Plan:
1. Assemble the team for this test. Willing volunteers are best.
2. Develop a theory and a plan by working through the fundamental MfI questions.

Do:
1. Test your theory by carrying out the plan you’ve developed.
2. Document observations and collect data.

Study:
1. Study the data and observations from the test.
   a. Did the results match the predictions, or were there surprises?
   b. Was there an improvement?

Act:
1. Decide on the best next steps based on what you learned in the current cycle.
2. Continue learning by running additional PDSA cycles.
3. Never implement after only one PDSA.

Repeated PDSA cycles toward the same aim are called...

Multiple PDSA Cycles
1. Scale up slowly, commensurate with the degree of belief and concerns about cost of failure.
2. Remember: You are testing a change on a small scale and increasing slowly in order to reduce risk of implementing a sub-optimal change.

Facilities should have PDSA cycles running for any and all practices in need of improvement. These are called...

Concurrent PDSA Cycles

Change One  Change Two  Change Three
For example...

For 30+ years, Dr. Ong has required that all of his patients are delivered to the nursery at 7AM, at which point he conducts the newborn assessments “assembly-line style.” (The nurses are frustrated because they have to scramble to get the babies, the babies often miss feedings / get supplemented in the nursery because they are waiting on the whole group to finish and be returned one-by-one, and the practice reduced their rooming-in rate.)

Dr. Ong is very committed to this practice, and believes that trying to round in the rooms will result in him being late to his office and his hip hurting from too much walking. I ask him if he will help me study the difference by conducting rounds “his way” on Monday and rounding in the room on Tuesday. We will use a timer to see how many minutes / baby, and a pedometer to measure how many steps he takes. We will ask patients who experience both ways which option they prefer. And, Dr. Ong will report on how he felt about each. Because we aim to learn (and we are testing our divergent theories), we will consider this a PDSA aimed at developing a test of change (even though Dr. Ong believes it will tell us we should not change anything.)

On Tuesday, we studied the results of our test.

- Dr. Ong’s time per baby, and overall was nearly identical (~9 minutes / baby and 117 minutes overall).
- Dr. Ong took ~120 fewer steps by rounding in-room. (In the “assembly line” he walked to the nursery, up and down the line multiple times, then to each patient’s room to report to mom.)
- Overall, the mothers “liked it better when [MD] looked at [baby] in the room because I could see what he does and ask questions.”
- Dr. Ong felt “more comfortable than expected” with conducting the rounds in front of the family, and was “pleasantly surprised” that he was able to answer the family’s questions without adding much time. He was worried about how to chart on each patient as he didn’t want to type while the couplet waited.
- Dr. Ong was now open to trying change, “as long as we can find a way of doing it that works.” We agreed that a set of PDSA cycles were needed to develop a process that would consistently result in improvement.

Meanwhile, other staff members were working on other tests. Also in post-partum, Angela, Renee and Pam were working on how to reduce mother-baby separation due to newborn bathing. Laurie in Labor and Delivery was working on keeping mom & baby skin-to-skin in the operating room during cesarean sections. Jenay, also in L&D, was working on “The Magic Hour” (she learned that she had to educate the supporters in the waiting room in order to make it work.) And, in the prenatal clinic, Dr. Sealy and nurse Kimberly were working together on “centering breastfeeding” as a way to ensure that all moms got the breastfeeding education they needed without taking up too much clinic time.
PLAN DO STUDY ACT (PDSA) Worksheet

Cycle #: 1  Start Date: Monday  End Date: Monday

Project Title: Dr. Ong’s Rounding Experiment

PDSA Team Members: Dr. Ong and Emily Taylor

Objectives of this Cycle:
  Develop a Change  Test a Change  Implement a Change  Spread a Change

Short objective of cycle: To observe and document Dr. Ong’s current approach to rounding on newborn patients, especially in terms of # minutes and # of steps.

PLAN
Question(s) to answer in this PDSA cycle:
How many steps does Dr. Ong take per baby during his current approach?
How many minutes does Dr. Ong spend per baby during his current approach (including documentation, parent reporting, and assessment)?

Plan to carry out this PDSA cycle (Who, What, Where, Why and When):
On Monday morning, Dr. Ong will round his normal approach. Emily will observe, documenting at least # minutes and # steps. They will analyze the process after rounds, and divide the total minutes and steps by baby to get an average.

What data will be gathered, and how?
Emily will gather. Dr. Ong and Emily will not communicate about #s in progress.
# minutes total, then divide by baby.
# steps total, then divide by baby.
Any other notable occurrences.

Predictions:
Dr. Ong: 10 minutes / baby, 600 steps
Emily: none
DO

Observations (both on expected outcomes and surprises): n/a

Data (visual display, if possible):
13 babies
572 steps  \[ \frac{572}{13} = 39 \text{ steps per baby} \]
116 minutes  \[ \frac{116}{13} = 8.9 \text{ minutes per baby} \]

STUDY
Complete analysis of the data you collected to know whether a change is needed, or if the change being tested is an improvement. Copy and paste Questions and Predictions from PLAN (above) and evaluate learning.

How many steps does Dr. Ong take per baby during his current approach?
Actual: 39  Prediction: 46  Fewer steps / baby than expected.

How many minutes does Dr. Ong spend per baby during his current approach (including documentation, parent reporting, and assessment)?
Actual: 8.9 minutes / baby  Prediction: 10 minutes / baby  Fewer minutes / baby than expected.

ACT  
Tomorrow, test same rounding in-room.
PLAN DO STUDY ACT (PDSA) Worksheet

Cycle #: 2      Start Date: Tuesday      End Date: Tuesday

Project Title: Dr. Ong’s Rounding Experiment

PDSA Team Members: Dr. Ong and Emily Taylor

Objectives of this Cycle:
Develop a Change      Test a Change      Implement a Change      Spread a Change

Short objective of cycle: To observe and document Dr. Ong’s rounding in-room, especially in terms of # minutes and # of steps, and compare it to his current approach.

PLAN
Question(s) to answer in this PDSA cycle:
How many steps does Dr. Ong take per baby during his current approach? How many minutes does Dr. Ong spend per baby during his current approach (including documentation, parent reporting, and assessment)? For parents who had rounded in-nursery yesterday, which experience did they prefer and why?

Plan to carry out this PDSA cycle (Who, What, Where, Why and When):
On Tuesday morning, Dr. Ong will round his normal approach. Emily will observe, documenting at least # minutes and # steps. They will analyze the process after rounds, and divide the total minutes and steps by baby to get an average.

What data will be gathered, and how?
Emily will gather. Dr. Ong and Emily will not communicate about #s in progress.
# minutes total, then divide by baby.
# steps total, the divide by baby.
Any other notable occurrences.

Predictions:
Dr. Ong: 15 minutes / baby, 1000 steps
Emily: 12 minutes / baby, 500 steps
Observations (both on expected outcomes and surprises): n/a

Data (visual display, if possible):

Baby 1: 9 min
Baby 2: 6 min (better)
Baby 3: 14 min (9% weight loss, better)
Baby 4: 11 min
Baby 5: 7 min (better)
Baby 6: 8 min
Baby 7: 6 min (ask ?s with baby here, better)

Average: 9 minutes / baby

392 Steps Average: 28 steps / baby

6/7 Repeat moms liked rounding in-room better. 1 said no difference.

STUDY
Complete analysis of the data you collected to know whether a change is needed, or if the change being tested is an improvement. Copy and paste Questions and Predictions from PLAN (above) and evaluate learning.

How many steps does Dr. Ong take per baby during his current approach?

Actual: 28  Prediction: Ong-71 Emily-36 < steps / baby than predicted.

In nursery: 39  In-room: 28  11 < steps in-room than in-nursery.

How many minutes does Dr. Ong spend per baby during his current approach (including documentation, parent reporting, and assessment)?

Actual: 9 minutes / baby  Prediction: 15-Ong, 12-Emily < min / baby than predicted

In-nursery: 8.9  In-room: 9  10 seconds / baby average > in-room than in-nursery

For parents who had rounded in-nursery yesterday, which experience did they prefer and why?

6/7 said it was better – "ask ?s w/ baby here."  1/7 said it made no difference.

ACT  Tomorrow, test same rounding in-room, with a tablet.
**PDSA FORM**

**MODEL FOR IMPROVEMENT**

<table>
<thead>
<tr>
<th>WHAT IS THE CHANGE OR INNOVATION?</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;No-stop&quot; baby transport AND prepped bathing area.</td>
</tr>
</tbody>
</table>

**OBJECTIVE(S) FOR THIS PDSA CYCLE**

Learn whether the change is an improvement.
Reduce time of mother-baby separation due to newborn bathing.

**PLAN**

**Questions:**

1. How much time is the dyad separated for bath? (30 minutes)
2. What materials are needed to give the bath? (2 towels, shampoo, cloth, sink, bassinet, diaper)
3. Were there unnecessary delays in the process? (No)
4. How did family feel about process? (Unremarkable. Fine.)
5. What does RN like / not like about current process? (Faster. Easier. May feel rude not stopping.)

Plan: Observe. Reflect after dyad reunification. RN2 to record discreet variables. RN1 to report in qualitative.

**Predictions:**

See above in parenthesis.

**Plan for Change or Test: who, what, when, where.** Try on two babies.

<table>
<thead>
<tr>
<th>List the tasks necessary to complete the test</th>
<th>Person Responsible</th>
<th>When</th>
<th>Where</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prep bathing area</td>
<td>RN2</td>
<td>8AM</td>
<td>NBN</td>
</tr>
<tr>
<td>2. Pickup baby</td>
<td>RNs 1 and 2</td>
<td>8:05AM</td>
<td>MB Room</td>
</tr>
<tr>
<td>3. No-stop transport</td>
<td>RNs 1 and 2</td>
<td>8:08AM</td>
<td>NBN</td>
</tr>
<tr>
<td>4. Bathing</td>
<td>RN1</td>
<td>8:10AM</td>
<td>NBN</td>
</tr>
<tr>
<td>5. No-stop transport</td>
<td>RNs 1 and 2</td>
<td>8:20AM</td>
<td>MB Room</td>
</tr>
<tr>
<td>6. Inquire with mom</td>
<td>RNs 1 and 2</td>
<td>8:22AM</td>
<td>MB Room</td>
</tr>
</tbody>
</table>

**Plan for Collection of Data: who, what, when, where.**

<table>
<thead>
<tr>
<th>List the tasks necessary to collect the data</th>
<th>Person Responsible (who)</th>
<th>When</th>
<th>Where</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stopwatching each task and whole process</td>
<td>RN2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Inquiring with mom</td>
<td>RN2</td>
<td>Return</td>
<td>MB Room</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Plan for likely next steps if test achieves desired results</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scale up and implement.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DO:</strong> What happened when you carried out the change or test? Was the cycle carried out as planned? Record data and observations. What did you observe that wasn’t part of your plan?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Baby 1 required warmer, then showed signs of cold stress, and RN2 fed formula (to EBF baby). Mother upset: "He was fine when you took him out." (57 minutes)  
Baby 2 went smoothly, but still took longer than predicted (29 minutes) due to prep and transport time. Mom was fine, unremarkable. |  |
| **STUDY:** Complete analysis of data. Did the results match your predictions? What did you learn?  |
| Baby 1 took twice as long, and got a supplement. Mom was displeased.  
Baby 2 met predictions. |  |
| **ACT:** What should we do next?  |
| **ADAPT**  
RN 1 thinks baby 2 is evidence that the plan works, and thinks they should repeat it on 5 babies to see whether baby 1’s outcomes are common or flukey.  
RN 2 thinks that baby 1’s outcomes are common, and feels that this is still far from best practice. She wants to create a mobile bathing cart, and try a bath in-room with mom. RN2 is going to partner with a PCT to create and test a mobile bathing cart.  |
| **ADOPT or Recommend for adoption**  
RN1 is adopting until RN2 proves that another solution is better.  |
| **ABANDON**  |
| **Plan for the next cycle or next steps:**  |
| RN2 and PCT will run a new PDSA on a new change idea. |  |
WHAT IS THE CHANGE OR INNOVATION?
In-room bathing with mobile bath cart.

OBJECTIVE(S) FOR THIS PDSA CYCLE
Learn whether the change is an improvement.
Reduce time of mother-baby separation due to newborn bathing.

PLAN

Questions:
1. How much time is the dyad separated for bath? (0 minutes)
2. What materials are needed to give the bath? (2 towels, shampoo, cloth, sink, bassinet, diaper, cart)
3. Were there unnecessary delays in the process? (yes, but reducing with practice)
4. How did family feel about process? (Happy. Some may want break.)
5. What does RN like / not like about current process? (May take more time than NBN bathing. Nice teaching opportunity.)

Predictions:
See above in parenthesis.

Plan for Change or Test: who, what, when, where.  Try on two babies.

<table>
<thead>
<tr>
<th>List the tasks necessary to complete the test</th>
<th>Person Responsible</th>
<th>When</th>
<th>Where</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Inform mom that bath will be at next rounding.</td>
<td>RN2</td>
<td></td>
<td>MB Room</td>
</tr>
<tr>
<td>2. At time, bring cart to MB room.</td>
<td>RN2</td>
<td></td>
<td>MB Room</td>
</tr>
<tr>
<td>3. Bathing and teaching</td>
<td>RN2</td>
<td></td>
<td>MB Room</td>
</tr>
<tr>
<td>4. Inquire with mom</td>
<td>RN2</td>
<td></td>
<td>MB Room</td>
</tr>
<tr>
<td>5. Return cart to NBN</td>
<td>RN2</td>
<td></td>
<td>MB Room</td>
</tr>
</tbody>
</table>

Plan for Collection of Data: who, what, when, where.

<table>
<thead>
<tr>
<th>List the tasks necessary to collect the data</th>
<th>Person Responsible</th>
<th>When</th>
<th>Where</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stopwatching each task and whole process</td>
<td>PCT</td>
<td></td>
<td>MB Room</td>
</tr>
<tr>
<td>2. Inquiring with mom</td>
<td>PCT</td>
<td></td>
<td>MB Room</td>
</tr>
<tr>
<td>Plan for likely next steps if test achieves desired results</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scale up testing and implement.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DO: What happened when you carried out the change or test? Was the cycle carried out as planned? Record data and observations. What did you observe that wasn’t part of your plan?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baby 1: 35 min total. Teaching made bathing process 6 minutes longer than nursery. Mom was “grateful for learning opportunity” and “loving skin-to-skin with [her] fresh, clean baby.” No separation.</td>
</tr>
<tr>
<td>Baby 2: 28 min total. Teaching still made bathing process 5 minutes longer than in nursery. Mom was “fine” and baby went to breast 2 minutes after being returned skin-to-skin in bed. No separation.</td>
</tr>
<tr>
<td>Baby 3: 19 min total. Mom asked to shower while baby bathed, so no teaching time was required. Baby was swaddled and placed in bassinet at mom’s request (visitors’ expected). Mom was “happy for the chance to shower… for [her] and baby.” She held the baby in the chair to keep her warm after bath. Baby started showing early feeding cues, so mom had her first chance to BF out of bed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STUDY: Complete analysis of data. Did the results match your predictions? What did you learn?</th>
</tr>
</thead>
<tbody>
<tr>
<td>All met predictions. The mobile bathing cart had everything needed, but the nurse thought it might be easier (and more hygienic) if it was packaged for 1 bath at a time, rather than stacks of each item.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACT: What should we do next?</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADAPT</td>
</tr>
<tr>
<td>RN2 and PCT will try to re-arrange the materials so that there is a “single-user kit” of sorts. They will try this on another three babies to see how it goes.</td>
</tr>
<tr>
<td>ADOPT or Recommend for adoption</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ABANDON</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Plan for the next cycle or next steps:</th>
</tr>
</thead>
<tbody>
<tr>
<td>RN2 and PCT will run another cycle with the adapted mobile bathing cart.</td>
</tr>
</tbody>
</table>
PLAN DO STUDY ACT (PDSA) Worksheet

Cycle #: _____  Start Date: _____  End Date: _____

Project Title: __________________________________________________

PDSA Team Members: ___________________________________________

Objectives of this Cycle:

Develop a Change  Test a Change  Implement a Change  Spread a Change

Short objective of cycle: __________________________________________

____________________________________________________________

____________________________________________________________

PLAN

Question(s) to answer in this PDSA cycle: _____________________________

____________________________________________________________

____________________________________________________________

Plan to carry out this PDSA cycle (Who, What, Where, Why and When):________

____________________________________________________________

____________________________________________________________

What data will be gathered, and how? ________________________________

____________________________________________________________

____________________________________________________________

Predictions: ___________________________________________________

____________________________________________________________

____________________________________________________________

DO

Observations (both on expected outcomes and surprises): __________________

____________________________________________________________

____________________________________________________________

____________________________________________________________
**STUDY**
Complete analysis of the data you collected to know whether a change is needed, or if the change being tested is an improvement. Copy and paste Questions and Predictions from PLAN (above) and evaluate learning.

Learning about #1 Question and Prediction: ____________________________________________
________________________________________________________________________________
________________________________________________________________________________

Learning about #2 Question and Prediction: ____________________________________________
________________________________________________________________________________
________________________________________________________________________________

Learning about #3 Question and Prediction: ____________________________________________
________________________________________________________________________________
________________________________________________________________________________

**ACT**
*Describe next PDSA Cycle:* Based on the learning this PDSA cycle, what is your next step? Use a new worksheet for the next PDSA in this cycle.