Plan-Do-Study-Act cycles

FPQC PAIRED Initiative Kickoff QI Snippet

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PAIRED: **PA**rticipation in care & decision-making; dignity & respect in identifying every infant & family as **I**ndividuals; **R**espectful collaboration with families; Information sharing regarding **ED**ucation for families on medical care
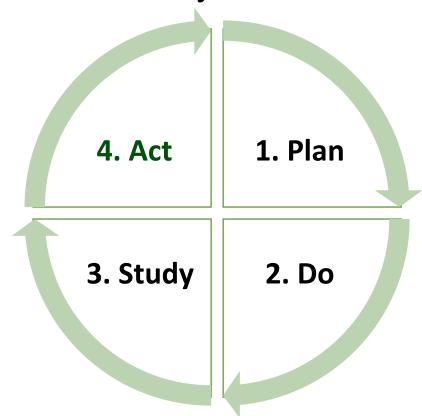Link to another video example: https://youtu.be/ZwnpexR2z1w

FPQC

What is a PDSA cycle?

- Useful tool for developing & documenting tests of change to **improve**

- AKA PDCA, Deming Cycle, Shewart Cycle

P – **Plan** a test

D – **Do** a test

S – **Study** & learn
     from test results

A – **Act** on results

Deming WE. *The New Economics for Industry, Government, and Education*. Cambridge, MA: The MIT Press; 2000.

"I haven't failed. I've just found 10,000 ways that won't work."

Thomas Edison

If you're going to fail,
fail *small*,
fail *fast*,
fail *often*,
LEARN & MOVE ON

Reasons to test changes

Learn whether change will result in improvement

Predict the amount of improvement possible

Evaluate the proposed change work in a *practice environment*

Minimize resistance at implementation

When are we ready for a PDSA cycle?

☐ Team formed

☐ Questions answered

  ☐ Aim established?

  ☐ Measures developed?
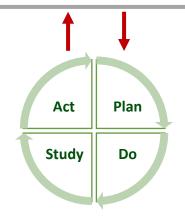
  ☐ Generated ideas for tests of change?

We are ready for a PDSA cycle to test our ideas

IHI's Model for Improvement

What are we trying to accomplish?

How will we know that a change is an improvement?

What changes can we make that will result in improvement?

Act	Plan
Study	Do

Example QI initiative: PAIRED Skin-to-Skin Care (SSC)

Problem statement

SSC is a major component of incorporating the family into a paired mental model with the medical team in the NICU. Many of Florida NICUs do not consistently provide SSC to infants in an optimal manner. This is important because SSC is shown to benefit infant growth, improve neurodevelopment, and reduce morbidities.

Aim statement

By 6/2023, >60% (a 20% improvement from our baseline of 50%) of infants admitted to our NICU will receive skin-to-skin care from at least one family caregiver within 3 days of clinical eligibility[1].

[1] Clinical eligibility is defined by individual NICU protocols.

Plan-Do-Study-Act

Objective of this cycle *(What are we trying to accomplish?)*: Including family caregivers in daily bedside rounds will result in more education on how to be active participants in the care of their infant and potentially increase direct care opportunities such as the number SSC care episodes experienced.

- **Have an objective**
  - Concisely state what you plan to do
  - **I plan to**... Intentionally include family caregivers in daily bedside rounds
- **Make a prediction** of what will happen
  - **I hope this produces... m**ore family caregiver education/awareness re: direct care opportunities → increase number of SSC episodes
- **Execute the plan**

Plan-Do-Study-Act

- **Have an objective**

- **Make a prediction**

- **Execute the plan**

Describe changes we plan to test
Use verbal (e.g., conversation prompt during rounds or via phone/virtual meeting) and nonverbal (e.g., SSC flyer) cues to intentionally include family caregivers in daily bedside rounds.

Who are stakeholders for this cycle?
Family caregivers, Providers (Nurse Practitioner, Attending, Fellow), Nurses, Admin (printing flyers), IT (telemedicine part), RT (on board with process), Social workers (address barriers), Developmental specialists

Plan-Do-Study-Act

Who? What? When? Where? How data to be collected?

Tasks needed to implement these changes *(How will we make this change happen?)*

Task	Who is responsible *Consider locations the changes will affect*	Due date
Develop & receive feedback on flyer. Flyer should include information on SSC care, timeframe of daily AM rounds, & instructions on how to join rounds virtually.	Nurse*, Caregiver	1 week
Provide education to NICU staff re: SSC guideline, importance of including family caregivers in daily rounds, & standardized verbal/nonverbal prompts (providers, nurses, RT, social work, developmental specialists)	Fellow*, Nurse*, RT*, Social work*, Developmental specialist*	1 month
Develop & test process for virtual rounds with family caregivers who are unable to be physically present for daily rounds (includes troubleshooting IT, security, & patient privacy issues with the hospital)	MD*, Caregiver	2 weeks
Develop visual reminder of standardized verbal prompt to intentionally include family caregivers in daily bedside rounds (e.g., card on rounding computers) & visually display them (e.g., rounding computers, workrooms). *Examples: Have you had the chance to experience SSC care with your baby yet? Is there anything we can do to help you and your baby have a SSC care experience? What questions do you have about SSC care?*	MD*, Caregiver	1 week
Create awareness about NICU's consensus guideline outlining how to provide SSC care.	Nurse*, MD*, RT*	2 weeks

*Listed stakeholder who is ultimately responsible for reporting to core team.

Plan-Do-Study-Act

Who? What? When? Where? How data to be collected?

Measures for this cycle *(How will we know that a change is an improvement)*
Consider: balancing measures, measures to determine whether the prediction succeeds, and your goal is achieved, how data will be collected & who is responsible for collecting data. You may find it easier to cut and paste from your measurement grid.

OUTCOME measure	Description	Baseline	Goal
Percentage of infants receiving prompt initiation of SSC[a]	Numerator: # of qualifying infants who receive SSC from at least one family caregiver within 3 days of clinical eligibility as defined by individual unit protocols. Denominator: Total # of qualifying infants.	20%	≥60%
Average day of life when SSC was first provided by a family caregiver[a]	Numerator: Total # of days of life of qualifying infants' first episode of SSC by family caregiver. Denominator: Total # of qualifying infants.	7 days	≤3 days
Percentage of eligible inpatient days where a family caregiver provided at least one hour of SSC[a]	Numerator: # of days during which a qualifying infant received at least one hour of SSC from a family caregiver. Denominator: # of inpatient days after which the infant was first eligible to start receiving SSC (date of final disposition minus date of SSC eligibility)	20%	≥50%

[a] Reported to FPQC

Plan-Do-Study-Act

Who? What? When? Where? How data to be collected?

Measures for this cycle *(How will we know that a change is an improvement)*
Consider: balancing measures, measures to determine whether the prediction succeeds, and your goal is achieved, how data will be collected & who is responsible for collecting data. You may find it easier to cut and paste from your measurement grid.

PROCESS measure	Description	Baseline	Goal
Non-verbal reminder audits	Numerator: # of qualifying infants with SSC care/rounding flyer posted on the patient information board Denominator: Total # of qualifying infants. Audits to occur 3 days each week with a "secret shopper" (e.g., charge nurse, registered dietician, or pharmacist) who uses a tally sheet to capture data.	0%	$\geq$90%
Use of verbal cues	Numerator: # of qualifying infants where NICU medical team used the standardized verbal prompt (or a variation of it) to intentionally include family caregivers in daily bedside rounds Denominator: Total # of qualifying infants. Audits to occur 3 days each week with a "secret shopper" (e.g., charge nurse, registered dietician, or pharmacist) who attends rounds and uses a tally sheet to capture data.	0%	$\geq$90%
Family caregivers physically present for rounds	Numerator: # of family caregivers physically present during daily bedside rounds with the medical team Denominator: # of qualifying infants	Unknown	$\geq$50%
Caregiver engagement during rounds	Numerator: # of qualifying infants whose family caregivers asked at least 1 question to the medical team when asked "What questions do you have?" Denominator: Total # of qualifying infants with a caregiver who attended rounds (physically or virtually) and where the medical team asked "What questions do you have?" Audits to occur 3 days each week with a "secret shopper" (e.g., charge nurse, registered dietician, or pharmacist) who attends rounds and uses a tally sheet to capture data.	Unknown	$\geq$25%

Qualitative feedback from staff & family caregivers using an anonymous 2 question survey. Question 1: What did you like about this process? Question 2: What could have been done better with this process?

Plan-Do-Study-Act

Who? What? When? Where? How data to be collected?

Measures for this cycle *(How will we know that a change is an improvement)*
Consider: balancing measures, measures to determine whether the prediction succeeds, and your goal is achieved, how data will be collected & who is responsible for collecting data. You may find it easier to cut and paste from your measurement grid.

BALANCING measure	Description	Baseline	Goal
Percentage of unplanned extubations associated with SSC among SSC episodes[a]	Numerator: # of unplanned extubations that occurred during transfers or during SSC at final disposition. Denominator: Total # of episodes of SSC at final disposition.	unknown	≤20% change from baseline
Percentage of other documented unplanned events associated with SSC[a]	Numerator: # of SSC episodes during which a documented adverse health event* other than extubation occurred including significant desaturation, apnea or bradycardia[1]; hypothermia[2]; or line dislodgement at final disposition[3]. Denominator: Total # of episodes of SSC at final disposition. *Adverse health event definition:* [1] *Significant desaturation/apnea/bradycardia which requires early termination of SSC per unit guideline* [2] *Hypothermia - temp < 36.5 at any time during or immediately after SSC* [3] *Line dislodgement - loss of line or subsequent malfunction or malposition of line*	unknown	≤20% change from baseline
Duration of daily bedside rounds	Average duration in minutes from time rounds starts to time rounds stop (rounded to nearest minute).	Unknown	≤20% change from baseline

[a] Reported to FPQC

Plan-Do-Study-Act

- ## Do the test

What happened when the test was conducted?
Was the cycle carried out as planned (yes, no)**? Yes**

OUTCOME measure	Baseline	Goal
Percentage of infants receiving prompt initiation of SSC[a]	20%	$\geq$60%
Average day of life when SSC was first provided by a family caregiver[a]	7 days	$\leq$3 days
Percentage of eligible inpatient days where a family caregiver provided at least one hour of SSC[a]	20%	$\geq$50%

PROCESS measure	Baseline	Goal
Non-verbal reminder audits	0%	$\geq$90%
Use of verbal cues	0%	$\geq$90%
Family caregivers physically present for rounds	Unknown	$\geq$50%
Family caregivers virtually present for rounds	Unknown	$\geq$50%
Staff education	0%	$\geq$80%
Caregiver engagement during rounds	Unknown	$\geq$25%

BALANCING measure	Baseline	Goal
Percentage of unplanned extubations associated with SSC among SSC episodes[a]	Unknown	$\leq$20% change from baseline
Percentage of other documented unplanned events associated with SSC[a]		
Duration of daily bedside rounds		

Plan-Do-Study-Act

- **Take notes** on problems & observations

What did you observe (i.e., qualitative feedback from the team)**?**

- It seemed to take a lot of time to connect with family caregivers virtually. This time gap was shortened by ensuring the rounding provider had the caregiver's contact information before rounds, the registered dietician was assigned the responsibility of calling the caregiver of "next patient" while the medical team recapped plans with the nurse and caregiver of the "current patient".
- Family caregivers appreciated being asked questions. Staff subjectively felt more family caregivers asked questions of the medical team when invited to do so (i.e., "What questions do you have?). Providers felt there were less call backs from family caregivers re: daily plan of care.
- Verbal and nonverbal cues seemed to increase the number of family caregivers who engaged with rounds. Family caregivers were appreciative of being able to virtually engage with the team, especially when they had to go back to work.
- Providers liked the card on computers reminding them to prompt family caregivers to participate in rounds.

What did you observe that was not part of the plan?

- It was challenging for family caregivers to hear us clearly if the computer microphone was used. This improved when an iPAD or a portable computer camera/microphone was used.
- Caregiver feedback helped improve phrasing of the standardized verbal cue used.
- Staff found it difficult to find copies of the flyer and often forgot to post it. Staff suggested including the flyer as part of the standard admission packet/process and creating awareness about the flyer/process during staff huddles.
- Flyers need to be translated and available in Spanish.
- An unplanned extubation occurred. Need to interview RN and RT who were present to identify opportunities for improvement.

Plan-Do-Study-Act

- **Know when to stop the test**
  - Can terminate before designated time frame if the test clearly doesn't work

Plan-Do-**Study**-Act

Analyze your results

What happened when the test was conducted?

Was the cycle carried out as planned (yes, no)**?** Yes

OUTCOME measure	Baseline	Goal	This cycle
Percentage of infants receiving prompt initiation of SSC[a]	20%	≥60%	25%
Average day of life when SSC was first provided by a family caregiver[a]	7 days	≤3 days	5 days
Percentage of eligible inpatient days where a family caregiver provided at least one hour of SSC[a]	20%	≥50%	30%

PROCESS measure	Baseline	Goal	This cycle
Non-verbal reminder audits	0%	≥90%	75%
Use of verbal cues	0%	≥90%	60%
Family caregivers physically present for rounds	Unknown	≥50%	20%
Family caregivers virtually present for rounds	Unknown	≥50%	5%
Staff education	0%	≥80%	90%
Caregiver engagement during rounds	Unknown	≥25%	40%

BALANCING measure	Baseline	Goal	This cycle
Percentage of unplanned extubations associated with SSC among SSC episodes[a]	Unknown	≤20% change from baseline	1
Percentage of other documented unplanned events associated with SSC[a]			0
Duration of daily bedside rounds			125 minutes

☐ **Do results support your prediction?**

☐ **What did we learn** (good and bad) **?**

Plan-Do-Study-**Act**

Refine next cycle based on what was learned
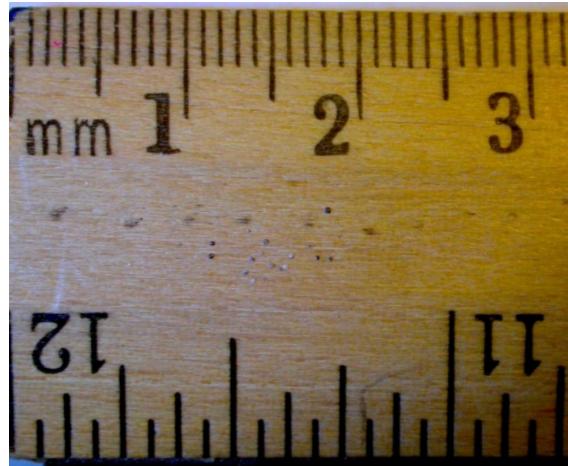
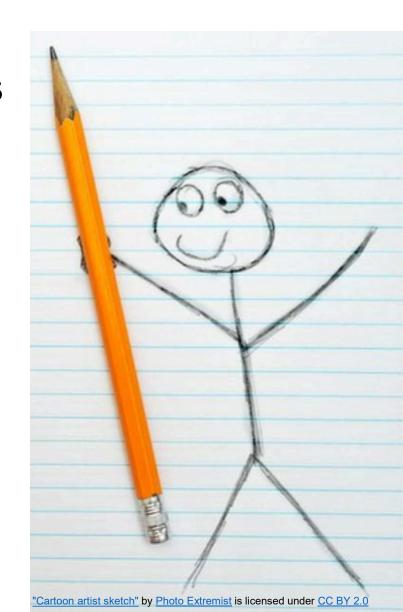| ☐	☐	☐
ABANDON: Discard change idea testing. Describe what you will change.	**ADAPT:** Improve the change & continue a larger scale. Develop an implementation plan for sustainability.	**ADOPT:** Select changes to implement on & try a new one

☐ **What modifications should be made?**
☐ **Can we expand our test?**
☐ **What will our next test be?**

- **Do you plan to expand the test** (yes, no)**?** Yes
- **Will you expand the scale** (i.e., keep the same conditions, just test more)**?**
- **Will you expand the scope** (i.e., change the conditions)**?**
- **Will you expand the scale and scope** (i.e., change locations/units and conditions)**?** Test more patients and make improvements in the below areas (PDSA 1.2):
  1. Outline roles and responsibilities for rounding team members for virtual/in-person caregiver communications (e.g., who calls parent, who confirms contact information, etc.)
  2. Ensure each rounding team has access to a NICU iPAD with stand to improve audio-visual communication during virtual rounding.
  3. Revise visual prompt on rounding computers to include caregiver suggesting phrasing.
  4. Make Spanish version of flyer and include flyers in NICU admission packets.
  5. Investigate unplanned extubation.

Keep in mind

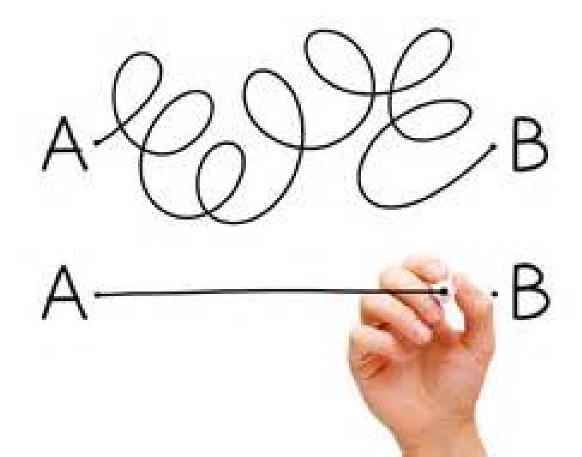- Scale down scope of tests

Keep in mind

- Scale down scope of tests
- Pick willing volunteers

Keep in mind

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- Pick willing volunteers
- Choose changes that don't require long process for approval initially

Keep in mind

- Scale down scope of tests
- Pick willing volunteers
- Choose changes that don't require long process for approval initially
- Don't reinvent the wheel

Keep in mind

- Pick easy changes with good yield

Keep in mind

- Pick easy changes with good yield
- Avoid technical slow downs

Keep in mind

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- Reflect on results of EVERY change – even failures

Keep in mind

- Pick easy changes with good yield
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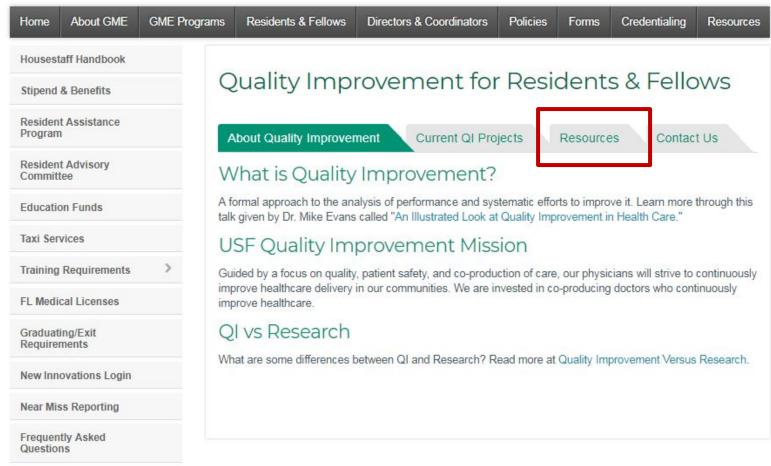- End the test if there is no improvement

Resources tab → QI workbook

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Slide set developed for FPQC QI Bootcamp series

Florida Perinatal
Quality Collaborative

Design your team's 1ˢᵗ PDSA cycle

Use our QI toolkit
- *Determine the next PDSA/DMAIC cycle in Section 10*
- *PDSA/DMAIC cycle example in Appendix K*

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