during pregnancy • Lack of understanding of risk: Risk factors, such as race, income, age, or obesity, may not resonate with patients as threats to health or may be perceived as stigmatizing	• Promoting shared decision making and respectful discussion of risk • Utilizing multiple touchpoints and voices to answer questions and communicate key messages • Providing culturally and linguistically appropriate education materials to use as decision aids • Adopting a community-centered promotion of LDA through community engagement
These elements can be supported by partnerships across the continuum of care, and with the community receiving care, to understand community perspectives and provide appropriate education and messaging.	
Unintentional non-adherence • Logistical or financial challenges in obtaining the medication • Difficulty remembering to take the medication • Confusion about whether it should be continued, such as after hospitalization	• Identifying and overcoming financial and logistical barriers, such as providing LDA via prescription or dispensing LDA in clinic, ensuring LDA insurance coverage and that pharmacists are willing to dispense it • Providing ongoing support for adherence as part of clinical visit workflows and conversations • Utilizing patient self-management tools such as pill boxes and reminder alarms • Engaging patient's support systems
To ensure the success of all of the above: • Use data to drive continuous quality improvement • Focus on patient and community engagement • Use learning collaboratives or other supports for groups of clinics to decrease administrative burden and spread best practices	

1.4 Patient and community engagement in quality improvement for preeclampsia prevention

This section includes:

1.4.1 Defining community and patient engagement

1.4.2 Patient and community engagement is critical

1.4.3 Engaging healthcare stakeholders across the continuum of care

1.4.4 How to proceed with community and patient engagement: Center community needs, mutuality, and respect

1.4.5 Conceiving of action steps: Patient and community engagement reflect the social ecological model of health

1.4.1 Defining patient and community engagement and their importance in LDA efforts

Patient engagement refers to the active involvement of individual patients in their own healthcare decisions, care processes, and overall well-being. Patient engagement aims to ensure not only that patients have access to necessary information, but that they're confident to make informed choices, share their preferences, and participate in decisions related to their care. Patient-engaged care should foster a collaborative relationship between healthcare providers and patients, where patients feel respected, heard, and supported in their health journeys.

Patient engagement plays a vital role in preeclampsia prevention by empowering patients with essential knowledge, enabling informed decision making, and ensuring patients receive care at the right time.

Community engagement is a collaborative process between organizations and the communities impacted by their policies, programs, governance, and delivery of health services to influence decisions and action through the mutually beneficial and bi-directional exchange of resources, expertise, and information. It emphasizes a partnership approach where lived

experiences, needs, and insights of the community help shape health interventions to ensure they are grounded in real-world needs and preferences.

Community engagement plays a key role in preeclampsia prevention by raising awareness of preeclampsia to the wider community, and by providing support to pregnant people, particularly in underserved communities, thereby helping to reduce health disparities.

A community-engaged approach is the meaningful involvement of community members and partners to achieve long-term and sustainable outcomes, processes, relationships, discourse, decision-making, or implementation.

Applying a community-engaged approach to care delivery processes and QI efforts is essential in preeclampsia prevention, to address patient and community factors that inform patient decisions and adherence around LDA and create a responsive and respectful care environment.



1.4.2 Patient and community engagement is critical

LDA for prevention of preeclampsia requires a patient's sustained commitment to take a daily medication, underscoring the importance of trust in the care team, understanding of recommendations, and logistical and personal capacity and support. Especially in communities experiencing health disparities, community and patient engagement are critical for success.

The historical and ongoing experiences of marginalized communities have created a landscape where trust in the healthcare system can be fragile and needs to be built and earned. Past exploitation, systemic or individual, as well as bias, and mistreatment or other negative experiences while receiving healthcare can understandably hinder patients' willingness to engage with medical care and adhere to advice. Further, systemic racism results in disproportionate exposure to unmet health-related social needs that can pose barriers to adhering to recommendations, such as limited financial or transportation related resources. Rural communities also suffer from inadequate access to maternal health care and disproportionate burdens of preeclampsia compared with urban communities and may have specific needs related to access to appropriate care.

By providing education, support, and resources to underserved populations, community engagement helps reduce disparities, improve access to care through community health workers and clinics, and fosters a supportive culture of health where women feel safe and encouraged to seek help and follow health recommendations.

1.4.3 Engaging healthcare stakeholders across the continuum of care

Beyond direct engagement with patients and with groups outside of the healthcare system, a community engagement approach may be useful within the healthcare system. This engagement can help ground connections between healthcare team members across the continuum of care. In some instances, there may be existing infrastructure that can provide a starting point for community-centered promotion of LDA. For example, consider building or leveraging connections between the following groups:

- Outpatient clinics and hospitals, to improve transitions of care and exchange of information and data
- Doulas and physicians, to foster trust and ongoing collaboration
- Outpatient clinics, public health services, and social services to coordinate services to address patient needs without replicating work
- Clinical teams and pharmacists, to ensure alignment about messaging and prescription of LDA in pregnancy

1.4.4 How to proceed with community and patient engagement: Center community needs, mutuality, and respect

Engagement efforts must always begin with cultural humility. Healthcare teams should approach both community and patient engagement with an openness to dialogue and learning, rather than assuming expertise based on professional or clinical knowledge. This includes awareness, openness, and sensitivity to cultural differences. Awareness of the specific needs and values of diverse populations, paired with recognition that each individual's life and healthcare experiences are different and shaped by many factors, provides a starting point.

Respectful community engagement involves building partnerships with local organizations, leaders, and patients, acknowledging their expertise, and creating an ongoing dialogue that ensures the intervention remains relevant and effective. Patient engagement requires creating an environment where patients feel confident to ask questions, express concerns, and make informed choices about their care.



1.4.5 Conceiving action steps: Patient and community engagement reflect the social ecological model of health

Patient and community engagement can be considered along a continuum rather than as discrete efforts. While many frameworks define this continuum, a common framework used is the Social Ecological Model (SEM). This model illustrates the interplay between individual, interpersonal, community, organizational, and policy and environmental factors as drivers of behavior and health.

Each of the SEM levels interact, thus making systems-thinking crucial to any health promotion work, including increasing LDA use. For example, an individual makes decisions based on knowledge and attitudes, which have likely been influenced by their support system and the community they live in. Their community is impacted by organizational efforts, such as local health systems, and policies, such as public health campaigns.

The SEM of health illustrates why efforts to increase the uptake of LDA for preeclampsia prevention must extend beyond healthcare team practices to achieve impact and illustrates areas through which patient and community engagement can increase success. Figure 7 illustrates the Social Ecological Model applied to Low-Dose Aspirin at different levels of the model.

The latter half of this implementation guide outlines steps that address both the clinical and the patient and community engagement domains, with the goal of positioning teams for maximum impact with their LDA QI projects. In turn, teams will build capacity for further work being careful to avoid unequal treatment, providing respectful care, and more.

Figure 7. Social Ecological Model Levels and Examples of LDA Work



The following are examples of recommendations within the guide that support clinical teams to embrace patient and community engagement:

- Inclusion of patient perspectives in the implementation team
- Consideration of patient and community engagement in the baseline assessment and plan development
- Emphasis on patient materials and education that are culturally and linguistically appropriate
- Emphasis on shared decision-making and respectful discussion of risk
- Inclusion of strategies to support adherence that emphasize collaboration and patient agency
- Attention to health-related social needs
- Inclusion of patient perspective as data for monitoring and evaluation
- Inclusion of a plan for community-centered promotion of LDA
- Stratify data to drive better health outcomes
- Inclusion of community partners in the evaluation, sustainability, and dissemination phase

Sections that provide action steps for patient and community engagement:

2.2.3 Conduct a baseline assessment

- a. Population characteristics
- e. Patient engagement
- f. Community engagement

2.3.4 Incorporating patient and community engagement



Section 2:

Approach to quality improvement

The following pages outline an overall approach clinical teams can use to put processes in place that improve uptake of LDA for preeclampsia prevention.

2.1 Preparatory steps

This section includes:

2.1.1 Identify a champion

2.1.2 Engage leadership

2.1.3 Form an implementation team

Though preparatory steps will vary by setting and practice size, the following steps based on a champion model will support team readiness and enhance the success of implementation efforts.

2.1.1 Identify a champion, or champions, to lead the project

A champion can act as a formal or informal leader of the project, positioned to provide insight as well as guide team building and buy-in from leadership and clinical team members. A clinician or staff member who is positioned to use their expertise and connections to support the adoption of best practices for LDA, possibly with lived experience related to preeclampsia or from the neighborhood or population being served, is a good candidate.

2.1.2 Engage leadership

Support from administrative leadership is critical to success. Leadership may be able to assist with:

- Providing protected time, for administrative project work or staff meeting time for team engagement.
- Contributing connections to and support for collaboration with internal or outside departments or organizations, such as:
 - Information technology (IT)/EHR
 - Health education, behavioral health, or other patient-facing departments
 - Community partners such as public health or community-based organizations
- Leveraging existing patient and community engagement work such as organization-level patient advisors.
- Leveraging existing quality improvement work, such as patient registries or team-based care.

- Identifying local incentives and alignment between organizational and project priorities, such as quality metrics, strategic priorities of the organization, required or planned activities that can be leveraged for the project, such as requirements to undertake quality improvement, or planned EHR developments or changes.
- Identifying opportunities to align the project with plans for expanded care team such as community health workers and doulas, and efforts to create linkages across the perinatal continuum of care.
- Advocating for inclusion of hypertension and perinatal health as organizational priorities through the organizational strategic plan, policies, and procedures.
- Advocating for funding to support project activities such as community engagement efforts or to support protected time for staff.

Resources:

7. [LDA talking points](#)

2.1.3 Form an implementation team

In generating the team, it may be helpful to consider the following:

- **Who is on the team?** It may make sense to have smaller working groups within the larger team with different but aligned goals. Different goals may include to focus on refining and implementing clinical team best practices such as screening and prescription workflows, or to orchestrate community engagement for LDA promotion outside of the clinic. Depending on the practice setting, the team could include representation from:
 - Clinical team members: clinicians, nurses, pharmacists, medical assistants, health educators, community health workers
 - Practice administration: office manager, senior leadership, front desk staff, IT

- Population health departments or others with experience with QI and data-driven strategies
- Hospital representatives: clinician, administrator, or QI representative who also works in the hospital
- Doulas, community or public health partners
- Patient representatives
- **Are there people who can provide mentorship to the team leaders and anyone who is growing in their role?** Consider executive sponsors and/or others who have skills and experience that complement or enhance the core team's expertise or support people who are working in a new capacity.
- **How will patient and community perspectives be incorporated?**
 - Larger practices may form or draw from an existing patient and community engagement infrastructure such as a patient advisory board or patient survey infrastructure.
 - Smaller practices may include a few patients to represent the patient voice, or clinical team members or staff with lived experience with preeclampsia and/or who are part of the community the clinic serves.
- **What are roles and responsibilities of team members, including administrative functions?**
 - Consider who will plan meetings, take notes, track action items, coordinate communication, and perform other project-related tasks.
 - In addition to a project or clinical champion, it may be useful to designate a team member to be the champion or liaison to various partners to ensure stewardship of important relationships and to help provide protected time for clinical or administrative staff for these functions and for team meetings.
- Learning collaboratives may be able to help decrease the administrative burden for clinical teams, for example by providing project management assistance and educational materials and enabling peer support and sharing of best practices.
- **How will ongoing engagement with staff and other stakeholders be maintained?**
 - It may be useful to reserve time at staff meetings for education, reporting, and feedback about the project, to maintain engagement of the clinical team.
 - Think about how to bring these people along by soliciting feedback and sharing progress and wins.

Resources:

8. [Team building and project planning worksheet](#)



Tips for engaging with Information Technology (IT) teams

Engagement and collaboration with your organization's IT team can dramatically enhance the success of a project. If possible, engage early with your IT team—even if the initial project does not rely heavily on the EHR. Some settings may be able to tap into existing resources or initiatives and integrate the EHR into their projects at the outset. In other cases, IT resources may be lacking initially, but clinical teams can implement some EHR-based elements, such as visit templates, use some tactics that don't involve the EHR, such as manual chart review, and understand what may be possible over time. Demonstrating initial success with simple, clinical-team led strategies may pave the way for more resources and larger-scale EHR integration. Furthermore, designing initial steps with an understanding of current and potential EHR capabilities may support easier spread and success as the project expands.

Reasons to prioritize EHR integration include:

- Standardizing clinical care through standardized EHR workflows and documentation, which will support pilot, spread, and sustainability efforts.
- Improving data tracking processes for care delivery processes, outcomes, and patient experience.

It may be helpful to keep the following considerations in mind when engaging with your IT team:

- **Who are key points of contact in the IT department?**
- **Do they have capacity to collaborate with you?**
- **Are there concurrent or upcoming IT initiatives that are important to understand** such as a pending upgrade or change to the EHR system, or that align with this project such as a planned build or patient-engagement capacities such as online screening tools?
- **What do you need to make your project successful from a clinical perspective, and how could IT support this?** Examples of potentially useful EHR-based elements that support clinical team members and workflows include:
 - Best practice advisories
 - Smart-sets and order sets
 - Screening and visit documentation templates and other documentation strategies
- **What do you need in place to be able to monitor success?**
 - Does your EHR system allow tracking of pregnant patients?
 - Are there other systems in place for tracking patients, such as patient registries for chronic hypertension or other relevant conditions?
- **Is it possible to use the EHR to build reports for:**
 - Preeclampsia risk factor screening rates?
 - LDA prescription rates and/or rates of adherence for at-risk patients?
 - Identifying risk factors?
 - Pulling baseline data?
 - Pulling prescription data?
 - Pulling data from visit templates?
- **What other components of your project can you integrate into your IT and EHR discussions?**

2.2 Project planning and initial team activities

This section includes:

2.2.1 Draft a project plan

2.2.2 Generate buy-in

2.2.3 Conduct a baseline assessment

2.2.1 Draft a project plan with a timeline for objectives and milestones

This will differ depending on the setting, but inclusion of the elements below is a reasonable approach.

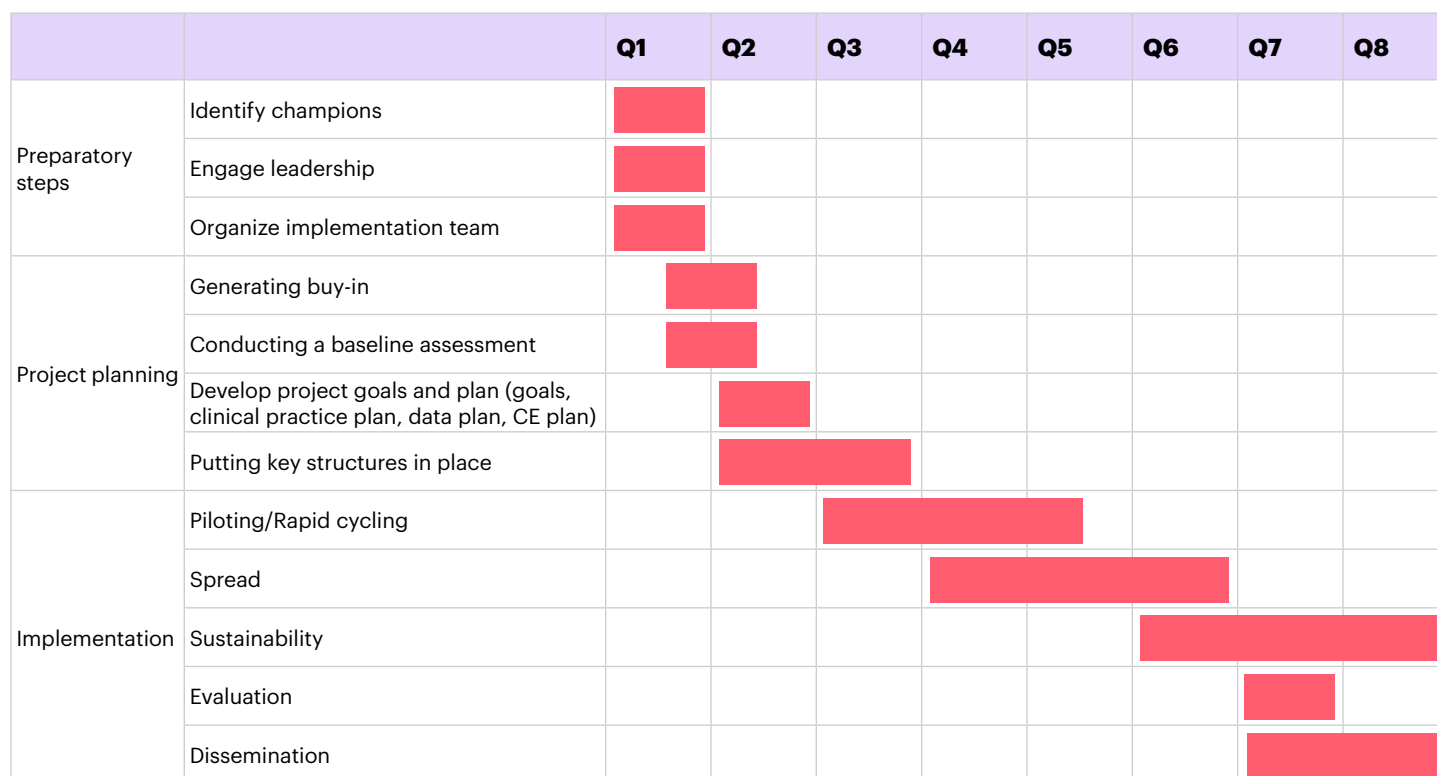
Learning collaborative or other efforts to support groups of teams may assist by creating a structured plan and helping participants move through it.

- Build a team
- Engage with leadership
- Develop a project plan
- Generate buy-in
- Conduct a baseline assessment

- Develop an action plan based on learnings from the baseline assessment including:
 - Plan to improve clinical practices
 - Data plan
 - Community engagement plan
- Putting key structures in place, including clinical practice updates
- Implementing and monitoring
- Spread and sustainability
- Evaluation and dissemination

The below Gantt chart is an example of how an LDA quality improvement project may be mapped over time. Note that some activities will occur simultaneously and some may be slow to materialize. Developing a timeline using a Gantt chart can help engage the project team in understanding the components of the project and the expected duration of each component.

Figure 8. Example LDA project Gantt chart



2.2.2 Generate buy-in

The concept of buy-in can be understood as an individual or group's agreement with or acceptance of an idea as worthwhile, which impacts their level of commitment to the work required of the project.^[63] In making the case for why this project is important, utilize the data presented in Section 1 to illustrate the importance of preeclampsia prevention, the disparities in preeclampsia outcomes, and the opportunities for improvement.

Understanding the perspectives and goals of the people you're engaging is key; for example, administrators may be motivated by performance measures, costs, or alignment with organizational priorities such as chronic disease management (related to hypertension), or integration of health-related social needs into clinical practice. Understanding their perspectives and needs can help create alignment and understand how to garner support for the project.



Crafting a plan that enables staff to be part of the transformation process can help further generate buy-in throughout the practice and ensure success. Team leaders will need to understand what's important to team members involved in any practice change and clearly communicate the rationale and benefits to clinical team members and all stakeholders.

Ideas for ensuring team engagement:

- Include the clinical team in the baseline assessment and solicit team perspectives and suggestions at the outset of the project. This can build buy-in and shape the approach to engagement and future education.
 - For example, if the team already understands LDA, maybe education is needed more about the evidence/adherence gap.
- Support wider participation from interested parties who may not be initially considered to participate.
 - For example, a medical assistant who hasn't participated in leadership before, but is passionate about preeclampsia or maternity care, may be encouraged and included in the project team.
 - Consider how you can provide mentorship to team members who may be new to implementation work.
- Provide education on LDA for preeclampsia prevention tailored to what you learn from the team, as well as on the plan for the project. Consider having different team members present the information.
- Continue to share information about project development and successes and solicit input at the project evolves.
- Provide regular and timely feedback on performance to the entire team.
- Share learnings from those who are reaching goals.

- Celebrate early wins. This will help build confidence of the team and momentum for ongoing project work. Consider who in the organization that is not represented on the implementation team but may need to be engaged.
- Engage with existing or potential community partners to let them know about the project and the potential for collaboration.

2.2.3 Conduct a baseline assessment

A baseline assessment provides a starting point for the project, guides improvement strategies, and helps demonstrate future progress. A baseline assessment will look different for each team depending on team resources and goals and may include the following elements.

The section below includes considerations for a baseline assessment in important areas including:

- Population characteristics
- Current clinical practices
- Care team perspectives and readiness
- Patient engagement
- Community engagement
- Quality improvement infrastructure and readiness
- Consolidating takeaways

Resources:

9. [A Guide to a Low-dose Aspirin Project Baseline Assessment](#).
(This tool includes all of the elements in the present baseline assessment chapter.)
10. [Current Clinical Practice Survey](#)
11. [Current Clinical Practices tool](#)
12. [IHI's 5-Why's Tool](#)*
13. [IHI's Driver Diagram](#)*
14. [Example LDA Driver Diagram](#)
15. [March of Dimes State Report Cards](#)

*These tools can be used in supplement or replacement for a longer baseline assessment. They can support QI planning, but will provide less baseline information for future comparison.

a. Patient population characteristics

Rationale: Understanding the population served by the project will guide project development to better address population health needs, including clinical workflow changes, community engagement planning, and specific patient engagement considerations.

Possible data sources:

- Demographic information may be available from clinic population health management, IT departments, or EHR teams, billing, and registration departments.
- Hospital partners may be able to pull ICD-10 codes or access other data sources. This may be helpful for evaluating baseline clinical outcome data such as preeclampsia rates and preterm birth rates.
- For some teams, manual chart review and discussion among team members may be the primary tools for collecting baseline data.
- While internal data may be most specific to the population served, there are sometimes barriers to using internal data at the beginning of a project. External data sources such as county level data, often available through state public health department data dashboards, may supplement internal data and provide insight on clinical outcomes among county and state level populations.
 - March of Dimes Report Cards offer data on state level maternal and infant morbidity and mortality, and link to state public health department data.



Questions to consider for assessment of population characteristics:

- Who is the population being served? How many pregnant patients are entering prenatal care each month?
- Are there stratifications available such as:
 - Race and ethnicity?
 - Languages spoken?
 - Other important demographic characteristics, such as sexual orientation and gender identity?
- Breakdown of insurance status or other indicators of health-related social needs?
- What is the current rate of preeclampsia in the population? This would be considered your baseline clinical outcome measure.
 - Can you further stratify this rate into the above stratifications?

b. Current clinical practices

Rationale: Oftentimes, clinical care components necessary for LDA uptake and adherence may be occurring in clinical settings but are inconsistent and not standardized. Assessing what clinical practices are currently occurring and identifying gaps can contribute to the development of updated clinical workflows and policies necessary for the project.

Possible data sources:

- Review of clinic policies and procedures
- Review of existing workflows and tools
- Manual chart auditing to assess documentation of clinical practices
- EHR data
- Surveys or conversations with clinicians and staff

Questions to consider:

- Are any of the key clinical interventions (preeclampsia risk factor screening, education on the benefits of LDA for preeclampsia prevention, LDA prescription, LDA adherence intervention) currently occurring? How? How often?
- Is the current process/workflow effective?
 - If so, can it be standardized, made more efficient, or easier to track?
 - If not, can it be improved? Are there identifiable barriers that need to be overcome?
- Are there any differences in current practice with respect to LDA prescription for high- versus moderate-risk factors?

- Do the current practices and patient education materials reflect a commitment to patient engagement? If not, how could this be improved? For example, are there:
 - Culturally and linguistically appropriate educational materials?
 - Strategies for shared decision making such as patient-centered communication techniques and multiple touchpoints for ensuring understanding and addressing concerns?

If clinical practices related to LDA for preeclampsia prevention are occurring, it may be beneficial to conduct a manual chart audit of enough charts to obtain data on the frequency that these practices are occurring at baseline. The results of this chart audit would provide baseline process measure data. Clinical practices to include in this manual chart audit would include:

- Preeclampsia risk factor screening of all pregnant patients
- Preeclampsia and LDA education for all pregnant patients
- LDA prescription for patients identified as at risk
- Support for LDA adherence for patients prescribed LDA

For support of this type of chart audit, see the resources on data planning and manual chart auditing.

c. Care team perspectives and readiness

Rationale: The care team will be responsible for direct patient care and delivery of patient care updates associated with the project. As such, care team perspectives are crucial to the development of effective and acceptable processes.

Possible data sources:

- Formal or informal survey of clinical team members, individual or in groups, such as during staff meetings or focus groups

Questions to consider:

- What is the current knowledge of LDA recommendations and clinical practices?
- What is the team's comfort level in discussing high- and moderate-risk factors for preeclampsia?
- What are the opportunities and ideas that team members identify for process improvement and patient and community engagement?
- What level of interest does the clinical team have in updating these clinical practices? Is there baseline interest or will the team need to generate more buy-in?
- What concerns does the clinical team have about the potential LDA related updates?

d. Patient engagement

Rationale: To be engaged members of the care team, patients need to understand their risk for preeclampsia, understand the benefits and risks of LDA for preeclampsia prevention, decide with their clinician whether it's right for them, obtain LDA, and continue to take it daily. The goal is to assess how the current process supports patients in these functions, and to identify gaps as well as opportunities and resources for improvement.

Possible sources of data:

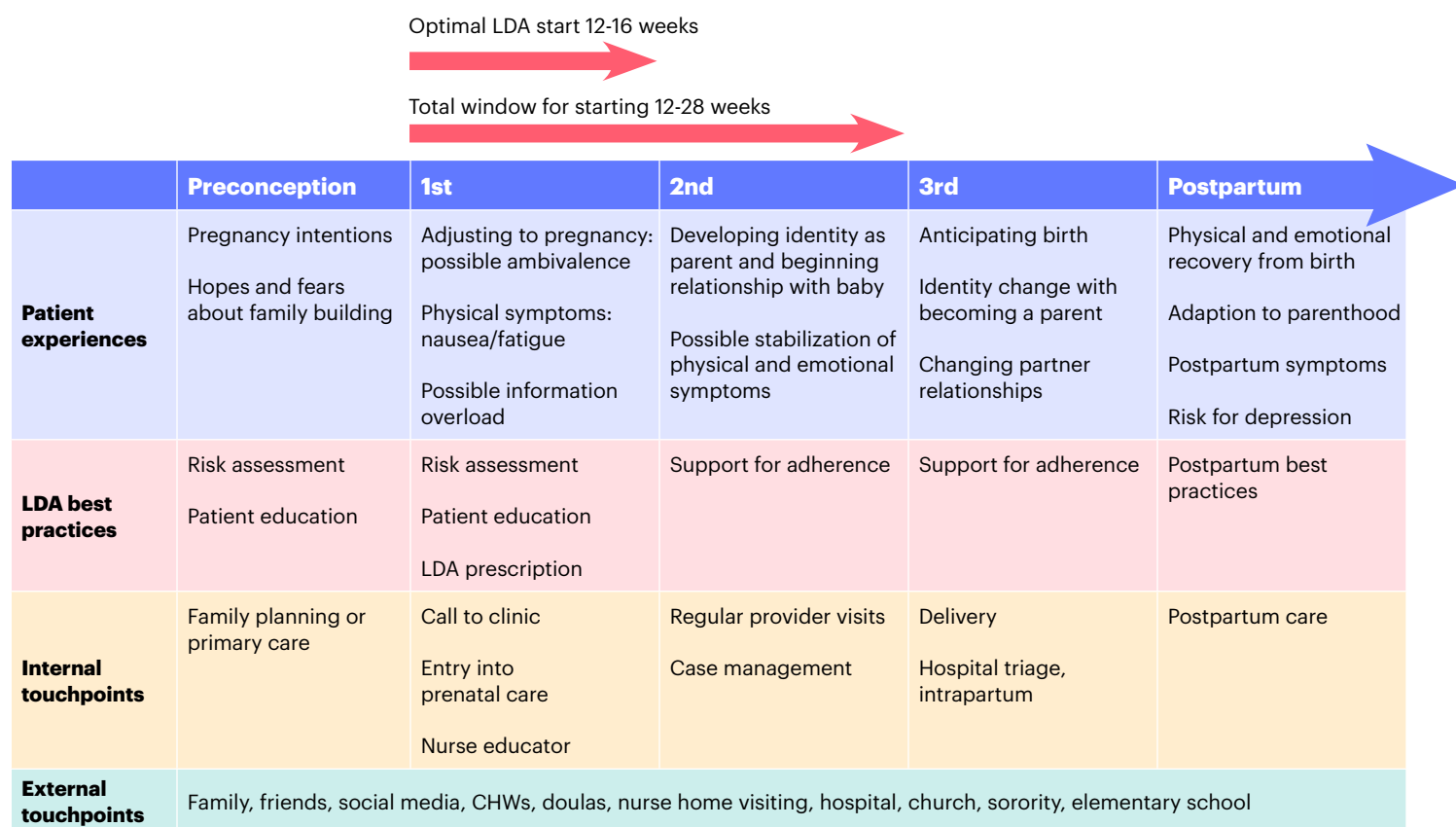
- Assessment of existing practices and tools using a patient engagement lens
 - Example: Create a patient journey map to identify touchpoints and opportunities for community engagement that could support patients in understanding, deciding to take, obtaining, and adhering to LDA. Figure 9 illustrates an example patient journey map.
- Clinical team perspectives
 - Example: Survey clinical team members about comfort level and skills for supporting shared decision making and respectful discussion of risk.

Patient journey map

A patient journey map is a visual tool that outlines the patient experience during their healthcare journey, from initial contact to ongoing care and follow-up. It aims to capture the patient's experience, mapped alongside care delivery processes across time. Creating a patient journey map helps identify critical moments in care delivery where improvements can be made, ensuring that the patient's perspective is central to the process.

By mapping out the patient's journey, the team can uncover gaps in care and opportunities for workflow improvements. Additionally, it can highlight opportunities for community engagement by revealing how patients access care, whether there are barriers to receiving treatment, and how community resources can be leveraged to enhance outreach and education. Ultimately, a patient journey map fosters a more patient-centered approach to care, which is essential to drive meaningful improvements in LDA uptake.

Figure 9. Patient journey map can inform workflows and generate ideas for patient touchpoints and community engagement



- Patient and community perspectives via questionnaires, focus groups, or conversation
 - Example: Hand out 10 hard copy surveys in the waiting room, about what patients know about LDA.
- Organization- or clinic-level data on patient satisfaction

Questions to consider:

- Are existing LDA-related materials and practices culturally and linguistically appropriate? Do they encourage patient agency?
- Does the clinical team have communication skills for respectful discussion of risk and shared decision making?
- What is the current understanding among patients of preeclampsia and LDA for preeclampsia prevention?
- Do patients feel LDA conversations, and/or clinic services as a whole, are collaborative and supportive? Do they feel like they are given appropriate information and supported in making decisions about LDA and in taking the medication?
- What are patient experiences at different points in the perinatal continuum of care? How can understanding this experience shape patient and community engagement?
- Are there available touchpoints outside the clinical team that are used to support patient understanding and engagement? How could these opportunities be made available?
- Are there opportunities and supports available to partner with patients around identified health-related social needs?

e. Community engagement

Rationale: Community engagement is essential to increasing uptake of LDA. Understanding the starting point of community engagement will help direct plan development. The goals of an LDA related community engagement baseline assessment include:

- Identifying existing infrastructure and resources that may be overlooked
- Identifying communities that need to be engaged
- Assessing understanding of LDA among current partners
- Assessing the quality of existing community engagement efforts

Sources of data:

- Assessment of existing community engagement efforts
 - Example: Make a list of groups who could help with community-centered promotion of LDA and think about structure, capacity, and gaps in the current setup.
- Formal and informal surveys and conversations with members of the clinical team especially those from the community being served, organizational leadership, or community groups to identify existing and potential partnerships, organization-level, or partner community engagement initiatives
 - Example: Devote a team or staff meeting to discuss of current status of relationships and community connections and where there are gaps and opportunities.

- Community asset mapping, internet searches for local resources patients
 - Example: Make a list of touchpoints in the continuum of care whose collaboration could support LDA uptake.
 - Patient journey map
 - Example: see Figure 9.
- Questions to consider:**
- Who are the communities that need to be engaged? These likely include:
 - Patients and their support systems served by the clinic
 - Consider community groups like churches, sororities, and public health and community-based organizations that interact with patients and their support systems.
 - Clinicians and care team members across the continuum of care
 - Consider doulas, community health workers, hospitals, pharmacists, primary care, pediatric, family planning, and cardiology clinics behavioral health, health education.
 - Though collaboration across the continuum of care is needed for optimal perinatal health outcomes, these groups do not always have existing relationships for collaboration, sharing information, and data.
 - What partnerships exist that could inform the project and/or be hubs for community-centered promotion of LDA?
 - What additional partnerships would be of benefit?
 - What is the level of awareness among existing partners of preeclampsia and of LDA for preeclampsia prevention?
 - Are there metrics at the organizational level used to monitor community engagement?



- What do existing partnerships need in order to be able to collaborate?
 - For example, lack of regular meetings or communication between clinics and hospitals or community groups can be a barrier to engagement. Infrastructure for this communication may need to be established.
- What is the nature of the relationship? How can the team engage respectfully with the goal of true partnership?

f. Quality improvement infrastructure and readiness

Rationale: Understanding the facilitators and barriers of the organization early in the project will help the team appropriately plan for structure and process updates.

Sources of data:

- Existing teams, processes, and policies
- Formal or informal conversations with organizational stakeholders

Questions to consider:

- What are the current clinic resources and structures?
 - Are there enough staff or resources (such as space or time) to implement preeclampsia screening, patient education, and LDA prescription?
 - If no, what additional resources will be needed?
 - Is there experience or infrastructure in the organization in quality improvement? Are there team members who have experience or who have lead QI in the past?

- What are the current technology and data systems processes and capacity?
 - What EHR is being utilized?
 - How adaptable is the EHR (related to both the software and the team that needs to make updates)?
 - How well is the EHR integrated between sites/ departments and with inpatient partners?
 - Does the clinic have the necessary infrastructure to track risk factors, LDA prescriptions, and patient outcomes effectively?
 - Are there digital tools or mobile apps that can help with patient engagement and tracking adherence to aspirin?

g. Consolidate takeaways from baseline assessment and consider measurement

After surveying the landscape with the baseline assessment questions in mind, it will be helpful to meet with the team to reflect on lessons learned. Identify what jumps out as important improvement opportunities. Consider what is measurable and trackable, and what resources are available for measurement and tracking. Consider if there are other priorities to be built into the project. This might be simple, like identifying gaps in care compared to clinical best practices. Or it might be more complex, like identifying an opportunity to align with an organization-wide effort on social drivers of health or chronic hypertension.

If planning a larger project with a systematic approach to data, or if the team is novice to QI, it may be helpful to think more deeply about data. Information on utilizing a systematic approach to data is discussed in section 2.3.2.

Otherwise, the next step is to take learnings from the baseline assessment and start to build an action plan.

2.3 Create an action plan

This section includes:

- 2.3.1** Clinical team best practices
- 2.3.2** Quality Improvement guiding models
- 2.3.3** Using data effectively
- 2.3.4** Incorporating patient and community engagement

2.3.1 Clinical team best practices

The recommended clinical team best practices include:

- Screening all patients for preeclampsia risk
- Patient-centered education for all patients about risk, LDA recommendations, and preeclampsia
- LDA prescription for patients identified as at risk for preeclampsia
- Assessment for adherence for patients prescribed LDA
- Standardized documentation, for all patients dependent on workflow

Strategies for increasing uptake and improving execution of these practices include:

- Standardizing clinical practice through workflow development
- Utilizing the full care team to minimize unnecessary burden on any one team member
- When possible, integrating the process into the EHR to support standardization and monitoring
- Prioritizing patient engagement through effective clinical communication, and consideration of individual patient factors related to LDA uptake and adherence

Resource:

55. [LDA structure measure bundle](#)



a. Screening for preeclampsia risk

The purpose of screening for preeclampsia risk is to:

- Create a risk assessment opportunity that will
 - Provide the patient with increased understanding of their own health
 - Provide the care team with information to tailor care for the patient
- Determine if a patient may benefit from an LDA prescription for reduction of preeclampsia risk

The team can identify a strategy for timely, universal screening of pregnant patients for elevated risk of preeclampsia. Screening tools can be self-administered or administered by a clinical team member or member of the expanded care team such as a community health worker and can be on paper or electronic. Some teams may choose to integrate the screening tool, or documentation of completion of the screening tool, into the template for the first prenatal visit. If electronic screening is not immediately available, teams may choose to start with paper screening with the goal of integrating electronic screening in the future. Examples of screening tools are available.

Resources:

6. [SMFM Checklists for preeclampsia risk factor screening](#)
16. [CMQCC's patient screening tool - English](#)
17. [CMQCC's patient screening tool - Spanish](#)
18. [March of Dimes patient screening tool - English](#)
19. [March of Dimes patient screening tool - Spanish](#)

Universal recommendation of LDA: Some clinics may choose to recommend LDA to all patients based on a high prevalence of elevated risk in the clinic population, such as high rates of low income as seen by Medicaid payer use. In this case, patients will still benefit from individualized conversations about risk, which may support adherence.^[65]

The workflow for preeclampsia risk screening should allow for timely initiation of LDA, ideally before 16 weeks gestation. Depending on when patients typically enter care, telephone or electronic screening prior to the first prenatal visit may be necessary, for example

if patients are not typically seen before 12 weeks gestation. For sites that accept patients as referrals from lower-risk clinics or family planning or primary care clinics, engagement and coordination with these referral sources to allow for timely screening, education, and prescription of LDA may be necessary.

Considerations for operationalizing specific risks

Low income: Clinical teams may operationalize the moderate-risk factor “low income” based on patient self-report, insurance plan (Medicaid or other Affordable Care Act plans that are designated for certain income levels), ZIP code data on neighborhood deprivation, other available proxies for low income, or other assessments of health-related social needs. Ideally, the clinical team response to assessment of health-related social needs involves connecting patients to needed resources and supports.

Chronic hypertension: Patients with chronic hypertension, an important high-risk factor for preeclampsia, may not have or be aware of a clinical diagnosis. Incorporating a review of historical blood pressures and flagging a history of elevated blood pressure readings into the chart preparation process for the initial prenatal visit may help identify patients with undiagnosed chronic hypertension. The CDC Hypertension in Pregnancy Change Package has additional resources on identifying cases of hypertension that is “hidden in plain sight.”

Prior adverse pregnancy outcome: Specific outcomes for ‘prior pregnancy outcome’ are a moderate risk factor in the USPSTF recommendations. Like with any guidelines, providers can use discretion. One potential approach is using a lens of etiology driven by inflammation, cardiovascular, and placental factors, including preterm birth, placental abruption, intrauterine growth restriction and small for gestational age, and intrauterine fetal demise.



“How do I speak with patients about race as a risk factor for preeclampsia?”

Discussing the impact of systemic racism as a risk factor can be uncomfortable, but is a crucial conversation. It's important to use the word “racism” to explain the risk of race is a proxy for exposure to racism. Emphasize that inequities in preeclampsia rates are not the result of anything the patient has done, nor are they due to any genetic predisposition. Instead, the inequities in preeclampsia are rooted in exposure to structural and interpersonal racism.^[8, 9, 47-53] Long-standing social, environmental, and historical factors create unequal access to resources and opportunities, and expose patients to stressors related to life circumstances and to experiences of racism that can increase preeclampsia risk. Help patients understand that these issues are systemic and external, not a reflection of their individual worth or inherent biology. It may be helpful to emphasize that though structural change is necessary and must be a focus in medicine, LDA represents an immediately available tool to help balance these effects of structural and interpersonal racism on patients' biology and risk.^[54] Emphasizing a broad expert and scientific consensus about this recommendation may be helpful for building trust.

b. Patient education and counseling

The purpose of patient education and counseling related to LDA is to:

- Support patient engagement in care through culturally and linguistically appropriate information
- Provide the patient information about preeclampsia risk factor screening and results
- Provide the patient information about LDA recommendations that supports shared decision-making
- Provide the patient information about preeclampsia that supports patient understanding of signs, symptoms, and when to present for care

Putting the following structures in place will ensure readiness.

Education for the clinical team on the clinical aspects of preeclampsia and LDA (key messages to patients, LDA indications, safety, patient access) as well as patient-centered communication techniques and respectful discussion of risk, will prepare the team. Studies show significantly decreased LDA prescription rates for the moderate-risk factors compared to high-risk factors, suggesting some team members may be unfamiliar with moderate-risk factors and/or feel uncomfortable discussing risk related to categories that can be sources of stigma, such as income, race, and obesity. Clinical teams will benefit from education in this area. Team members may already have skills for engaging patients in shared decision-making, such as motivational interviewing, or may benefit from additional education in these areas. These skills will be helpful in all areas of care and contribute to improved patient relationships, satisfaction, and outcomes.

Resources:

20. [Detailed grand rounds](#)
21. [Mini grand-rounds LDA presentation](#)
22. [March of Dimes E-learning module](#) – continuing education available
23. [Provider LDA information sheet](#)
24. [Pharmacist LDA information sheet](#)
25. [Nurse LDA information sheet](#)
26. [Care team member \(MA/CHW\) information sheet](#)
27. [CMQCC Webinar: Low-Dose Aspirin Campaign: Discussing Risk Respectfully](#)

Educational materials such as handouts and videos that reinforce key information, answer frequently asked questions, and provide resources for further information, can supplement direct conversations with patients. March of Dimes and CMQCC have materials available that have been reviewed by clinical experts as well as patient advisors. In some settings, patient materials will need to go through an organizational review process before they're able to be presented to patients.

Resources:

- 28. [CMQCC patient education materials](#)
- 29. [March of Dimes patient education materials](#)
- 30. [OPQIC patient education materials](#)
- 31. [Preeclampsia Foundation aspirin materials](#)

Patient engagement in the screening and education process

Screening and education workflows should incorporate time for questions. Because patients may not be aware that LDA is indicated for preeclampsia prevention, and given the presence of mixed messages about aspirin in pregnancy, significant time may be needed to sufficiently provide information, address questions and concerns, confirm patient understanding, and support creation of a plan for adherence.

Given limited time in clinician visits, it may be useful to provide multiple touchpoints for education, for example during educational visits with nurses or community health workers, or during group prenatal visits, in addition to supplemental materials such as handouts or videos. Utilize the full expertise and scope of practice of every member of the healthcare team: physician, advanced practice nurse, physicians assistant, nurse, hospital and community pharmacist, medical assistant, care coordinator, and others.

Communication strategies focused on patient engagement, such as open-ended questions, motivational interviewing, and shared decision-making, as well as clinical team education on how to discuss risk respectfully, can increase patient understanding and motivation, and support adherence. Patient education can be reinforced through messaging to and engagement with patients' support systems, as well as reinforcement via touchpoints with community partners.

Resources:

- 27. [CMQCC Webinar: Low-Dose Aspirin Campaign: Discussing Risk Respectfully](#)
- 32. [CMQCC patient/provider communication videos](#)
- 33. [LDA example scripts](#)
- 34. [Motivational interviewing for LDA counseling](#)

c. LDA prescription

The purpose of LDA prescription is to:

- Support patient access to LDA through use of insurance to reduce cost
- Standardize clinical practice
- Support data tracking of LDA processes

Standardized electronic prescription may help with documentation and data monitoring, even in instances where patients will buy LDA over-the-counter. Some insurance plans cover LDA. Depending on the clinical setting, collaboration with pharmacists may be necessary to overcome barriers to LDA prescription. Pharmacists may have safety concerns and may not be aware of recommendations for LDA for preeclampsia prevention, which can present a barrier to adherence. Engagement with in-house or local pharmacies or pharmacy organizations, providing educational materials for pharmacists—including for patients to give to pharmacists—and providing LDA directly to patients may help to overcome these barriers. Pharmacies may be interested in supporting LDA for preeclampsia prevention by providing education to their employees, providing information to patients, or by stocking LDA in the prenatal medication section.

Resources:

- 35. [LDA pharmacy letter](#)
- 36. [CMQCC Webinar: Low-dose Aspirin Campaign: Pharmacy](#)



d. Assessment of and support for adherence

The purpose of prioritizing assessment of and support for adherence is to:

- Maximize effectiveness of LDA through ensuring regular adherence.
- Maintain patient engagement by allowing ongoing education about preeclampsia, risk, and LDA.
- Address barriers to use including factors of intentional and nonintentional adherence.

Adherence is known to influence the effectiveness of LDA for preeclampsia prevention. In the ASPRE trial, improved reduction in preeclampsia was observed for patients reporting >90% adherence to LDA. Adherence to any medication is the decision of the patient, and thus patient engagement in LDA adherence must be prioritized. Additionally, despite its importance, support for adherence is often omitted from LDA QI efforts. Including support for adherence during workflow development will help ensure that patients experience the benefit from LDA through adhering to the regimen.

Workflow-oriented strategies to support adherence may include:

- Conducting pre-visit planning to make the most of the care encounter
- Using the pre-clinic huddle to identify patients who are taking LDA
- Conducting medication reconciliation in the EHR at the beginning of the clinic visit
- Including documentation of whether a patient is taking LDA as part of routine prenatal visits
- Building a check-in with patients about adherence, understanding of LDA, and any hesitancy or questions, into visit workflows and templates
- Including LDA on the OB/prenatal problem list to remind care teams about adherence

Patient and community engagement-oriented strategies to support adherence may include:

- Using patient supports such as pill boxes, alarms, family supports, or other tools that encourage agency
- Ensuring educational discussions include a plan for where patients will obtain LDA, when they will take it, and how they will remember to take it
- Providing multiple opportunities for patient to ask questions and voice concerns
- Engaging the broader community across the continuum of care to support adherence, including nurse home visitors, collaboration with hospitals, and other extended care team members such as doulas and community or public health touchpoints

Resources:

37. [LDA adherence workflow aid](#)
38. [Simplified Medication Adherence Questionnaire \(SMAQ\) adapted for LDA](#)
39. [Example of app-based medication adherence project](#)
40. [OPQIC Patient Adherence Calendars](#)

LDA EHR integration checklist

Determine the clinical best practices that require integration. Clinical best practices to consider:

- Preeclampsia risk factor screening
- Patient education (communication and materials)
- LDA prescription
- Assessment of LDA adherence
- Standardized documentation

Determine your goals for EHR integration. These may include:

- Standardizing clinical practice
- Improving clinical team processes: Reducing documentation burden, reducing time investment
- Improving data tracking processes: EHR integration to be used to support process measure and outcome measure tracking

Consider your goals and updated workflow. What EHR features that would ideally be built to serve the project? Features may include:

- Standardized clinical notes: Sometimes referred to as smart phrases
- Improving problem lists: Can be used to document risk level and LDA recommendation
- Practice advisories: Can be used to flag patients who require screening, LDA prescription, or assessment of adherence
- Integrated screening tools: May include checklists or drop downs. Some versions may calculate the screening results.
- Order sets: These tie multiple interventions together, such as screening, prescription, and a flag risk level depending on screening results
- Integrated patient education materials: may be sent through the patient portal
- Full integrated workflow: where the EHR fires step by step through the determined workflow.
 - See the resource 64. *Epic LDA EHR tools for the Preeclampsia Care Path* an example.

Additional integration questions to answer include:

- Who will be using the tool? Where does the tool/documentation need to be visible?
- What components are absolutely necessary? What components are “nice to have”?
- How should different the EHR features of different clinical practices relate to each other?

Engage the EHR/IT team about the desired EHR updates.

- Sometimes, there can be “translation” issues between the clinical and IT/EHR teams. Clear conversation about clinical need and EHR capabilities is crucial for successful EHR integration.
- Topics to discuss:
 - From the clinical team: What are the desired integration components?
 - From the IT/EHR team: What are the capabilities of the EHR?
 - What is the current capacity of the IT/EHR team to complete this integration? What is the timeline?
 - Is there any ability to update the features/integration in the future if improvements are identified?
 - If the answer is no, then it may be beneficial to test and confirm the workflow before requesting updates to the EHR.
- Determine next steps and follow up timeline to ensure integration occurs.

After discussion and planning with the IT/EHR team, revisit with the project team to determine what work will occur while the EHR integration is being completed.

- Sometimes the updates in the EHR can be slow. Does the team want to start with piloting the developed workflow while the EHR integration completed?

Resources:

41. [Epic EHR LDA and preeclampsia tools](#)

See Case Examples 2.6.1-4 for examples of EHR integration approaches

e. Documentation

The purpose of standardizing documentation processes is to:

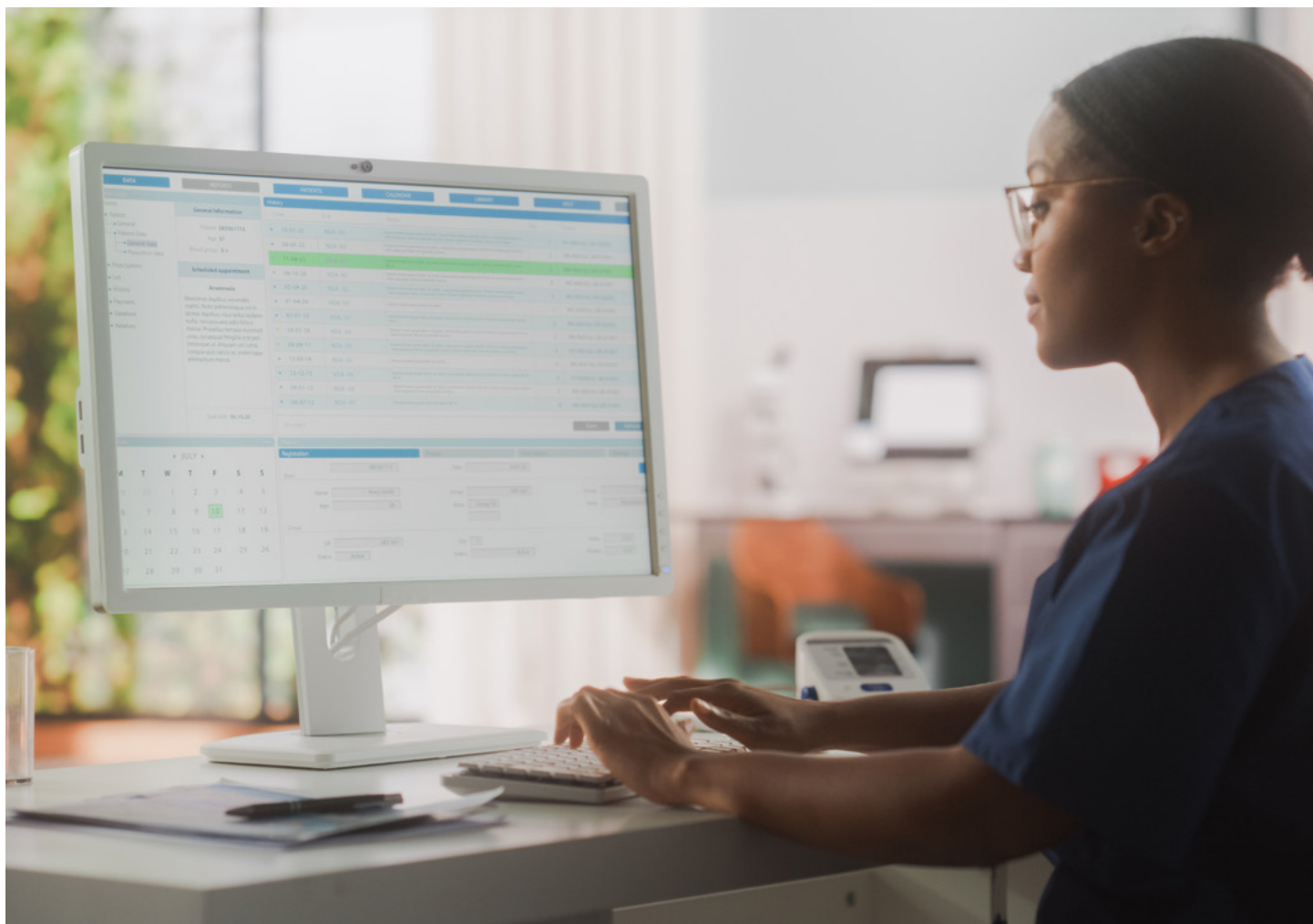
- Support standardized clinical practices by encouraging care teams to utilize the same checklists, notes, prescriptions, etc.
- Support data monitoring through the EHR, reducing administrative burden.

Documentation should be standardized for each element of the LDA workflow. Strategies for easing and standardizing documentation include incorporating documentation into visit templates, using dropdown menus, and standardizing the location for documentation, like in the problem list. Consider whether documentation is easily visible for tracking and at different sites, like at the hospital.

Ideally, standardized documentation can be integrated into the electronic health record to facilitate tracking. The use of 'discreet fields' for documentation aids in reporting output. Engaging the EHR team members or clinician experts in the EHR to understand possible solutions to documentation standardization, including what is easily accomplished, what could be trackable, and how to balance those goals, may be of benefit.

Using the Electronic Health Record

Electronic health records and data are useful tools, but integration with these tools can be a heavy lift for some teams, depending on available resources. It may be useful to begin at the easiest starting point, and gradually increase integration with the EHR over time. Early collaboration with the IT department can help identify what is easily within reach and what is a bigger build and help bridge clinical and data needs with EHR capabilities.



f. Workflow development

Upon consideration of these clinical best practices, the project team should develop a preliminary workflow to test in the implementation phase of the project. While each component (screening, education, prescription, and adherence) may have different considerations, they likely will exist within the same workflow due to their relationship to each other.

Development of a complete draft workflow at this point can help highlight what practice changes might occur

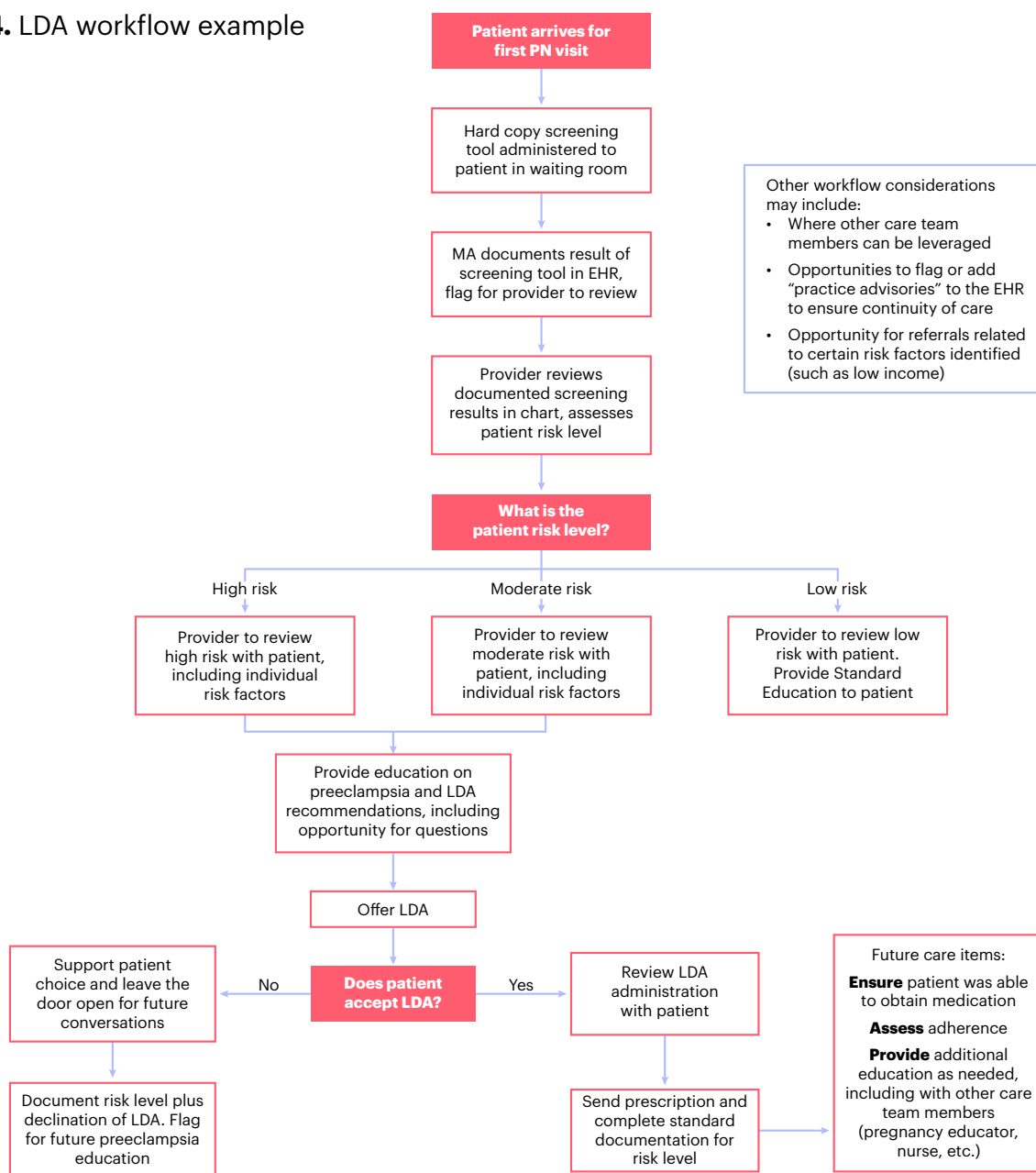
and when. However, remember that this workflow needs to be tested to ensure that it is effective in the system. The ability to update and refine the workflow is crucial for the implementation process.

Here is an example workflow that includes screening for preeclampsia risk, patient education, LDA prescription, and future care considerations.

Resources:

42. [LDA workflow example](#)
43. [Workflow development tool](#)
44. [IHI flowchart tool](#)

Figure 14. LDA workflow example



2.3.2 Quality improvement guiding models

After conducting a baseline assessment, the team can review the results and consider implementation steps that will lead to increase LDA uptake and adherence. This may include deciding on goals, action steps, and metrics.

The Institute for Healthcare Improvement (IHI) Model for Improvement is a widely-used model referenced throughout the rest of this guide. The IHI model is a simple and powerful tool compatible with many organizational change frameworks and may be one already in use in the organization's quality improvement department.

The IHI model consists of two parts. First, the team uses three fundamental questions to guide development of its strategy and action plan. Next the team uses a "Plan-Do-Study-Act" (PDSA) cycle that provides rapid feedback on what is effective to inform the next iteration. This process is repeated in short cycles of small tests of change to inform additional improvement efforts, all leading towards the goal of the project. Answering the model's three questions is an iterative process—the team moves back and forth between them as changes in thinking in one question or learning from PDSA cycles results in changes in thinking in another. Likely, the project will consist of multiple PDSA cycles to achieve the level of implementation required of the project goals.

PDSA cycle:

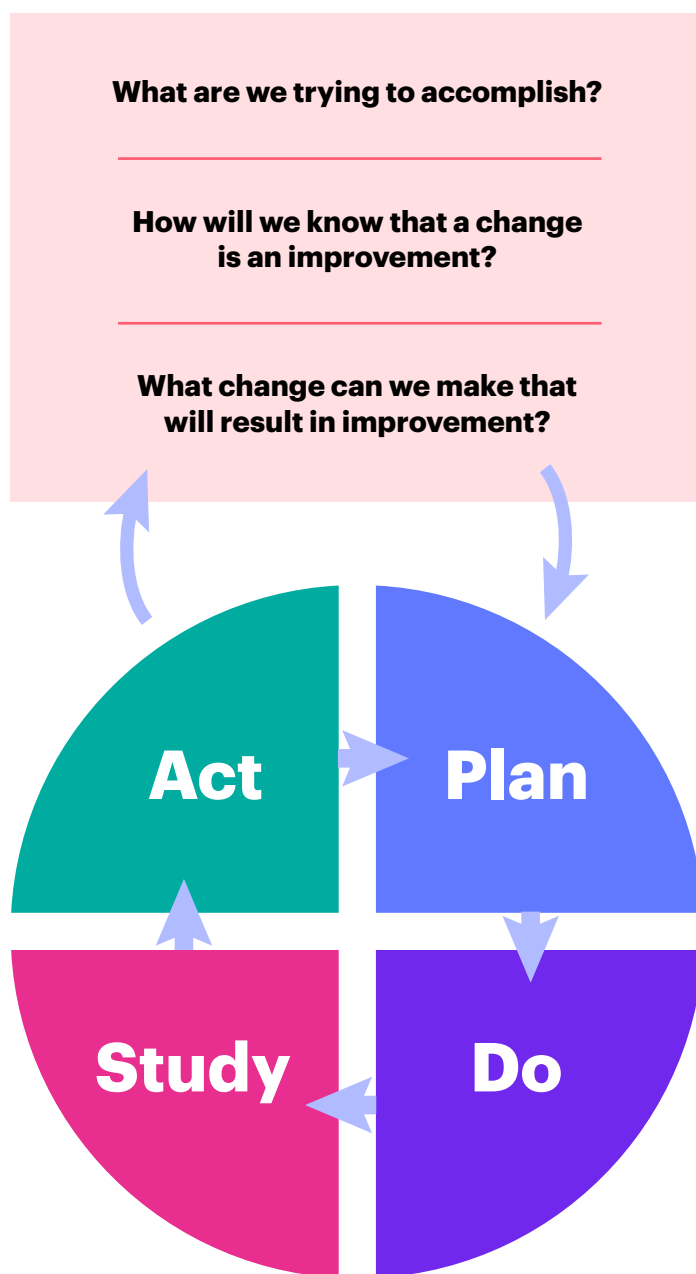
PLAN: Based on the baseline assessment and consideration of guiding questions, a team makes a plan to adjust an existing workflow for screening.

DO: One clinician and support team try this workflow for one week and track the results.

STUDY: The clinician team and project team review the results, consider what works and what does not work

ACT: Based on the answer to the study questions, the team updates the workflow in advance of repeating the cycle.

Figure 10. Institute for Healthcare Improvement (IHI) Model for Improvement



Goals developed by answering the IHI model key questions can be further refined for effectiveness by creating Specific, Measurable, Achievable, Relevant, Time-bound, Inclusive, and Equitable (SMARTIE) goals.

Example aim statement with SMARTIE approach:

“By the end of quarter four, we will see an increase in the rate of LDA prescription among patients at risk for preeclampsia from 40% to 80%.”

The following is a high-level example of project steps that incorporate these tools.

- Gather insights from the baseline assessment and exploring the key questions to develop an initial goal and strategy.
 - For example, the team is prescribing LDA for 80% of patients with high-risk factors but only 10% of patients who meet criteria based on moderate-risk factors, lacks a dedicated workflow and linguistically appropriate patient-facing materials, and clinicians are unsure how to discuss certain moderate-risk factors.
- Put key structures in place to prepare for practice change.
 - For example, through the baseline assessment, the team identifies a need for workflows, patient-facing resources, and clinical team education on respectful discussion of risk—see next section for more discussion and resources on putting key structures in place.
- Test these on a small scale.
 - For example, one clinician/medical assistant/nurse educator team who distributes the screener in clinic, engages in patient education, and follows up to ensure understanding and address questions.

- Permit experimentation and discard failed tests, using information learned from small tests to refine the process until it’s ready to be spread more broadly.
 - For example, the team described above realizes that patients are overwhelmed with information at the first prenatal visit, so updates to the process in testing include patient-facing information in a packet mailed to the patient prior to the first visit, as well as posters about LDA in the waiting room.

Resources:

- 45. [IHI Model for Improvement](#)
- 46. [IHI Project Charter](#)
- 47. [Example LDA Project Charter](#)
- 48. [PDSA Worksheet/Example](#)
- 49. [CDC: From SMART to SMARTIE Objectives](#)
- 50. [IHI Setting Aims](#)
- 51. [IHI QI Toolkit: AIM Worksheet](#)

The following sections address key considerations that will be useful for many teams generating an action plan for a systematic approach to increasing LDA uptake.



2.3.3 Using data effectively

Thinking about data up front helps inform what is created so that improvement is useful, measurable, and effective. Teams may benefit from considering how they will use data at each phase of their LDA project. A useful plan will consider the purpose of the data at each phase, as well as types of measures and data that will be of benefit. This section outlays building blocks for thinking about data, including considering the purpose of data at each phase, types of measures, sources of data, and data stratification to drive better health outcomes for all.

Resources:

- 52. [Low-dose aspirin data plan worksheet](#)
- 53. [Low-dose aspirin data measures tip sheet](#)
- 54. [Metric development tool](#)
- 55. [LDA structure measure bundle](#)
- 56. [LDA process measure excel tool](#)
- 57. [LDA chart audit tools](#)
- 58. [Outcome measure definitions](#)
- 59. [SMFM Special Statement LDA Quality Metric](#)
- 60. [March of Dimes PeriStats](#)



a. Purpose of data

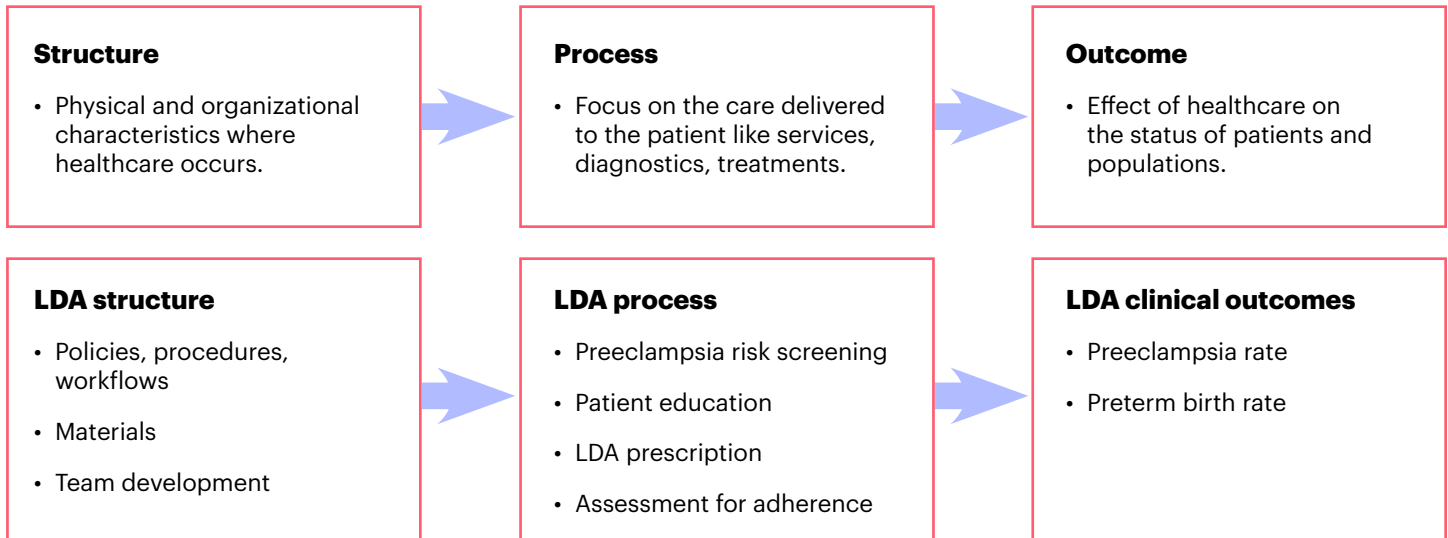
The data collection and management strategy depends on the purpose of the data, which may vary by phase of the project. The purpose of the data will be reflected in the overall strategy, including the measures selected and the way data are collected, understood, and presented. For example, the purpose of data collection at any given phase might be:

- Quality improvement: To determine whether process improvements, such as support clinical team best practices, including patient identification, patient education, LDA prescription, and support for adherence, are occurring as expected.
 - Evaluation of a pilot: To determine if the pilot was successful prior to spreading improvements to other settings, or to present to leadership to gain support for increased resources.
 - Ongoing evaluation for sustainability: To monitor improvements previously implemented and now in sustainability to ensure that there is no “slipping” of previously made improvements.
- Data for internal vs. external audiences:
 - Data for internal audiences may be less formal and be used solely to drive change.
 - Data for external audiences may be needed for funding and reporting and may be more formal.

b. Types of measures

A QI data plan will often include different types of measures, as each type will provide insight into different components of a project. Here we use the Donabedian model of metrics to conceptualize different measures. See resource 20. *LDA data measures quick sheet*.

Figure 11. Adapted Donabedian Model to include definitions and LDA project examples^[64]



Structure measures aim to assess the infrastructure of the system to support the care delivery process.

- Examples include policies and workflows, presence of patient education materials in exam rooms and posters on walls, presence of preeclampsia risk screening in EHR.
- These measures are typically easy to measure.
 - Is this structure in place? Yes or No.
- Assess structure measures as part of the baseline assessment and then compare after structure is updated to illustrate change.

See resource [55. LDA structure measure bundle](#).

Process measures aim to assess if care processes are occurring as determined by the project plan.

- Development of a workflow is a structure measure, while the frequency of that workflow occurring is a process measure.
- For the LDA project, process measures include
 - Rate of clinical team education completed
 - Rate of preeclampsia risk screening completed
 - Rate of LDA prescription among those at risk for preeclampsia
 - Rate of LDA adherence assessed among those who received LDA prescription
- Process measures can be assessed through manual chart auditing or through EHR data reporting.

See resources [56. And 57. LDA process measure tools](#).

Clinical outcome measures aim to measure the downstream effect of the implemented structure and process measures to indicate clinical change, generally the effect on the status of the patient or population.

- For an LDA project, examples include:
 - Preeclampsia rate
 - Preeclampsia associated preterm birth rate
- More granular clinical outcome measures include:
 - The severity of preeclampsia: Are there changes to rates of preeclampsia with severe features after LDA implementation efforts?
 - The severity of prematurity: Are there changes to timing of preterm birth associated with preeclampsia after LDA implementation efforts?
 - Severe maternal morbidity related to preeclampsia: This may be available through inpatient outcomes measure tracking, if the outpatient site is connected to the delivering hospital.
- For an LDA project, improvements in clinical outcome measures may be slow to materialize due to:
 - Long implementation timelines: Outcome measure changes are unlikely to change until widespread implementation of LDA best practices occur.
 - The gestation of the pregnancy: The clinical outcomes tracked related to LDA use occur around the time of delivery, which is approximately 6 to 7 months after appropriate initiation of LDA at 12 to 16 weeks.
- Understanding timeline considerations can support clinical outcome measure planning and communication.

See resource [58. LDA outcome measures definition tool](#).

Some additional types of measures, outside of the Donabedian model, include:

- **Balancing measures** aim to identify if new care changes cause issues in other parts of the care delivery process.
 - LDA project examples may include longer visit times, or clinical team or patient dissatisfaction.
- **Demographic information**, including age, gender, race/ethnicity, sexual orientation, payer, and preferred language, can be used to stratify process and clinical outcome measures to evaluate for differences between patient groups.
- **Perception of clinical processes** from patients and clinical teams can provide additional insight into success of the new process. This can include:
 - Clinical team surveys
 - Patient experience measures such as formal survey processes
 - Less formal processes such as inquiring with patients about the new process



c. Sources of data

In addition to considering the type of measures needed for a project, it's important to consider data sources. Data can come from different places. The determination of data source should align with the goals of the data and may be driven by organizational capacity. Appropriate data sources and EHR capacity for data tracking may change over time.

Note: Changes to data capacity may be identified as a needed change to infrastructure. This can be measured as a structure measure.

Manual chart auditing is an approach to assessing care delivery that is useful because it can be adapted to the needs and capacity of the team employing it. It can be formal or informal and can range in chart volume, while still providing insight into how and when care delivery is occurring.

- Manual chart auditing can be used to assess:
 - Process measures: Did the workflow occur as desired for this patient?
 - Outcome measures: What were the clinical outcomes experienced by this patient?
 - Demographic information: If it is not available by EHR reporting, add the desired demographic measures to the chart audit tool chosen.
- Selecting a number of charts, such as 10-15 charts or 10% of patient volume, may be appropriate, especially for a small project in initial phases.
- Though EHR data is powerful and useful, many teams will not have capacity for EHR reports, at least initially. A lack of sophisticated technology capacity should not get in the way of quality improvement!

- Early in the implementation process, particularly during piloting and rapid cycle testing, it can be important to chart audit every or most patients seen as part of that test of change. The small volume of patients in an early test of change allows for low administrative burden of the audit, while allowing evaluation of the change being implemented.
- Selecting charts from different providers or sites will help provide insight into where practice variability may be occurring.

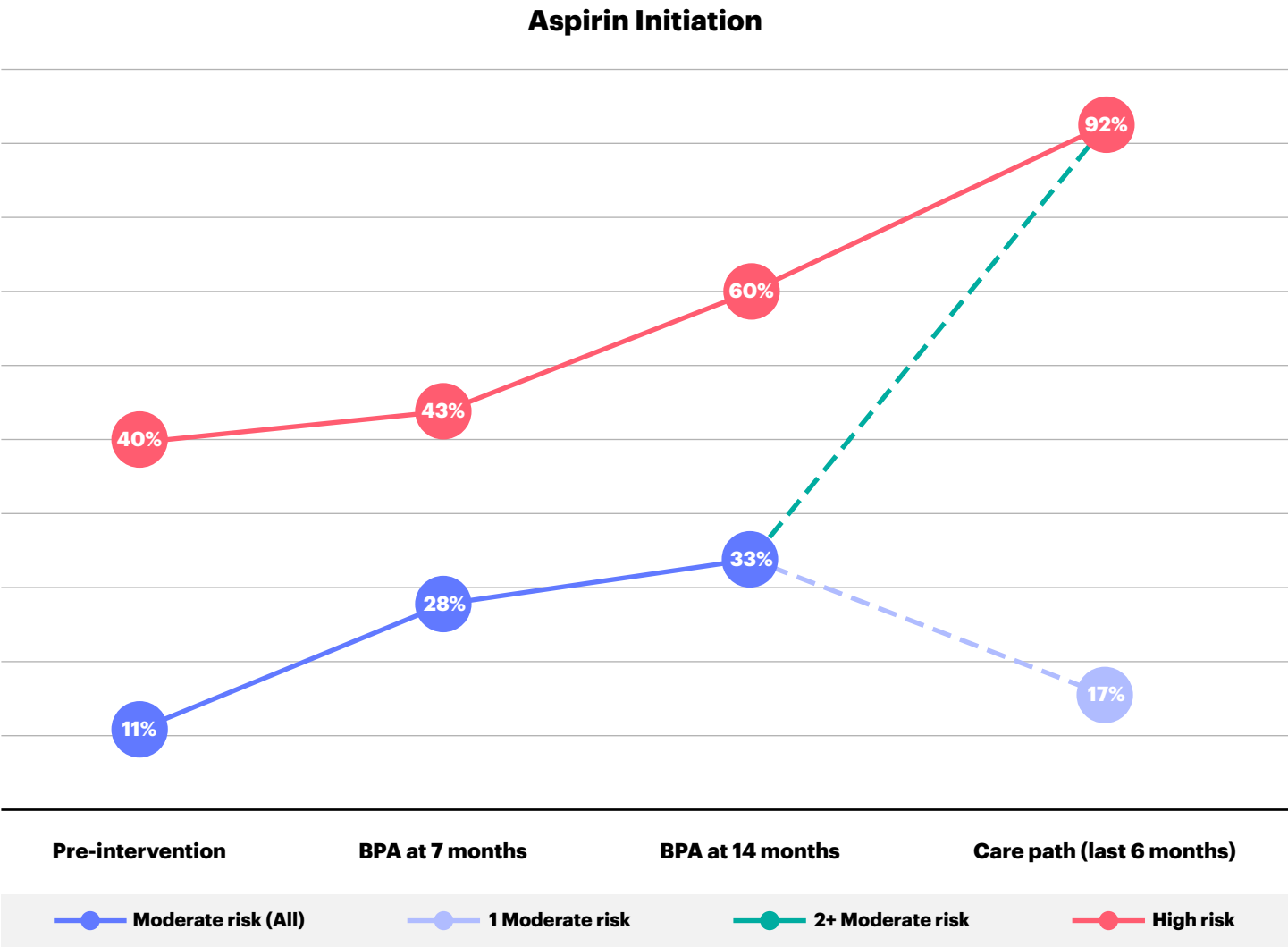
See resource [57. Chart Audit Tools for more details.](#)

EHR-based tracking of process measures can, over the long term, reduce administrative burden and support sustainability, but there may be a significant lift required to establish process measures in the short term.

- Understanding the EHR capabilities is important when determining data source. Engaging with the EHR/IT early in the project is important to communicate the clinical data need and to understand capacity.
- Generally, development of custom reports is possible when data is input into “discrete data fields.”
 - Was screening completed? Yes or no
 - Risk level: Low, moderate, high
 - Was LDA prescribed? Yes or no
- Stratification may be feasible by location, by provider, or by different demographics group, as this is data already collected by the EHR. Stratification can be used to identify differences in care processes between groups of patients.
- EHR data can support visualization of trending progress over time.

Figure 12 is an example of an intervention chart, graphing intervention changes and changes to LDA prescription rates overtime. This data tracking was done through EHR integration of preeclampsia risk factor screening and LDA prescription. The data is further stratified by moderate-risk and high-risk for preeclampsia.

Figure 12. The graph from 2.6.1 Case Example from the Institute for Family Health.



Tracking clinical outcome measures through EHR data

can be a powerful tool for gaining buy-in from leadership and clinical teams alike. Outpatient teams often report limited capacity for tracking clinical outcome measures. Though this should not prevent teams from undertaking this work, it's important to recognize that clinical outcome measures can provide insight into the unique landscape facing your patient population. EHR-generated reports based on ICD-10 coding can reduce the administrative burden required of chart auditing—but require accurate and consistent coding.

See resource [58. Outcome measure definitions for ICD-10 coding details.](#)

Clinical outcome measures through existing public data sources can supplement internal tracking of clinical outcome measures.

- County- and state-level data may be available for populations with demographic characteristics similar to the population you are serving.
- Keep in mind there may be differences in clinical outcomes experienced by the unique patient population served by the project.
- Available public data sources vary by state. Go to the state public health department to assess available data, including state- or county-level fetal-infant or maternal mortality reports.
- Publicly available birth certificate data includes a question about gestational hypertension/preeclampsia.
- Connections with affiliated hospital systems may create channels for sharing outcome measure data.

See resource [60. March of Dimes State Report Cards, PeriStats, and maternity care desert reports.](#)

d. Considerations for use of data stratification to drive better health outcomes for all

- Include diverse stakeholders in QI process.
- Consider stratifying data by race/ethnicity, preferred language, insurance payer, or other dimensions where inequities may exist, to identify areas where particular focus is warranted.
- Consider oversampling at-risk populations or consider chart reviews of at-risk populations who may not have a high patient volume.
 - This is often the case for Native American, Alaska Native, or Pacific Islander pregnant patients. While they experience significant maternal health disparities, population volume is generally small at a given site. Extra attention of these groups can help identify opportunities to improve care for these patients.
- Review cases of patients who are at risk for preeclampsia but did not receive an LDA prescription, or did not accept or adhere to LDA. This will help identify possible differences in clinical care and in patient perspective.
- Prioritize patient experience data in the plan by incorporating patient voices as data.
- Include data transparency and stakeholder collaboration. Consider how data will be shared and how feedback will be incorporated.

Table 3. Example data strategy for LDA project

This example illustrates how data purpose and approach can change throughout a project. To utilize the data plan below, add considerations like frequency, data sources, and team member responsible for data monitoring and sharing.

Phase	Purpose of data	Data strategy
Initial	- To identify the baseline status of LDA related clinical practices - To identify the baseline status of clinical outcome measures - To identify patient perspective/experience prior to implementation	Complete baseline assessment of structure, process and outcome measures—consider which measures are useful and feasible to track over time to identify progress.
Early implementation: Piloting and rapid cycling	- To assess if improvements, based on workflow updates, are occurring and if the improvements are successful/efficient - To confirm the workflow in advance of spread to other providers/sites	- Track updates to structure measures via the LDA structure measure bundle. - Track process measures for all patients involved in pilot improvements. This may be most feasible with small chart audits as patient volume for each PDCA should be low. - Engage the clinical team for direct feedback on improvements. Track to aid updates to workflow.
Spread	- To develop the spread plan - To assess if the spread of the workflow to another department/team is successful - This includes assessing if the workflow is occurring as advised and if clinical teams have a positive perception of the new workflow	- Assess clinical team perspectives of the teams/sites who will be part of the spread of the workflow. - Assess starting point and updates of structure measures at each new site/department. - Consider a similar approach to that taken for early implementation, by manual chart auditing small PDCA cycles, at the sites where spread is occurring. - Track process measures less often at the sites where pilot implementation has already successfully occurred.
Sustainability	- To assess that the improved workflow is occurring consistently over time - To assess if this improved workflow remains acceptable to patients and clinical teams - To assess clinical outcome change	- Monitor structure measures to ensure infrastructure remains in place. Reassess structure measures annually after initial implementation. - Track process measures at less frequent intervals: Use EHR reporting if available. - Adopt a formal 30-, 60-, and 90-day assessment at the transition to sustainability. - Engage clinical teams for feedback at predetermined intervals. - Assess rates of clinical outcome measures after implementation of new processes. This may be after 3 or 6 months as appropriate and feasible.
Throughout	To supplement structure, process, and outcome measures with insight from patients, community, and clinical team	Approach may vary depending on infrastructure, but may include: - Tailored patient experience surveys - Engagement of Patient Advisory Council - Clinical team feedback surveys at predetermined intervals

e. Ideas for sharing data to increase impact

- Present data back to the project team to share wins, learn from successful early adopters, and gain insight into challenges.
- Present data to clinical stakeholders throughout the project to increase buy-in for when spread of practice changes occur.
- Present data to leadership to maintain or increase support and gain feedback.
- Present data to outside stakeholders to gain feedback, increase engagement, and identify opportunities for collaboration.
- Present data to IT team to see how EHR process can improve data collection and review.
- Present data at a community meeting with a local community-based organization or health department.



2.3.4 Incorporating patient and community engagement

This guide was developed with the goal of incorporating materials developed through a process of community engagement and support for patient engagement. Because community engagement is central to success, we encourage teams to further engage with communities in their individual LDA projects. The following are steps teams can take to build community engagement into their action plans.

a. Define the community

This will include the community that encompasses the patients served. Patients and their support systems, institutions where they are connected such as churches, schools, and community groups, are some examples. These community stakeholders may be ones elicited during the baseline assessment process.

Another relevant community may be the community of medical providers and extended care team members in the continuum of care. This is interconnected with the community served. One observation in the CMQCC LDA work was that the medical community across the continuum of care needed to be better connected for the work to succeed.

- Pharmacists and primary care providers may not be aware of the LDA recommendations and may unintentionally promote contradictory messages or make adherence more difficult.
- Hospitals and clinics may not have relationships or infrastructure needed for effectively coordinating care and sharing project information or process and outcomes data.
- Community based expanded care team members may be unaware or not trusting of medical recommendations. Engagement with these groups is needed and can proceed with the same attitude of respect, learning, and collaboration that is employed in engagement with patients.

b. Think of the work as capacity-building

For LDA-related community engagement, it may be possible to build on existing meetings or relationship infrastructure; in other cases, relationships and structures for connection and collaboration may need to be built. For example, inviting a potential community partner to come to a staff meeting and share about their organization and priorities, and offering a reciprocal presentation on LDA for preeclampsia prevention, can be a foundation for an ongoing working relationship.

Examples of community-based organizations

- Public health departments
- Healthy Start
- Women, Infants and Children program (WIC)
- Black Infant Health program in California
- Social services organizations: food banks, resources centers, housing organizations
- Patient and family support groups
- Churches and faith-based organizations
- Doula organizations
- Social organizations such as sororities and fraternities
- Schools, from early education through higher education—some may provide clinical services
- Other health organizations, including local pharmacies, urgent care, local Medicaid payers, specialty offices involved in prenatal care

To find CBOs locally, use a general search engine or tool like FindHelp.org. Using the local ZIP code, FindHelp will result CBOs by services provided.

c. Consider who will own the work and drive it forward

Depending on capacity, this may be a team member with an interest in making community connections, or a person whose job is dedicated to community engagement. Starting with small steps and slowly gaining traction and sharing successes is a very reasonable place to start.

d. Generate ideas for community engagement

Depending on capacity, your team's engagement may involve initial outreach or building on existing partnerships to share information or co-develop materials and other aspects of the program. Because many clinical teams may have limited bandwidth or lack experience in this area, administrative and capacity-building support through learning collaboratives or other group collaborations may be beneficial. Sample ideas for community engagement for community-centered promotion of LDA are provided below.

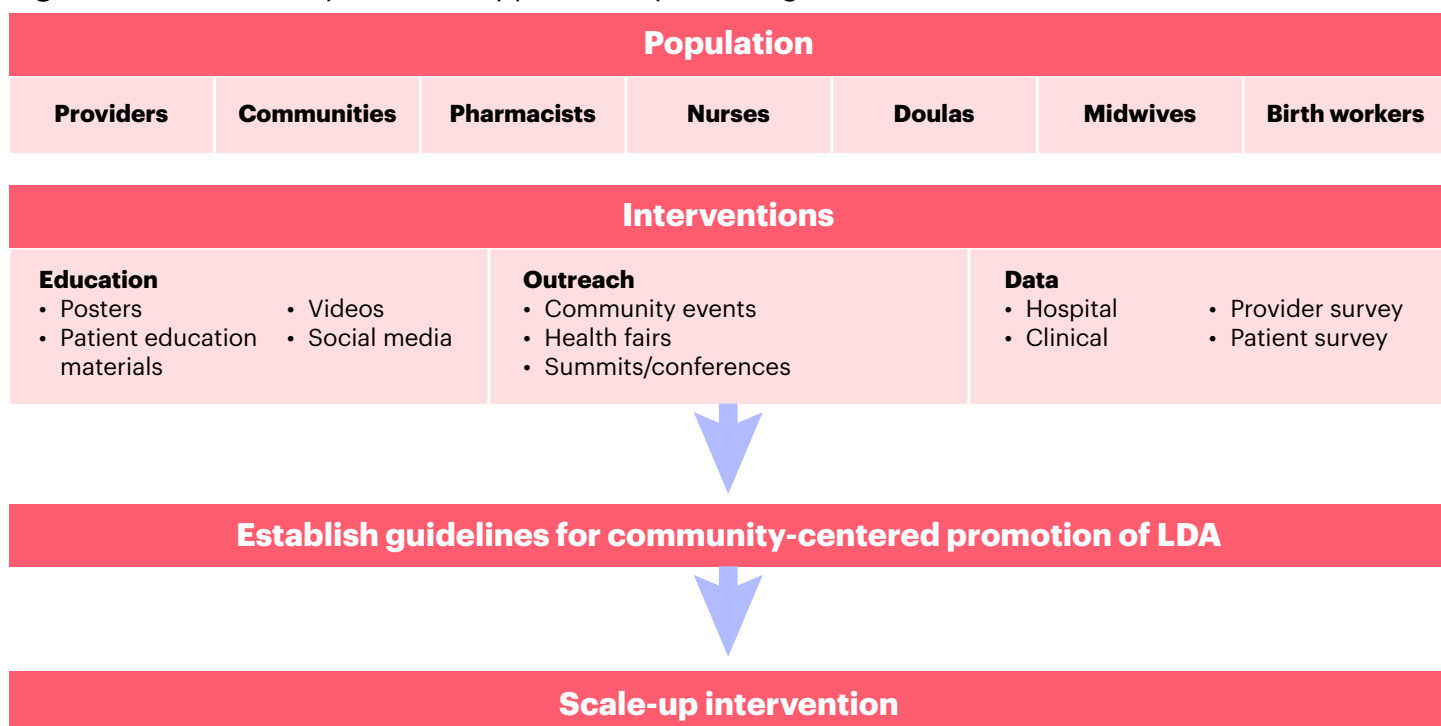
- **Collaborate with local organizations.** Work with community groups, faith-based organizations, and other trusted local entities to learn about patient perspectives and challenges, develop messages that resonate, and educate the broader community about preeclampsia risks and the benefits of low-dose aspirin. You might be able to build on existing partnerships in your organization or begin a new relationship that can be a foundation for ongoing collaborative work.
- **Share educational materials** with community groups, such as local maternal health organizations or public health programs, to spread awareness.

- **Solicit patient and community perspectives.** Hold community-wide listening sessions or focus groups to hear directly from patients and their support systems about their knowledge of preeclampsia, their views on aspirin use, and any concerns they might have. These sessions can help identify potential barriers to aspirin use, such as cultural beliefs, misconceptions, or access issues. Depending on clinic capacity, other avenues for hearing from patients might be an existing community advisory board, or formal or informal discussions with one or two patients.
- **Tailor educational materials.** Develop and distribute culturally appropriate materials that explain preeclampsia and the role of aspirin in preventing it, addressing the specific needs and languages of the community.
- **Host patient education sessions or community workshops** on the benefits of early risk screening for preeclampsia and LDA.

Resources:

61. [FindHelp.org](https://findhelp.org)
62. [Institute for Medicaid Innovation \(IMI\): Tool 2: Brainstorming CBP Connections and Potential Partnerships, pages 13 and 14](#)
63. [IMI: Becoming Clear About Purpose, pages 23 and 24](#)
64. [IMI: Checklist-Readiness for CBO Partnership Outreach, pages 26 and 27](#)
65. [National Academy of Medicine: Community Engagement Measure](#)
66. [CMQCC Webinar: Low-Dose Aspirin Campaign: Doula Panel](#)
67. [CMQCC Webinar: Low-Dose Aspirin Campaign: Clinic and Community Connections](#)

Figure 13. A community-centered approach to promoting LDA adherence



Community-centered approach — LDA initiative — Developed by Lindsay du Plessis

This diagram illustrates a model for community-centered promotion of LDA uptake that has been part of the CMQCC LDA Learning Collaborative and illustrates key principles of community engagement.

2.4 Implementation

This section includes:

- 2.4.1** Piloting workflow improvements
- 2.4.2** Spreading workflow Improvements
- 2.4.3** Sustainability
- 2.4.4** Evaluation
- 2.4.5** Dissemination

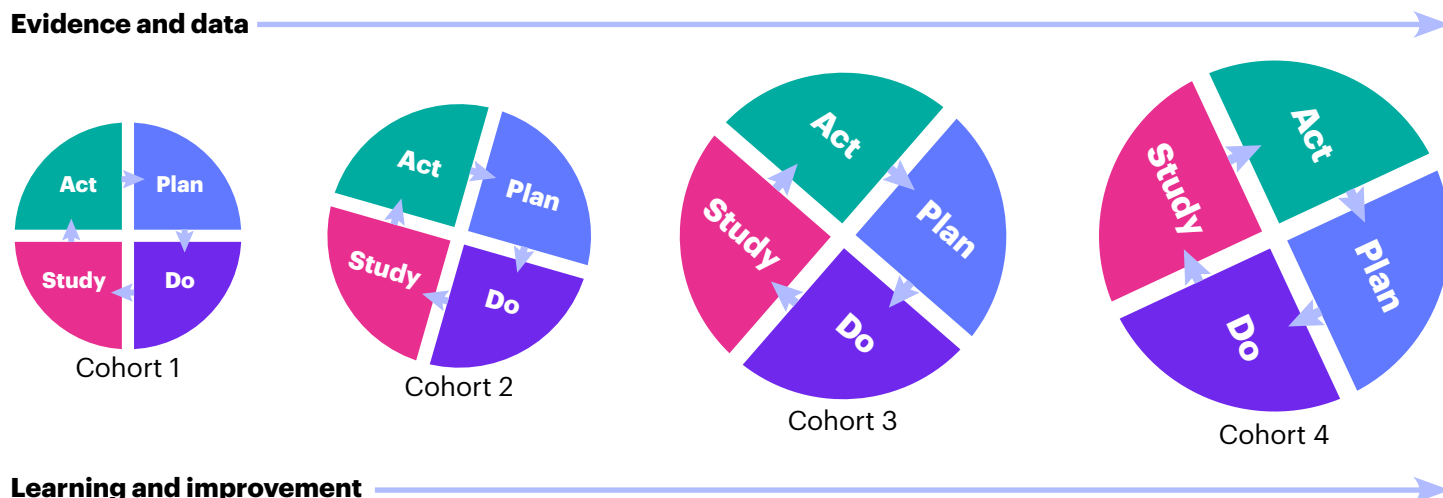
2.4.1 Piloting workflow improvements

After putting key structures in place and developing an updated workflow, a next step is to pilot pieces of the workflow on a small scale, with the goal of refining them for effectiveness to the point where they will be broadly implemented.

One option for this phase is to use Rapid Cycle Improvement (RCI). RCI is a practical and real-time approach that involves testing interventions on a small scale using PDSA cycles, such as with one clinical team or a small group, permitting experimentation, and learning from successful and unsuccessful tests. Numerous small cycles of change can successfully accumulate into large effects. Anticipating that real life testing will identify the most relevant and necessary changes, the workflow prior to testing can be fairly simple and does not have to be “perfect”. Tracking each cycle will aid in improving the workflow throughout the rapid cycling process.



Figure 15. Illustration of Rapid Cycle Improvement



Below is an example of a team's tracking of rapid cycling of an updated LDA workflow. It demonstrates how the team tackles one piece of the workflow at a time until the entire workflow is addressed. The improved workflow can then be spread to another clinician, with buy-in and feedback accumulating until the group feels the workflow is sufficiently effective to be piloted amongst the whole team. In this rapid cycling phase, data collection is limited to what is needed to determine effectiveness of the workflow. Additional information about using RCI for implementation is available at IHI and AHRQ websites.

During this process, consider sharing data with the team to gain feedback, ensure buy-in, and increase readiness as the process spreads.

Resources:

45. [IHI Model for Improvement](#)

48. [PDSA Worksheet](#)

68. [Rapid cycling worksheet and LDA example](#)

Figure 16. Example of Rapid Cycle Tracking for LDA

Test number and dates	PDSA 1 Week 1	PDSA 2 Week 2	PDSA 3 Week 3	PDSA 4 Week 4
Test description	Trial hard copy preeclampsia risk screening with patients at time of pregnancy intake. Include standard documentation.	Continue hard copy preeclampsia risk screening, update documentation. Start standard process for education.	After screening and education, start standard LDA prescription and documentation. Include questions for patients about how to get medication.	Expand workflow to test with new care team for additional testing/insights.
Population	5 early pregnant patients over 1 week	5 early pregnant patients over 1 week	5 early pregnant patients over 1 week	5 early pregnant patients over 1 week
Location of test	With Dr. Smith's team	With Dr. Smith's team	With Dr. Smith's team	With Dr. Smith and Dr. Jones team
Results	All 5 patients were screened successfully. MA team and Dr. Smith feels this workflow was smooth in the given appointment time. Dr. Smith recommends improvement in documentation.	4 patients received patient education based on risk and LDA recommendations successfully. Difficulty with a patient who spoke different language. New documentation process good per Dr. Smith.	3/5 patients were candidates for LDA. Prescription and standard documentation completed. Patients report no concern regarding getting prescription. Screening and education completed per workflow without issues for all 5 patients.	Dr. Jones' team was able to complete workflow with 5/5 patients. Report workflow is acceptable. Reports some concerns about education, desires additional communication/educational support for communication.
Next Steps	Continue hard copy screening with MA at intake. Update documentation process. Next: Start with education workflow.	Continue with screening and education. Continue with current documentation process, though will ensure other providers like this process when spread occurs. Consider education improvements for non-English speaking patients. Next: Test standard prescription process and documentation.	Continue with current workflow for screening, education, and prescription. Plan to f/u with patients at next visit to see if patients were able to pick up prescription. Next: Trial this workflow with a new provider.	Continue with current workflow. Provide additional clinical team educational support. Next: continue with Dr. Smith and Dr. Jones. Consider additional PDSA spread. Upcoming: PDSA for adherence

2.4.2 Spreading workflow improvements

After the workflow has been piloted, the next step is to consider and implement a spread strategy that leads to wider implementation of the workflow among additional clinical teams. At this point, revisit team engagement to ensure that clinical teams are ready for and invested in the updated workflow process. Share the updated workflow along with information about the development process, and revisit the purpose of the project as a whole and why this intervention will support the purpose. Identify additional champions and early adopters who can facilitate adoption within the clinic.

Checklist for spread process

- Confirm workflow is updated from pilot work.
- Engage team and identify best next location to implement the workflow.
- Build enthusiasm and buy-in with clinical team at new location.
 - This may include answering questions, providing more education, and providing materials for implementation.
 - Confirm all necessary structures are in place prior to implementing workflow.
- Begin implementing with new team. This may be a rapid-cycling PDSA approach to ensure each component of the workflow works for the new team.
 - Consider tracking with structure and process measures to ensure successful implementation.
- After implementation of the full workflow, ensure sustainability through less frequent data monitoring and reaffirmation of needed infrastructure.
- Next, move on another location to spread the workflow!

New implementation teams may choose to take on the new workflow in phases, undertaking rapid cycling with PDSA cycles addressing pieces of the workflow to ensure they can be accomplished in the new setting. Alternatively, they may choose to implement the new workflow as a whole. In the latter case, attention should be paid to each piece of the workflow—screening, education, prescription, and adherence—to ensure all pieces are implemented smoothly.

The focus of data during the spread process will balance refinement of new implementation of the workflow with assessment of maintenance in the initial settings. To assess the implementation at new settings, manual chart audit, similar to that done during piloting, would be appropriate until the workflow has been fully implemented. During this process, there is a balance between strengthening of the infrastructure to support uptake, while maintaining flexibility to make needed adjustments.

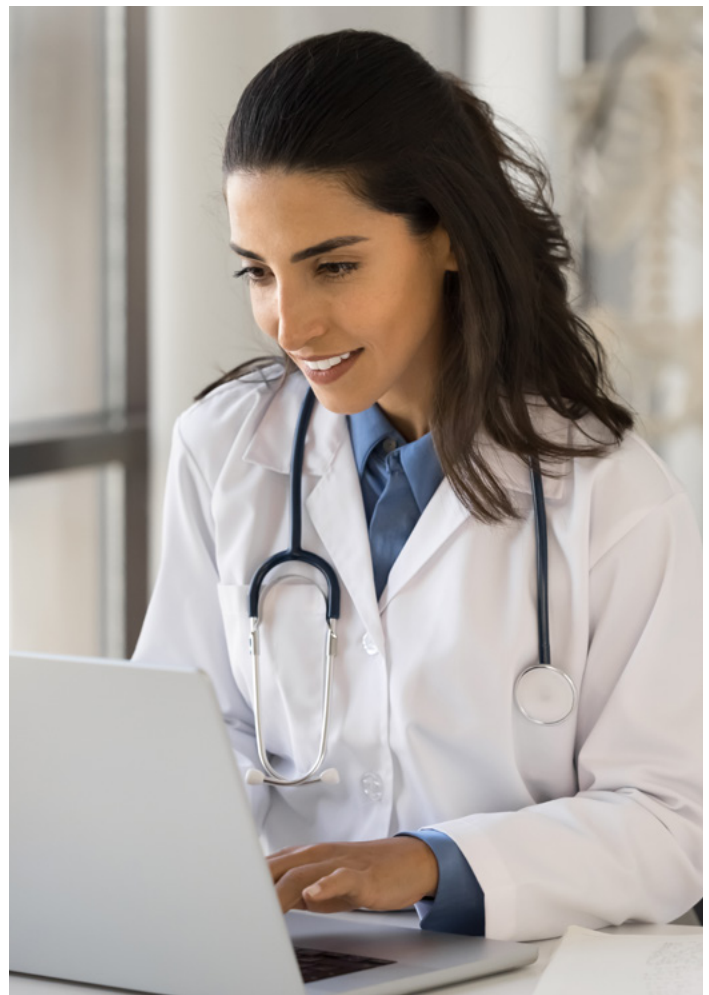


Figure 17. Example of spread plan and results

Spread number	1 (first team after initial pilot)
Team	• Dr. Smith’s care team at Alpha Clinic. • Dr. Smith MD, 2 MAs, sometimes assistance from LVN on site.
Timeline	• 1 month rapid cycling
Plan details	• Plan to conduct rapid cycling to integrate workflow in pieces. • Start with preeclampsia risk screening and documentation, followed by education, then by LDA prescription process. • Will provide team time to provide feedback about process to ensure their questions are answered and they receive sufficient support.
Data considerations	• Will plan to monitor all patients in the rapid cycling process, aligned with the pilot process. • After confirmation that team has implemented the workflow, will transition monitoring to include Dr. Smith’s team in the monthly chart audit for process measures.
Anticipated facilitators	• Dr. Smith identified as early adopter, interested in LDA work. • Has high patient satisfaction scores due to high quality communication/counseling.
Anticipated barriers	• New MA team, will possibly require additional education on preeclampsia risk, LDA, and workflow.
Results	• Dr. Smith and team were able to implement risk factor screening and prescription without issue. • Dr. Smith reports comfort in patient education, but the care team would like ongoing support on education to ensure they have the time, resources, and knowledge they need to sufficiently educate patients.
Next Steps	• Will continue to provide educational support for Dr. Smith’s team. This should be straightforward as other care teams will also be receiving education as spread process continues.

When the team determines that the adopted processes are meeting the established goal, or on target to do so, decreased frequency of monitoring is appropriate. This is cause for celebration! But the work isn’t done. Teams should know that attention to sustainability, evaluation, and dissemination are essential for capturing the successes of the project to maintain impact and pave the way for future work that can improve patients’ experiences and health outcomes.

Resources:

69. [Spread strategy worksheet and example](#)

2.4.3 Sustainability

Sustainability involves making sure that the positive changes implemented in clinical practice, patient care, or healthcare systems are not only achieved but are continuously supported and integrated into everyday operations for long-term benefit. Consider the following ideas to ensure sustainability.

How can you ensure new processes are fully integrated into the practice?

- Strengthen the infrastructure for the project to better integrate into standard team functions. This may include reinforcement of education on LDA and preeclampsia and new workflows to ensure consistent use.
- Improve EHR capacity for documentation and data. This may include integration of screening and patient education into the EHR rather than paper copies to ensure continued use of tools.
- Create clinic policies to support the work.
- How will you ensure adaptability, for example if clinical recommendations related to LDA change?

How will you continue to involve stakeholders?

This may include clinical teams, administrators, other organizational departments, community members, including patient and healthcare touchpoints on the continuum of care. Ongoing engagement can create feedback loops of increased capacity that can support future work.

- Are additional project meetings or communications necessary to sustain the work? If so, at what frequency?
- What important items need to be reported out at these set intervals?
- How can you maintain leadership and team support for continuous quality improvement work in the clinic?

How will you update the data plan to support sustainability?

- How will you know if the updated processes are consistently being utilized?
- What is the plan for continuous monitoring of the processes put in place? How will feedback be obtained and integrated?
- How will you continue to share data?
- Can you track and monitor outcome measures? What about patient experience and feedback? What other measures might be useful, such as Uniform Data System (UDS) measures related to hypertension or health-related social needs?

What resources are needed (time, funding, staffing, training) for the benefits of the project to continue?

- Think about logistical responsibilities, for example, who will review charts or order new patient-facing materials?
- Plan for ongoing education related to the topic and the clinical landscape change.
- Think about onboarding of new staff—how will they be educated? Can this be added to existing onboarding workflows?
- Can you leverage the success of this project to advocate for needed resources and support future related work?

Resources:

70. [Sustainability plan worksheet](#)

2.4.4 Evaluation

At the conclusion of the implementation phase, conducting a formal or informal evaluation by collecting learnings and insights through data and reflection will help demonstrate impact, advance organizational knowledge, and support dissemination. While this step can be reduced to accommodate for time and resources, evaluation of the project can be a key to continued capacity building for QI efforts, particularly those related to prenatal and postpartum care and hypertensive disorders of pregnancy.

The following questions can help guide evaluation:

- What were the goals of the project? Were they achieved?
 - May include changes in preeclampsia screening rates, LDA prescription rates, etc. Compare to initial SMARTIE goals.
 - Is there any observable effect on patient outcomes?
 - Such as patient engagement or satisfaction
 - May want to assess clinical outcomes like preeclampsia and preterm birth, though caution should be taken as changes to these measures may be slow.
 - Were the processes put in place effective? What barriers and facilitators were identified? Were there any unexpected challenges or unintended consequences?
 - How was data used in the project? How can it be used to demonstrate effectiveness?
 - What was the clinical team and staff experience? Was the team engaged? Any effect on team burnout or wellbeing? Any additional training or education needed?
 - How do patients perceive the new processes? Do patients feel more confident around decisions about LDA? Do patients feel supported in overcoming unintentional nonadherence?
- 
- What were community engagement challenges and successes? What feedback did stakeholders provide? Are there opportunities to maintain or grow newly developed community engagement capacity?
 - What were the EHR/IT challenges and successes?
 - What adjustments are needed to ensure ongoing success? What are key lessons learned that are relevant to future projects?
 - What are possible next steps or expansion plans?
 - Are there any areas directly related to this project that could be easy or natural next steps?
 - This might include postpartum best practices for patients at elevated risk of preeclampsia, or connection to other hypertensive disorders of pregnancy work.
 - Addressing maternal health challenges and inequities will require collaboration across the continuum of care, which is often fragmented, and involve quality improvement in outpatient settings, which in some instances have less experience and capacity in QI. How did this project address these issues? How can that new capacity be sustained and built upon?

Resources:

71. [Evaluation worksheet](#)

2.4.5 Dissemination

Dissemination of the results and outcomes of the project ensures that the lessons learned, successful strategies, and key findings are shared. Effective dissemination helps to spread best practices, maintain momentum for improvement, and potentially scale successful interventions to other areas or clinics. It's also key to respectful and effective community engagement—for example in acknowledging and elevating the importance of collaborators' contributions and demonstrating trustworthiness and transparency that can support further collaborative work.

Here are some considerations for dissemination of the results of your LDA project:

Identify key stakeholders. Consider internal stakeholders, such as clinical team members and support staff, leadership, and other teams who contributed to the project including IT or Health Education, and external stakeholders such as patients, collaborating organizations, and the broader community related to the perinatal continuum of care. Engage key stakeholders in discussions about the project's results, lessons learned, and next steps. This can foster a sense of ownership and investment in sustaining and expanding improvements.

Determine the key messages

- What was the problem addressed?
- What interventions were implemented?
- What were the outcomes?
- What lessons were learned? Share both successes and challenges.
- What are the next steps?
- Highlight sustainability and spread/scalability.
- Recognize contributions from stakeholders.
- Share success stories.

Select the appropriate channels for dissemination

- Internal channels: Consider staff meetings, email newsletters, intranet, or other shared platforms, workshops
- External channels: Presentations, press releases, social media

Tailor the message to the audience

- **Clinical staff** may need more detailed, technical information about the QI process, specific interventions, and evidence-based outcomes.
 - Such as specifics related to preeclampsia risk screening and education, LDA prescription, and improvements made from the project.
- **Administrative leaders** might be more interested in the impact of the QI project on operational efficiency, cost-effectiveness, and sustainability.
- **Patients or community groups** may appreciate learning how the project affected patient experience, safety, and satisfaction. The messaging should be non-technical and patient friendly.

Use data effectively, for example:

- **Visual aids** (charts, graphs, infographics) to summarize key data points that show the impact of the project,
- **Comparison of baseline and post-intervention data** to highlight the magnitude of the improvement.
- **Inclusion of qualitative insights** (patient and staff stories) to provide a more complete picture of the project's impact.

Plan for ongoing communication. Providing ongoing updates and encouraging feedback about the LDA work will reinforce its importance and maintain engagement and capacity for future collaboration.

2.5 Postpartum best practices for patients at elevated risk of preeclampsia

While postpartum best practices may not be integrated in initial project work of increasing LDA uptake and adherence, postpartum considerations are crucial in reducing negative maternal outcomes and promoting health in the postpartum period and beyond. Ultimately, LDA may reduce some, but not all, cases of preeclampsia in pregnant patients. As a result, consider what care is necessary to address needs of patients who experienced hypertensive disorders or pregnancy..

Additionally, patients at risk for preeclampsia may not have developed a hypertensive disorder of pregnancy prenatally, but remain at risk for postpartum preeclampsia or other conditions and complications related to their risk of preeclampsia. The interventions discussed below may be integrated into the LDA project or implemented upon conclusion of the planned interventions. This will depend on organizational priorities and capacity.

Maintain patient engagement.

- Ensure that every patient who is at elevated risk for preeclampsia or experienced a hypertensive disorder of pregnancy has the opportunity to discuss and understand any current diagnoses and future risks.
- Provide patient education on postpartum preeclampsia and its warning signs.^[36]
- Advise and encourage patients to alert future clinicians to their postpartum status and any history of preeclampsia. One promising practice is the use of wrist bands to flag postpartum status and related diagnoses such as preeclampsia.^[66]
- Educate at-risk patients about LDA for future pregnancies and the importance of seeking care early.



Ensure care coordination and follow-up.

- Ensure prompt, appropriate postpartum follow-up.^[67]
- Consider enrollment in a postpartum blood pressure monitoring program.
- Ensure connection to the continuum of care. Address the need for ongoing connections with primary care provider and other specialty providers, such as cardiology or mental health. Communicate any relevant history related to elevated preeclampsia risk assessment or pregnancy conditions/outcomes that could influence care.

Encourage breastfeeding.

- Breastfeeding has favorable effects not only on mother-infant bonding, but also on hypertension management through positive effects on the maternal vasculature and lipid and hormonal milieu. Women whose cumulative lifetime duration of breastfeeding is 6–12 months are 10% less likely to develop cardiovascular disease.^[53]

Address risk of cardiovascular disease.

- Patients at elevated risk for preeclampsia may also have increased risk of cardiovascular disease. Cardiovascular assessment and follow-up at 3 months postpartum is recommended for women with hypertensive disorders of pregnancy.^[53] These efforts should include patient education and engagement to ensure patients understand their risk and tools to mitigate risk overtime.

Assess for and treat mental health conditions.

- ACOG recommends all patients be screened for postpartum depression at the postpartum visit. Preeclampsia and preterm birth are risk factors for postpartum depression, and also for traumatic birth and childbirth-related post-traumatic stress disorder (PTSD).^[68] Some authors recommend screening for PTSD in patients who screen positive for depression.^[69]

Encourage healthy living habits.

- Support patients in connecting with opportunities to be healthy to support future pregnancies and lifelong health, such as exercise, healthy diet, folic acid supplementation, and smoking cessation.

Additional tools for addressing postpartum risks and optimizing postpartum care can be found in the CDC's Hypertensive Disorders of Pregnancy Change Package.

Resources:

72. [ACOG Committee Opinion Number 736: Optimizing Postpartum Care](#)
73. [CMQCC Cardiovascular Disease Risk Assessment](#)
74. [Preeclampsia Foundation: Postpartum Preeclampsia Education](#)
75. [Preeclampsia Foundation: My Health Beyond Pregnancy](#)
76. [Preeclampsia Foundation: Beyond Pregnancy](#)
77. [Alliance for Innovation on Maternal Health \(AIM\) Postpartum Discharge Transition Patient Safety Bundle](#)
78. [AIM Community Care Initiatives: Community Care Bundles](#)
79. [CMQCC Hypertensive Disorders of Pregnancy: COMFORT Postpartum Debrief tool, Page 69](#)
80. [CDC Hear Her Campaign](#)
81. [CDC Urgent Maternal Warning Signs](#)
82. [CMQCC Lifetime Risks of Heart Disease after Pregnancy Complications patient education materials](#)
83. [CMQCC Signs and Symptoms of Heart Disease During Pregnancy and Postpartum patient education materials](#)



2.6 Case examples

This section includes:

- 2.6.1** Institute for Family Health
- 2.6.2** University of California, San Diego
- 2.6.3** Riverside University Health System
- 2.6.4** Kaiser Permanente:
Napa Solano Service Area
- 2.6.5** California Maternal Quality Care
Collaborative: LDA collaborative

2.6.1 The Institute for Family Health

The Institute for Family Health (IFH) is a Federally Qualified Health Center (FQHC) system located in New York, providing care through the Primary Care Medical Home model. They primarily serve Medicaid, Medicare, and uninsured patients, and provide integrated services, including primary care, pediatrics, women's health, behavioral health, dental care, and wraparound services such as case management. Through the leadership of three family medicine residency programs, IFH has implemented an innovative LDA project that supports their at-risk maternal patient population.

Early work

While the IFH team knew they wanted to improve LDA uptake, they encountered a limiting initial barrier. As an FQHC providing primary care, they lacked the infrastructure to generate a list of patients who were actively receiving prenatal care at the organization. This was necessary to address prior to starting any LDA work because they needed to identify the patient population to be served by the LDA project. To address this issue, they worked with their EHR team to build a registry for pregnant and postpartum patients receiving care.

Tip for foundational work

This effort is a great example of building QI capacity. By building a registry for this patient population, IFH can now more effectively understand their patient population and tailor future QI efforts to the population needs.

Facilitators

- **Grant funding:** IFH received grant funding to support personnel time for data collection and EHR tool development.
- **Clinical Informatics Specialist:** One of the clinical leaders, a family medicine physician, is also an Epic builder. This position provided critical expertise towards the development of new Epic tools and provided crucial “translation” between the clinical and EHR teams.
- **Administrative work:** IFH leveraged family medicine residents and medical and public health students to support the LDA work including data tracking.
- **Supportive administrative team members:** Administrative leaders and team members provided critical support throughout the various stages of the project.

Barriers

- **Setting type:** FQHCs often have competing priorities and are generally considered a “low-resourced” setting. Serving publicly insured patients can sometimes present unique challenges related to the social health of patients and structural barriers to patients receiving care.
- **Administrative burden:** Despite the facilitators of funding and residents/students in supportive roles, the administrative burdens of data collection and monitoring remained an obstacle.

Baseline assessment

The IFH team conducted a baseline assessment to understand the current state of LDA-related clinical practice. In the pre-intervention time period, 40% of high-risk patients and 11% of moderate-risk patients received an LDA prescription. They identified inconsistent documentation, potentially resulting from inconsistent clinical care.

Tip for baseline assessment

The IFH baseline assessment included the rates of LDA prescription and qualitative process information. Understanding baseline infrastructure can help identify improvement areas needed prior to updating clinical practices.

Initial implementation

For their first major intervention, the IFH team developed a practice advisory and associated smart order set, designed to standardize clinical practice and documentation.

Their EHR practice advisory was developed to alert the provider to complete a preeclampsia risk factor screening and a preeclampsia prevention/evaluation smart order set. A smart order set is a list of orders and associated items through the EHR associated with the topic of the set. This smart set included options such as:

- Preeclampsia risk factor screening
- Standardized documentation
- An LDA prescription
- Preeclampsia labs
- Patient education on LDA and preeclampsia
- Consults for perinatology and case management
- Associated ICD-10 Diagnosis Codes

The team implemented these tools across their prenatal care providers for 14 months, seeing improvement among LDA prescription of high-risk patients from 40% to 60% and moderate-risk patients from 11% to 33%.

Tip for celebrating wins

This improvement is exciting and an opportunity for celebration! The IFH team made improvements in care. The team can celebrate this improvement. IFH took this a step further, wanting to understand limitations with this new workflow and identify additional opportunities for improvement. This is an example of an iterative process.

Evaluation and iteration

After the initial implementation period, the IFH team assessed their project and identified additional areas for improvement. They identified limitations to the practice advisory/smart set process including:

- Ineffective capture of the moderate-risk factors in the EHR due to limitations of ICD-10 coding
- Inconsistent data documentation in discrete data fields, increasing administrative burden required by manual chart auditing and limiting accuracy of data monitoring

A thorough chart audit was completed to find gaps in the new process. The audit revealed that while many patients with high-risk factors, such as history of preeclampsia and chronic hypertension were consistently being prescribed aspirin, patients with moderate-risk factors, like Black race and advanced maternal age, were consistently missed.

Resources:

84. [IFH's published work: Missed opportunities in aspirin prescribing for preeclampsia prevention.](#)

Tip for iteration

This is an example of how monitoring and evaluation can lead to improved care processes. If the IFH team had not invested the time to evaluate their first intervention, they may have continued with a process that was not ideal. Through evaluation, they identified specific areas for improvement and updated processes.

Development of the Preeclampsia Care Path

Based on findings from the evaluation of the practice advisory/smart set intervention, they developed the Preeclampsia Care Path. This new tool facilitated:

- Tracking all risk factors, allowing for stratification of risk levels
- Collecting data through reports, based on integrated information in discrete data fields
- Visualizing patient risk via a dashboard and ability to open smart set from the same page
- Updating preeclampsia risk level new information as new information was added to the patient's chart
- Monitoring patient into the postpartum period through utilization of the preeclampsia risk level to identify preventive care opportunities



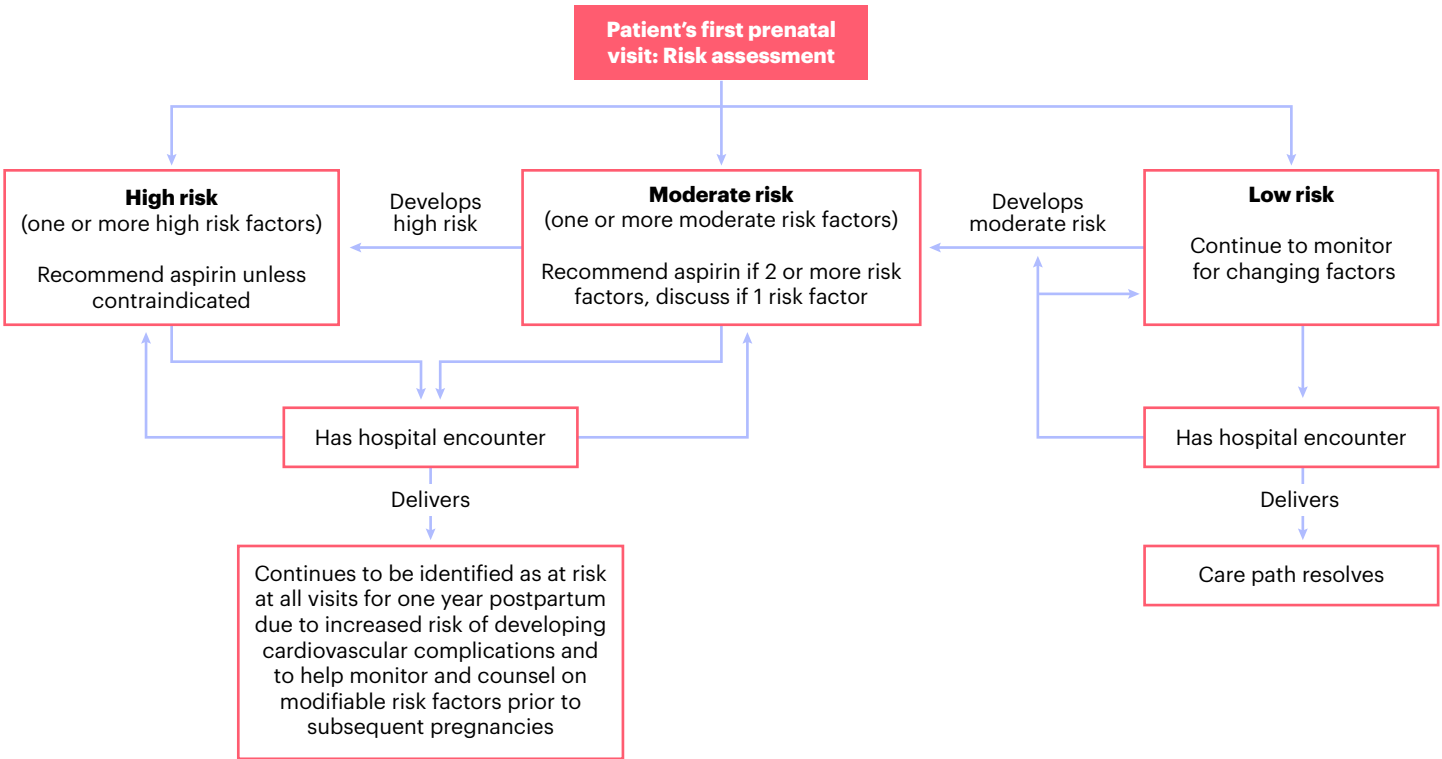
Tip for expanding work:

This is a great example of including care practices that may be outside of LDA work but are important for maternal health and lifespan promotion.

Tip for preeclampsia risk factor screening

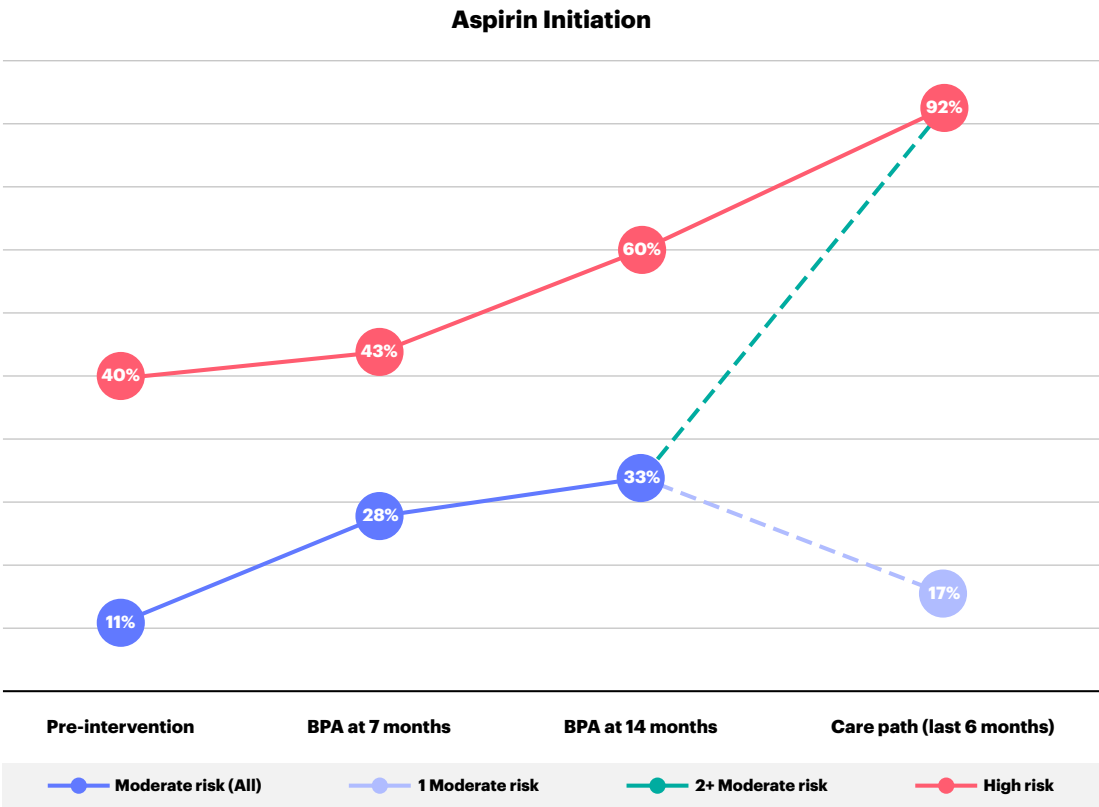
Low income as a moderate-risk factor is vague and undefined. The IFH team leveraged the work being done around health-related social needs screening to inform their assessment of “low income” as risk factor.

Figure 18. Preeclampsia care path Epic workflow



After 6 months of utilizing the Preeclampsia Care Path, LDA prescription rates increased to 92% for both high-risk and moderate-risk patients.

Figure 19.



Tip for presenting data

This is a great example of an intervention chart, which graphs intervention changes and associated rates to LDA prescription overtime.

Dissemination

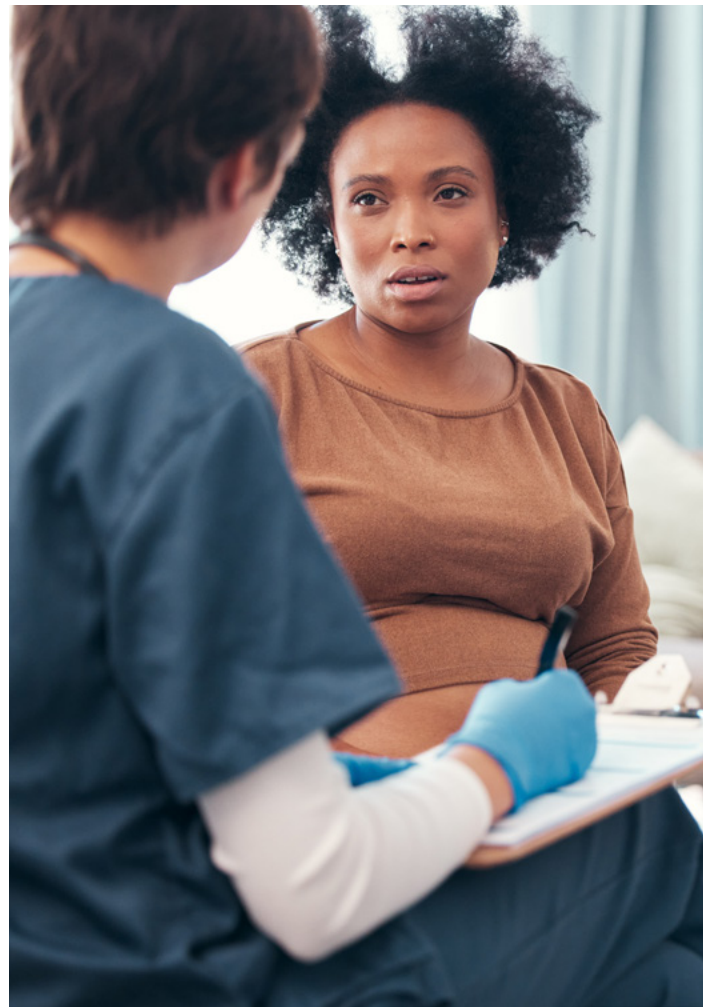
The IFH team has already undertaken many efforts to disseminate their findings and tools to support other teams doing similar LDA work. They encourage anyone to use their tools that can be found in the Epic Community Library. Instructions on how to access these tools can be found in [41. Epic LDA EHR Tools](#).

Additionally, they've published their work illustrating the gaps in LDA prescription even after their initial efforts of the practice advisory and smart set. They plan to continue these dissemination efforts in 2025.

Next steps

The IFH team plans to continue sustainability of the work on the Preeclampsia Care Path and efforts to assess LDA adherence. They have prioritized education of providers and clinical teams, due to a high volume of provider turnover through their residency programs. Additionally, they plan to continue to explore the data they have collected for any outcome associations with various interventions.

They are also exploring the relationship between environmental factors and preeclampsia, as related to direct clinical care. You can find more about this in their upcoming article, Beyond Guidelines: The Impact of Lived Environment and Racial Composition on Hypertensive Disorders of Pregnancy.



2.6.2 University of California San Diego

The University of California San Diego (UCSD) is an academic hospital system, providing inpatient maternity care to around 5,000 patients per year. The system serves patients from their integrated outpatient settings and from external providers within the community. The UCSD team initiated and sustained efforts to increase LDA uptake to prevent preeclampsia, driven by their leadership role in the community and the acuity level of their patient population.

How did this work start?

In September 2022, an OB-GYN resident at UCSD started a QI project to increase LDA uptake among prenatal patients. Their early work integrated a preeclampsia risk factor screening into their Epic EHR. This resident acted as an early leader in development of the project and garnered interest and leadership support for wider implementation. This tradition of resident involvement in QI has continued throughout UCSD's LDA efforts.

Tip for team building

Residents, students, and other types of new professionals may be strong team members in being able to lead initial development, data tracking, and other administrative tasks that can be difficult to undertake by others on the clinical team. Many residents and students may leverage this type of work for their educational requirements. These projects can be publishable and may be an opportunity for career development.

Team building and structure

The project team of UCSD included many clinical leaders in addition to administrators with decision-making powers in different settings. Supportive outpatient clinic managers were particularly important for communicating information about the project to outpatient teams. This has aided in the spread and sustainability of the project.

EHR integration

Updating the documentation process in Epic was an early success of this project. The EHR updates encouraged standardization of care across multiple practice settings.

- Outpatient integration included a standard new prenatal visit note created to prompt and document preeclampsia risk factor screening, patient education, and LDA prescription as appropriate.
 - Different departments started using the new updated note, supporting standardized practice across the OB-GYNs, MFMs, midwives, nurse practitioners, and family practice providers.
 - This standardized practice improved chart audit data collection and consistent patient population assessment. A pre-implementation baseline assessment was not completed, but with this integration, the QI team gained more insight into early clinical practices after starting implementation.

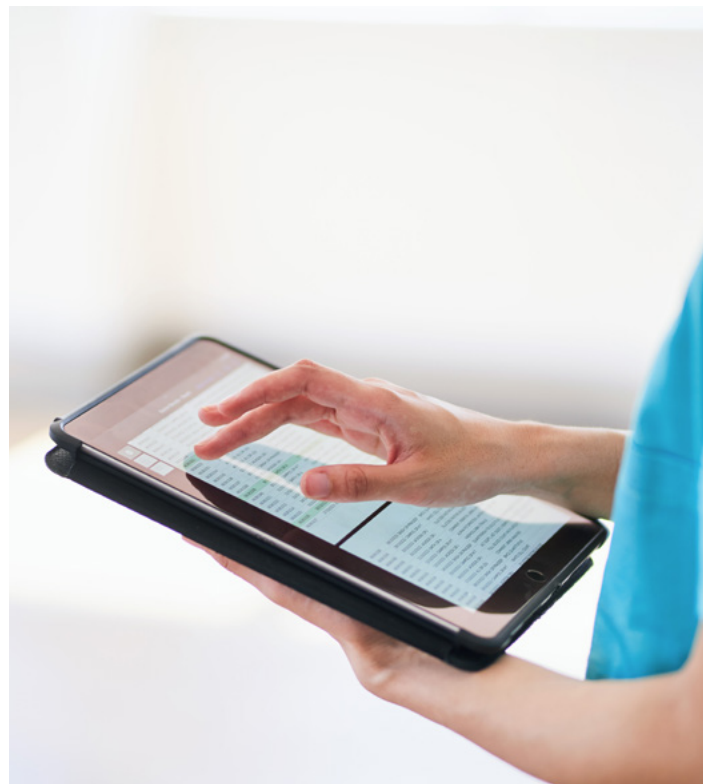


Figure 20. UCSD outpatient new prenatal visit note

Preeclampsia risk screen:

High-Risk Factors (Recommend prophylactic low dose aspirin (81 mg/day) initiated ideally between 12-16 weeks to be continued daily until delivery if any of these risk factors are present):

Preeclampsia risk high ▼

Moderate-Risk Factors (Recommend prophylactic low dose aspirin (81 mg/day) initiated ideally between 12-16 weeks to be continued daily until delivery if more than 1 of these factors are present):

Preeclampsia risk moderate ▼

Was LDASA prescribed? ☐ Yes ☐ No

☐ Preeclampsia in a previous pregnancy

☐ Multifetal gestation

☐ Chronic hypertension

☐ Pregestational diabetes (type 1 or type 2)

☐ Kidney disease

☐ Autoimmune disease (SLE, APLS, RA)

☐ N/A

Moderate-Risk Factors (Recommend prophylactic low dose aspirin (81 mg/day) initiated ideally between 12-16 weeks to be continued daily until delivery if more than 1 of these factors are present):

Preeclampsia risk moderate ▼

Was LDASA prescribed? No ☐ Yes

☐ Nulliparity

☐ Interpregnancy interval more than 10 years

☐ Obesity (BMI > 30)

☐ Family history of preeclampsia (mother or sister)

☐ Black race (based on patient self-report)

☐ Low socioeconomic status

☐ AMA (age > 35)

☐ History of pregnancy affected by low birth weight or SGA

☐ Patient born with low birth weight or SGA

☐ Prior adverse pregnancy outcome

☐ In vitro fertilization

☐ N/A

Was LDASA prescribed? **LDASA prescribed** ▼

☐ Yes

☐ No

Was LDASA prescribed? No **Reason not prescribed** ▼

☐ Did not meet criteria

☐ Will obtain over the counter

☐ Already prescribed

☐ Patient declined

- Inpatient integration included updates to the History and Physical note (H&P) at Labor & Delivery (L&D) admission. A standard note was developed to assess LDA prescription and adherence during the prenatal period.
 - This integration has been less successful due to competing priorities on L&D. However, the team noted an increased awareness of the importance of LDA by the inpatient team. This continues to be an opportunity for improvement.

Figure 21. UCSD L&D History and Physical Standardized documentation

Did you take aspirin in your pregnancy? Aspirin checklist ▾	
Allergies: Steroids [corticosteroids]	☐ Yes; If Yes ▾ ☐ No ☐ Unknown
System Review (Pertinent Positives)	

Did you take aspirin in your pregnancy? Yes; If Yes ▾	
Allergies: Steroids [corticosteroids]	☒ One of two pills? Aspirin dose ▾ ☒ When did you start taking it? Weeks GA ▾ weeks of gestation ☒ When did you stop taking it? Weeks GA ▾ weeks of gestation ☒ Did you take it every day? Yes/No ▾
System Review (Pertinent Positives) As per HPI	

Did you take aspirin in your pregnancy? Yes; One of two pills? Aspirin dose ▾	
When did you start taking it? Weeks GA ▾ weeks of gestation	☐ 1
When did you stop taking it? Weeks GA ▾ weeks of gestation	☐ 2
Did you take it every day? Yes/No ▾	

Did you take aspirin in your pregnancy? Yes; One of two pills? Aspirin dose ▾	
When did you start taking it? Weeks GA ▾ weeks of gestation	
When did you stop taking it? Weeks GA ▾ weeks of gestation	
Did you take it every day? Yes/No ▾	
Allergies: Steroids [corticosteroids]	☐ Yes ☐ No; missed a lot ☐ No; missed a little
System Review (Pertinent Positives)	

Tip for clinical standardization

Documentation can be a useful approach to standardizing care across sites and departments. The documentation prompts clinicians to complete important clinical interventions, such as screening, education, prescription, and assessment for adherence.

Tip for data planning

During the piloting phase, utilize a more intensive data monitoring approach to understand what is working and what is not. Then, after implementation moves to sustainability, reduce the level and frequency of data monitoring to support sustainability while balancing administrative burdens.

Data collection and monitoring

UCSD utilized manual chart auditing to assess improvements in their screening, education, prescription, and adherence rates due to of limitations to standardized reporting through the EHR.

Facilitators:

- A QI nurse was able to take on the administrative burden of data collection and monitoring.
- UCSD utilized CMQCC's Maternal Data Center, which allowed for easy active tracking of outcome measures such as preeclampsia rates.

Barriers:

- The chart audit process was time intensive due to a high volume of patients.
- To review all patients determined at risk for preeclampsia, a review of about 120 charts was required per month, resulting in about 8 hours of dedicated time.

Despite the administrative burden, the QI nurse reported that manual chart audits early in the implementation process assisted with the understanding the timing of interventions and associated improvements. This helped filled gaps associated with not completing a baseline assessment. Instead, they were able to learn what clinical processes were occurring in conjunction with early implementation efforts. Once utilization of the new workflow became more consistent, the value of consistent chart auditing of all patients declined.

Early published data:

After 3 months of early LDA implementation work, the UCSD team evaluated their data through a manual chart audit. Their results included:

- 37.8% (60/158) of patients had a documented preeclampsia risk screen at their new prenatal visit.
- 70% (42/60) of these screenings were completed by nurse practitioner providers.
- 33% (20/60) of patients screened were identified as at risk for preeclampsia with one or more high-risk factors, and 25% (15/60) were at risk for preeclampsia with two or more moderate-risk factors.
- 60% (9/15) moderate-risk patients received an LDA prescription and 75% (15/20) of high-risk patients received an LDA prescription.
- For patients identified at risk but did not receive an LDA prescription:
 - 58.8% (10/17) declined a prescription.
 - 17.6% (3/17) had previously received an LDA prescription.
 - 23.5% (4/17) planned to purchase LDA over the counter.

Resource:

85. [UCSD published work: Utilizing the electronic medical record for preeclampsia screening and low-dose aspirin prescription for obstetric patients at UCSD Health](#)

UCSD's manual chart audit of LDA-related processes illustrates how a full picture can develop through this type of data collection. The team identified improvement in preeclampsia risk factor screening, with additional room for improvement noted. A large proportion of completed screenings were done by NPs, which leads to additional questions. Are the UCSD NP providers early adopters of this intervention? Or are NPs more likely to see early OB patients, resulting in more preeclampsia risk factor screens completed?

Prescription rate was higher for high-risk patients compared to moderate-risk patients, which is consistent with literature that often highlights prescription gaps for moderate-risk patients. Additionally, 10/17 patients who did not receive a prescription for LDA, declined the medication. This can lead to further questions, like why are these declinations occurring? This can lead to further investigation and additional iteration of the project.

Tip for project iteration

Use early data monitoring to identify areas for additional improvement. In the case of UCSD's 2022 data, they were able to identify opportunities to increase screening and ensure patients with moderate-risk for preeclampsia were more consistently being prescribed LDA.

Dissemination

UCSD has published and disseminated their work, even as their work continues to progress. This benefits the wider maternal health community by sharing successes, facilitators, and barriers to LDA implementation work. They plan to continue sharing their results.

Next steps

The UCSD team continues to support sustainability of implemented work, including early preeclampsia risk factor screening and LDA prescription. They continue to improve their approach to assessing LDA adherence throughout the pregnancy and the strengthening inpatient documentation to aid in the data collection and monitoring process. They additionally plan to continue their LDA work by exploring the community impact on adherence and investing in interventions that supports this relationship.

Tips for continuing the work

Understand that this work is iterative! Even large systems like UCSD take on this work in pieces to promote system capacity building, sustainability, and progressive improvement.



2.6.3 Riverside University Health System

Riverside University Health System (RUHS) is the public hospital system for Riverside County, California. As a public system, RUHS serves primarily MediCal, Medicare, and uninsured patients, with a wide diversity in patient populations. To meet the needs of the community, RUHS has an expansive system of care including a network of community-based clinics, specialists, and the RUHS hospital that sees 3,000 deliveries per year. RUHS has been long committed to quality improvement work because of the medical and social risks experienced by the populations served.

Prior to formally starting any preeclampsia prevention QI work, preeclampsia risk screening and LDA prescription occurred inconsistently across practices. This inconsistency was identified as an area for improvement, leading RUHS to engage in the first CMQCC collaborative.

Piloted in the OB clinic

To begin their work, the RUHS LDA project team recognized the need to standardize the approach to clinical care due to the variability in practice seen in their baseline assessment. To achieve standardization, they started with updating their Epic EHR processes.

“The most benefit we can have on patient outcomes for both mom and baby is to address as many things as we can for them before they get to the hospital. We want to answer, how can we empower people to take care of their own health?”

Dr. Oshiro

These updates included:

- An integrated preeclampsia risk factor screening tool in the EHR
- A practice advisory to alert providers to complete preeclampsia risk factor screening and consider LDA prescription
- A standardized prescription of low-dose aspirin (81 mg/d)
- Reaffirmation of the medication reconciliation process with documentation to track adherence

Figure 22. RUHS Practice Advisory

Our Practice Advisories

 OB Preeclampsia Warning

OB Preeclampsia Warning

This patient is positive for either High and/or Moderate Preeclampsia Risk. Please see the next section to review the last flowsheet filed for this patient.



 Preeclampsia Patient Risk Check

Preeclampsia Patient Confirmation

Has patient's preeclampsia risks been reviewed?

The team piloted these changes initially in their OB clinic, with their champion providers piloting the changes. Through the initial pilot, they identified areas of improvement to their EHR workflow. Improvements included:

- Ensuring that the screening tool was visible in both the provider and medical assistant flow sheets. This supported the ability for the screening to be completed by the MA and then reviewed by the provider in the flowsheets they were most used to utilizing.
- Adding the calculation of the screening result score in both flow sheets.
- Turning off the LDA practice advisory after pregnancy, as they were seeing it continue to fire in the postpartum period.
- Adding parameters to the practice advisory to align with the timing recommended by the USPSTF LDA guidelines.
- Adding an option for screening that could be completed by the patient via iPad at the time of appointment check in.

Figure 23. RUHS Preeclampsia Risk Factor Screening Tool in MA flow sheet

Time taken: 2/5/2025

0910

Responsible

Create Note

More

☐ Show Row Info

☐ Show Last Filed Value

☐ Show All Choices

Preeclampsia Screener Scores

Vitals

Height (inches):

Weight before pregnancy (lbs):

High Risk Factors

Preeclampsia in previous pregnancy?

1=Yes

0=No

Multiples in current pregnancy?

1=Yes

0=No

Hypertension?

1=Yes

0=No

Diabetes Mellitus (type 1 or 2)?

1=Yes

0=No

Kidney disease?

1=Yes

0=No

Autoimmune disorder?

1=Yes

0=No

Antiphospholipid syndrome?

1=Yes

0=No

Figure 24. RUHS Preeclampsia Risk Factor Screening Tool in the provider flowsheet

Moderate Risk Factors

Did your mother or sister have preeclampsia ("toxemia") during a pregnancy?

1=Yes 0=No

Are you 35 years or older?

1=Yes 0=No

Did you weigh less than 5-1/2 pounds (2.5 kg) at birth?

1=Yes 0=No

Are you of African or Afro-Caribbean ancestry?

1=Yes 0=No

Are you taking low-dose aspirin (81 mg daily)?

1=Yes 0=No

In the last six months, has it been difficult for you to pay for the very basics like food, housing, medical care, and heating?

1=Yes 0=No

Is this a pregnancy from in vitro fertilization?

1=Yes 0=No

Will this be your first child?

1=Yes 0=No

Risk Scores:

High Risk Score (0-7):

Moderate Risk Score (0-11):

BMI:

Create Note

Restore Close Cancel Previous Next

Tip for piloting

RUHS used their pilot to test the initial EHR workflow. Through this process, they identified components that worked as well as opportunities for improvement. They then updated the workflow to increase effectiveness and efficiency prior to spreading the workflow to other teams. Often, the first version of workflow is not perfect. Testing and improving the workflow at the time of piloting will support a smoother spread process.

Spread: Expansion to family medicine

The RUHS experienced success in initial piloting followed by sustainability in their OB clinic due to engagement in the project and specialization in prenatal care. Upon this success, the LDA team spread the project to other departments to ensure care across the organization was standardized.

One area of spread was to the family medicine department. The LDA team provided education to the clinical teams and discussed use of the new workflow. This spread process found some success with more patients being screened for preeclampsia and prescription of LDA, but the process was less successful than the experience in the OB department. They worked to identify causes for the differences in department success and found:

- Frequent turnover of clinicians due to family medicine (FM) residents who rotate through the community clinics.
- Competing clinical priorities, as FM providers have many different patient types they see. Sometimes, prenatal care needs are not always top of mind.
- Differences in incentive structures like quality incentives and pay for performance. Quality measures for reimbursement may take priority over other QI projects.

After identifying these factors, the RUHS LDA project team worked to align the LDA project with existing FM infrastructure. They leveraged the quality metrics software used by the FM practice by developing a care gap measure for LDA that could be used to track preeclampsia risk factor screening rates of the FM providers. They further aligned the project to FM priorities by positioning LDA work as health promotion and prevention and made sure to highlight the lifespan considerations of preeclampsia prevention.

Tip for project spread

The RUHS team was strategic in aligning their LDA efforts with the different priorities and structure of the family medicine department. It's important to assess and understand similarities and differences of clinical sites where spread occurs to ensure buy-in and smooth implementation of the determined workflow.

Community engagement of the clinical care continuum Because of the expansive system of RUHS, an infrastructure of engagement between outpatient and inpatient teams had already been established. RUHS has a tradition of sharing clinical practice updates and projects across these connections to improve and standardize care throughout the system. The RUHS LDA team utilized these connections to support spread of the project to other sites, as well as to support messaging throughout the community. They engaged with community organizations, promoted messaging through their website and with patient stories, and utilized printed and posted materials for patient education.

Tip for clinical community engagement

Remember that this LDA project is an opportunity to build capacity. If the organization does not have connections with clinical partners, now can be a time to build them. This can be as simple as calling another site to speak with their leader about shared priorities. In the best-case scenario, engaging clinical partners can continue the spread of preeclampsia prevention work.

Caring for diverse patients

The RUHS team encountered concern from patients about how Black race is identified as a risk factor for preeclampsia. Some patients reported feeling isolated or targeted by this framing, which aligns with the literature on patient comfort with preeclampsia risk factor screening.

In response, the RUHS ensured that they were providing patient centered education, where questions and concerns could be addressed with empathy and information. This was already an existing priority for care teams, but they used this as an opportunity to reaffirm patient centered communication and support.

Patient support was additionally bolstered through the involvement of care team members who reflect the community. According to the RUHS team leaders, their care teams are as diverse as the patients they serve. This concordance of race, ethnicity, and other backgrounds helps support patients in learning information, asking questions, and being empowered in their own care.

Tip for discussing risk

The obstacle faced by the RUHS related to race and preeclampsia risk is common. Patients often report feeling discomfort or stigma related to sensitive risk factors such as exposure to racism, elevated BMI, and low income. Ensuring all members of the care team understand how to address these concerns with empathy and understanding is crucial to ensuring patients are engaged in the discussion about preeclampsia prevention. This project can be an opportunity to revisit communication approaches to promote patient comfort and understanding.

Next steps

The RUHS team reports the rate of use of the workflow is about 70 to 80% among the women's health clinicians, representing a significant improvement from the inconsistent screening and prescription prior the QI project. The use of the workflow among the family medicine providers remains around 50%. Though this remains lower than the women's health clinicians, the family medicine rate still illustrates improvement of preeclampsia prevention efforts in the department.

Both rates illustrate improvement in initial implementation and continued opportunities for improvement. The next steps for the RUHS project include a more thorough assessment of the current processes to identify where there are successes and barriers to workflow implementation.



2.6.4 Kaiser Permanente Napa Solano Service Area

Kaiser Permanente Napa Solano Service Area (KPNSA) is a service area of Kaiser Permanente in Northern California that provides a wide range of integrated services, including primary care, women's health, pediatrics, specialty care, pharmacy services, case management, and mental healthcare. KPNSA includes two hospitals with maternity services and four outpatient sites that provide maternal care. Between their two sites, they have a birth volume of about 2,800 births per year.

Preeclampsia prevention: A health equity effort

KPNSA started their LDA project through the commitment of physician champions to health equity. The physician champions were leaders in health equity efforts at KPNSA and identified an LDA project as an opportunity to continue their health equity efforts with pregnant patients. They viewed LDA work as “a good way to put into practice the theoretical, knowledge-based concepts” of health equity. “It’s a way to make equity tangible.” They highlight the connection between preeclampsia prevention and health equity through understanding maternal health disparities, promoting respectful conversations with patients, and engaging with community groups.

Tip for equity

Interest and buy-in for LDA work may be gained through situating this project as an extension of organizational health equity priorities or existing health equity projects.

Dr. Silas-Young reports that LDA work is “a good way to put into practice the theoretical, knowledge-based concepts” of health equity.

“It’s a way to make equity tangible.”

System integration: A Facilitator and a barrier

KPNSA, as part of the wider Kaiser Permanente system, is a large, integrated system of care that has the benefit of infrastructure that supports QI, but the disadvantage of being large and difficult to navigate. To gain approval and start work for an LDA project, the KPNSA team had to navigate, leverage, and expand upon existing infrastructure that could help or hinder their work. Examples of this included:

- Learning over time who the key stakeholders were and engage them in the project
 - The KPNSA team reports that they knew who many important stakeholders were, but also learned of new colleagues who needed involvement as the project went on. They stayed adaptable to these updates, ensuring to engage newly identified stakeholders when needed.
- Utilizing existing department infrastructure
 - To educate clinical team members, they used time at their department meetings in which providers for multiple sites were present at one time.

- Building additional infrastructure
 - The project leaders successfully engaged their pharmacy department to provide education on LDA and to strategize about reducing barriers to patients obtaining LDA. This occurred after a few unsuccessful attempts to make this connection.
 - They also worked to ensure all care team members received education about LDA guidelines and the project to increase engagement and buy-in.
- Leveraging expertise from their maternal-fetal medicine (MFM) to inform the clinical understanding and process for improvement
 - Because of their integrated system, the KPNSA team works closely with their MFMs. They engaged them as specialists to help determine the appropriate clinical approach to their project.
- Aligning with EHR and data analysts from the wider system
 - KPNSA has an extensive approach to data, which is a facilitator due to expertise, but a barrier because it can be slow to navigate. The KPNSA team engaged the EHR and data teams early to anticipate this time barrier.
- Identifying a clinic champion for each site to support the project more widely
 - The team bolstered existing infrastructure by identifying a champion for each clinic who relayed project information and provided on-site support to ensure success at each site.

Tip for system navigation

Generally, every health system, large or small, has specific structures that are unique and require navigation. The KPNSA team learned how to navigate their system and updated their approaches as necessary when the system became a barrier. Considering the system through the lens of identifying facilitators and barriers may improve the project implementation process.

Standardizing clinical practice

Because of the breadth of the system, the KPNSA team had to consider implementation of this LDA work among multiple different departments, including general obstetrics, FM, and MFM. They engaged all departments and gained insight into the similarities and differences to the clinical approach to preeclampsia prevention. The team identified opportunities to improve and standardize clinical care through this informal baseline assessment.

Their primary approach to standardizing clinical care was to update their documentation processes to prompt clinicians of the different elements required for preeclampsia prevention. This included:

- A standard note for preeclampsia risk factor screening as part of the prenatal intake visit
- Addition of preeclampsia risk factor screening, LDA prescription, and counseling to the OB problem list used by prenatal care providers

Figure 25. KPNSA Preeclampsia Risk Factor Screening note

- **Low Dose Aspirin Screening Tool For Preeclampsia Prevention - @!d!@**

MAJOR CRITERIA (Recommend ASA for any major criteria)	{NSA OB Aspirin - Major Criteria:415798}
MODERATE CRITERIA (Offer ASA for any moderate criteria, and recommend ASA for 2 or more)	{NSA OB Aspirin - Moderate Criteria:415799}

{NSA OB Aspirin - Plan:415800}

FOLLOWUP :

- Referral to RPSC: {YES-NO-NOT INDICATED:197342}
{SLRPSC referrals:416522}
- Early start referral: {YES-NO-NOT INDICATED:197342}
- AOQ depression screening: {291900} Behavioral medicine referral {YES-NO-NOT INDICATED:197342}
- LDA ordered: {RH Yes, No, Declined, NA:244739} *[If patient is a accepts LDASA, add ASPIRIN TREATMENT COUNSELING to the problem list with .nsawhldaproblst F2 and delete to remove these instructions from the note]*

Figure 26. KPNSA OB Problem List that includes other standard items, such as breastfeeding, birth control, and LDA

User SmartPhrase – NSAWHPNPROBL [8342565]

This SmartPhrase is currently read-only.
You don't have the security to edit this SmartPhrase.

1 2 3 4 5 6 7 8 9 10 11 12 13

@EDD@
Fetal Gender/ Name: **
Partner: **
Delivery plan: **
Infant Feeding Plan: {yslbreastfeeding:132675}
Planned birth control method : {Personal Blank SmartList:122842}
Will Accept Blood products? {Yes No Unknown:251377}

☐ Flu (Sept-Apr)
☐ Tdap @27+ weeks
☐ RSV vaccine 32-36w6d if not previously given (Sept- Feb)
☐ Covid
☐ Covid booster
☐ History of HSV {Yes and/or No:254773}
☐ ACES testing 12w
☐ LDA indicated. Order date ***. Add ASA Treatment Counseling to Problem list with .phrase .nsawhldaproblst

Figure 27. Dot phrase that includes data needed for tracking

12 B Insert SmartText Insert SmartList

1 2 3 4 5 6 7 8 9 10 11 12 13

CMQCC ASA project data:
For prenatal outpatient team:
Week of pregnancy prenatal care began: ***
LDA taken: yes
LDA dosage: 81mg
LDA start date: ***

For L&D/delivery team:
LDA end date: **

Prenatal care at (select one):
☐ KP Vacaville
☐ KP Vallejo
☐ KP Napa
☐ KP Fairfield
☐ KP outside NSA
☐ Outside KP
☐ No prenatal care

Tip for clinical improvement

KPNSA's approach of updating their documentation approach is example of improving structure to support clinical change. This is an example of a structure measure. Before advising providers change their clinical practice, consider the necessary structure updates that will support the update in care.

An approach to community engagement

The KPNSA team leveraged existing connections to the community to support their LDA efforts. Multiple physician leads are from the community in which they practice, providing the project with unique insight.

One example of the community engagement effort was attending a support meeting they attended at Solano Heals, a local organization that provides support to Black pregnant people and their families. At this session, the physician lead presented on preeclampsia risk and LDA, as well as patient empowerment and how to advocate for high-quality care. The physician reported that it was important to ensure that they also bring content and support for topics that are important to the community group, rather than only focusing on LDA.

Tip for community engagement

The KPNSA project has benefited from champions who are part of the populations they serve. These individuals offer valuable insights beyond the healthcare system and can help provide guidance for community engagement. A team member from the community may come from any professional background—physician, nurse, other clinical team member, or non-clinical team member! Be creative and inclusive in how you represent the people you're serving during project planning and implementation.

Filling gaps in community engagement

Despite their existing community connections, the KPNSA team recognized gaps in their community engagement efforts. They had limited established relationships with groups serving Spanish speaking members of the community. By speaking with another clinical team member from the community, they identified a church that serves hundreds of parishioners every Sunday. The project lead called the church, spoke with their leadership, and developed a plan for a health fair after a service. Through this effort, the KPNSA team built a relationship with a vital CBO, connected with people in the community, spread the work about LDA, and built capacity for their future efforts.



Tip for community engagement

It can be easy to overcomplicate community engagement. Taking the time to understand the patient population served, identify the gaps, and find existing CBOs using a search engine search can be enough to get the ball rolling. In many cases, specific services, that internally have been identified as a gap, may already be provided by a CBO. Reach out, connect with existing organizations, and be creative in how to work together.

Next steps

The KPNSA team has made great strides in establishing the foundation for this project through starting clinical practice change, and prioritizing community engagement. As they look toward continued spread and sustainability, their next endeavor is to strengthen and solidify their approach to process measure monitoring. They report this is necessary to ensure that the changes they have made are actively occurring.

They have begun this process by developing a data report to collect a list of all patients actively receiving prenatal care. They additionally have built a report to collect the information from the medication reconciliation process at the time of L&D admission. They are now developing a plan to determine their approach to chart auditing, including how often and how many charts to sufficiently understand the updated care processes.

Tips for monitoring

KPNSA illustrates that the approach to data monitoring changes over time! The goals and needs of data at each stage of the project may vary. Identifying those two components first can guide the logistics of data monitoring.



2.6.5 California Maternal Quality Care Collaborative: LDA collaborative

A collaborative model to quality improvement can increase the breadth of low-dose aspirin work in a healthcare system, county, or state. Organizations who might run collaboratives include large healthcare organizations, payers, perinatal quality collaboratives, or other types of associations such as hospital associations.

Quality improvement collaboratives support different healthcare settings undertaking similar QI projects. The collaborative facilitators provide support, including delivery of content and curriculum, project planning, technical assistance, and general consultation. This support results in reduced administrative burden for the front-line teams implementing the QI project and allows for peer-to-peer learning between different healthcare teams.

The development of this implementation guide was informed by the development and implementation of two rounds of a Low-dose Aspirin for Preeclampsia Prevention collaborative, facilitated by CMQCC.

The CMQCC low-dose aspirin collaborative aimed to increase LDA uptake and adherence among patients at risk for preeclampsia. The CMQCC LDA team developed guided curriculum, including clinical background of preeclampsia and LDA, quality improvement foundations, data tracking, and community engagement. Monthly meetings were held to present topic content and hospital team project updates. These facilitated meetings allowed for teams to share successes and solve problems and ensure a shared learning experience.



Improving system integration

An important component to this collaborative was improving system integration and community engagement through the QI work being completed at the clinical level. Connection building occurred between outpatient and inpatient teams, with local specialists and MFMs, pharmacies, emergency departments, and more along the clinical care continuum. Through the collaborative work, CMQCC identified that relationship building is necessary to long-term reductions in preeclampsia and preterm birth as well as capacity building for future QI efforts.

Tip for system integration

Each team will have to take on their own system integration efforts. This can be a slow process and can be frustrating if clinical teams must address multiple barriers. Collaborative leaders can support teams by celebrating wins and troubleshooting with teams when barriers arise.

CMQCC's LDA collaborative data approach

The collaborative approach to data blended CMQCC's previous work with inpatient teams with growing capacity for outpatient work. CMQCC runs the Maternal Data Center (MDC), where hospital teams can actively track their outcomes measures and some process measures for QI use. Most outcome measures are calculated through use of birth certificate data and postpartum discharge codes. Supplemental data can be submitted by the hospital teams.

The MDC remained a major facilitator to this work, supporting inpatient and outpatient understanding of outcome measures, including preeclampsia rate, preeclampsia-associated preterm birth, preeclampsia rate among those at risk for preeclampsia rate, and severe maternal morbidity rates.

A process measure for LDA usage was built into the MDC to act as a process measure to track work. This supported integrated teams with access to data entry through the MDC.

The CMQCC LDA team learned that alone these MDC measures were not sufficient due to the clinical improvement work occurring in the outpatient setting rather than the inpatient setting. Only relying on the MDC created time delays in identifying opportunities for improvements and increased data burden on the inpatient teams.

To address this, the CMQCC LDA team developed supportive materials for outpatient QI efforts, including the LDA structure measure bundle and LDA process measure tools. The data process was significantly improved when strong relationships between inpatient and outpatient teams were established, allowing for data sharing.

Tip for data support

Collaborative leaders should consider what measures would be ideal for teams to track and consider how to best support teams in data planning. Data planning and tracking can consist of significant administrative burden and act as a barrier to LDA efforts. Supporting teams to reduce this burden as much as possible will improve likelihood of QI success.

Supporting community engagement

Additionally, CMQCC was able to provide support to teams in community engagement work. As discussed in the implementation guide, community engagement is an important factor of LDA uptake and adherence, as patients are impacted by perceptions and support structures of their communities. CMQCC's Community Engagement Lead worked closely with LDA collaborative teams to assess the baseline status, create plans for, and support LDA-related community engagement activities. This filled the gap that many organizations report: a lack of expertise in community engagement.

Tip for community engagement

Similar to system integration and data support, collaborative support for community engagement should aim to reduce administrative barriers, celebrate wins, and support troubleshooting when barriers arise. Reiterate capacity building as an advantage to community engagement efforts.

This Implementation Guide has been developed with the intention of supporting collaboratives as a means for wider spread of improvement of LDA uptake and adherence. When utilizing this guide to support an LDA collaborative, collaborative facilitators should consider prioritizing the following items:

- Emphasize patient and community engagement as a backbone to LDA.
- Tailor support for individual team needs. A collaborative is a structured model but should remain adaptable to the needs of collaborative teams, especially if there are multiple teams encountering similar issues.
- Provide technical assistance for quality improvement, data planning and monitoring, and evaluation and dissemination. QI and data can act as barriers either due to lack of expertise or teams feeling intimidated by technical concepts.
- Reduce administrative burdens on teams as much as possible. This may include providing support for QI work, or consider the administrative time needed to participate in the collaborative balanced with the benefits of collaborative support.

Resources:

86. [Collaborative planning tool](#)

87. [Example LDA collaborative curriculum](#)



■ **Appendix and references**

Appendix A

Implementation guide methodology

The Low-dose Aspirin Implementation Guide was informed by outpatient QI work completed by CMQCC and supported and funded by March of Dimes to increase LDA uptake and adherence among patients at risk for preeclampsia. Historically, CMQCC has worked with hospital teams, addressing inpatient clinical care to reduce preventable maternal morbidity and mortality. With success in these settings, CMQCC initiated outpatient work for an upstream, preventive approach. The CMQCC team worked to build internal organizational capacity to support outpatient clinical teams through a QI collaborative approach and subsequently learned that addressing clinical care alone was insufficient to address the gap in LDA use.

CMQCC’s LDA work was informed and supported by research conducted through the March of Dimes Prematurity Research Center at Stanford University, utilizing system thinking to further understand factors

impacting patients’ decision-making around LDA uptake. Lee et al. (2025) conducted a scoping review to identify, synthesize, and integrate knowledge domains related to women’s decisions related to LDA uptake. Synthesis and integration occurred through system mapping causal relationships between factors.

The review and system mapping illustrates provider factors, patient factors, and system-level factors that interact to impact LDA decision-making, highlighting the need for a community-engaged approach to increase LDA uptake. Additional system dynamics research was conducted with women with lived experience of preeclampsia and with stakeholders across the women’s healthcare pathway in Riverside, resulting in development of a simulation model that will guide future implementation.

Table. Factors impacting LDA decision-making¹

Provider factors	• Providers’ communication quality • Quality of patient education and recommendations • Validity of screening • Availability of treatment choices	• Degree of medicalization during pregnancy • Timeliness of advice • Effectiveness of care management
Patient factors	• Patient experiences, values, beliefs, and perceptions • Perceived benefits of aspirin • Non-intentional omission • Personal identification of risk factors • Side effects • Concerns about medication in pregnancy • Trust in providers	• Time to process education • Medicine-taking experience • History of preterm birth • Concern about safety of aspirin • Being stigmatized as a medicine taker • Quality of interpersonal relationships with providers • Patient’s knowledge • Cognitive load
System-level factors	• Emotional and practical social support • Access to aspirin • Community information	

Adapted from Lee et al., 2025.

In addition to this review, CMQCC gained qualitative insight through surveys, interviews, and a Patient Advisory Council to guide development of the program. CMQCC utilized this evidence to develop a low-dose aspirin pilot program in 2023, engaging with clinical teams in California to improve LDA uptake and adherence. This program aimed to standardize clinical practices, improve patient engagement, and improve community engagement among participating

outpatient sites, to address the wide range of factors impacting LDA uptake. Through a yearlong pilot collaborative and a subsequent second collaborative, the CMQCC team developed approaches to LDA-related QI to address the above factors and additional frontline barriers identified by teams conducting QI work. Some of the barriers identified and solutions developed from the CMQCC collaborative work includes:

Barrier	Solution
Clinical knowledge gaps	Clinical team education about recommendations and clinical approaches
Discomfort of clinical teams in providing patient education on preeclampsia risk, LDA, and preeclampsia	Clinical team education, specifically addressing common concerns and communication approaches
Patient knowledge gaps and concerns about taking LDA in pregnancy	Patient education developed through a Patient Advisory Council
Varying levels of QI expertise and capacity of outpatient sites	Adaptable resources to support different capacities
Difficulty with outpatient data tracking	Data support and tools specific for LDA
Difficulty with EHR integration	Support for EHR integration, bolstered by preliminary improvement that can occur prior to integration
Lack of expertise in community engagement	Integrate community engagement throughout the project through a capacity building approach

This implementation guide is a culmination of the CMQCC program with the scientific underpinnings of the system thinking review and causal mapping. The guide integrates provider, patient, and system-level factors through implementation driven support and tools.

1. Lee, Y.J.; Taft, A; Moua, M; Stevenson, D.K.; Darmstadt, G.L. Integrating Evidence and Causal Mapping of Factors Which Influence Medication-Taking Behavior of Pregnant Women at Risk of Hypertensive Disorder: A Scoping Review. *Systems* 2025, 13, 86. <https://doi.org/10.3390/systems13020086>

Diagnostic criteria for preeclampsia

Blood pressure

- Systolic blood pressure of 140 mm Hg or more or diastolic blood pressure of 90 mm Hg or more on two occasions at least 4 hours apart after 20 weeks of gestation in a woman with a previously normal blood pressure.
- Systolic blood pressure of 160 mm Hg or more or diastolic blood pressure of 110 mm Hg or more. (Severe hypertension can be confirmed within a short interval [minutes] to facilitate timely antihypertensive therapy).

Proteinuria

- 300 mg or more per 24-hour urine collection (or this amount extrapolated from a timed collection)
- Protein/creatinine ratio of 0.3 or more
- Dipstick reading of 2+ (used only if other quantitative methods not available)

Or in the absence of proteinuria, new-onset hypertension with the new onset of any of the following:

- Thrombocytopenia: Platelet count less than $100 \times 10^9/L$
- Renal insufficiency: Serum creatinine concentrations greater than 1.1 mg/dL or a doubling of the serum creatinine concentration in the absence of other renal disease
- Impaired liver function: Elevated blood concentrations of liver transaminases to twice normal concentration
- Pulmonary edema
- New-onset headache unresponsive to medication and not accounted for by alternative diagnoses or visual symptoms

Gestational hypertension and hypertension. ACOG Practice Bulletin No. 222. American College of Obstetricians and Gynecologists. Obstetrics and Gynecology 2020;135: e237-60. Reprinted with permission from the American College of Obstetricians and Gynecologists.

Appendix C

Severe features of preeclampsia

- Systolic blood pressure of 160 mm Hg or more, or diastolic blood pressure of 110 mm Hg or more on two occasions at least 4 hours apart (unless antihypertensive therapy is initiated before that time)
- Thrombocytopenia (platelet count less than $100 \times 10^9/L$)
- Impaired liver function that is not accounted for by alternative diagnoses and as indicated by abnormally elevated blood concentrations of liver enzymes (to more than twice the upper limit normal concentrations), or by severe persistent right upper quadrant or epigastric pain unresponsive to medications
- Renal insufficiency (serum creatinine concentration more than 1.1 mg/dL or a doubling of the serum creatinine concentration in the absence of other renal disease)
- Pulmonary edema
- New-onset headache unresponsive to medication and not accounted for alternative diagnoses
- Visual disturbance

Gestational hypertension and hypertension. ACOG Practice Bulletin No. 222. American College of Obstetricians and Gynecologists. Obstetrics and Gynecology 2020;135: e237-60. Reprinted with permission from the American College of Obstetricians and Gynecologists.

Appendix D

Abbreviations list

ACOG: American College of Obstetricians and Gynecologists

AIM: Alliance for Innovation on Maternal Health

ASPRE: Combined Multimarker Screening and Randomized Patient Treatment with Aspirin for Evidence-Based Preeclampsia Prevention

CBO: community-based organization

CDC: Centers for Disease Control and Prevention

CHW: community health worker

CMQCC: California Maternal Quality Care Collaborative

EHR: electronic health record

FM: family medicine

HEDIS: Healthcare Effectiveness Data and information Set

ICD-10: International Classification of Diseases, Tenth Revision

IFH: Institute for Family Health

IHI: Institute for Healthcare Improvement

IMI: Institute for Medicaid Innovation

IT: information technology

IUGR: intrauterine growth restriction

KPNNA: Kaiser Permanente, Napa/Solano Service Area

LDA: low-dose aspirin

LGBTQ+: lesbian, gay, bisexual, transgender, queer

LVN: licensed vocational nurse

MA: medical assistant

MFM: maternal fetal medicine

NSAIDs: non-steroidal anti-inflammatory drugs

OB-GYN: obstetrics and gynecology

OPQIC: Oklahoma Perinatal Quality Improvement Collaborative

PDSA: Plan-Do-Study-Act

PTSD: post-traumatic stress disorder

QI: quality improvement

RCI: rapid cycle improvement

RN: registered nurse

RUHS: Riverside University Health System

SEM: Social Ecological Model

SMARTIE: Specific, Measurable, Achievable, Relevant, Time-bound, Inclusive, and Equitable

SMFM: Society for Maternal Fetal Medicine

UCSD: University of California San Diego

UDS: Uniform Data System

USPSTF: United States Preventive Services Task Force

WIC: Women, Infants, and Children

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■ Resources

#	Source	Name
1	ACOG	Practice Bulletin Number 222 Gestational Hypertension and Preeclampsia
2	CMQCC	Improving Health Care Response to Hypertensive Disorders of Pregnancy Toolkit
3	CDC Million Hearts Campaign	Hypertensive Disorders of Pregnancy Change Packet
4	USPSTF	Aspirin Use to Prevent Preeclampsia and Related Morbidity and Mortality: Preventive Medication
5	ACOG	Committee Opinion Number 743: Low-Dose Aspirin Use During Pregnancy
6	SMFM	Society for Maternal-Fetal Medicine Special Statement: Checklists for preeclampsia risk-factor screening to guide recommendations for prophylactic low-dose aspirin
7	CMQCC	LDA talking points
8	CMQCC	Team building and team infrastructure worksheet
9	CMQCC	A guide to a low-dose aspirin project baseline assessment
10	CMQCC	Provider current clinical practices survey — Template
11	CMQCC	Current Clinical Practices Tool
12	IHI	5 Whys
13	IHI	Driver Diagram
14	CMQCC	Example driver diagram
15	MOD	State Report Cards
16	CMQCC	Patient Screening Tool – English
17	CMQCC	Patient Screening Tool – Spanish
18	March of Dimes	Patient Screening Tool – English
19	March of Dimes	Patient Screening Tool – Spanish
20	CMQCC	Detailed grand rounds
21	CMQCC	Mini grand rounds
22	March of Dimes	E-learning module
23	CMQCC	Provider information sheet
24	CMQCC	Pharmacy information sheet
25	CMQCC	RN information sheet
26	CMQCC	MA/CHW information sheet
27	CMQCC	Webinar: Low-Dose Aspirin Campaign: Discussing Risk Respectfully
28	CMQCC	Patient education materials
29	March of Dimes	Patient education materials
30	OPQIC	Patient education materials
31	Preeclampsia Foundation	Aspirin Patient Education Materials
32	CMQCC	Patient/Provider videos
33	CMQCC	LDA sample scripts
34	CMQCC	LDA Motivational Interviewing algorithm
35	CMQCC	LDA pharmacy letter
36	CMQCC	Webinar: Low-Dose Aspirin Campaign: Pharmacy
37	CMQCC	LDA adherence aid

#	Source	Name
38	CMQCC	Simplified Medication Adherence Questionnaire (SMAQ)
39	External	Example App Based Medication Adherence Project
40	OPQIC	OPQIC calendar for adherence
41	CMQCC	Epic LDA EHR tools
42	CMQCC	Workflow example
43	CMQCC	Workflow development worksheet
44	IHI	Flowchart worksheet
45	IHI	Model for Improvement
46	IHI	Project Charter
47	CMQCC	Example LDA project charter
48	CMQCC	PDSA worksheet/example
49	Oregon Health Authority	How to Use SMARTIE Goals
50	IHI	IHI Setting Aims
51	IHI	IHI Aim Statement Worksheet
52	CMQCC	Low-dose aspirin data plan worksheet
53	CMQCC	Low-dose aspirin data measures quick sheet
54	CMQCC	Metric development tool
55	CMQCC	LDA structure measure bundle
56	CMQCC	LDA process measure Excel tool
57	CMQCC	LDA individual chart audit and summary tool
58	CMQCC	Outcome measure definitions
59	SMFM	Society for Maternal-Fetal Medicine Special Statement: Prophylactic low-dose aspirin for preeclampsia prevention—quality metric and opportunities for quality improvement
60	March of Dimes	March of Dimes PeriStats
61	FindHelp	FindHelp
62	Institute for Medicaid Innovation	Tool 2: Brainstorming CBO Connections and Potential Partnerships, Pages 13-14
63	IMI	Tool 6: Exercise – Becoming Clear about Purpose/Next Steps, 23-24
64	IMI	Tool 7: Checklist – Readiness for CBO Partnership Outreach 26-27
65	National Academy of Medicine	Community Engagement Measure
66	CMQCC	Webinar: Low-Dose Aspirin Campaign: Doula Panel
67	CMQCC	Webinar: Low-Dose Aspirin Campaign: Clinic and Community Connections
68	CMQCC	Rapid cycling example and worksheet
69	CMQCC	Spread strategy worksheet
70	CMQCC	Sustainability plan worksheet
71	CMQCC	Evaluation worksheet
72	ACOG	Committee Opinion Number 736. Optimizing Postpartum Care
73	CMQCC	CVD Risk Assessment Tool
74	Preeclampsia Foundation	Postpartum Preeclampsia Patient Education

#	Source	Name
75	Preeclampsia Foundation	My Health Beyond Pregnancy Tool
76	Preeclampsia Foundation	Beyond Pregnancy
77	AIM	AIM PP Discharge Transition Patient Safety Bundle
78	AIM CCI	Community Care Bundles
79	CMQCC	CMQCC HDP Toolkit: COMFORT debrief tool, page 69
80	CDC	CDC Hear Her Campaign
81	CDC	CDC Urgent Maternal Warning Signs
82	CMQCC	Lifetime Risks of Heart Disease after Pregnancy Complications
83	CMQCC	Signs and Symptoms of Heart Disease During Pregnancy & Postpartum
84	IFH	Missed opportunities in aspirin prescribing for preeclampsia prevention
85	UCSD	Utilizing the electronic medical record for preeclampsia screening and low-dose aspirin prescription for obstetric patients at UCSD Health
86	CMQCC	Collaborative planning worksheet
87	CMQCC	Example curriculum

Additional/Supplemental Resources

#	Source	Name
Clinical Resources		
88	ACOG	Response to CHAP Trial (outpatient treatment of chronic HTN)
89	American Heart Association	Call to Action: Maternal Health and Saving Mothers: A Policy Statement From the American Heart Association
90	CMQCC HDP Toolkit	Patient Education Checklists
91		Pg 202: Checklist 1: Prenatal HDP Education for All Pregnant Women
92		Pg 203: Checklist 2: Discharge HDP Education for All Postpartum Women
93		Pg 204: Checklist 3: Education for outpatient management of preeclampsia
94		Pg 210: Checklist 6: Immediate and long-term follow-up Counseling for Women after HDP Diagnosis
95		Pg 212: Appendix J: Sample Script: Physician Explanation of Hypertensive Disease Process and Management Plan
QI Resources		
96	IHI	IHI Quality Improvement Essentials Toolkit
97	OPQIC	Low dose Aspirin toolkit
98	American Hospital Association	A Framework for Stratifying Race, Ethnicity, and Language Data
99	ILPQC	Stratifying Maternal Quality Data
Patient and Community Engagement Resources		
100	IHI	Improving Health Equity: Guidance for Health Care Organizations
101	AHRQ	What is Patient Experience?
102	IHI	Using PDSA Cycles in Community Settings
103	IHI	Teaching Driver Diagrams to Advance the Work of Community-Based Collaboratives
104	Institute for Medicaid Innovation	Value of Investing in Social Determinants of Health toolkit
105	American Hospital Association	A Playbook for Fostering Hospital-Community Partnerships to Build a Culture of Health
106	CMQCC	Webinar: Enhancing Equity Through Engagement: Strategies for Inclusive Patient and Community Engagement
107	CMQCC	Webinar: Creating a Respectful Care Environment: lessons from a trauma-informed approach
108	CMQCC	Webinar: Patient Experience Baseline Assessment and Respectful Care

7. Talking points for a low-dose aspirin initiative

This document outlines talking points and opportunities of alignment to build buy-in and support for a low-dose aspirin (LDA) initiative. Consider what's important to the organization, including current projects or strategic plans, and align communication about the need of this project accordingly.

1. Overview of preeclampsia and the role of low-dose aspirin: see the Background Knowledge sections of the Guide for more details.

Evidence on LDA: LDA is the only evidence-based way to prevent preeclampsia and associated preterm birth.

- LDA reduces outcomes, including:
- Preeclampsia by 15%
- Preterm birth by 20%
- Fetal growth restriction by almost 20%
- Perinatal mortality by more than 20%

Clinical guidelines: LDA for pregnant patients at risk for preeclampsia is recommended by US Preventive Services Task Force, American College of Obstetricians and Gynecologists, and the Society of Maternal Fetal Medicine.

- It was first recommended by USPSTF in 2014 and reaffirmed in 2021.
- The recommendation states patients who screen at risk for preeclampsia should take low-dose aspirin 81-mg daily, starting between 12 and 28 weeks until delivery. Ideally, initiation should be started between 12 and 16 weeks.

Gap in practice: Despite these recommendations, research illustrates that many patients at risk for preeclampsia either do not receive a low-dose aspirin prescription or do not take it. This highlights an opportunity for practice improvements.

2. Patient outcomes: Improving health and safety

Improved maternal and fetal health: LDA is a low-cost, feasible preventive intervention to reduce poor maternal and fetal outcomes, specifically reducing preeclampsia and associated preterm birth. In cases where preeclampsia is not prevented, LDA use can result in less severe preeclampsia and prematurity.

Long-term benefits:

- Preeclampsia increases lifetime risk of repeat preeclampsia in future pregnancies, cardiovascular disease, chronic hypertension, and stroke in the pregnant person.
- Preterm birth increases risk of physical and intellectual developmental issues.
- LDA in patients at risk for preeclampsia can reduce preeclampsia and associated preterm birth, thus reducing long term risks for the mother and infant.

Reducing health disparities:

- Black women are at higher risk for preeclampsia related to chronic stress for systemic racism. Further, they experience higher rates of maternal morbidity and mortality.
- Low-income women are at high risk for preeclampsia, related to poor access to care and chronic stress related to poverty. Additionally, women who are uninsured or publicly insured experience higher rates of morbidity and mortality.
- These disparities illustrate an opportunity that may, in part, be address through a low-dose aspirin initiative..

3. Strategic alignment

Alignment with organizational goals: These examples are discussed separately but may be framed as in alignment with existing organizational goals and associated projects.

- Prioritization of evidence-based, high-quality care: this may include patient safety and quality improvement considerations
- Prioritization of efforts to reduce maternal health disparities
- Prevention of cardiovascular disease and associated poor outcomes
- Improvement of patient experience and satisfaction through increased patient and community engagement
- Opportunities to support expanded care team efforts

Return on investment: Improving maternal health outcomes and reducing complications directly translates into financial savings (lower costs for interventions and longer-term savings on healthcare resources).

- Maternal readmissions associated with preeclampsia
- Long term health complications of the mother: including high-risk future pregnancies and risk of cardiovascular disease
- NICU stay and associated poor outcomes associated with preterm birth

Reputation enhancement: Including positioning the organization as a leader in maternal health and quality care, improving both patient trust and institutional reputation.

4. Patient satisfaction and engagement

Patient-centered care: This initiative prioritizes patient engagement in care through risk assessment, health-related social needs promotion, and patient-centered education.

Trust and communication: Proactive communication about the benefits of LDA builds trust and strengthens the patient-provider relationship.

Supporting patients: Through patient engagement and support, patients are encouraged to make the health decisions that make the most sense for them. This can build trust and improve patient experience.

Patient satisfaction and engagement may be a quality measure that the organization is required to report to payers. This is an opportunity for alignment.

5. Alignment with regulatory bodies

Alignment with The Joint Commission:

- Beginning in 2023, The Joint Commission implemented a new patient safety goal: National Patient Safety Goal 16: Improve healthcare equity.
- This is a requirement of hospitals, ambulatory settings, and behavioral health settings.
- This NPSG requires attention to healthcare equity, assessment of health-related social needs, plans to address healthcare equity, acting on healthcare equity, and informing key stakeholders.
- An LDA project may align with the requirements of the NPSG by assessing equity-related disparities, improving care for at-risk patient populations, assessing and addressing health-related social needs through preeclampsia risk factor screening, and informing stakeholders by increasing integration and engagement of community organizations and members.
- For more information: [jointcommission.org](https://www.jointcommission.org)

Alignment with Centers for Medicare and Medicaid Services (CMS):

- CMS emphasizes preventive care for at-risk populations, including pregnant women. Supporting LDA for preeclampsia prevention aligns with CMS's broader quality goals of improving maternal and fetal health outcomes.
- As of January 2025, postpartum Medicaid coverage has been extended for 1 year postpartum in 48 states, including Washington DC. While LDA is a prenatal intervention, postpartum care is critical for reduction of maternal morbidity and mortality related to hypertensive disorders of pregnancy, long-term health promotion for prevention of cardiovascular disease, and interconception care to reduce future pregnancy risk. This LDA project can leverage this year-long postpartum period to prevent future pregnancy complications and long-term health risks.
- LDA use can help meet CMS performance measures related to maternal health, including the reduction of adverse pregnancy outcomes, such as preeclampsia, preterm birth, and fetal death.
- Find more information on your state: kff.org
- For more information on CMS: cms.gov

Alignment with outpatient clinical quality

measures: These quality measures may be reported to payers and may be associated with the opportunity for increased revenue for achieving certain targets.

- Common sets of outpatient quality measures include HEDIS and UDS. Check with your organization to learn more about their required quality measures.
- **Measure: Timeliness of prenatal care** – Percentage of pregnancies that received prenatal care in the first trimester or within 42 days of enrollment to the organization.

- While an LDA initiative may not directly address timeliness of prenatal care, timeliness of care is a major consideration to start LDA on time for maximum effectiveness.
- This alignment may increase attention to this measure.

- **Measure: Postpartum care attendance** – Percentage of postpartum patients who are seen for a postpartum visit between 7 and 84 days postpartum.
 - By improving patient care experience, which can be a secondary outcome of an LDA initiative, there is the potential to increase postpartum care attendance due to improved patient-care team relationships.
 - Improving relationships between outpatient and inpatient teams, as recommended by this implementation guide, may improve transitions of care to outpatient postpartum care.
- **Measure: Low birth weight** (UDS only) – Percentage of babies of health center prenatal care patients born whose birth weight was below normal (less than 2,500 grams).
 - For organizations with integrated services (may include maternal health, primary care, and pediatrics), consider how an LDA initiative could improve other quality metrics, such as pediatric measures like low birth weight.
 - Preeclampsia is a major contributor to preterm birth and associated low birth weight. Effective increase in LDA uptake and adherence may result in reduction in low birth weight.
- For more information on HEDIS measures: ncqa.org/hedis/measures/
- For more information on UDS measures: bphc.hrsa.gov/data-reporting

6. Health-related social needs considerations

Also called social determinants of health.
Language for tracking and reporting may vary.

Addressing health inequities: Health-related social needs, including socioeconomic status, race, education, and access to care, contribute to higher rates of preeclampsia in marginalized populations. By improving access to LDA for pregnant women at elevated risk, the project helps mitigate these disparities. Further, some of these factors are assessed in preeclampsia risk factor screening.

- There is an opportunity to align social needs screening in pregnancy with preeclampsia risk factor screening and an LDA initiative.
- Social needs screening and intervention may be a required outpatient quality measure.

Access to preventive care: Ensuring that all patients, regardless of social or economic background, are offered evidence-based preventive care like LDA is an important step toward addressing health inequities in maternal health.

Community engagement: This initiative can be a part of a broader strategy to engage vulnerable populations, offering education and resources that support positive health behaviors and reduce disparities in pregnancy outcomes.

- The implementation guide encourages and supports community engagement assessment and planning.

7. Staff engagement and retention

Increased job satisfaction: When staff can see the positive outcomes of their work, such as preventing serious complications and improving patient health, job satisfaction may increase.

Supporting healthcare team members: Providing staff with evidence-based tools (such as standardized protocols for prescribing aspirin) fosters a sense of efficacy and reduces burnout by focusing on proactive, preventive care.

Reducing workload strain: By preventing complications, the organization may achieve a reduced burden of urgent, crisis-oriented care and focus on holistic patient well-being.

Retention: Improved patient outcomes and staff satisfaction are linked to better retention rates. Healthcare workers who see the direct impact of their efforts are more likely to stay engaged and committed to the institution.

8. Team building and project infrastructure worksheet

Team building:

Identify a champion: Who is passionate about this work and will take on some of the early messaging to increase interest and buy-in in the project?

Engage leadership: Leadership will be important to increase buy in as well as gain some resources that may be needed (time, finances).

- What leaders do you need to engage?
- How do you plan to engage them to gain support for the project?
- See talking points resource to plan communication approach to engage leadership.

Team building: Who do you need on your team to be successful? Team members may include:

- Provider champion
- Nurse champion
- Care team champion: A community health worker or medical assistant.
- Administrative champion: Leadership and/or administrator of where care changes will initially occur.
- Community champion: A team member who can take on community engagement tasks. Likely someone who may already participate in community engagement.
- QI champion: To support QI project planning, data planning, collection, monitoring.
- IT representation: To support EHR updates needed, data planning, and monitoring via EHR program.
- Do you need inclusion of team members from multiple sites or departments?

Team infrastructure:

- Who is on standing team?
- What are the roles of specific team members?
- Are there people who will need to be consulted throughout the project?
 - This may include individuals who are not on the standing team but may need to be updated or included in project activities.
- How often will meetings be scheduled?
 - More frequent meetings may be required early in the project.
 - How will meetings be documented? Consider meeting minutes, recording meetings, sharing notes.
- Where will project information/documentation be saved?
- How will updates from the team be shared within the team and externally? What will be the frequency of updates?
- See data planning worksheet to help with building out structure around data plan.

Initial project steps: After forming a team and determining team infrastructure, consider these next steps as a broad overview of what may be required of your project.

Complete baseline assessment: See baseline assessment worksheet

- Timeline to complete assessment:
- Personnel responsible for assessment:
- Sharing of assessment scheduled for:

Develop an action plan: See the project charter example

- Timeline to complete plan:
- Personnel responsible for plan:
- Sharing of plan scheduled for:

Develop data plan: See data plan worksheet and data plan example

- Timeline to complete plan:
- Personnel responsible for plan:
- Sharing of plan scheduled for:

Develop preliminary workflow: See workflow development worksheet

- Timeline to complete plan:
- Personnel responsible for plan:
- Sharing of plan scheduled for:

Provide clinical team education: See grand rounds for support

- Education may be provided in a piecemeal fashion as piloting starts, or occur with larger groups, such as an entire department at a standing meeting.
 - Determine the approach to clinical team education.
- Timeline to complete plan:
- Personnel responsible for plan:
- Sharing of plan scheduled for:

Develop pilot rapid cycling plan: See PDSA worksheet, rapid cycling worksheet, and examples

- Location/team involved in initial piloting:
- Timeline for pilot:
- Plan to assess effectiveness of pilot:
- Plan for sharing results and updates:

After initial project work, additional planning will include:

- Spread strategy
- Sustainability
- Evaluation
- Dissemination
- Next Steps

9. A guide to a low-dose aspirin project baseline assessment

This guide is designed to support a healthcare team in conducting a baseline assessment for a project aimed at increasing uptake and adherence of LDA for patients at risk for preeclampsia. This baseline assessment aims to gain insight into infrastructure and processes around patient-centered care, community engagement, clinical best practices, and data-driven strategies prior to any LDA implementation work. It is recommended to document the findings of this assessment so it can be referenced in the future and compared to after implementation efforts occur.

This guide includes baseline assessment questions for:

- Patient population characteristics
- Current clinical practices
- Clinical team readiness
- Patient engagement
- Community engagement
- Resource and infrastructure
- Baseline data
- Consolidating takeaways

Note: While this baseline assessment is thorough, these are critical components to a well-rounded LDA project. That said, a baseline assessment may be more or less extensive depending on available resources and project needs.

A. Patient population characteristics

Note: For this assessment, there may be components that you do not have data for. Make a note if there is no data for review and consider if this project requires updated infrastructure to collect the missing data elements.

Patient volume:

- What is the overall volume of pregnant patients?
- What is the volume of pregnant patients that will initially be served by this project?

Demographic information: Using internal or external data sources, assess the following characteristics of the pregnant population being served:

- Age, race/ethnicity, sexual orientation and gender identity, socio-economic status, preferred language, payer
- Access to care (e.g., urban vs. rural, insurance status)

Prevalence of risk factors:

- What proportion of your pregnant population has known risk factors for preeclampsia?
- Are there any high-risk groups (e.g., adolescent pregnancies, women of color, those with chronic conditions)?
- Are there any groups who experience or are at risk for disparities?

Patient awareness of preeclampsia:

- To what extent do patients understand preeclampsia and its risks?
- Are patients aware of the benefits of low-dose aspirin for prevention?

Takeaway: Use this assessment to develop of patient engagement and community engagement unique to the patient population being served.

Comments on patient population characteristics:

B. Current clinical practices

Replace or supplement this section with tools:

- 10. Provider current clinical practices survey
- 11. Current clinical practices worksheet

Current preeclampsia screening protocols:

- Is preeclampsia risk factor screening being completed in any capacity?
- Is there a designated workflow for preeclampsia risk factor screening and documentation?
- Is preeclampsia risk factor screening being done in alignment with current recommendations (in time to start LDA between 12 and 16 weeks)?
- Who in the clinical team is responsible for preeclampsia risk factor screening (patient completed, provider, nurse, health educator, CHW, other)?
- What risk factors for preeclampsia are currently being screened for (e.g., hypertension, obesity, diabetes, previous preeclampsia, family history, age)?
- How are patients screened for these risk factors during prenatal visits?
- Are there barriers to screening patients?

Current patient education practices:

- What information is currently provided to pregnant patients about preeclampsia, preeclampsia risk and risk factor screening, and LDA?
- What other topics are provided via patient education (e.g., preeclampsia signs/symptoms, postpartum preeclampsia, long-term risk, etc.)?
- How are patients educated about the benefits and risks of low-dose aspirin?
- What format is patient education delivered in (verbal counseling, written materials, digital resources)?
- What gaps in patient education exist?

Current prescription practices for LDA:

- What is the current practice around prescribing LDA for preeclampsia prevention? Is it based on specific risk factors?
- Is LDA prescription being completed in alignment with LDA recommendations?
- Is there a standard workflow for prescription and documentation?
- Are there any barriers to prescribing LDA (e.g., patient resistance, lack of guidelines, cost concerns)?

Current adherence practice for LDA:

- What is the current practice around assessing adherence for LDA?
- Is this process formalized? Does it happen consistently?
- Are there barriers to assessing adherence?

Takeaway of current clinical practices assessment:

Use this assessment to guide workflow development. What is already occurring successfully can be reinforced. Gaps in care can be identified and addressed via new workflows.

Comments on assessment of current clinical practice:

C. Care team perspectives and readiness

- Is there interest among the clinical team in contributing to a project to improve patient LDA rates?
- Is there an obvious clinical champion (such as a provider or nurse passionate about maternal care, preeclampsia, or general QI)?
- Do members of the clinical team understand preeclampsia?
- Do members of the clinical team know the LDA recommendations?

Takeaway: Use this assessment to tailor clinical team education and support clinical team buy in.

Comments on assessment of care team perspectives and readiness:

D. Patient engagement:

- Tip: Administer small patient survey or a few informal patient interviews to understand current patient awareness.
- Are existing LDA-related materials and practices culturally and linguistically appropriate? Do they encourage patient agency?
- Does the clinical team have communication skills for respectful discussion of risk and shared decision making?
- Do patients feel LDA conversations and/or clinic services are collaborative and supportive? Do they feel like they're given appropriate information and encouraged and supported to make decisions about LDA and to take the medication?
- What are patient experiences at different points in the perinatal continuum of care? How can understanding this experience shape patient and community engagement?
- Are there available touchpoints outside the clinical team used to support patient understanding and engagement? How could these opportunities be made available?

- Are there opportunities and supports available to partner with patients around identified health-related social needs?

Comments on assessment of patient engagement:

E. Community engagement

Existing community infrastructure:

- What is the existing approach of the organization to community engagement?
- What partnerships exist that could inform the project and/or be hubs for community-centered promotion of LDA?
- Are there metrics at the organizational level used to monitor community engagement?
- What community resources are available to support prenatal care, patient education, and adherence to prescribed medications?
- How engaged is the community in maternal health initiatives (e.g., local health fairs, prenatal education classes, community health workers)?

Gaps in community engagement:

- What additional partnerships would be of benefit? Are there resources or relationships within the organization that could support community engagement goals of the clinical team and project?
- Who are the communities that need to be engaged? These likely include:
 - Patients and their support systems served by the clinic.
 - Clinicians and care team members across the continuum of care.
- What is the level of awareness among existing partners of preeclampsia and of LDA for preeclampsia prevention?

Comments on community engagement:

F. Assessment of organizational resources and infrastructure

Tip: Utilize the structure measure bundle to assess existing infrastructure compared to needed infrastructure.

Clinic resources:

- Are there enough staff or resources (such as space or time) to implement preeclampsia screening, patient education, and LDA prescription?
 - If no, what additional resources will be needed?
- Is there experience or infrastructure in the organization in quality improvement? Are there team members who have experience or who have lead QI in the past?

Technology and data systems:

- What EHR is being utilized?
- How adaptable is the EHR (related to both the software and the team that needs to make updates)?
- How well is the EHR integrated between sites/ departments and with inpatient partners?
- Does the clinic have the necessary infrastructure to track risk factors, LDA prescriptions, and patient outcomes effectively?
- Are there digital tools or mobile apps that can help with patient engagement and tracking adherence to aspirin?

Takeaway: Use the results of this assessment to understand what additional structural/infrastructure changes are required for implement/project success.

Comments on resources and infrastructure assessment:

G. Baseline data assessment

Baseline data can be used for comparison after implementation efforts to evaluate the success of the project and monitor progress.

Structure measures: Use the results from resources and infrastructure assessment and the LDA structure measure bundle.

Process measures:

- **Tip:** Can complete small manual chart audit to assess if and when processes were completed. See process measure and manual chart audit tools for assistance.
- **Screening rates:**
 - Numerator: Number of pregnant patients screened for preeclampsia risk factors.
 - Denominator: All pregnant patients (total volume or total of sample).
- **Patient education rate:**
 - Numerator: Number of pregnant patients who received education on preeclampsia risk factors and LDA.
 - Denominator: All pregnant patients (total volume or total of sample).
- **Prescription rates:** Rate of eligible patients who receive a prescription for low-dose aspirin.
 - Numerator: Number of patients at risk for preeclampsia who received LDA prescription.
 - Denominator: Number of patients who screened at risk for preeclampsia (total or of the sample).
- **Adherence rates:** Rate of patients who continue to take low-dose aspirin as prescribed.
 - Numerator: Number of patients prescribed LDA who had adherence assessed.
 - Denominator: Number of patients prescribed LDA (total or of the sample).

Clinical outcome measures:

- Preeclampsia rates of the population and associated preterm birth.
- **Tip:** See Outcome Measure Definition tool for ICD-10 codes that may be pulled to assess outcome measures. If coding is not consistent, this report may be inaccurate.
- If this is not available for evaluation internally, considering looking for clinical outcome measures in publicly available data sources such as March of Dimes or the state public health department.

Patient experience measures: This may include from survey results or from another source like focus groups.

Balancing measures: What aspects of care may be negatively impacted by implementing an LDA project? Assess a baseline to compare to as implementation occurs. This may include:

- Visit length
- Wait times
- Provider perspectives

Comments on baseline data assessment:

H. Consolidating takeaways

- Based on the sections above, what are your major takeaways?
 - What is occurring well?
 - What gaps have been identified?
- What change ideas have been identified?
 - Were gaps in care or outcomes found among certain patient populations?
 - Does structure need to be improved prior to updating processes?
 - Are the necessary clinical processes occurring in any capacity?
- Next steps:
 - Share results of the baseline assessment to the team and necessary stakeholders.
 - Use the results to inform action planning for improvement.
 - Ensure appropriate documentation of the baseline assessment to support comparison to baseline after implementation efforts occur.

10. Provider current clinical practice survey

[Google Form Template](#)

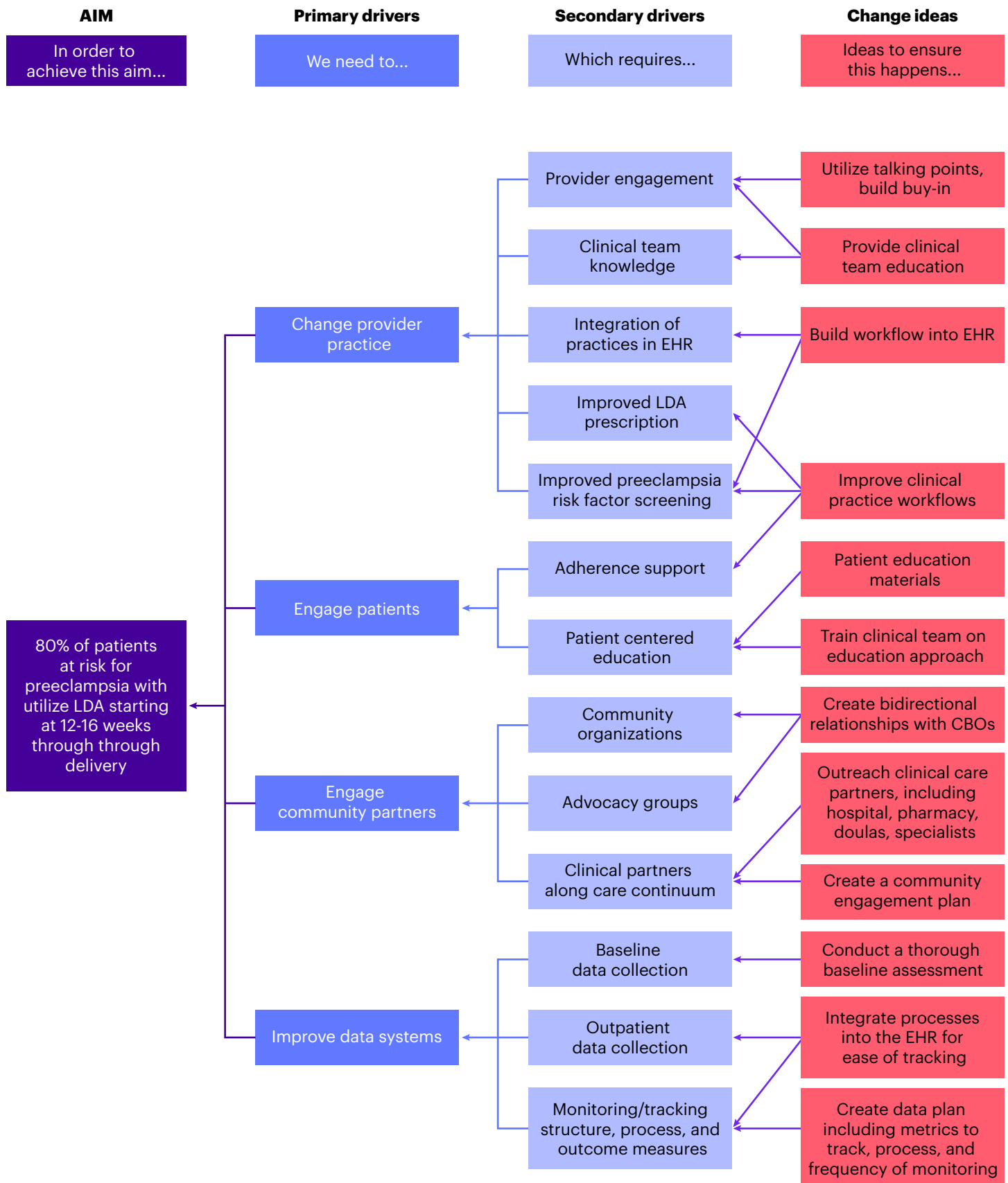
11. Assessment of current low-dose aspirin clinical practices

Site: _____ Date of completion: _____

This tool can be used to assess and document current clinical practices related to low-dose aspirin. This does not have to be exact but can provide an opportunity to reflect on what may be (or may not be) occurring. If there are questions you do not know how to answer, investigate further by asking team members or completing a chart audit. Remember to consider different providers, departments, sites, and variabilities in practice settings.

Clinical intervention	Is this occurring?	How is it occurring? (all variations, including who, when, how it's occurring)	Which variations are working well?	What barriers are identified? (Tip: use IHI's 5-Whys)	What change ideas may improve the identified processes?
Preeclampsia risk factor screening	☐ Yes, always ☐ Sometimes ☐ Rarely ☐ Never ☐ Unsure				
Patient education on preeclampsia risk and LDA	☐ Yes, always ☐ Sometimes ☐ Rarely ☐ Never ☐ Unsure				
LDA prescription	☐ Yes, always ☐ Sometimes ☐ Rarely ☐ Never ☐ Unsure				
Assessment of LDA adherence	☐ Yes, always ☐ Sometimes ☐ Rarely ☐ Never ☐ Unsure				
Any outpatient tracking/data processes in place?	☐ Yes, always ☐ Sometimes ☐ Rarely ☐ Never ☐ Unsure				
Are there patient experience processes in place?	☐ Yes, always ☐ Sometimes ☐ Rarely ☐ Never ☐ Unsure				

14. Example LDA driver diagram



20. Detailed grand rounds

[Linked document](#)

21. Mini grand rounds

[Linked document](#)

23. Low-dose aspirin (LDA) education for providers

The role of providers (MD, DO, CNM, NP, PA):

- Assessment, diagnosis, care planning, prescribing
- Providing culturally and linguistically appropriate patient education
- Providing screening and triage
- Coordination of team-based care

LDA in pregnancy:

- **LDA 81-mg daily is recommended for patients at risk for preeclampsia, starting ideally between 12 and 16 weeks pregnant until delivery.**
 - It can be initiated between 12 and 28 weeks, but most effective before 16 weeks
 - Recommended dose: 81-mg
Acceptable dose: 162-mg
- Recommendations from: ACOG, USPSTF, SMFM
- LDA has been shown to significantly reduce risk of preeclampsia and related preterm birth.
- Preeclampsia is a disease in pregnancy that often involves hypertension and organ damage, and can put the maternal patient at risk of seizures and long-term risk for cardiovascular disease. It also puts baby at risk for preterm delivery.
 - For full information and guidance on preeclampsia in clinical practice, see [ACOG Bulletin No. 222](#), Million Heart's Campaign Hypertensive Disorders of Pregnancy [Change Packet](#) and/or CMQCC's [Hypertensive Disorders of Pregnancy toolkit](#)
- Preeclampsia is caused by underlying abnormalities to placental development and is characterized by maternal inflammation and vascular injury related to uteroplacental ischemia. LDA works to reduce the inflammation and vascular injury to prevent preeclampsia.
- LDA is safe in pregnancy and does not increase the chance of maternal or neonatal hemorrhage, placental abruption, or intrauterine growth restriction. Exposure to LDA does not increase fetal risks during the pregnancy or after birth.
- Very few patients have contraindications to LDA. Contraindications include allergy to aspirin, nasal polyps. Caution is taken when the patient has a history of gastrointestinal bleeding, active peptic ulcer disease, or pregnancy bleeding.
- LDA 81-mg can be prescribed or purchased over the counter.
- Similar considerations can be made related to low income and BMI. Low income is related to chronic stress and limited access to high-quality healthcare. High BMI carries increased physiologic risk and can also increase stress related to discrimination based on weight stigma.
- Discussing these risk factors in a way that conveys these nuances without making a patient feel isolated or discriminated against can help patients feel more comfortable taking LDA.

Who should receive recommendations to take LDA?
Patients at risk for preeclampsia. See below.

Preeclampsia risk factors

High-risk factors (1 or more = at risk)

- Personal history of preeclampsia
- Multifetal gestation
- Chronic hypertension
- Type 1 or 2 diabetes
- Chronic kidney disease
- Autoimmune disease (lupus, antiphospholipid)

Moderate-risk factors (2 or more = at risk)

(One moderate risk factor can be sufficient for LDA prescription.)

- Nulliparity
- Age 35 or older
- Immediate family history of preeclampsia (mother or sister)
- Obesity (BMI>30)
- Black race (due to social, rather than biological, factors)
- Low income
- IVF pregnancy
- Personal history (low birth weight, small for gestational age, adverse pregnancy outcome)
- Over 10 years since last pregnancy

Adapted from USPSTF Recommendations Aspirin Use to Prevent Preeclampsia and Related Morbidity and Mortality: Preventive Medication (2021)

These factors are associated with increased risk due to environmental, social, and historical inequities shaping health exposures, access to health care, and the unequal distribution of resources, not biological propensities.^[14]

What can providers do to support LDA use in pregnancy?

- Advocate for and implement universal and early screening for preeclampsia risk
 - Participate in workflow planning to ensure all patients receive preeclampsia risk factor screening to determine if they are a candidate for LDA. This may include inclusion of screening in care gap reporting and patient visit planning efforts.
- Advocate for standardization of documentation and evaluation to aid improvement efforts and track changes in outcomes.

- Advocate for and support standardized clinical approaches to preeclampsia risk factor screening, patient education, LDA prescription, and assessment of adherence.
- Create positive patient-provider relationship to facilitate comfort and trust in advance of recommendations for LDA. This includes discussing risk respectfully and allowing for shared decision making with the patient.
- Provide high-quality recommendations and patient education to increase knowledge about preeclampsia and LDA use.
 - Hold an evidence-based, respectful discussion of risk factors that increase risk for preeclampsia and indicate if the patient is a candidate for LDA.
 - Provide educational materials for signs and symptoms of preeclampsia and when to seek care.
 - Provide education about normal versus abnormal blood pressure readings. If a patient has a home blood pressure cuff, support patient in learning how to take accurate home blood pressures.
 - Provide education about why LDA is important, how it works, how to take it, and on specific risk factors.
 - Education should be culturally and linguistically appropriate.
- Provide medication adherence support for LDA and other pregnancy-related medications: How to obtain the medication/prescription, complete medication reconciliation throughout pregnancy.
 - Support patient in strategizing how to be adherent with taking medications daily.
- Provide community resources for pregnancy support, which may further support LDA use.

For additional information, see the USPSTF Recommendation: Aspirin Use to Prevent Preeclampsia and Related Morbidity and Mortality.

24. Low-dose aspirin (LDA) education for pharmacists

The role of pharmacists:

- Providing patient education and identifying health promotion opportunities
- Providing patient education related to LDA use, purpose, and adherence
- Dispensing medications that support patient care

LDA in pregnancy:

- **LDA 81-mg daily is recommended for patients at risk for preeclampsia, starting ideally between 12 and 16 weeks pregnant until delivery. It can be initiated up to 28 weeks.**
- Patients may be prescribed 162-mg per day based on risk. This is safe and aligned with the evidence on LDA to prevent preeclampsia.
- Recommendations from: ACOG, USPSTF, SMFM
- LDA has been shown to significantly reduce risk of preeclampsia, and related preterm birth.
- Preeclampsia is a disease in pregnancy that often involves hypertension and organ damage, and can put the maternal patient at risk of seizures and long-term risk for cardiovascular disease. It also puts baby at risk for preterm delivery.
- Preeclampsia is caused by underlying abnormalities of the placenta development followed by maternal inflammation and vascular injury related to uteroplacental ischemia. LDA works to reduce the inflammation and vascular injury to prevent preeclampsia.
- LDA is safe in pregnancy and does not increase the chance of maternal or neonatal hemorrhage, placental abruption, or intrauterine growth restriction. It does not increase fetal risk during the pregnancy or after birth related to exposure.
- Very few patients have contraindications to LDA. Contraindications include allergy to aspirin and nasal polyps. Caution is taken when a patient has a history of gastrointestinal bleeding, active peptic ulcer disease, or pregnancy bleeding.

- LDA 81-mg can be prescribed or purchased over the counter.
- While NSAIDs are often not recommended in pregnancy, LDA is considered safe and should be filled/advised for patients who are at risk of preeclampsia.

Who should receive recommendations to take LDA?
Patients at risk for preeclampsia. See below.

Preeclampsia risk factors

High-risk factors (1 or more = at risk)

- Personal history of preeclampsia
- Multifetal gestation
- Chronic hypertension
- Type 1 or 2 diabetes
- Chronic kidney disease
- Autoimmune disease (lupus, antiphospholipid)

Moderate-risk factors (2 or more = at risk)

(One moderate risk factor can be sufficient for LDA prescription.)

- Nulliparity
- Age 35 or older
- Immediate family history of preeclampsia (mother or sister)
- Obesity (BMI>30)
- Black race (due to social, rather than biological, factors)
- Low income
- IVF pregnancy
- Personal history (low birth weight, small for gestational age, adverse pregnancy outcome)
- Over 10 years since last pregnancy

Adapted from USPSTF Recommendations Aspirin Use to Prevent Preeclampsia and Related Morbidity and Mortality: Preventive Medication (2021)

These factors are associated with increased risk due to environmental, social, and historical inequities shaping health exposures, access to health care, and the unequal distribution of resources, not biological propensities.^[14]

- Similar considerations can be made related to low income and BMI. Low income is related to chronic stress and limited access to high quality healthcare. High BMI carries increased physiologic risk and can also increase stress related to discrimination based on weight stigma.
- Discussing these risk factors in a way that conveys these nuances without making a patient feel isolated or discriminated against can help patients feel more comfortable taking LDA.

What can pharmacists do to support LDA use in pregnancy?

- Stay up to date on pregnancy-related pharmacy recommendations.
- Advocate for universal and early screening for preeclampsia risk.
 - Advise patients to complete a self-screening and/or bring up screening to their provider.
- Provide high quality recommendations and patient education to increase knowledge about preeclampsia and LDA use.
 - Hold an evidence-based, respectful discussion of risk factors that increase risk for preeclampsia and indicate a patient is a candidate for LDA.

- Provide educational materials for signs and symptoms of preeclampsia and when to seek care.
- Provide education about normal versus abnormal blood pressure readings. If a patient has a home blood pressure cuff, support patient in learning how to take accurate home blood pressures.
- Provide education about why LDA is important, how it works, how to take it, and on specific risk factors.
- Implement visible patient and support person education, such as posters, in the pharmacy area.
- Advocate for system-level knowledge to correct misinformation related to safety of LDA in pregnancy.
- Assist patients in obtaining affordable LDA, either through insurance or OTC options.

For additional information, see the USPSTF Recommendation: Aspirin Use to Prevent Preeclampsia and Related Morbidity and Mortality.

25. Low-dose aspirin (LDA) education for RNs and LVNs

The role of registered nurses and licensed vocational nurses includes:

- Providing high quality patient education
- Providing screening and triage
- Care gap assessment and care planning
- Providing case management and care navigation services

LDA in pregnancy:

- **LDA 81-mg daily is recommended for patients at risk for preeclampsia, starting ideally between 12 and 16 weeks pregnant until delivery. LDA can be started up to 28 weeks gestation.**
- Patients may be prescribed 162-mg based on risk level.
- This has been shown to significantly reduce the risk of preeclampsia, a type of hypertensive disorder in pregnancy, and related preterm birth.
- Preeclampsia is a disease in pregnancy that often involves hypertension and organ damage, and can put the maternal patient at acute risk of seizures and long-term risk for cardiovascular disease. It also puts baby at risk for preterm delivery.
- Preeclampsia is caused by underlying abnormalities of placental development, and is followed by maternal inflammation and vascular injury related to uteroplacental ischemia. LDA works to reduce the inflammation and vascular injury to prevent preeclampsia.
- LDA is safe in pregnancy, and does not increase the chance of maternal or neonatal hemorrhage, placental abruption, or intrauterine growth restriction. There is no increased fetal risk during the pregnancy or after birth related to exposure to the medication.
- Very few patients have contraindications to LDA. Contraindications include allergy to aspirin and nasal polyps. Caution is taken when a patient has a history of gastrointestinal bleeding, active peptic ulcer disease, or pregnancy bleeding.

Who should receive recommendations to take LDA?
Patients at risk for preeclampsia. See below.

Preeclampsia risk factors

High-risk factors (1 or more = at risk)

- Personal history of preeclampsia
- Multifetal gestation
- Chronic hypertension
- Type 1 or 2 diabetes
- Chronic kidney disease
- Autoimmune disease (lupus, antiphospholipid)

Moderate-risk factors (2 or more = at risk)

(One moderate risk factor can be sufficient for LDA prescription.)

- Nulliparity
- Age 35 or older
- Immediate family history of preeclampsia (mother or sister)
- Obesity (BMI>30)
- Black race (due to social, rather than biological, factors)
- Low income
- IVF pregnancy
- Personal history (low birth weight, small for gestational age, adverse pregnancy outcome)
- Over 10 years since last pregnancy

Adapted from USPSTF Recommendations Aspirin Use to Prevent Preeclampsia and Related Morbidity and Mortality: Preventive Medication (2021)

These factors are associated with increased risk due to environmental, social, and historical inequities shaping health exposures, access to health care, and the unequal distribution of resources, not biological propensities.^[14]

- Similar considerations can be made related to having low income or a higher BMI. Having low income is related to chronic stress and limited access to high-quality healthcare. High BMI carries increased physiologic risk and can also increase stress related to discrimination based on weight stigma.
- Discussing these risk factors in a way that conveys these nuances without making a patient feel isolated or discriminated against can help patients feel more comfortable taking LDA.

What can RNs and LVNs do to support LDA use in pregnancy?

- Provide high-quality patient education to increase knowledge about preeclampsia and LDA use.
 - Provide educational materials on the signs and symptoms of preeclampsia and when to seek care.
 - Provide education about normal versus abnormal blood pressure readings. If a patient has a home blood pressure cuff, support patient in learning how to take accurate home blood pressures.
 - Provide education about why LDA is important, how it works, how to take it, and on specific risk factors.
- Participate in workflow planning to ensure all patients receive screening for preeclampsia risk to determine if they are a good candidate for LDA. This may include adding preeclampsia risk screening in care gap reporting and patient visit planning efforts.
- Participate in accurate medical and social history taking to support care planning with the provider.
- Provide medication adherence support for LDA and other pregnancy-related medications: How to obtain the medication/prescription, complete medication reconciliation throughout pregnancy.
 - Support patient in strategizing how to be adherent with taking medications daily.
- Provide community resources for pregnancy support, which may further support LDA use.

For additional information, see the USPSTF Recommendation: Aspirin Use to Prevent Preeclampsia and Related Morbidity and Mortality.

26. Low-dose aspirin (LDA) education for MA/CPHW/CHW

The medical assistant, comprehensive perinatal health worker, and community health worker role:

- Providing patient support and appropriate patient education (without providing medical advice)
- Potentially participating in screening efforts and appropriately informing care providers of results
- Addressing identified issues related to social determinants of health and connecting the patient to community resources and support systems

LDA in pregnancy:

- LDA 81-mg daily is recommended for patients at risk for preeclampsia, starting ideally between 12 and 16 weeks pregnant until delivery. LDA can be initiated until 28 weeks.
- Patients may receive a prescription for 162-mg based on risk level.
- LDA has been shown to significantly reduce risk of preeclampsia, a type of hypertensive disorder in pregnancy, and related preterm birth.
- Preeclampsia is a disease in pregnancy that often involves hypertension (high blood pressure) and organ damage, and can put the maternal patient at risk of seizures and long-term risk for cardiovascular disease. It also puts baby at risk for preterm delivery.
- LDA is safe in pregnancy and does not increase the chance of maternal or neonatal hemorrhage (heavy bleeding), placental abruption (separation of the placenta from the uterus before delivery of the baby), or intrauterine growth restriction (baby not growing enough due to placental issues). Exposure to LDA also does not increase any risk to baby during the pregnancy or after birth.
- LDA works by reducing inflammation and vascular issues associated with abnormal placental development in early pregnancy.

Who should receive recommendations to take LDA? Patients at risk for preeclampsia. See below.

Preeclampsia risk factors

High-risk factors (1 or more = at risk)

- Personal history of preeclampsia
- Multifetal gestation
- Chronic hypertension
- Type 1 or 2 diabetes
- Chronic kidney disease
- Autoimmune disease (lupus, antiphospholipid)

Moderate-risk factors (2 or more = at risk) (One moderate risk factor can be sufficient for LDA prescription.)

- Nulliparity
- Age 35 or older
- Immediate family history of preeclampsia (mother or sister)
- Obesity (BMI>30)
- Black race (due to social, rather than biological, factors)
- Low income
- IVF pregnancy
- Personal history (low birth weight, small for gestational age, adverse pregnancy outcome)
- Over 10 years since last pregnancy

Adapted from USPSTF Recommendations Aspirin Use to Prevent Preeclampsia and Related Morbidity and Mortality: Preventive Medication (2021)

These factors are associated with increased risk due to environmental, social, and historical inequities shaping health exposures, access to health care, and the unequal distribution of resources, not biological propensities.^[14]

- Similar considerations can be made related to having low income and or a higher BMI. Having low income is related to chronic stress and limited access to high-quality healthcare. Those with high BMI have physiologic risk and may also experience stress related to discrimination based on weight stigma.
- Discussing these risk factors in a way that conveys these nuances without making a patient feel isolated or discriminated against can help patients feel more comfortable taking LDA.
- Many patients feel uncomfortable when race, obesity, age, or income is identified as a risk factor. MAs and CHWs can provide helpful context to improve patient understanding.
- Provide medication adherence support for LDA and other pregnancy-related medications: How to obtain the medication/prescription, medication reconciliation throughout pregnancy.
 - Support patients in strategizing how to be adherent with taking medications daily.
- Provide community resources for pregnancy support, which may further support LDA use.

For additional information, see the USPSTF Recommendation: Aspirin Use to Prevent Preeclampsia and Related Morbidity and Mortality.

What can MAs/CHWs do to support LDA use in pregnancy?

- Provide general, accurate information about LDA use to increase patient and family knowledge of LDA and preeclampsia.
 - Providing information related to race, BMI, low income, and age may be particularly supportive for patients who feel worried about discrimination related to these risk factors.
- Advise patients to discuss LDA with their provider and advocate for patient understanding and shared decision making in conversations.
- Include LDA screening in care gap assessment and huddle efforts, followed by informing a care provider if a patient is in need of LDA use screening.

33. Low-dose aspirin scripts

Providing patient education about LDA can be difficult for providers and care teams because of factors, including limited time, the volume of topics to review, and the sensitivity of topics that may be covered. Starting with scripts can be a straightforward way to address some of these barriers and ensure patients receive the education they need. Remember that discussions should be patient centered by addressing a patient's specific concerns. These scripts should be used as a starting point, with recognition that individual patients may require additional or different education.

Below, you will find some scripts that are specific to different LDA-related topics. You can also find short clips of a patient-provider conversation about LDA at [CMQCC's YouTube channel](#).

Basic preeclampsia counseling:

- Preeclampsia is a condition specific to pregnant patients who are greater than 20 weeks gestational age.
- It is usually associated with elevated blood pressure and protein in the urine.
- It can be harmful to the patient and their infant, and be associated with early delivery and long-term complications.
- Common symptoms include headache that won't resolve, visual changes, swelling, upper epigastric pain, nausea, and vomiting. It is also sometimes associated with more severe symptoms such as shortness of breath or altered mental status.
- Patients should be advised where to go if they have any of these symptoms.
- CDC Urgent Maternal Warning Signs and March of Dimes Patient Education are handouts that can be provided.

Script example:

"Preeclampsia is a condition that is specific to pregnant patients who are greater than 20 weeks gestational age. Usually, we see new onset high blood pressure accompanied by protein in the urine. Unfortunately, it is a disease that can be very severe and cause problems for both mom and baby. I like to make sure my patients are aware of preeclampsia so they know what to look out for. It helps us be proactive in case you end up having high blood pressure later in your pregnancy."

Screening:

- Screening allows us to determine if you're at higher risk for preeclampsia.
- At risk does not mean you will definitely develop preeclampsia, but it can help us pay extra attention to symptoms and to reduce risk for LDA use.

Script example:

"We can screen people to figure out if they are at higher risk for preeclampsia. If you are at risk, we want to be very careful to pay attention to any signs or symptoms of preeclampsia developing. We also have some preventative treatment options for you. Preeclampsia, in many women is mild and does require some monitoring and treatment. I don't want to scare you, but it's better for us to know and be prepared so that we can take great care of you throughout your pregnancy, delivery, and in the postpartum timeframe. Is it okay if we complete the preeclampsia risk factor screening together?"

Risk factors results

Based on your screening results, it looks like you are at risk for preeclampsia because of the risk factors ____ and _____. These are factors that have been found to lead to higher rates of preeclampsia.

Black race as a risk factor:

- Black race is NOT the risk factor. It is instead a proxy for exposure to racism.
- Racism increases stress over time, which can increase inflammation. This results in increased risk for preeclampsia.
- It can be useful to normalize concern about this risk factor, as patients can feel targeted or isolated when first seeing this factor on the screening tool.

Script example:

“One risk factor is Black race. It’s important to know that when we say Black race is a risk factor for preeclampsia, it isn’t related to anything inherently genetic or about identifying as Black that gives you that risk. Instead, we know that racism and the increased stressors due to racism can increase your risk for preeclampsia. Although this is very complex issue, one way we can reduce this risk is by taking low-dose aspirin.”

Low income as a risk factor:

- Low income is a risk factor for preeclampsia because it can sometimes be associated with less access to care and with increased stress.
- It’s not a well-defined risk factor, but we include it so we don’t miss people who may be at risk for preeclampsia.

Script example:

“One risk factor for preeclampsia is low income. This is a vague factor, but we know that stress and limited access to healthcare increases the risk for preeclampsia. So, identifying this in the screening is not to make someone feel badly about it, but instead to figure out if someone’s stress level and ability to get healthcare may put them at risk for preeclampsia. Does this make sense to you?”

BMI as a risk factor:

- Elevated BMI is associated with negative maternal outcomes including preeclampsia.
- This is due to biological factors and potentially compounded by exposure to weight stigma increasing stress.
- Be aware that talking to patients about weight can be sensitive and potentially stigmatizing, especially if they have had a negative healthcare experience in the past.
- Reassurance that this discussion is only about identifying risk factors can help reduce this feeling of stigmatization.

Script example:

“One risk factor for preeclampsia is obesity or a BMI over 30. Based on your current weight, you fall into this category. This is common and can be tough to talk about. I want to make sure you know that this does not change your value as a person or how I view you. Instead, we know from the research that higher weight can lead to higher risk for preeclampsia. I want to make sure you have all the options available to you to reduce preeclampsia risk. One way we can reduce your risk is by taking low-dose aspirin.”

Sometimes, pointing out these risk factors can be sensitive and uncomfortable. What does that feel like to you when I talk about the risk factors we identified?”

LDA safety:

- Low-dose aspirin is safe in pregnancy.
- Research shows no increased risk of maternal or infant complication after using LDA, including bleeding risk for mom and baby or issues with the placenta.
- It can be useful to normalize concern about taking medication. It is common for pregnant patients to feel unsure about any medication use during pregnancy.

Script example:

"It's very normal to have concerns about low-dose aspirin. Many pregnant people are concerned about taking any medication during pregnancy. Sometimes this makes sense as there are some medications that can be harmful in pregnancy. But there are certain medications that are not only safe but can improve your health. Aspirin at this low dose prevents preeclampsia without causing safety concerns for you or your baby. I can tell more specifics about the baby aspirin safety considerations if you're interested."

Because we sometimes use aspirin as a blood thinner, researchers paid close attention to increased bleeding in mom and baby when studying this medication. They have found no increased risk in bleeding for mom or for baby. Additionally, there are no harms to baby regarding baby's growth or any long-term impacts after baby is born."

Is there another option to prevent preeclampsia?

- There are not any other known ways to prevent preeclampsia.
- Healthy lifestyle can be helpful for overall pregnancy health, but is not specific to preeclampsia.
- Knowing about preeclampsia risk does help us pay closer attention to possible preeclampsia onset, which can improve outcomes, but this is not prevention.

Script example:

"Aspirin is the only intervention that has strong evidence showing it prevents preeclampsia. We do know that healthy nutrition and movement can be overall helpful to the pregnancy and is recommended, though would not be a replacement itself for aspirin. There are no other ways to prevent preeclampsia."

Can I decline it?

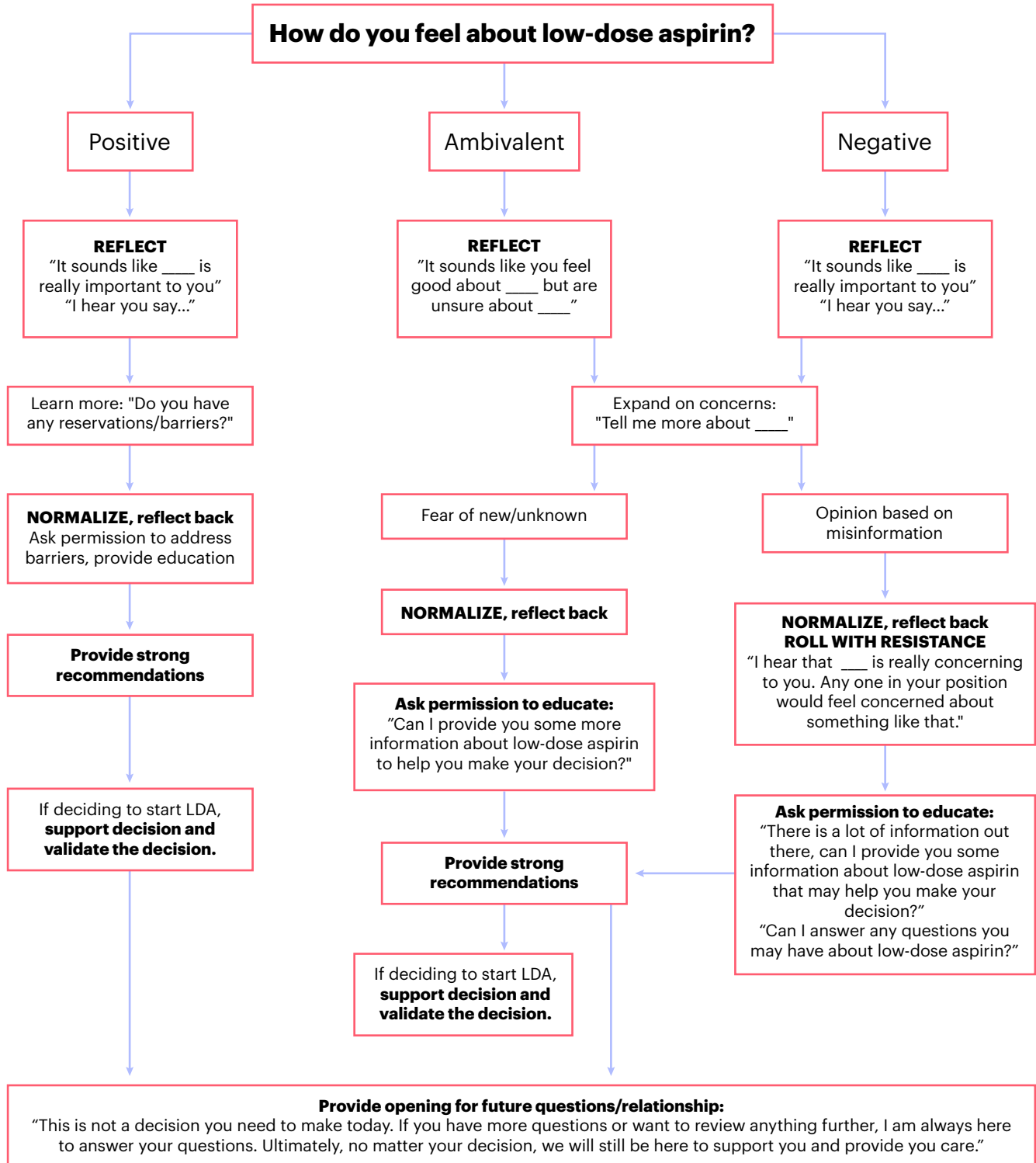
- Yes, the patient can decline LDA.
- Reassure the patient that they will still receive high-quality care even if they decline. They can also start at a later time if they decide they do want to take LDA.

Script example:

"Yes, you can decline low-dose aspirin if that's what you decide is best for you. I'm your healthcare provider and committed to taking great care of you and will continue this commitment if you decide aspirin is right for you or you decide that it is not. As your provider, I'm going to make the best recommendations we have based on evidence and data. But if you choose that aspirin is not right for you, I will still do my best to take great care of you. You can always let me know in the future if you have additional questions about it or if you change your mind. We know that aspirin is helpful as long as it is started before 28 weeks. Do you have any additional questions today?"

34. Low-dose aspirin Motivational Interviewing algorithm

Upon screening and addressing risk factors, you can ask:



Motivational Interviewing (MI) is an evidence-based communication approach that prioritizes empathy and nonjudgement while supporting patient decisions and behavior change. In the setting of preeclampsia risk factor screening, education, and low-dose aspirin (LDA) prescription, MI can be used to assess and address patient concerns, misinformation, and lack of knowledge.

Goals of MI for LDA education and patient acceptance:

- To approach patients with empathy and nonjudgement
- To support the goals and approaches of respectful care
- To protect the patient-provider and patient-organization relationship during counseling
- To maximize the number of patients who voluntarily start low-dose aspirin during pregnancy

Expansion of the algorithm

- **Ambivalence:** When a person feels positive and negative about the same topic
 - Example: “I am interested in LDA if it is healthy for me, but I’m worried about the safety risks of taking medication in pregnancy.”
- **Reflective listening:** We can restate what the person said to us to express that we were listening and to confirm that what they meant is what we heard. It can act as an opening to encourage continued sharing and connection.
 - Reflection should be focused on reflecting meaning rather than words themselves.

- **Use of open-ended questions** allows a patient to drive the conversation towards what they think and feel rather than us assuming we know what they think and feel.
 - An easy open-ended structure includes: Tell me more about...
- **Normalize:** Anything someone is feeling about LDA use is normal and often common. By normalizing, we can validate their feelings and communicate that we are not judging them.
 - Example: It’s normal and common to feel worried/scared/unsure.
- **Roll with resistance:** If someone states misinformation as a reason they decline LDA, it is important NOT to immediately correct them as this can convey judgement and confrontation. Instead, reflecting and normalizing the feelings behind the misinformation, such as fear or worry, can maintain an open, connected conversation.
- **Asking permission** to share information or address barriers is important to express respect of patient autonomy. If the patient does not want to continue the conversation, they can decline. If they do want to continue, now you know that they are active participants in the counseling process.
- **Providing an open door** at the end of the conversation is important to protect and maintain the patient-clinician relationship. Communicating that a patient can always follow up with questions, change their mind, or decline LDA without impact on their care supports patient autonomy and ability to make their own decisions.

35. Pharmacy letter

Patients: Give this sheet to your pharmacist. The pharmacy must fill your prescription.

If they have questions, tell them to call your doctor or provider to confirm.

Pharmacists: You are receiving this information sheet because this patient has been prescribed low-dose aspirin during pregnancy. Low-dose aspirin is the only evidence-based approach to preventing preeclampsia during pregnancy.

Preeclampsia, a hypertensive disorder of pregnancy, is a serious medical condition in which a pregnant or postpartum patient experiences high blood pressure. Oxygen supply for the patient and fetus is reduced. Preeclampsia is a major cause of preterm birth, and the condition may cause liver and/or kidney damage for the pregnant person. Onset occurs at or beyond 20 weeks of pregnancy, or after birth, typically between 48 hours and six weeks postpartum. Preeclampsia can affect people who have never had high blood pressure before. When preeclampsia becomes severe, it can progress to eclampsia, in which oxygen flow to the brain is reduced and seizures or coma may occur.

The United States Preventive Services Taskforce and the American College of Obstetricians and Gynecologists recommend the use of low-dose aspirin during pregnancy according to specific risk criteria. The best practices for risk assessment are multi-factorial and evidence-based.

This patient has been evaluated by a provider who has determined a prescription for low-dose aspirin is appropriate. Please discuss any questions or concerns with the provider. The provider's evaluation includes determining an appropriate time for the patient to begin taking low-dose aspirin as well as a suitable duration, which may include until delivery. The standard dosing is daily. The provider should have indicated the dosing frequency in the prescription. If that information is not included, please contact the provider for clarification.

For further information on the use of low-dose aspirin to prevent and treat preeclampsia, see the United States Preventive Service Taskforce or the American College of Obstetricians and Gynecologists' website.

References:

Henderson, J.T., PhD, MPH, Vesco, K.K. MD, MPH, Senger, C.A., MPH (2021). Aspirin Use to Prevent Preeclampsia and Related Morbidity and Mortality, Updated Evidence Report and Systematic Review for the US Preventive Services Task Force. *Journal of the American Medical Association (JAMA)*, 326(12), 1192-1206.
Rolnik DL, Nicolaides KH, Poon LC. Prevention of preeclampsia with aspirin. *Am J Obstet Gynecol* 2022;226:S1108–19.

37. Assessment of low-dose aspirin adherence

Use this tool for an easy-to-administer assessment of adherence of LDA. It may be integrated into pre-visit surveys/ paperwork, either as a hardcopy or electronically.

Note: This is not a validated tool. It should be used as a clinical workflow aid.

1. Has your clinician prescribed you low-dose aspirin?

- ☐ Yes
- ☐ No

2. Are you currently taking the prescribed low-dose aspirin?

- ☐ Yes
- ☐ No

3. If you are not taking it, is this related to any of the following concerns? (Check all that apply)

- ☐ I don't see myself as at risk
- ☐ I have questions or concerns about the medication
- ☐ I don't have the medication
- ☐ I have challenges remembering to take it

38. Simplified Medication Adherence Questionnaire (SMAQ) adapted for low-dose aspirin

The Simplified Medication Adherence Questionnaire (SMAQ) is a validated medication adherence tool developed in 2002 to assess medication adherence in HIV patients¹ and has since been adapted for medication adherence in many different settings. Matthews et al. in 2021 adapted the SMAQ for LDA to assess LDA adherence in pregnant patients at 20, 26, and 32 weeks gestation.² Find this abstract here.

SMAQ adapted for LDA

1. Do you ever forget to take your aspirin?

- ☐ Yes ☐ No

2. Are you careless at times about taking your aspirin?

- ☐ Yes ☐ No

3. Sometimes if you feel worse, do you stop taking your aspirin?

- ☐ Yes ☐ No

4. Did you not take any of your aspirin over the past weekend?

- ☐ Yes ☐ No

5. Thinking about the last week, how often have you not taken your aspirin?

- ☐ Never ☐ 1x ☐ 2-3x ☐ 4-5x ☐ 6-7x

6. Over the past 3 months, how many days have you not taken any aspirin at all?

- ☐ ≤ 2 days ☐ > 2 days

Nonadherence is defined as:

- A positive response to any of the questions 1 through 4
- More than 2 doses missed over the past week
- More than 2 days of non-use over the past 3 months

References

1. Knobel H, Alonso J, Casado JL, et al. Validation of a simplified medication adherence questionnaire in a large cohort of HIV-infected patients: The geema study. *AIDS*. 2002;16(4):605-613. doi:10.1097/00002030-200203080-00012.
2. Matthews K, Khander A, Edusei E, et al. Assessing compliance to daily low-dose aspirin for preeclampsia prevention using a validated questionnaire. *American Journal of Obstetrics and Gynecology*. 2021;224(2). doi:10.1016/j.ajog.2020.12.1071.

41. Accessing Epic tools

Through the Epic Community Library, you can find many different tools that teams across the country have developed to support their LDA work and preeclampsia work more broadly. To do this, you can go to the Epic Community Library (directions below) and search tools via “preeclampsia.” Through this list, you can look for different tools including:

- Standardized notes
- Screening templates
- Smart sets, which include a list of orders that often are ordered together
- Practice advisories, which may alert the care team of care items for a certain patient
- More intensive tools like the below listed Preeclampsia Care Pathway

We recommend looking through this list to get ideas of what might make sense to utilize for your project. Remember to consider items such as:

- Standardizing documentation to standardize practice
- How documentation may fit into existing or new workflows
- How data might be pulled based on documenting chart elements in discrete data field

By equipping yourself with existing available Epic tools, you may improve the collaboration process with the Epic/IT team at your organization. Understanding the available tools for adaption can help aid the communication between the clinical and EHR team and can inform your “ask” during that collaboration.

How to access Institute for Family Health Preeclampsia/LDA EPIC tools

These tools have been developed by the team at the Institute for Family Health and are references in the IFH Case Example at the end of the LDA Implementation Guide.

1. In a web browser, log in with your Epic credentials to the Epic User Web (LINK).
2. Access the Epic Community Library.
3. Filter by organization and find “Institute for Family Health.” This will lead to all tools published by Institute for Family Health.
4. Search “preeclampsia tools” among this list.
5. Available preeclampsia tools include (listed in least to most intensive):
 - Standardized Documentation/Risk Screening - “IFH Pregnancy Overview” smart form, “Preeclampsia Prevention Note”
 - Symptom Evaluation - “Preeclampsia Evaluation” note
 - Practice Advisory/Smart Set (see below for details)
 - Preeclampsia Care Path (see below for details)
6. To add a team member with permission to make Epic changes will need to go into the EPIC Community Library to add it to the organization’s Epic.
 - Take down the name of the tool to communicate to the IT/EHR team.

Note: Some tools may need to be updated or altered based on the version of Epic in use, or the specific practice requirements of your organization. Be sure to engage the IT/EHR team early, as this can be a time intensive process. Ensure that EHR updates are effective as possible by:

1. Defining capabilities of the EHR system to understand what may be feasible for EHR improvements, and
2. Developing specifications of what is desired clinically for the tool being integrated or developed.

Practice Advisory/Smart Set as developed by IFH:

This tool will flag for every pregnant patient to initiate the Preeclampsia Prevention Note, which includes a risk factor screening.

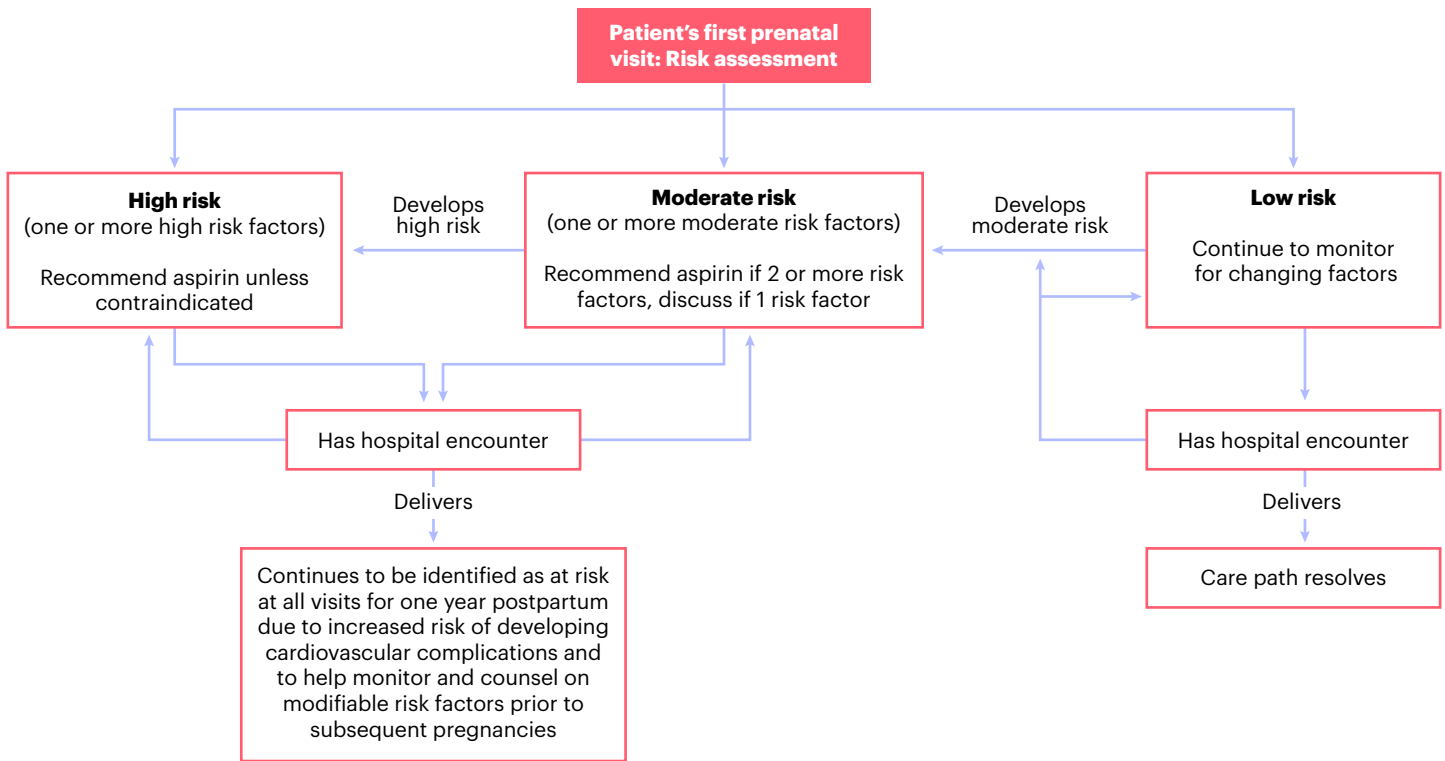
- There is the additional option to utilize the Preeclampsia Evaluation if the patient presents with any symptoms or an elevated blood pressure.
- Depending on results of the screening, there are additional items that may be added for patient including:
 - Medication order: Low-dose aspirin 81mg prescription
 - Device order: Home blood pressure machine
 - Preeclampsia labs: CBC with differential and platelets, CMP, PTT, lactate dehydrogenase, fibrinogen activity, uric acid, prot/creatinine random urine
 - Referral orders
 - Consult to Perinatologist
 - Consult to Case Management
 - Consult to Diabetes Self-Management Team
 - Consult to Nutrition
 - Consult to Healthy Families

- Patient education
 - Danger Signs of Pregnancy (English and Spanish)
 - Preeclampsia (English and Spanish)
- Diagnosis codes:
 - High-risk pregnancy (O09.90)
 - High-risk teen pregnancy (O09.899)
 - Hypertension during pregnancy (O16.9)
 - Preeclampsia (O14.90)
 - Obesity in pregnancy (O99.210)

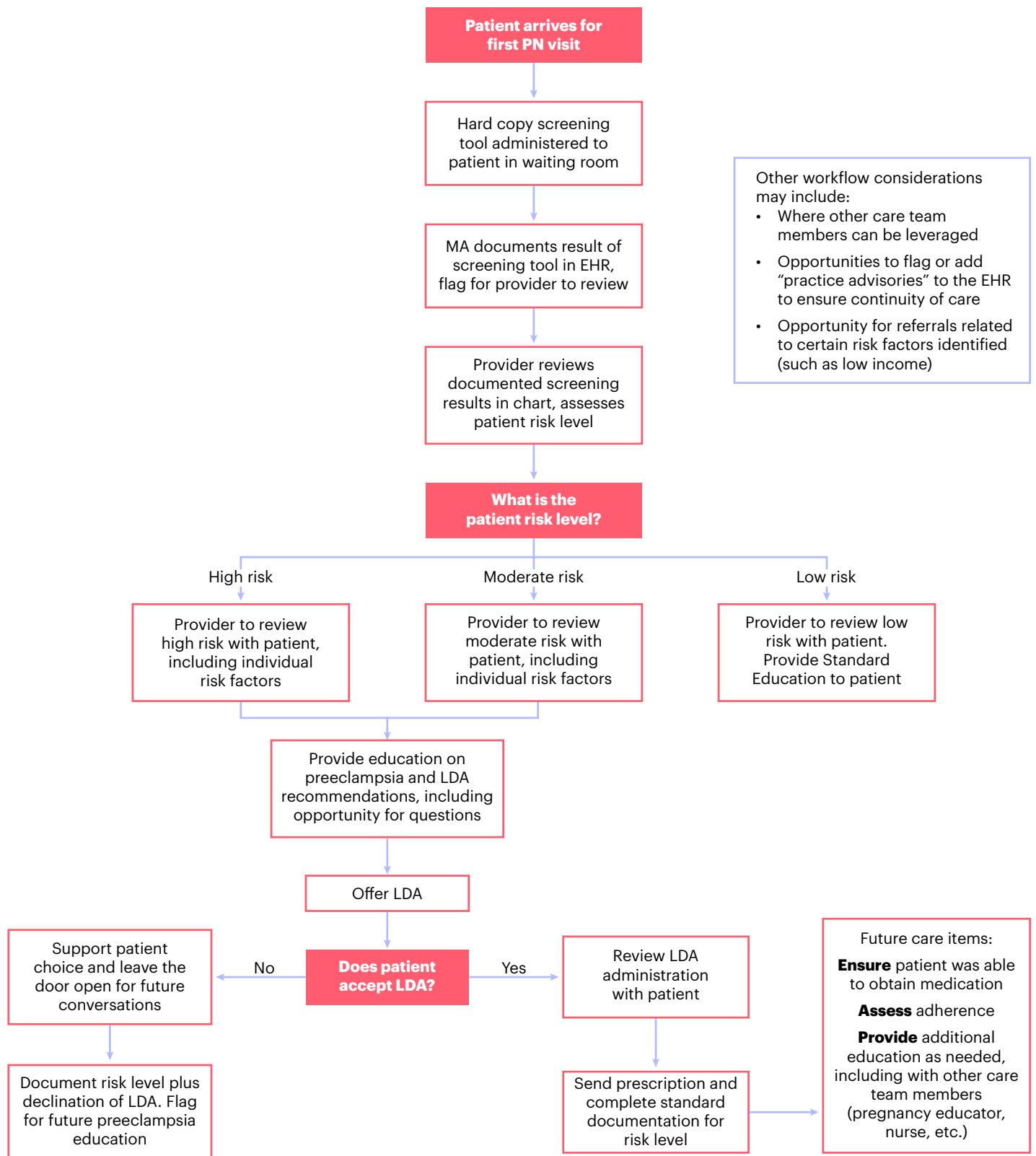
Preeclampsia Care Path as developed by IFH:

- This tool is more intensive and may require more integration work from the IT/EHR team.
- It includes the practice advisory and follows the patient through pregnancy to account for change in preeclampsia risk. Additionally, it will account for pregnancy outcome and follow patient one year postpartum if the patient developed preeclampsia or other cardiovascular complications.
- Below is a schematic for how the care path works throughout a pregnancy.
- A major advantage of this tool is that it captures information, including all of the preeclampsia risk factors, in discrete data fields. This is conducive to running standardized reports about risk factor results and LDA prescription instead of requiring manual chart audit to assess process measures.

IFH's Epic Patient Care Path Workflow



42. LDA workflow example



43. Low-dose aspirin workflow development worksheet

This tool can be used to develop the workflow components of each clinical practice change required for an LDA project. Remember that the workflow may change over time as you confirm what is effective and what is not. Completing updated versions of this form may be an effective way to track these changes over time.

Date completed:

Department/Site for workflow to be implemented:

Preeclampsia risk factor screening:

- What:
- Who:
- When:
- How:
- Next steps:
- Needed items:

LDA prescription:

- What:
- Who:
- When:
- How:
- Next steps:
- Needed items:

Patient education on preeclampsia and low-dose aspirin:

- What:
- Who:
- When:
- How:
- Next steps:
- Needed items:

Assessment of LDA adherence:

- What:
- Who:
- When:
- How:
- Next steps:
- Needed items:

Example completed LDA workflow development worksheet:

Preeclampsia risk factor screening:

- What: Screen early pregnant patients for preeclampsia risk
- Who: Patient to complete in pre-visit documents, will be documented into the EHR
- When: At the first prenatal intake visit
- How: Completed by patient, reviewed and documented by MA, EHR documentation will be reviewed by provider
- Next steps: Provider to review results with patient
- Needed items: Pick screening form version, determine documentation approach

Patient education on preeclampsia and LDA:

- What: Provide culturally and linguistically appropriate education to patients on preeclampsia risk and LDA recommendations
- Who: Provider at time of first visit or time when risk factor screening occurs
- When: At the first PN visit with provider
- How: Discussing risk respectfully, provide printed materials, review preeclampsia basics
- Next steps: Prescribe LDA if a candidate
- Needed items: Provider education on educating patients, LDA patient education materials, standardize documentation

LDA prescription:

- What: Prescribe LDA to patients at risk of preeclampsia
- Who: Provider
- When: At time of preeclampsia risk factor screening. Ideal time between 12-16 weeks
- How: Through EHR so patient has prescription to be covered by insurance
- Next steps: Ask if patient was able to obtain medication at the next visit
- Needed items: Standard process for documentation, save LDA 81-mg in prescription favorites

Assessment of LDA adherence

- What: Assess adherence to LDA as prescribed to patient
- Who: Medication reconciliation by MA, additional education by provider
- When: During a prenatal visit between 20 and 28 weeks gestation
- How: Assess via medication reconciliation
- Next steps: Allow time for questions/additional
- Needed items: Documentation process, medication reconciliation process through EHR system

47. Example LDA project charter

This project charter is an example charter developed utilizing the framework of the IHI QI Project Charter. The full IHI QI Project Charter can be found here: ihi.org/resources/tools/qi-project-charter

What are we trying to accomplish?

Problem:

Preeclampsia and associated preterm birth remain an issue to maternal and infant health. Low-dose aspirin is an evidence-based intervention to reduce preeclampsia risk for pregnant patients. Despite recommendations, there is no formal approach to addressing this at the organization.

Project description:

We will seek to improve the rate of patients who start and continue LDA through:

- Clinical practice change/standardization
- Patient and community engagement

Rationale:

After a baseline assessment, we found a gap in care where pregnant patients are not routinely screened for preeclampsia. Some are receiving LDA, but there is not consistent follow up. Providers report that these efforts occur sometimes but are not standardized. Additionally, we found gaps in patient education, including communication techniques and materials.

Expected outcomes and benefits:

If successful, the rate of patients who receive and continue LDA will improve. This should reduce the rates of preeclampsia, thus improving the maternal and infant outcomes.

Aim statement:

By the end of this project (initially 12 months), the rate of preeclampsia risk factor screening will be 90% of all pregnant patients.

By the end of this project (initially 12 months), the rate of LDA uptake and adherence will improve to reach 80% of patients who are identified as at risk.

How will we know that a change is an improvement?

Outcome measures:

- Preeclampsia rates.
- Preeclampsia associated preterm birth rates.
- We will need to develop processes to monitor this internally. Additionally, change in these measures may be slow to materialize.

Process measures:

- Rate of preeclampsia risk factor screening (among all pregnant patients).
- Rate of patient education on risk factor screening, LDA, and preeclampsia (among all pregnant patients).
- Rate of LDA prescription (among those identified as at risk for preeclampsia).
- Rate of assessment of adherence (among those prescribed LDA).

Structure measures:

- Will utilize the LDA structure measure bundle to track improvements to infrastructure.
- We will use the baseline assessment to supplement the structure measure bundle for any additional infrastructure improvement needed.

Balancing measures:

- Visit duration.
- Patient and provider feedback.

What changes can we make that will result in improvement?

Initial activities:

- Start by building the team, forming team infrastructure (meeting schedule), and gaining leadership buy-in.
- Complete a chart audit of outcome and process measures: An initial baseline assessment was completed. We plan to conduct a chart audit to identify baseline rates for future comparison.

Change ideas:

- Address clinical team knowledge through providing clinical team education.
- Standardize clinical care by developing an updated workflow for preeclampsia risk factor screening, education, LDA prescription, and adherence.
- Screening: Integrate preeclampsia risk factor screening for patient to complete.
- Education: Utilize patient education materials. Provide clinical team through education support for patient education.
- Prescription: Add “favorited” prescription for LDA and a practice advisory on the EHR.
- Adherence: Reaffirm medication reconciliation process, confirm standardized documentation.
- Engage our community partners in external messaging efforts.

Key stakeholders:

- Champion provider, champion nurse, champion care team, and champion administrator.
- QI, IT/EHR team who may provide support to this project.
- Wider department who may need to be more generally informed about the process.
- Community and patient stakeholders: Consider how we can engage patients in the project process.

Barriers:

- Clinical team resistance: Busy care teams may be wary of “additional” work.
- IT/EHR team bandwidth: Difficult to make EHR updates. This may be a slow-moving component.

Boundaries:

- Limitations to funding and additional support.

48. LDA PDSA example

Change idea: Improve preeclampsia screening by updating workflow		Cycle number 1		Date 11/2024
Plan				
What is the purpose of this cycle? Increase preeclampsia risk screening		Develop	Test	Implement
What is the objective of this cycles? What questions do you want to answer? What are your predictions? We want to test a new workflow for preeclampsia risk factor screening. We want to know if this workflow is feasible, efficient, and possible to continue implementing. We predict this will be success but want to identify any unknown barriers.				
List necessary tasks to set up and conduct the test.				
What? (task) Screen pregnant patients for preeclampsia risk	How? (tool) Hard copy tool	Who? (team, # of patients) Administered by MA, assessed by provider. 5 patients total	When? (times, dates) 1 week over 5 clinic days	Where? (sites) Main Street site with Dr. Smith's team
Outline your PDSA data collection plan.				
What data will be collected: track each patient — 5 total	How? Keep track via this form	Who? Clinical team (MA or provider)	When? At end of week	Where? On this form
Do				
What did you observe during the test? Were there any unexpected observations or issues? What went well? Process mostly went well. Provider would like more time to review results in advance of seeing patient.				
Study				
Analyze your data and describe the results. How do the results compare with your predictions? What did you learn from this cycle? The actual screening was successful—5/5 patients screened				
Act				
What changes need to be made? What is your plan for the next cycle? Will try administering patient screening with pre-visit documents to provide more time for review from provider.				
	Adapt	Abandon	Adopt	

52. Low-dose aspirin data planning worksheet

Use this tool to support development of the data plan for your LDA QI project. An example of this type of plan can be found in the implementation guide.

Purpose of overarching data plan: As discussed in the tool kit, determine the purpose for data of a project to inform the overall data plan. Purposes may include:

Quality improvement

- Evaluation of a pilot
- Evaluation of project at scale
- Ongoing evaluation of sustainability

External reporting

- For funding
- For dissemination of findings

What are the available resources for data monitoring?

- Personnel:
- Time:
- EHR:
- Other necessary data capacity identified:

Plan for baseline data: utilize the Guide to Baseline Assessment for support.

- What measures will you assess to determine what is currently happening?
- Structure measures:
- Process measures:
- Outcome measures:
- Patient perspective/experience:
- Clinical team perspective/experience:

Pilot data: Utilize the Workflow Example and Workflow Development tool for support.

- Once piloting begins, tracking processes is the best way to identify if the new processes are occurring and are successful.
- Process measures to track:
- Frequency: Close tracking is needed because pilot sample will be small and pilot duration will be short.

PDSA rapid cycling: utilize the Rapid Cycling Example and tool for support.

- Similar to pilot data, rapid cycle data will be tracking processes.
- Processes to track:
- Frequency: Aligned with duration of each rapid cycle.

Spread data: Utilize the Spread Worksheet for support.

- For spread, we want to be able to track that previously implemented efforts continue as new implementation occurs with other provider teams/clinics/departments.
- Determine what to track:
- Determine frequency of tracking:

Sustainability data: utilize the Sustainability Worksheet for support.

- What data will you monitor to ensure implemented changes continue consistently?
- Determine what to track:
- Determine frequency of tracking:

Evaluation data: see the Evaluation Section of the Implementation Guide for support. What will you assess at the end of the project to report successes?

- Compare to baseline data collected.
- Structure measures: What new structure measures were implemented during the process?
- Process measures: What are the rates from new processes?
 - Preeclampsia risk screening
 - Patient education
 - LDA prescription
 - LDA adherence
 - Overall usage
- Outcome measures: If possible, use the same measures used for the baseline assessment to allow for comparison to the baseline measures.
 - If your team has developed improved ability to track outcome measures since baseline assessment were done, include them as well.
- Patient perspective/experience
- Clinical team perspective/experience

53. Low-dose aspirin data measures quick sheet

Structure measures: Used to evaluate the infrastructure in place for care delivery. May include:

- Team building
- Clinical team education
- Development of new workflow including screening, education, prescription, and adherence
- Patient education materials
- Outpatient data structures in place to measure process and outcome
- Development plans, including data plan, community engagement plan, and sustainability plan.

Process measures: Measure the delivery of care and healthcare services, which can include patient education, diagnosis, screening, preventive services.

- Preeclampsia screening rate: For all patients
- Patient education rate: For all patients
- Prescription rate: Among those who are candidate for LDA
- Adherence rate: Among those who were prescribed LDA
- Can stratify by race/ethnicity, payer, clinic site, provider for additional insights into process improvement.

Outcome measures: Measure the impact of healthcare on patients, such as the rates of a specific diagnosis in a patient population.

- Preeclampsia rate:
 - Among all pregnant patients
 - Among those at risk for preeclampsia
 - Can also consider rate of preeclampsia with severe features

- Preeclampsia associated preterm birth
 - Among all pregnant patients
 - Among those at risk for preeclampsia
 - Can also consider severity of prematurity, related to gestational age at delivery
- Can stratify by race/ethnicity, payer, clinic site, provider for additional insights into disparities in clinical.

Balancing measures: Measure unintended consequences of system change.

- Consider what may have a negative impact after implementation of the new LDA workflow. These may include visit length, wait times, clinical team perspectives.

Patient experience:

- Patient experience is increasingly an important clinical measure used in many healthcare systems. There may already be processes in place to assess patient experience.
- Your organization may already have infrastructure for surveying patient experience.
- Other options include patient focus groups, patient interviews, informal questions/surveys.

Clinical team experience:

- Surveys of clinical team experience or informal questions for feedback.
- This can be a useful tool to increase and maintain clinical team buy in, and to identify barriers that were not previously identified.
- Can also measure clinical team education:
 - Structure: Plan in place, education occurring
 - Process: Rate of clinical team members completing education
 - Outcome: Knowledge change can be measured via pre- and post-surveys

54. Metric development tool

This tool can be used to help think through what type of metrics will be assessed when and how during the QI project.

Intervention	Example: Universal preeclampsia risk factor screening			
Purpose of measurement	Assess effectiveness of workflow			
Metric definition	Numerator = number of patients who completed screening Denominator = total pregnant patients during time period			
Type of measure (process, structure, outcome)	Process measure (a metric to assess how effective a process is performing)			
Data collection (who, when, how)	Manual tracking, by MA, daily during PDSA cycle (1 week)			
Monitoring plan: How often will you assess outcome?	Assess at end of 1 week, with ability to assess fall outs Will consider using again if updating workflow			

55. LDA structure measure bundle

Use this structure measure bundle as a tool to track progress for making infrastructure improvements related to the Low-Dose Aspirin QI project. You can use this same format to add additional structure measures as you identify them as necessary for improvement.

Status key: ■ not started ■ ongoing ■ complete

Structure Measure		Rationale	Status	Date of Completion	Notes
1	Conduct clinical team education about preeclampsia and low-dose aspirin recommendations.	Educating all team members (including but not limited to providers, nurses, medical assistants, medical receptionists, other support staff) can help support patient education and sustaining workflows that increase LDA uptake and adherence.			
2	Develop a workflow, including documentation, for early universal preeclampsia risk screening based on USPSTF screening guidelines.	Screening at first presentation of care for preeclampsia risk will help teams identify candidates who will benefit from LDA to reduce preeclampsia risk. Standardization will ensure all patients are appropriately screened.			
3	Develop a workflow, including documentation, for patient education that includes culturally and linguistically appropriate preeclampsia risk factor screening results, LDA recommendations, and preeclampsia.	Patient education should be specific to their risk factors, and identified risk level, in addition to cultural and linguistic considerations. This is an opportunity to ensure that patients understand their risk factors, risk level, and preeclampsia basics.			
4	Display visible patient education in necessary languages in patient care areas.	Displaying patient education such as posters can help with passive knowledge building for patients and support people in the clinical environment.			
5	Develop a workflow to standardize LDA prescription and documentation process for those identified as at-risk for preeclampsia.	Prescribing LDA, despite availability over the counter, along with standardized documentation will aid in QI process measure monitoring to ensure that LDA is being prescribed.			
6	Develop an adherence assessment workflow including a standardized approach to assessing adherence, documenting assessment, and the opportunity to provide additional LDA education.	Implementing an LDA adherence measure will help ensure that patients not only received an LDA prescription but that they are taking LDA ongoing. This may also provide an opportunity to answer any outstanding questions. Some intervention options include: utilizing a medication reconciliation, adding LDA adherence to a prenatal checklist, or using the adherence aid referenced in the implementation guide.			
7	Develop capability to track process measures for ongoing evaluation.	The ability to track process measures (preeclampsia risk screening, high quality education, LDA prescription, LDA adherence) provides insights into QI successes and areas that require additional attention.			
8	Develop processes to monitor outcome measures, either internally or via external data sources.	Understanding outcome measures can inform the project by identifying disparities and populations of interest. Consider blending internal data tracking capabilities with external data sources.			
9	Develop plan for community engagement.	Patients make health decisions in their communities and often take guidance from those who are close to them. Connecting with CBOs in order to promote LDA uptake and adherence can increase LDA rates.			
10	Develop a sustainability plan to monitor data, workflows, outcomes related to LDA collaborative project.	A clear plan including who, what, when, how can support ongoing work and prevent loss of momentum regarding practice change. See the Sustainability Worksheet for additional support.			

Link to excel tool

Copy and paste this sheet for every new chart audit completed (ideally monthly, can be quarterly)

Date of completion:

[illegible]

57. LDA manual chart audit tools

Background and instructions

This tool is designed to support manual chart audit processes, particularly if the chart audit process will be completed by multiple team members or team members who require training to assess process measures in the chart. These tools can be updated as is useful for the measures identified for your project.

For a manual chart audit to effectively assess what type of care is occurring, care improvements should be documented in a way that can be assessed when charts are reviewed. Standardized documentation should be a component of practice care improvement.

Additionally, after implementing an updated workflow to include new processes, a manual chart audit should assess if the processes are occurring as directed, with timing and process in alignment with the updated workflow.

Additional considerations can be added to this approach to assess for variations in care. This may include capturing the provider, site, or department where the patient received care to assess for differences. This could also include comparing groups such as payer (Medicaid vs private), race/ethnicity, or other demographic, to investigate care differences between low and high-risk groups.

The first tool, **LDA Individual Chart Audit Tool**, should be used to assess if processes occurred for the care of an individual patient. The second tool, **LDA Chart Audit Summary**, should be used to collect the results of the individual patient chart audits to determine the results of those audits. The results from the second tool are the ones that can be used as process measures and tracked over time to assess for changes/improvements and can be reported out to the project team.

LDA individual chart audit tool

Manual data collection sheet

Date of review: _____

Patient ID: _____

Auditor: _____

Note: Assessment of the following processes should be aligned with workflow improvements made by the project (unless this is for baseline assessment). Comments should be made about timing, particularly if the process occurred at a time different than that prescribed by the new workflow.

Screening:

- Was the patient screened for preeclampsia risk? ☐ Yes ☐ No
- Was screening appropriately documented? ☐ Yes ☐ No
- Was the patient identified to be at risk for preeclampsia? ☐ Yes ☐ No
- What was the result of risk assessment? ☐ Low ☐ Moderate ☐ High

Education:

- Did the patient receive education by care team (about preeclampsia, risk factor screening, LDA)? ☐ Yes ☐ No
- Did the patient receive patient education materials? ☐ Yes ☐ No
- Was education appropriately documented? ☐ Yes ☐ No

Prescription: If the patient was identified as at risk for preeclampsia

- Did the patient agree to LDA? ☐ Yes ☐ No
- Was LDA prescribed? ☐ Yes ☐ No
- Was prescription appropriately documented? ☐ Yes ☐ No

Adherence: If the patient was prescribed LDA

- Was adherence verified with patient at designated time? ☐ Yes ☐ No
- Is patient adhering to LDA? ☐ Yes ☐ No
- If not, was patient check in completed to inquire about adherence? ☐ Yes ☐ No

(Adherence can be addressed at a later time if chart audit is occurring earlier than when adherence intervention is due.)

LDA chart audit summary

Date: _____

Auditor: _____

Determined frequency of chart audit: _____

Determined number of charts to audit: (Recommend 10% of patient population)

Total charts reviewed:

Number of patients who: Rate determined with denominator of total charts reviewed

- | | | |
|--|-------|---------|
| a. Received screening | _____ | _____ % |
| b. Received education from healthcare team | _____ | _____ % |
| c. Received education materials | _____ | _____ % |
| d. Had appropriate documentation in the chart | _____ | _____ % |
| e. Was identified as at risk for preeclampsia (moderate and high risk) | _____ | _____ % |
| Total at risk | _____ | _____ % |
| Moderate risk | _____ | _____ % |
| High risk | _____ | _____ % |

Number of patients who: Rate determined with denominator of number of patients identified as at risk for preeclampsia

- | | | |
|------------------------------------|-------|---------|
| a. Agreed to plan to start LDA | _____ | _____ % |
| b. Received prescription for LDA | _____ | _____ % |
| c. Received adherence intervention | _____ | _____ % |
| d. Is continuing LDA as prescribed | _____ | _____ % |

Charts identified for further assessment and improvement: This is an opportunity to drill down and assess why any of these items may have been missed and to correct any LDA care gaps.

58. Outcome measure definitions

[Linked document](#)

68. PDSA rapid cycling tracking worksheet

Use this tool to track the rapid PDSA cycles utilized to implement and improve your LDA workflow. Rapid cycle PDSAs should be short and targeted to test small parts of the workflow. At the end of the PDSA, assess if that part of the workflow was efficient/successful/makes sense for your site. Then, determine if changes should be made, if updates are needed, and what should be tested next. An example of a PDSA rapid cycle process for an LDA project is below.

Test number and dates	PDSA 1 Week 1	PDSA 2 Week 2	PDSA 3 Week 3	PDSA 4 Week 4
Test description	Trial hard copy preeclampsia risk screening with patients at time of pregnancy intake. Include standard documentation.	Continue hard copy preeclampsia risk screening, update documentation. Start standard process for education.	After screening and education, start standard LDA prescription and documentation. Include questions for patients about how to get medication.	Expand workflow to test with new care team for additional testing/insights.
Population	5 early pregnant patients over 1 week	5 early pregnant patients over 1 week	5 early pregnant patients over 1 week	5 early pregnant patients over 1 week
Location of test	With Dr. Smith's team	With Dr. Smith's team	With Dr. Smith's team	With Dr. Smith's team
Results	All 5 patients were screened successfully. MA team and Dr. Smith feels this workflow was smooth in the given appointment time. Dr. Smith recommends improvement in documentation.	4 patients received patient education based on risk and LDA recommendations successfully. Difficulty with a patient who spoke different language. New documentation process good per Dr. Smith.	3/5 patients were candidates for LDA. Prescription and standard documentation completed. Patients report no concern regarding getting prescription. Screening and education completed per workflow without issues for all 5 patients.	Dr. Jones' team was able to complete workflow with 5/5 patients. Report workflow is acceptable. Reports some concerns about education, desires additional communication/educational support for communication.
Next Steps	Continue hard copy screening with MA at intake. Update documentation process. Next: Start with education workflow.	Continue with screening and education. Continue with current documentation process, though will ensure other providers like this process when spread occurs. Consider education improvements for non-English speaking patients. Next: Test standard prescription process and documentation.	Continue with current workflow for screening, education, and prescription. Plan to f/u with patients at next visit to see if patients were able to pick up prescription. Next: trial this workflow with a new provider.	Continue with current workflow. Provide additional clinical team educational support. Next: continue with Dr. Smith and Dr. Jones. Consider additional PDSA spread. Upcoming: PDSA for adherence

PDSA rapid cycling tracking worksheet

Test number and dates	PDSA 1 Week 1	PDSA 2 Week 2	PDSA 3 Week 3	PDSA 4 Week 4
Test description				
Population				
Location of test				
Results				
Next Steps				

69. Spread planning tool

For more details about spread planning, see the [IHI's A Framework for Spread](#)

What are the findings of the pilot/rapid cycling process?

- Did the pilot/rapid cycling process confirm the workflow?
- What specific considerations were learned during this process?
 - Consider, how will you explain how the workflow was developed? What did you learn during the pilot work that led to confirmation of the workflow?
- What is needed to start spreading the workflow to new teams?
 - Buy-in, engagement: Are there champions or early adopters you'll target first?
 - Materials: For example, do you need patient education materials with the new care teams/sites/departments?
 - Structure measure updates: Are there structure measures that have not been implemented among the next team/site/department? Get these in place first before spreading to this team.
 - Team education on process: Do the teams who will be involved in spread of the new workflow know about the project, about preeclampsia, and LDA?
 - Any additional partners needed to engage? Consider administrative leaders and QI support as spread occurs.

Where will the new workflow be spread to next?

First spread:

- Team/Site information:
- Timeline:
- Plan details:
- Data considerations:
Tip: Consider monitoring during initial implementation and then the transition to sustainability.
- Anticipated facilitators:
Tip: Targeting early adopters and possible champions will aid in early spread efforts. This can help increase momentum for spread and sustainability.
- Anticipated barriers:
Tip: Try to consider barriers in planning for spread to each individual team. Anticipating and addressing them in advance may result in smoother implementation.
- Results:
- Next steps:

Second spread:

Third spread:

Example of spread plan and results

Spread number	1 (first team after initial pilot)
Team	• Dr. Smith's care team at Alpha Clinic. • Dr. Smith MD, 2 MAs, sometimes assistance from LVN on site.
Timeline	• 1-month rapid cycling
Plan details	• Plan to conduct rapid cycling to integrate workflow in pieces. • Start with preeclampsia risk screening and documentation, followed by education, then by LDA prescription process. • Will provide team time to provide feedback about process to ensure their questions are answered and they receive sufficient support.
Data considerations	• Will plan to monitor all patients in the rapid cycling process, aligned with the pilot process. • After confirmation that team has implemented the workflow, will transition monitoring to include Dr. Smith's team in the monthly chart audit for process measures.
Anticipated facilitators	• Dr. Smith identified as early adopter, interested in LDA work. • Has high patient satisfaction scores due to high quality communication/counseling.
Anticipated barriers	• New MA team, will possibly require additional education on preeclampsia risk, LDA, and workflow.
Results	• Dr. Smith and team were able to implement risk factor screening and prescription without issue. • Dr. Smith reports comfort in patient education, but the care team would like ongoing support on education to ensure they have the time, resources, and knowledge they need to sufficiently educate patients.
Next Steps	• Will continue to provide educational support for Dr. Smith's team. This should be straightforward as other care teams will also be receiving education as spread process continues.

70. Low-dose aspirin quality improvement sustainability plan

Use this tool as a starting point for developing your LDA sustainability plan. Consider both how the improvements made will be sustained in practice and how you monitor if these changes are continuing to occur.

Site name:
Date completed:
<i>Key process/Balancing measures: List approach/strategies to sustaining each</i>
Preeclampsia risk factor screening:
Patient education:
LDA prescription:
LDA patient adherence:
Data collection: What will the approach be to monitoring each of the above processes to ensure they continue? (Ex: For chart audits, how many charts at what time interval?) Who will collect this data?
Community connections and engagement: How will you maintain connections built with community partners?
Clinical team perspectives: Will you assess clinical team perspectives on this process? How? How often?
Patient perspectives: Will you assess patient perspectives on this process? How? How often?
What measures need additional improvement (before reaching sustainability)?
Is there additional data that will be monitored from external sources?

Data reporting:

Where/frequency of project updates and data sharing with the following stakeholders:

Staff:

Physicians/Midwives:

Administration:

Healthcare system (as appropriate):

Plans on public data transparency:

New hire education:

What education tools/plans will you utilize for ongoing/remedial staff/provider education?

Ongoing education:

What education tools/plans will you utilize for ongoing/remedial staff/provider education?

In what settings will you provide ongoing staff/provider education?

Accountability:

Nursing champion:

Physician champion:

Accountability nurse leader:

Other champions:

Sustainability plan date:

30-day review date:

60-day review date:

90-day review date:

Quarterly review plan:

Notes:

71. Evaluation planning worksheet

This worksheet can be utilized to aid in development of an evaluation plan for your LDA project. While evaluations tend to occur late in the project, consideration of your ideal evaluation can help inform what changes are made and what information is tracked.

1. Evaluation design: As a team decide how formal (or informal) this evaluation will be. Based on the goals of the project, the need for spread and continued buy in, and the resources available to complete an evaluation, the level of intensity of the evaluation will vary.

- Who is able and available to complete an evaluation?
- What is the goal of the evaluation? See Evaluation Objectives below
- How will elements of the evaluation be collected? Consider options such as:
 - Structure measure
 - Process measure results
 - Outcome measure results
 - Patient satisfaction
 - Perspectives from stakeholders, including clinical teams
 - Perspectives from community engagement efforts

2. Project review: Starting any evaluation, be sure to review the goals and scope of the project.

- Objective: What specific quality improvement issue is being addressed?
- Scope: Which clinical area, population, or process did the project target?
- Goals: What were the desired outcomes of the project? Revisit your AIM Statement(s)

3. Evaluation objectives: Define the primary aims of the evaluation, such as:

- Assessing the effectiveness of the intervention(s).
- Identifying barriers and facilitators to implementation.
- Measuring impact on patient outcomes, staff engagement, or system performance.
- Informing scalability and sustainability of the initiative.

4. Key evaluation questions: Identify specific questions the evaluation will address, such as:

- Were the planned interventions implemented as intended?
- What changes occurred in clinical processes or patient outcomes?
- What lessons were learned that can be applied to future projects?

5. Assessment of data and outcomes: Over the course of the project, your team collected and monitored data for different goals. Evaluate the results from these identified metrics of interest. These may include:

- Structure measure assessment: Did infrastructure change to support the process?
 - Use the structure measure bundle to assess changes. Compare to baseline assessment of structure measures.
 - Consider any other infrastructure changes (staffing, roles, workflows, policies) that may have been updated.
- Process measure results: Is there evidence that the updated process occurred consistently? Contextualize these results by aligning them with when different interventions were implemented.

- Preeclampsia risk factor screening
- Patient education
- LDA prescription
- LDA adherence
- Consider stratifying to assess changes in care to populations of interest or high-risk patient groups
- Outcome measure results: Were there any changes to outcome measures that should be highlighted?
 - NOTE: There may not be notable changes to these measures depending on the timeline and scale of the project. Setting this expectation can aid in ensuring that stakeholders understand the impact of the project.
 - Preeclampsia rates
 - Preeclampsia associated preterm birth rates
 - Consider stratifying to assess changes in care to populations of interest or high-risk patient groups
- Other measures: Patient and staff perspectives and engagement.
- Balancing measures: Were there negative changes to the process because of implementation?
 - This may include longer visit time or longer wait times depending on workflow impact.
- What does this data show? Does the data tell any story about the implementation project?
- Are there limitations to the data plan that may benefit from improvement?
- How can data be visually demonstrated for easy review?

6. Stakeholder engagement: Engage key stakeholders to understand how the project, process changes, and outcomes are perceived.

- Identify stakeholders to engage in evaluation: Clinicians, support staff, administrators, patients, community stakeholders.
- Identify questions that may be asked of stakeholders:
 - What was your primary role in project?
 - What is your overall perception of the project?
 - What is your perception of the outcome of the project?
 - What were major facilitators to project success?
 - What were major barriers to the project? Were these barriers overcome?
 - What would you recommend to be next steps?
 - What would you have changed in hindsight about the project?
- This type of engagement can be done via interviews with individual stakeholders, or you can develop a short survey to include more perspectives in the evaluation.

7. Putting it all together: An evaluation can communicate the narrative of the project. It can integrate the story of the implementation by contextualizing patient experience, staff experience, and lessons learned with the structure, process, and outcome measures that were monitored throughout. Some considerations for putting these pieces together may include:

- Successes of the project
- Limitations of the project: Data limitations, resource limitations
 - What might be needed or improved for additional implementation?

- Staff and patient experience
- Capacity building: Was capacity built for QI? For data monitoring processes? For community engagement?
 - Will this capacity be leveraged for ongoing project activities?
- What are the next steps? This may include:
 - Ongoing sustainability
 - Continued spread to other areas of the organization
 - Leveraging of this work into other hypertensive disorders of pregnancy work

8. Reporting and dissemination: A major reason to complete an evaluation is to develop findings that can be disseminated to internal and external stakeholders. Consider:

- To whom will evaluation results be shared? Consider internal and external stakeholders.
- How will evaluation results be shared? Consider written reporting as well as visual demonstration of data.
- What major evaluation results are important to share?

86. Developing a low-dose aspirin collaborative

Use this worksheet to develop the necessary components of planning a low-dose aspirin collaborative. For most of the components, there will be corresponding implementation guide narrative sections and tools that will support the collaborative teams. Because these collaborative support tools are based on the implementation guide, we recommend being familiar with the guide and associated tools prior to planning the collaborative project.

Planning needed prior to collaborative kick off:

Determine the scope of the collaborative:

- Who will lead the collaborative?
 - Effective collaborative leadership may include leaders with clinical, quality improvement, and/or program management experience.
- What is the expertise, previous collaborative experience, and time/bandwidth of the team that will run the collaborative?
- Based on bandwidth and expertise, how many collaborative teams with what level of support will be feasible?

Determine goals and desired metrics of the collaborative:

- Based on the determined scope, create main and interim collaborative goals. Some examples may include:
 - Primary goal:
 - Increase low-dose aspirin uptake and adherence among patients at risk for preeclampsia.
 - Interim goals:
 - Improve knowledge of clinical teams about low-dose aspirin.
 - Improve clinical practices to support LDA uptake and adherence.

- Increase system integration of participant teams.
 - Increase community engagement, related to the collaborative and/or participant teams.
- Based on desired goals, consider the project metrics that will be suggested/required for collaborative teams to track and report. This may include:
 - Completion of baseline assessments.
 - Tracking of structure measure bundle implementation progress.
 - Process measure tracking at a certain frequency to report to the collaborative.
- Consider collaborative process metrics: Tracking collaborative activities
 - Attendance to scheduled meeting.
 - Rate of completion of expected reporting by teams enrolled in the project.
 - Participant feedback: Consider participant evaluations to improve collaborative overtime.
- Consider what dissemination of the work will be
 - Are there requirements based on funding for the collaborative? Are there project components that may be published?
 - Answering these questions will help determine in advance what metrics will be useful to track in the collaborative.

Determine the structure of the collaborative:

- Meeting frequency and structure
- Curriculum: See Example LDA Collaborative Curriculum
 - Utilizing the example curriculum, update the curriculum plan based on the scope, goals, and desired structure of your collaborative.
- Expectations for collaborative teams: Determine your expectations for the collaborative teams a part of participation. Being clear at the beginning will aid in collaborative team success. Expectations may include:
 - Expected attendance to monthly collaborative meetings.
 - Implementation of the structure measure bundle as appropriate to the organization.
 - Process measure tracking with reporting at certain intervals.
 - Commitment to patient and community engagement efforts.

Determine recruitment strategy:

- Based on scope and bandwidth, how many teams would you like to enroll?
- What types of organizations do you want (or have the ability to) engage with?
 - Integrated health systems, private practices, community health settings, other.
 - This may mean recruiting from existing relationships, or finding and building new connections with organizations who may be interested in LDA work.
- Consider recruitment time frame: How long will you need to recruit and when do you want to start the collaborative?
 - This is a balance between having enough time to complete outreach without having teams wait too long to begin work and thus lose momentum.

- Create recruitment documentation:
 - Create a recruitment letter that explains the purpose and rationale for the collaborative with general information about the project.
 - Create a commitment letter that teams will sign to enroll in the collaborative and agree to collaborative expectations.

Once recruitment is completed, you can move ahead to collaborative kick off and running the collaborative. Based on CMQCC's experience, items that teams may require specific support for during the collaborative cycle may include:

- Baseline and readiness assessments: This is important to set the team up for success but can be a daunting task.
- Data planning: Teams may benefit from specific coaching about how to measure structure, process, and outcome measures can increase skills of the team.
- Implementation planning such as PDSA and rapid cycling.
- Community engagement planning: Teams often express inexperience or lack of comfort in pursuing community engagement. Collaborative leaders can provide expertise in CE or administrative support to encourage local CE can build confidence of the team and help start with small improvements.
- Spread and sustainability planning.
- Dissemination of findings.

Additional collaborative items that occur after kick off:

Monitor for collaborative successes and barriers

- Active tracking of structure measure implementation and process measure results can help assess where teams are succeeding and where changes to the collaborative may be needed.

Midpoint evaluation

- At the about the 6-month mark, ask participants how it's going. This can be informal or formal, such as with a survey.

Transition to sustainability

- Will the collaborative end at 12 months and encourage independent sustainability planning?
- Or, will there be less frequent sustainability meetings (such as quarterly for 6-12 months)?

Final evaluation

- How will you evaluate the collaborative overall?
- Consider repeating a midpoint survey for comparison of feedback.
- Evaluate initial measures set out at the beginning of the collaborative, both collaborative level measures and individual team measures.

Lessons learned

- Take the findings from the evaluation and consider lessons learned.
- What was successful and is worth repeating?
- What components can be improved?

Dissemination of findings

- Share findings with internal and external stakeholders.

87. Example curriculum

Project Title	Low-Dose Aspirin Collaborative Project
Project objectives	To increase utilization of 81mg of aspirin among moderate and high-risk pregnant patients
Interim objectives	To increase appropriate prescription of LDA To increase provider knowledge of LDA prescription benefits To increase patient knowledge of LDA medication To increase patient adherence to prescribed LDA medication
Project Timeline	12 months implementation, followed by 6 months quarterly sustainability meetings
Project Deliverables	1 Cohort meeting monthly for 12 months, engaging outpatient clinics and community organizations.

Month	Monthly Coaching Topic, Speakers and other details	Report Out Slides (in addition to general updates, successes, barriers)	Homework Assignments	RESOURCES (from the LDA implementation guide unless otherwise stated/linked)
1	Pre-Implementation Kick Off- Introduction to the work- mini- rounds, establish the WHY. Collaborative expectations	Team introductions, inquire about past QI work or current capacity	Confirmation of teams, baseline/ readiness assessments	• Baseline Assessment Tools • Project Planning Tools • Current Clinical Practice Assessment/Survey
2		Confirmation of Teams and Baseline Assessment	AIM statement, Setting Collaborative Goals for each intervention. Continue baseline assessment if not done yet	• AIM statement • PDSA Planning • Structure Measure Bundle
3		AIM Statements, Goals, baseline assessment results	Complete first draft workflow update. Determine what first PDSA will be undertaken.	• Example Workflow • PDSA Planning Tool • Rapid Cycling Tool and Examples
4	Implementation QI 2- Measure types (outcome, process, structure), tracking clinic data, baseline data	Workflow, first PDSA.	Solidify data planning- structure measure implementation, what process measures to track, what outcome measures available? Begin rapid cycling to test work flow.	• LDA Data Planning Tools
5		Update on PDSA rapid cycling- how is it going?	Solidify data planning- structure measure implementation, what process measures to track, what outcome measures available? Begin rapid cycling to test work flow.	• Population Assessment Tool
6		Population assessment, stratified data results	Evaluate and improve education process as needed. Deliver respectful risk discussion to teams	• Communication Tools • CMQCC Webinar- Discussing Risk Respectfully
7		Education follow up	CE baseline assessment if not done, CE plan	• CE Baseline assessment • CE Planning Tool
8		CE baseline assessment and plan	Review Webinar, continue community engagement efforts	• CMQCC Webinar-Clinic and Community Connections
9	Spread and Sustainability Per participant preference (gauge team interest/ needs in topics)	Community Engagement Efforts	Based on coaching item	
10		QI work- updates on interventions, successes, barriers	Assess current implementation status- ready for spread? Consider spread strategy- expand to new sites? What does that look like?	• Spread Strategy Planning Tool • IHI Spread Strategy Tool
11		QI updates, sustainability planning status	Assess current status (ready for sustainability?) Consider sustainability plan, Complete measure bundle if not yet done	• Sustainability Planning Tool
12		QI updates, spread strategy updates	Ongoing work, sustainability and/or spread if appropriate	• CDC HDP change packet
13		Updates and progress on sustainability		