

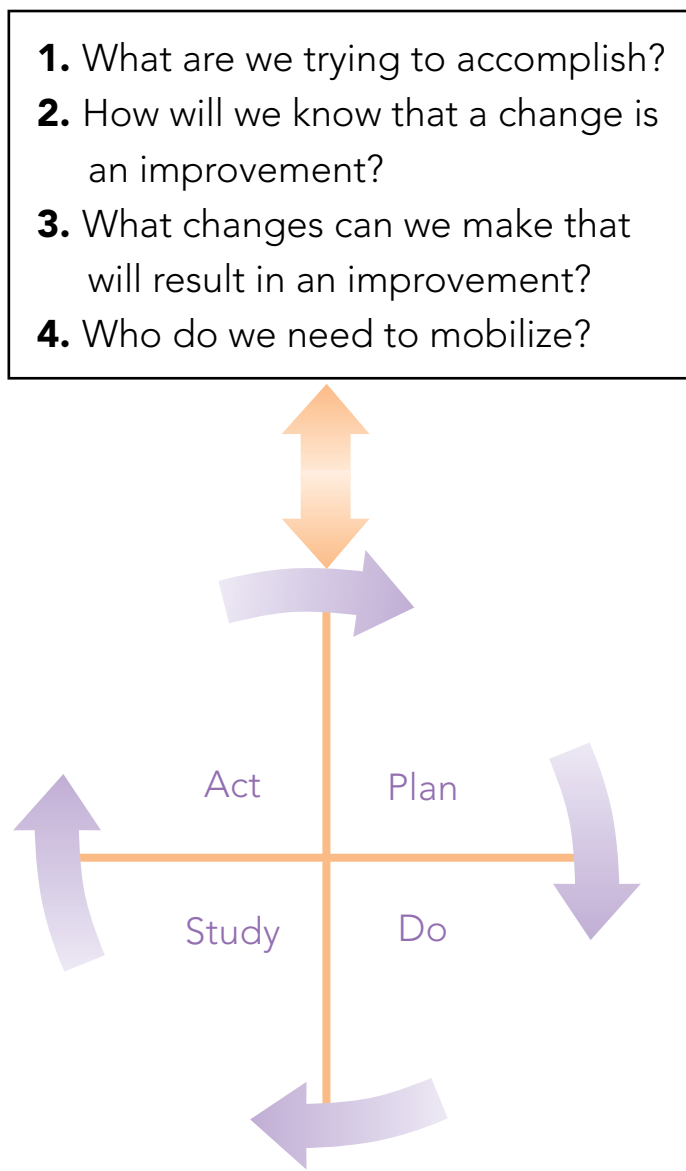
### Plan-Do-Study-Act (PDSA) Method

**Background:** A commonly used implementation and evaluation method is the PDSA cycle, which has been the foundation for many collaborative quality improvement (CQI) programs.<sup>2,3</sup> The PDSA cycle is effective in real world settings and applicable to data collection on a wide range of conditions. Additionally, it is reliable for implementing and testing on a small scale, which is critical in settings where failure is risky. Hospital QI department

leaders can help identify the preferred method for use in your setting; other structured improvement approaches, such as Six Sigma's Define – Measure – Analyze – Improve – Control (DMAIC) have been shown to be equally or possibly more effective.<sup>58, 59</sup>

Regardless of the QI methodology, the key initial step is to identify specific elements that hinder or foster high quality of care. Four fundamental questions need to be addressed when developing a CQI program:

Figure 20: Plan-Do-Study-Act Cycle



## Appendix C – QI Implementation Tools

Answer the questions in any order, but realize that every process for change is iterative; we rarely get it right the first time around. Be observant; make modifications as you go, reintroduce plans and actions, then observe again. “That’s the way we do things around here” can be a common response to a problem, but it seldom succeeds.

**Systematic Approach for Leaders:** By approaching problems systematically, everyone works smarter, not just harder. One benefit of the systematic approach includes collecting meaningful data that outlines outcomes, processes and structures that are in need of evaluation and manipulation. As a result, leaders and teams develop strategies and tactics that are evidence-driven, and they can effectively identify and mitigate barriers, test systems and modify implementation for another cycle of change toward improvement.

Improvement cycles should be repeated as many times as needed in order to gather sufficient data to indicate signs of improvement. In general, affecting change involves creative thinking. Specific activities include:

- Evaluate the purpose.
- Visualize the ideal.
- Remove “the current way of doing things” as an option.
- Challenge the boundaries.
- Embed improvements (making it easier to make the right choice for patients).
- Influence the culture.
- Look for ways to smooth the flow of activities.

Small tests of change help leaders and teams see that their efforts are moving toward improvement. At each small test-of-change cycle, data collection and analysis is designed to inform leaders and teams about process and patient outcome measures. Charts, flow charts, Pareto charts, and formal Failure Modes and Effects Analysis (FMEA) show results to leaders and teams about the direction of change.<sup>60</sup> Results in QI may not be immediately apparent when patient outcomes are used as a measure, because they are usually slower to change. Therefore, the first months of QI projects typically focus on process measures.

Table 12: Plan-Do-Study-Act (PDSA) Method Summary	
<b>Plan</b>	<ul style="list-style-type: none"> <li>• State the objectives of the cycle.</li> <li>• Make predictions about what will happen next and why.</li> <li>• Develop a plan to carry out the changes: Who? What? Where?</li> <li>• What data needs to be collected?</li> </ul>
<b>Do</b>	<ul style="list-style-type: none"> <li>• Introduce the change(s).</li> <li>• Collect data.</li> <li>• Document problems and unexpected observations.</li> <li>• Begin analysis of the data.</li> </ul>
<b>Study</b>	<ul style="list-style-type: none"> <li>• Complete the analysis of the data.</li> <li>• Summarize what was learned.</li> </ul>
<b>Act</b>	<ul style="list-style-type: none"> <li>• What modifications should be made?</li> <li>• What will happen in the next cycle?</li> </ul>

### Applying the PDSA Cycle to Elective Deliveries <39 Weeks

The PDSA process for CQI can be applied when implementing a plan to reduce or eliminate elective deliveries <39 weeks. Below are action items and details to address during this process.

PLAN	
Action Items	Details
Convene multidisciplinary QI team of key stakeholders.	Key stakeholders may include: <ul style="list-style-type: none"> <li>Physicians/Nurses/Clerical staff</li> <li>Risk/Quality management</li> </ul>
Determine outcome measure(s) and data collection process.	<ul style="list-style-type: none"> <li>NICU admissions for babies delivered &lt;39 weeks</li> <li>Morbidities measures: neonatal and maternal</li> <li>Electronic records, chart reviews, logs</li> <li>Ongoing monitoring and evaluation of morbidities associated with &lt;39 week deliveries</li> </ul>
Determine process measure(s) and data collection process.	<ul style="list-style-type: none"> <li>Scheduling process, including documentation to identify gestational age, indication for elective delivery</li> <li>Process of oversight, guidelines enforcement and communication chain that prohibit elective deliveries &lt;39 weeks</li> </ul>
Align scheduling process with process to identify whether elective deliveries are appropriate and can be scheduled.	<ul style="list-style-type: none"> <li>Step 1: Check that gestational age and medical indication are documented in scheduling form.</li> <li>Step 2: If criteria are missing or do not match specific guidelines (outlined in a checklist, for example), first level of communication is triggered (e.g., call to OB provider to request information).</li> <li>Step 3: Additional chains of communication are triggered so that scheduling criteria are met and resolved.</li> </ul>
Develop or adopt scheduling form(s).	Identify who fills out forms and who reviews forms for required elements for scheduling.
Aim for consensus on key concepts.	<ul style="list-style-type: none"> <li>What is the appeal process for cases not covered by the guidelines?</li> <li>Outline consequences if a provider refuses to follow the guidelines.</li> </ul>
Develop departmental policy.	Policy reflects scheduling, documentation, oversight and enforcement processes to reduce or eliminate elective inductions and cesarean sections prior to 39 weeks gestation that are not medically indicated.
Collect baseline outcome and process measure data to identify areas in need of attention; collecting data before implementation allows specific analysis of change after implementation.	<ul style="list-style-type: none"> <li>Conduct chart reviews of scheduled inductions and cesarean deliveries for a minimum of 2 months prior to implementation.</li> <li>Assess the level of understanding of the issues by providers and patients.</li> <li>Assess barriers to change.</li> </ul>
Conduct educational presentations and grand rounds for key stakeholders.	<ul style="list-style-type: none"> <li>Neonatal risks of early term birth</li> <li>Successful QI projects that reduced elective early term births</li> </ul>
Develop a plan and timeline for implementation.	First implementation plan runs for 1-2 months; first evaluation (Study) is completed within 1-2 months.

## Appendix C – QI Implementation Tools

DO	
Action Items	Details
Communicate new department policy.	Identify point persons to communicate policy with each group; e.g., department chair, QI committee chair or MD project lead communicates with OB providers; nursing director communicates with nursing staff.
Implement use of new processes and forms for a predetermined pilot period of time.	Implement new processes and forms for 1-2 months; evaluate within 1-2 month time period.

STUDY	
Action Items	Details
After predetermined pilot period, review and assess effectiveness of policy and forms implementation; analyze impact on obstetrical service, process and patient outcomes.	Depending on the intent and resources of the department, this action item can be conducted as in-depth analysis or a less intensive overview of trends of process and outcome measures including: <ul style="list-style-type: none"> <li>• Review of elective procedures</li> <li>• Indications</li> <li>• Neonatal outcomes</li> </ul>

ACT	
Action Items	Details
Reconvene QI team to identify additional changes to continue improvement process.	<ul style="list-style-type: none"> <li>• Edit scheduling forms and guidelines.</li> <li>• Clarify implementation plan.</li> <li>• Provide additional guidance to providers about department policy, scheduling and documentation requirements.</li> </ul>
Inform staff of changes.	Process measures may require additional change over time; process measures can change during the implementation process; however outcome measures remain more constant.
Obtain ongoing feedback on strengths and areas for improvement.	Feedback reminds everyone about the importance of the project, fosters teamwork and gives everyone a voice. Providing feedback can be as simple as posting monthly data in prominent spots in L&D; data can include process and outcome measures, i.e., number of elective births and number of NICU admissions in that population.