Quality Improvement for Nurses

TIPQC Annual Meeting – March 2025

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Children's Hospital
at Vanderbilt

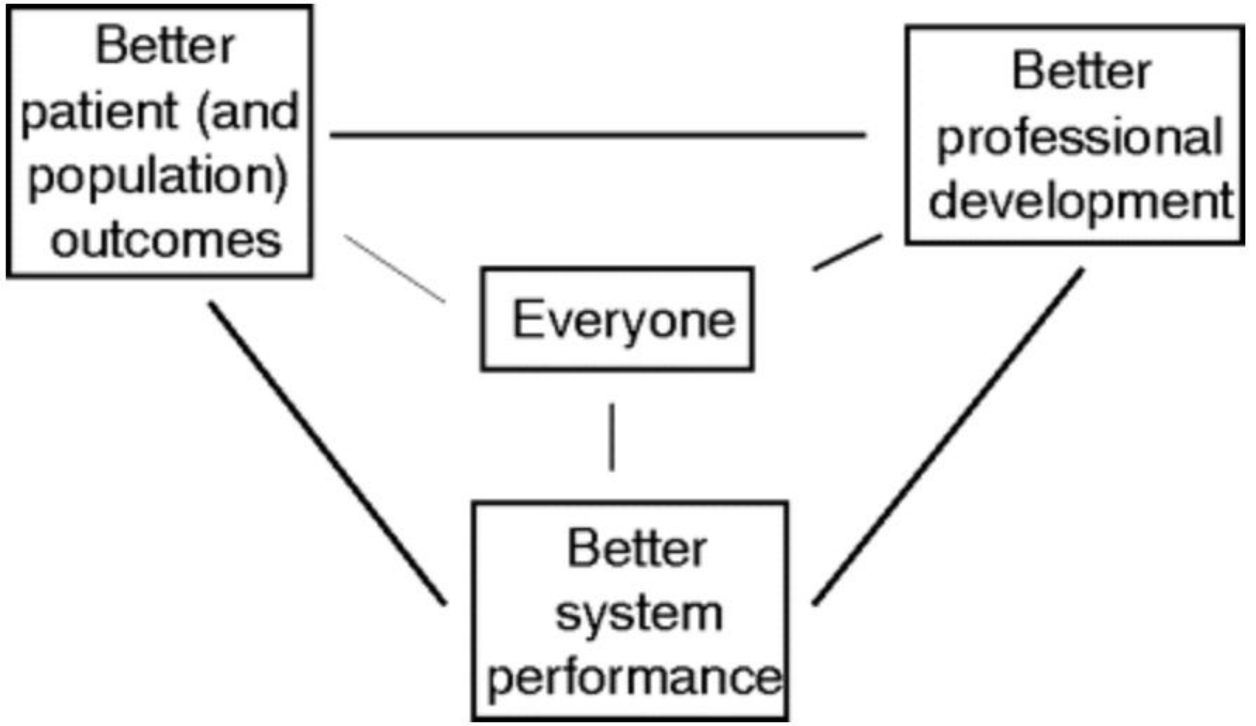
I have no disclosures

Objectives

- Define quality improvement
- Learn about the history of quality improvement
- Learn about a common quality improvement framework
- Learn tools to get started with QI projects
- Have fun!

What is Quality Improvement?

"The combined and unceasing efforts of everyone - healthcare professionals, patients and their families, researchers, payers, planners and educators - to make the changes that will lead to better patient outcomes, better system performance and better professional development."



Batalden PB, Davidoff F. What is "quality improvement" and how can it transform healthcare? Qual Saf Health Care. 2007 Feb;16(1):2-3. doi: 10.1136/qshc.2006.022046.

Why Quality Improvement?

On average, it takes about **17 years** for things that have been shown to be efficacious in clinical trials to be adopted into everyday clinical practice.

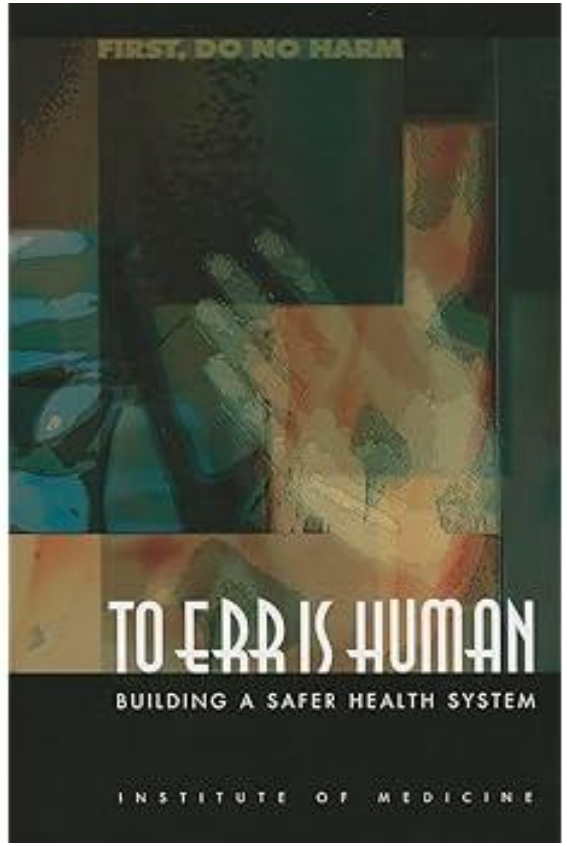
- Lack of integration of research and health care settings
- Professional and organization silos
- Competition
- Failure to engage stakeholders

Morris ZS J R Soc Med. 2011;104(12):510–20.
Robinson T Health Res Policy Syst. 2020 Oct 9;18(1):117.

Quality Improvement History

Photo courtesy of The W. Edwards Deming Institute®

harvard.edu



100,000 Lives Campaign

ihi.org

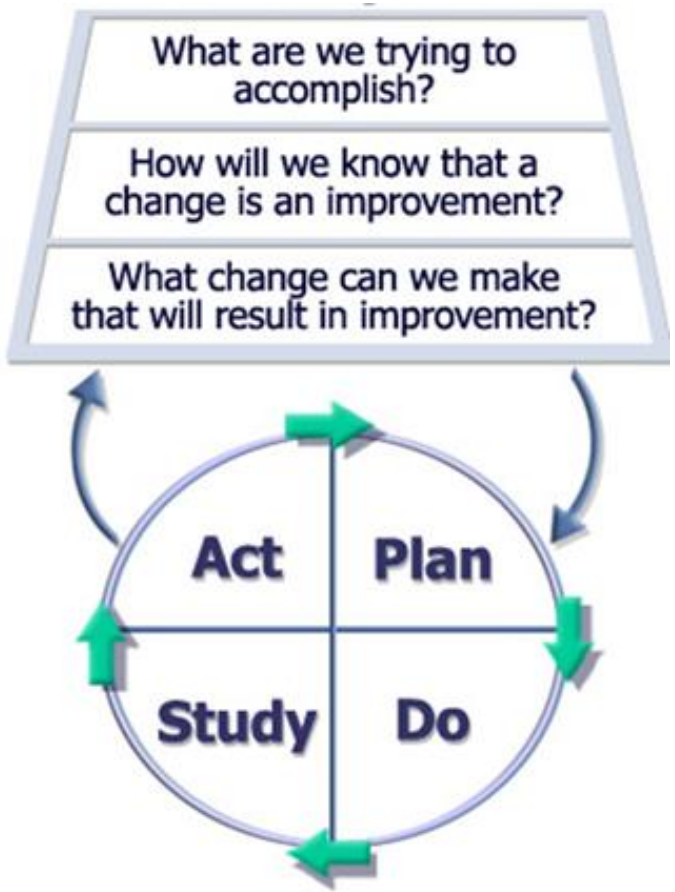
100,000 Lives Campaign

- Rapid Response Teams
- Improved Care for Acute Myocardial Infarction
- Medication Reconciliation
- Preventing Central Line Infections
- Preventing Surgical Site Infections
- Preventing Ventilator-Associated Pneumonia

3100 Hospitals participated

120,000 deaths prevented

Quality Improvement Methodology



Institute *for* Healthcare Improvement

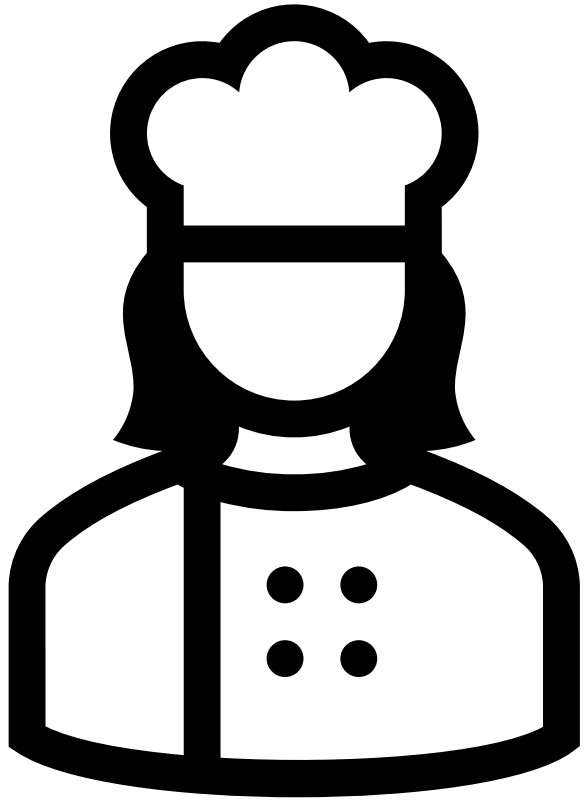
Quality Improvement Methodology

Questions to consider:

- Do we have a problem?
- What are we trying to improve?
- What is our goal?

Eva’s Excellent Sandwich Mart

Problem: Sandwich sales of my historically most ordered sandwich seem to be declining!



Let's Make a Sandwich!

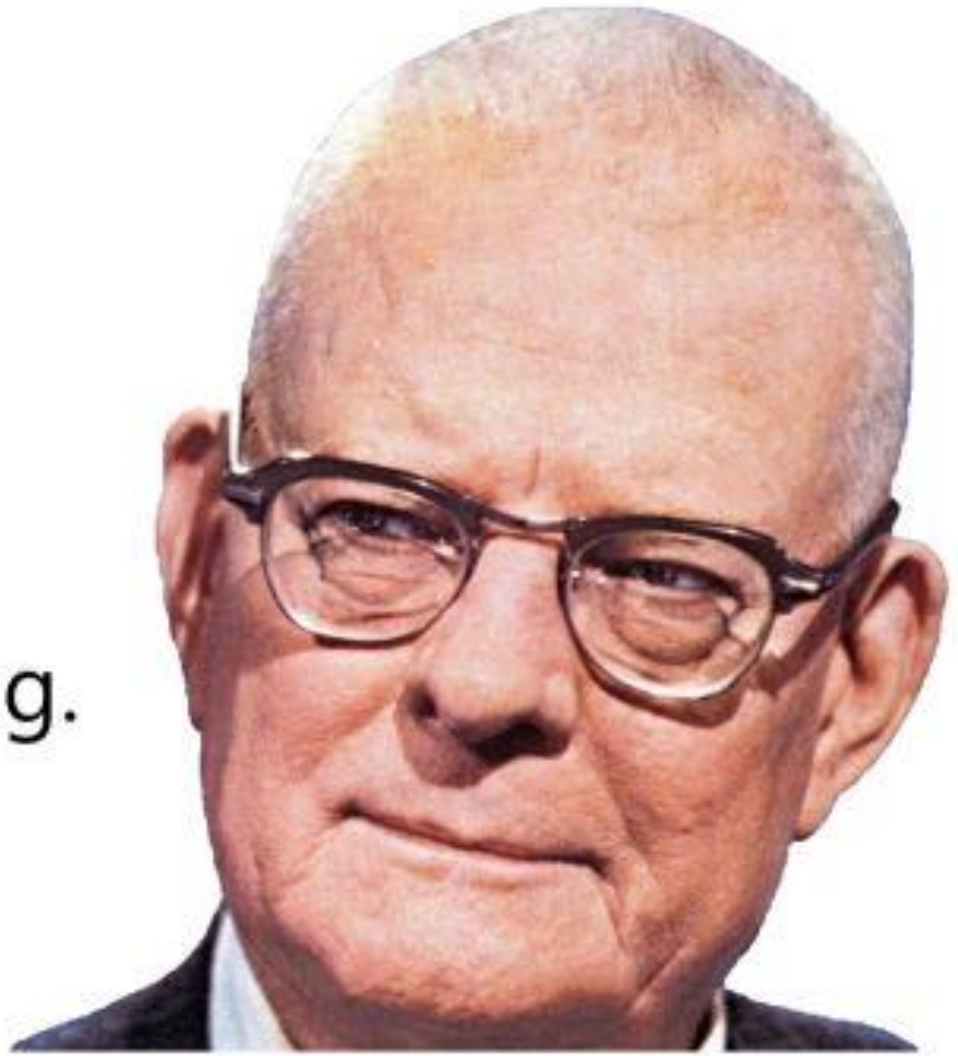
With the group at your table, write down the steps to make a WOWbutter and jelly sandwich.

- Paper/pens on tables
- 7-8 minutes

Let’s Make a Sandwich!

If you can't describe what you are doing as a process, you don't know what you're doing.

William Edwards Deming



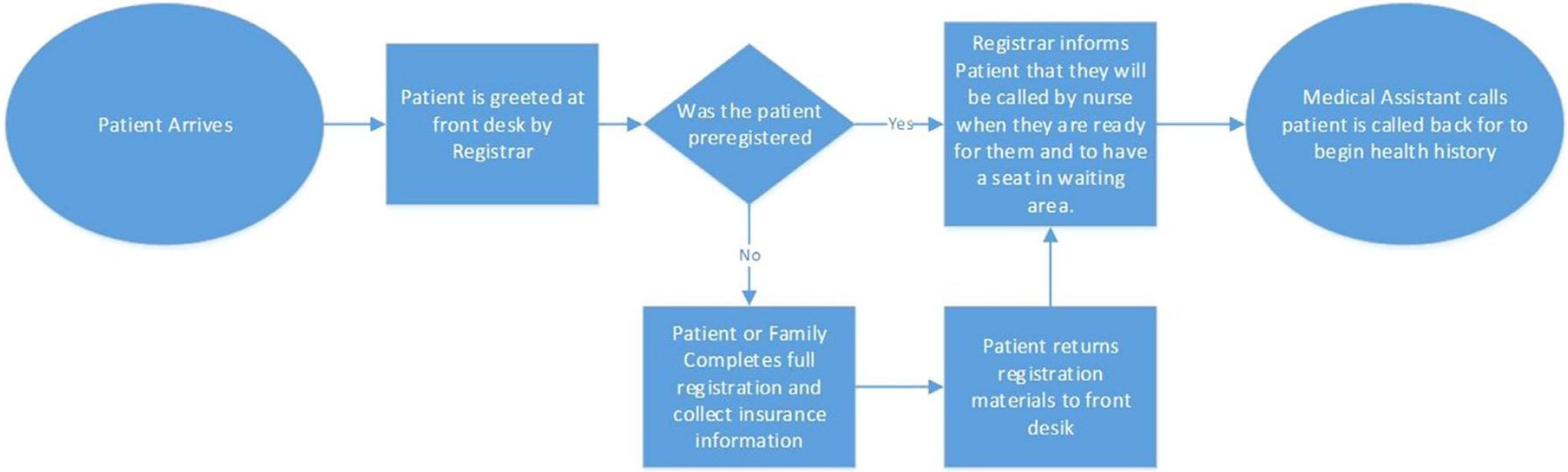
Quality Improvement Methodology

Questions to consider:

- Do we have a problem?

Process Mapping

- Team learning exercise and training aid to help others understand the process
  - Include all key stakeholders
- Identifies delays, complexities, bottlenecks
- Compares reality vs. ideal
  - Work-as-done vs. Work-as-imagined

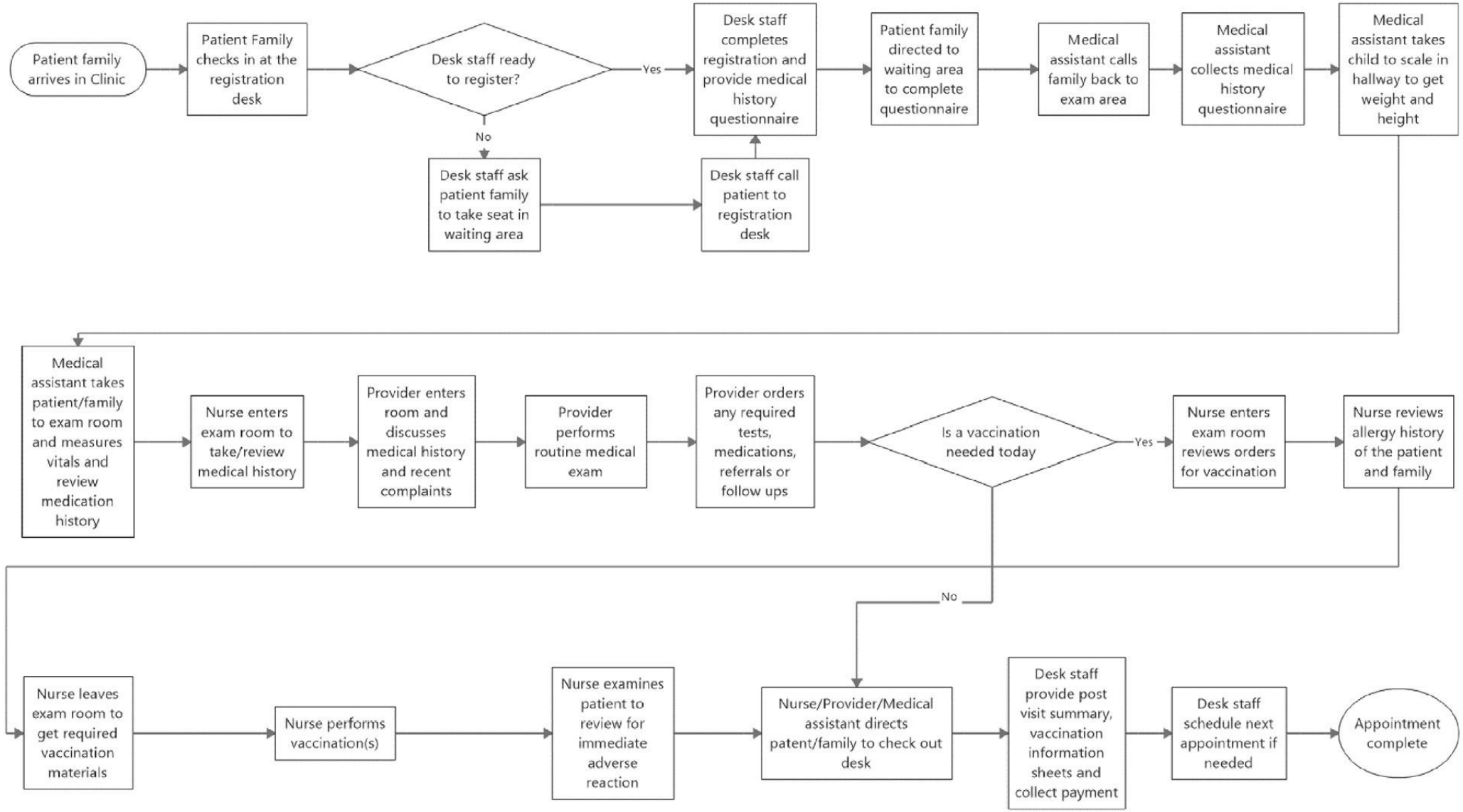


Beginning and End
(input/output)

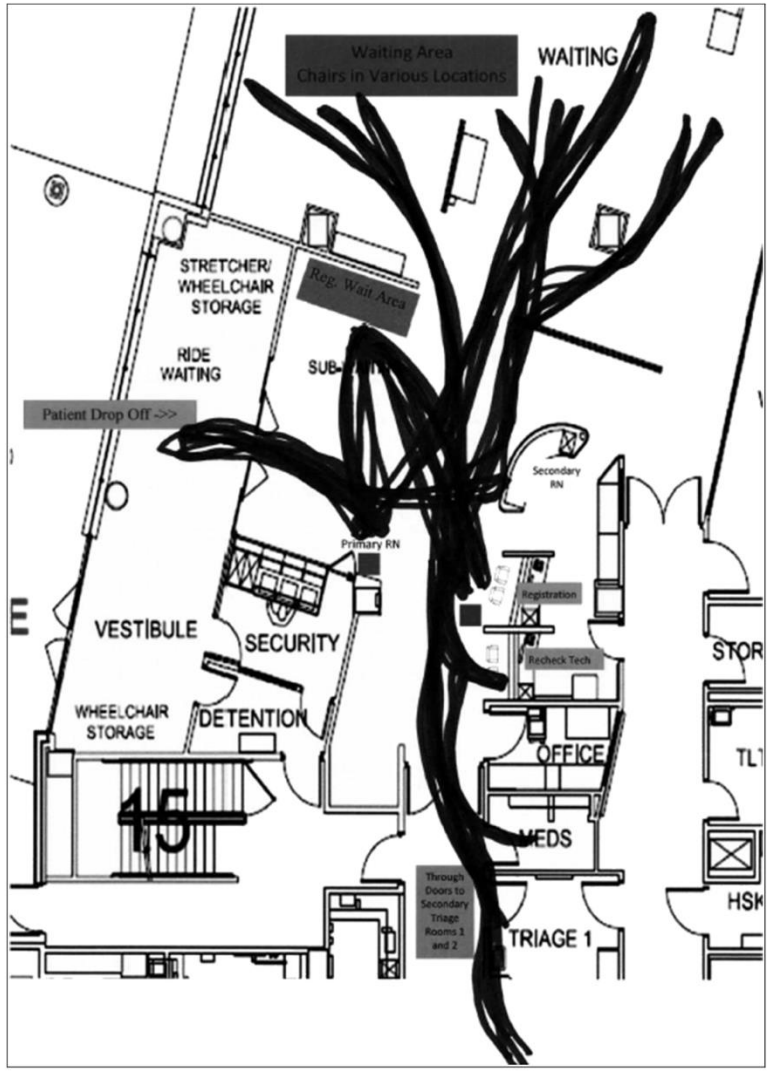
Step in process

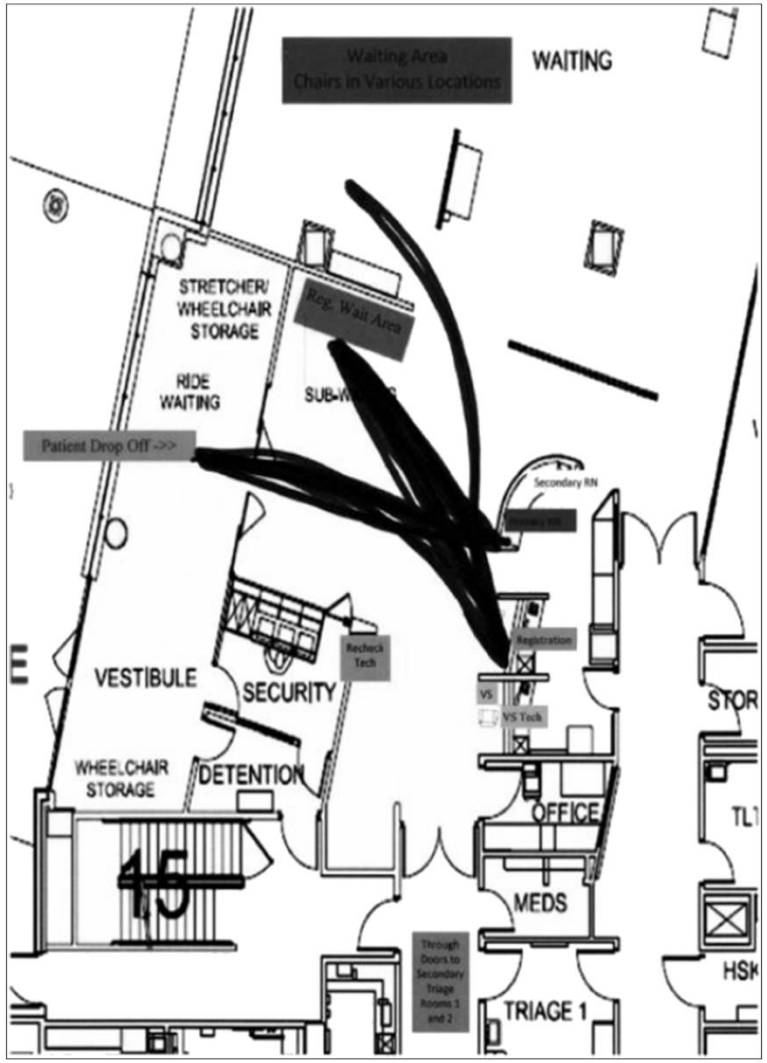
Decision point

Marriott RD. Process Mapping - The Foundation for Effective Quality Improvement. *Curr Probl Pediatr Adolesc Health Care*. 2018;48(7):177-181. doi:10.1016/j.cppeds.2018.08.010



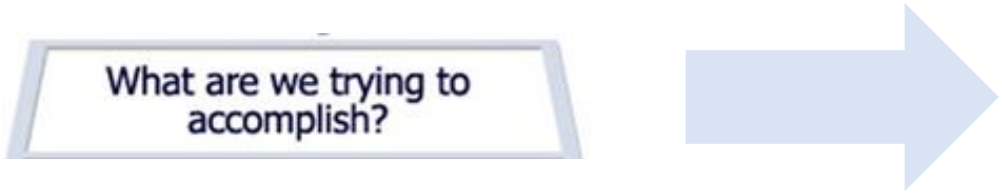
Marriott RD. Process Mapping - The Foundation for Effective Quality Improvement. *Curr Probl Pediatr Adolesc Health Care*. 2018;48(7):177-181. doi:10.1016/j.cppeds.2018.08.010





Falconer SS, Karuppan CM, Kiehne E, Rama S. ED Triage Process Improvement: Timely Vital Signs for Less Acute Patients. J Emerg Nurs. 2018 Nov;44(6):589-597. doi: 10.1016/j.jen.2018.05.006.

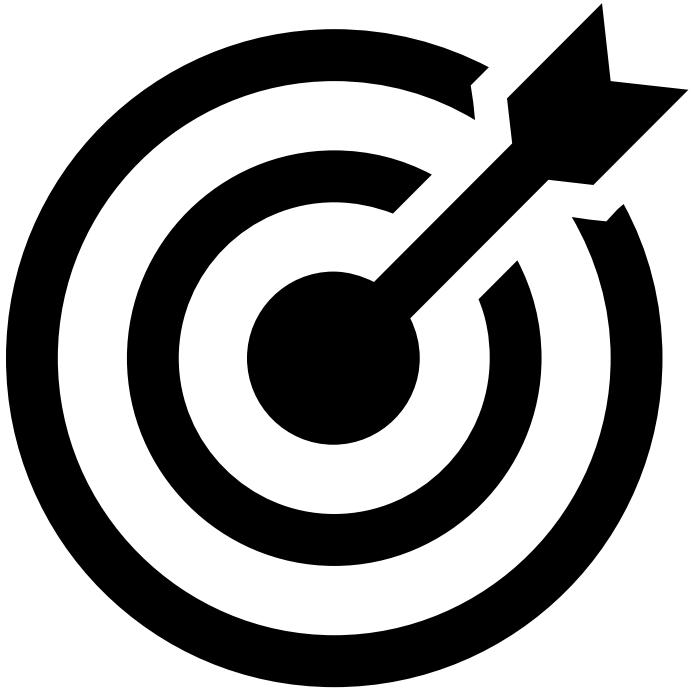
Quality Improvement Methodology



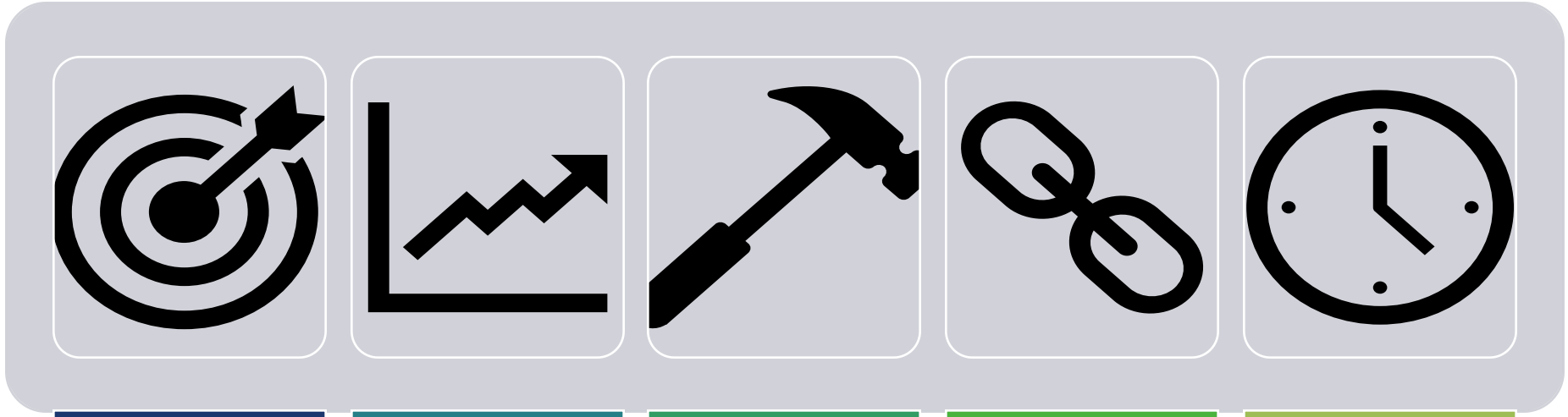
Questions to consider:

- What are we trying to improve?
- What is our goal?

Aims



SMART Aims



S	M	A	R	T
Specific clearly stated goals, patients, and outcomes	**Measurable** measured numeric goal	**Actionable** within the control of your team or your influence	**Relevant** Align/ link with the goals of your group, clinic, or org.	**Time bound** has a specific time frame, a deadline

SMART Aims

- Specific – Increase the sales of WOWbutter and jelly sandwiches
- Measurable – from 22% of total sales in 2024 to 35% of total sales
- Actionable – in Eva’s Excellent Sandwich Mart
- Relevant – to improve profit margins
- Timebound - by December 31, 2025.

Health Care SMART Aims

Our labor and delivery unit will decrease our surgical site infection (SSI) rate by 30% (from 10% to 7%) by sequential implementation of vaginal cleansing and azithromycin for women who underwent a cesarean delivery (CD) after having labored or experienced ruptured membranes by June 30, 2025.

We will achieve a 25% relative reduction (over last 3 years institutional baseline) in Chronic Lung Disease* in Infants less than or equal to 29.6 weeks gestational age in participating TN NICUs by June 2025.

Not a SMART AIM

- Implement EPIC as our electronic health record.
- Develop an educational program regarding care of the opioid exposed newborn.
- Reduce our CLABSI rates.

Health Care SMART Aims

Our labor and delivery unit will decrease our surgical site infection (SSI) rate by 30% (from 10% to 7%) by sequential implementation of vaginal cleansing and azithromycin for women who underwent a cesarean delivery (CD) after having labored or experienced ruptured membranes by June 30, 2025.

We will achieve a 25% relative reduction (over last 3 years institutional baseline) in Chronic Lung Disease* in Infants less than or equal to 29.6 weeks gestational age in participating TN NICUs by June 2025.

Quality Improvement Methodology

Measures and Data!

Types of Measures

Outcome measures (typically your main metric)

- Sandwich shop sales of WOWbutter and jelly sandwiches

Process measures (other metrics that influence your outcome)

- Percent of online sales

Balancing measures (things you could make worse or need to be aware of with changes)

- Cost of new marketing campaign

Types of Measures

Outcome

- Decrease the percentage of mothers with postpartum hemorrhage

Process

- Increase the percentage of mothers with postpartum blood loss accurately measured

Balancing

- Percent of mothers who breastfeed within one hour

Hints for Data

- Data collection can be time consuming – only collect what is pertinent to your project
- Utilize IT support to request reports to assist with data collection
- Share the data burden among team members
  - **BUT** – make sure you are clear on what, where, and how you are collecting data so it is consistent between team members (operational definition)

Quality Improvement Methodology

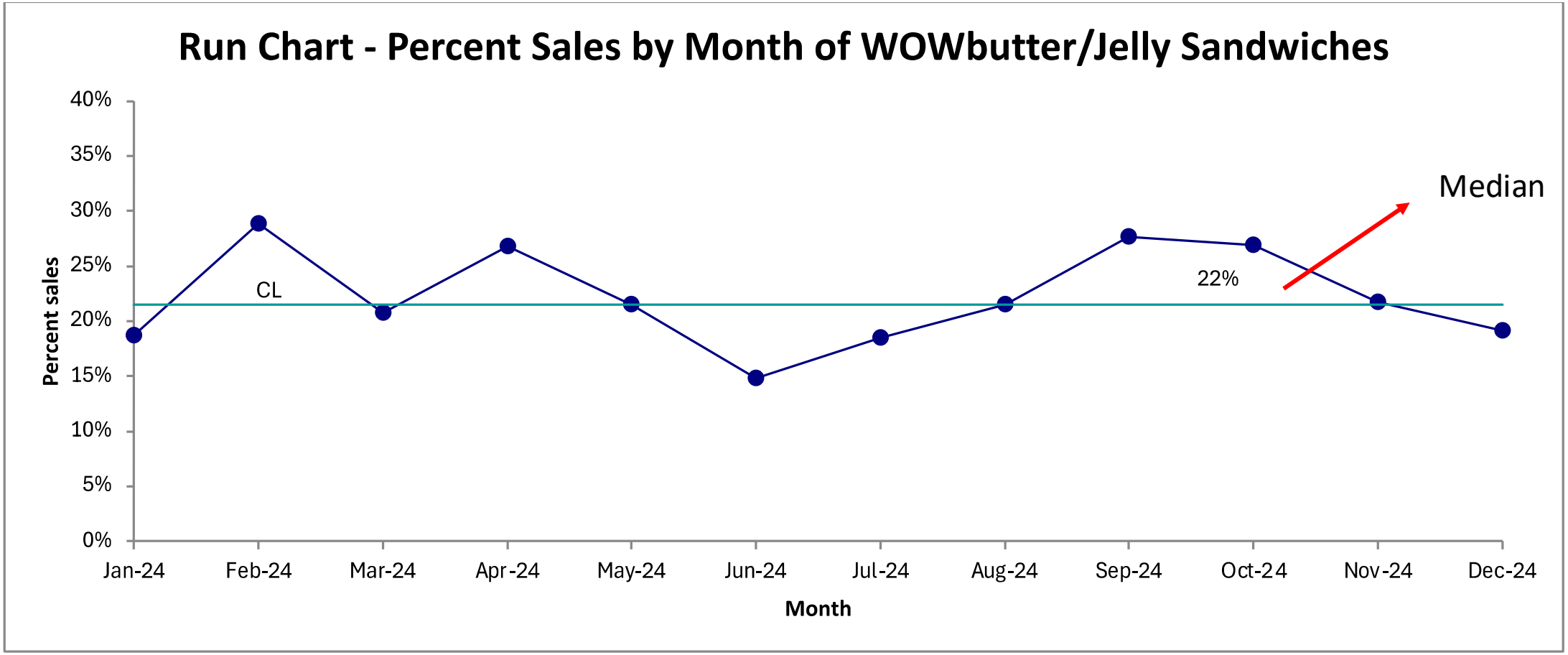
Measures and Data!

Charts!

Data

Month	Percent sales
Jan-24	19%
Feb-24	29%
Mar-24	21%
Apr-24	27%
May-24	22%
Jun-24	15%
Jul-24	19%
Aug-24	22%
Sep-24	28%
Oct-24	27%
Nov-24	22%
Dec-24	19%

Run Charts


Run Chart - Percent Sales by Month of WOWbutter/Jelly Sandwiches
40%
35%
30%
25%
20%
15%
10%
5%
0%
Percent sales
CL
22%
Median
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Month

Hints for Run Charts

- Data points can represent one patient, a day, a week, a month – it really depends on your process and how many opportunities you have
- Show normal variability that is present in any process (common cause)
- Can show changes in process (special cause)
  - There are “rules” to help identify special cause

Quality Improvement Methodology

Theories for change

Theories for Change

- All improvement requires change, but not all change is improvement.
- Improvement is more likely if you have an idea (or theory) of why the process is not what you want it to be

Ideas for Theories for Change

- Direct observation
- Process maps
- Baseline data
- Structured interviews with key stakeholders
- Evidence in literature

Quality Improvement Methodology

Test ideas for change

Testing – PDSA Cycles

Systematically and methodically evaluating an improvement idea prior to introducing it into the system

- Increases your confidence in the success of the intervention
- “Low risk”- can try something without severely affecting the system
- Minimizes resistance to change

PLAN

- What is the objective?
- Patient population? Inclusions/exclusions?
- Develop the action plan. Who carries out test? When? etc.
- How will you measure the test?
- What do you predict will happen?

DO

Execute the plan:

- What were the results?
- Was it carried out as planned?

STUDY

Analyze the results:

- Was prediction correct?
- What do you need to do next?

ACT

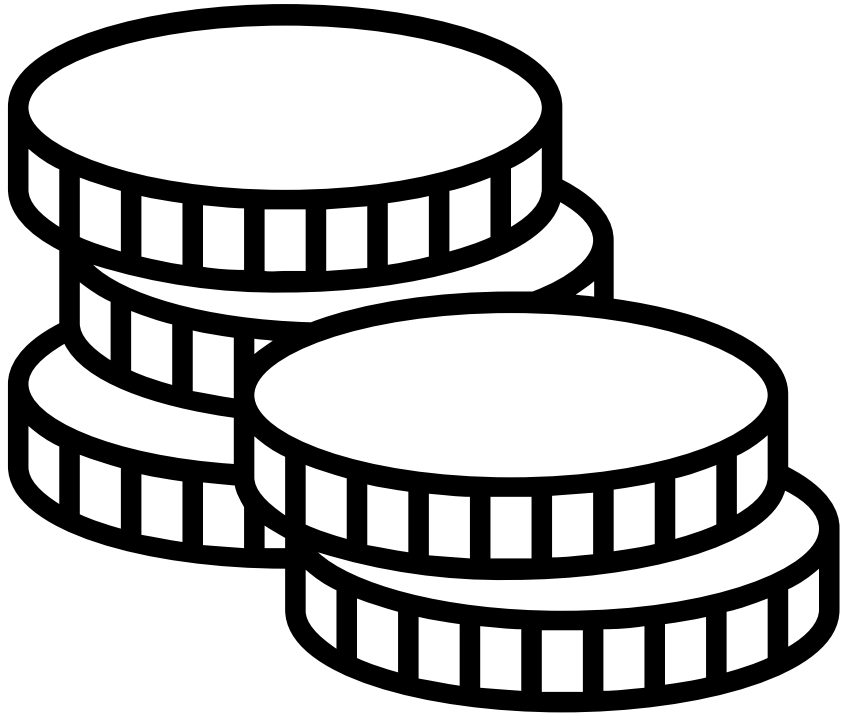
- Adapt: Improve the change and continue testing the plan. Plan/changes for next trial
- Adopt: Select changes to implement on a larger scale and develop an implementation plan and a plan for sustainability
- Abandon: Discard the change idea and try a different one

Sandwich Shop PDSA

	Plan		Do	Study	Act
	What questions? Theories?	Prediction	What did you see? How long?	How did what you see match your prediction?	What now? Adopt, adapt, abandon?
1	**Better visibility that we sell WOWbutter sandwich will increase weekend sales**	**Sidewalk sign will increase sales for weekend**	**Placed sign on Sat and Sun; noticed some people had trouble reading fancy lettering**	**Sales increased on Sat; Noticed more sales with families of young children**	**Adapt - improve lettering and try again next weekend**

Coin PDSA

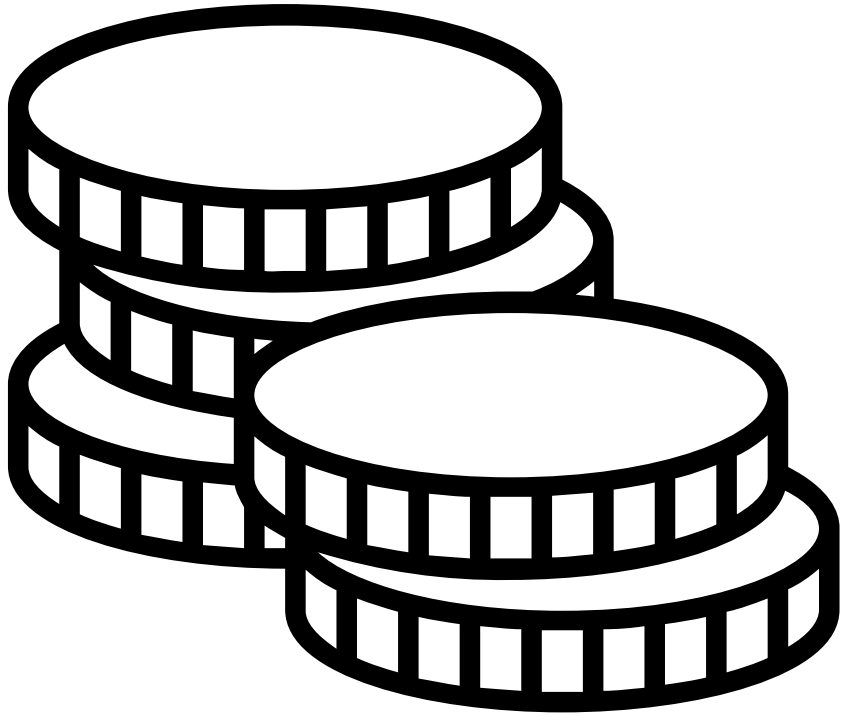
With the group at your table, run PDSA cycles to determine the longest spin time for a coin.



- Be creative!
- Think about all factors involved in the spin
- Designate a timekeeper for spins
- Record your PDSA cycles!
- 15 minutes

Coin PDSA

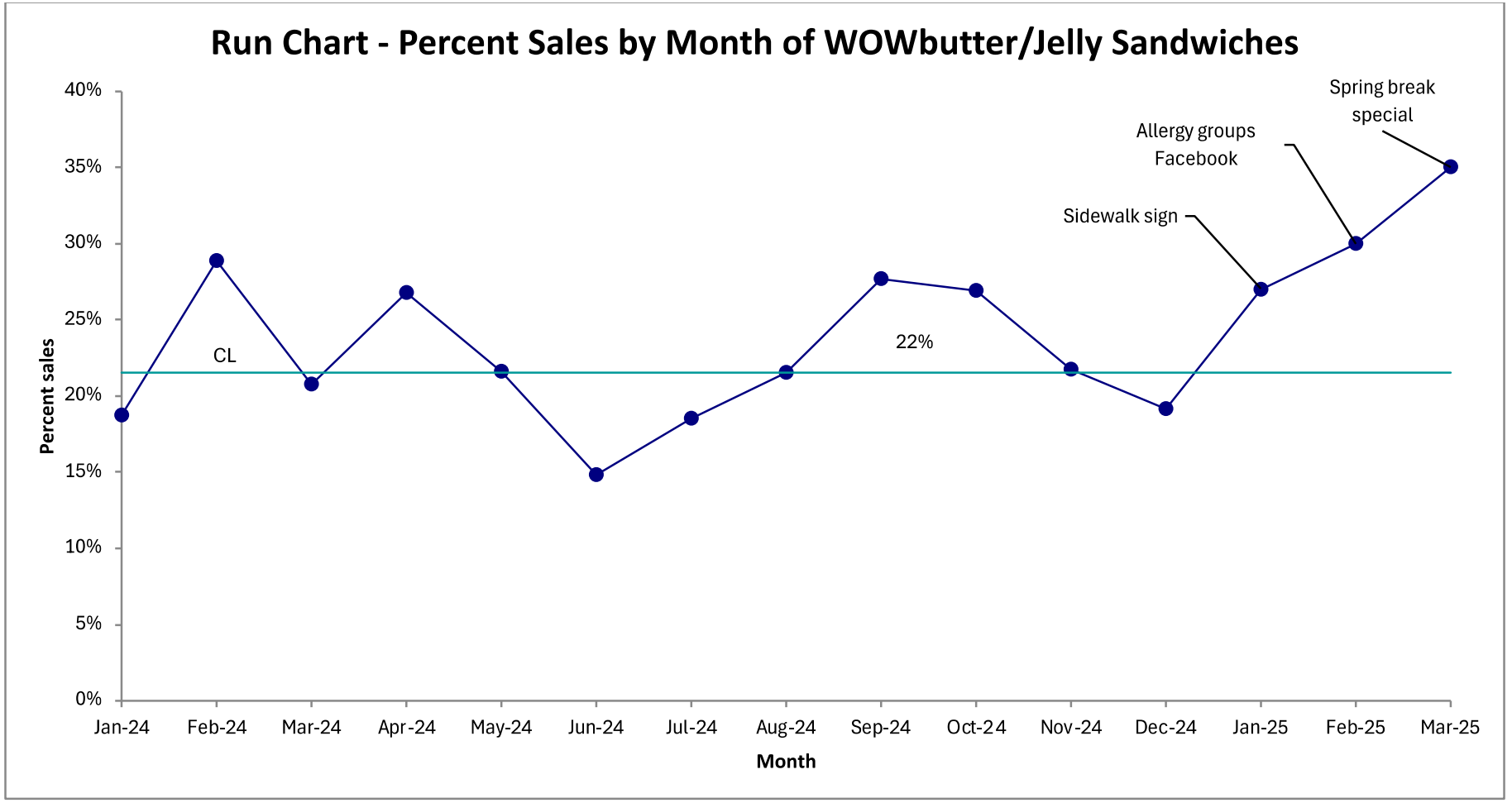
Results!



PDSA Tips

- PPPPPDSA: balance time spent planning test
- PDDDDDSA: remember to study what you are doing
- Collaboration and borrowing ideas is encouraged
- Document! Document! Document!
- Failure and abandoning ideas is expected

Recording data and Annotation



Putting it All Together

Improving Nutrition In Very Low Birth Weight Infants

TIPQC
Tennessee Initiative for Perinatal Quality Care

SMART Aim

To decrease average change in weight z-scores from birth to 36 weeks PMA for VLBW infants* in the Vanderbilt NICUs from -0.80 to -0.60 by December 31, 2018.

*inborn or transferred by 72 hours of life

NICU NUTRITION QI
Key Driver Diagram

SMART Aim

To decrease average change in weight z-scores from birth to 36 weeks PMA for VLBW infants* in the Vanderbilt NICUs from -0.80 to -0.60 by December 31, 2018.

Global Aim

Improve growth and nutrition of infants in the NICU

*inborn or transferred by 72 hours of life

Key Drivers

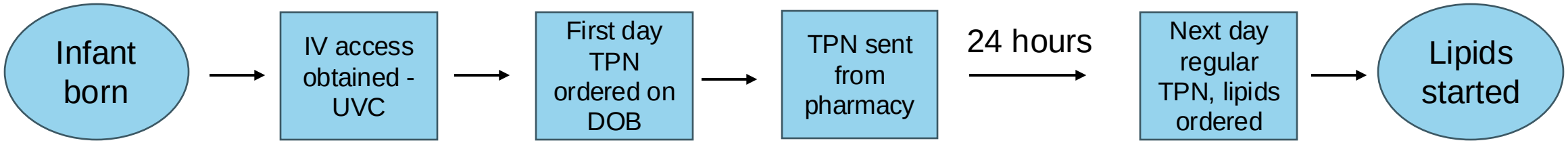
- Prevent morbidities that would affect growth and nutrition (NEC and Sepsis)
- Promote early initiation of feedings
- Readily available mother's own milk or DBM
- Consistent tolerance of feedings; clear definition of intolerance
- Standardization of feeding regimes in NICU
- Achieve goal enteral calories ASAP and maintain calories throughout hospital stay
- Constitution at birth
- Ability to obtain and document accurate measurements
- Engagement and buy in of staff and families
- Maximize Parental Nutrition after birth

Interventions

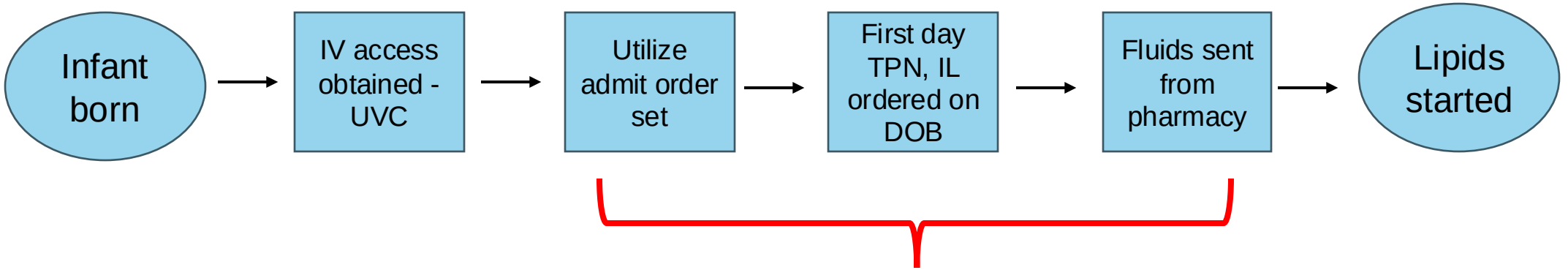
- Standardized feeding protocol based on gestational age and birth weight
- Default order and note template to start trophic MOM feeds as available
- Increasing BM availability (Breastfeeding QI team)
- Order sets for fortification of EBM and DBM
- Standardize DBM ordering process
- Initiate first day TPN and IL at time of admission; orders in admit order set (LOR 2)
- Frequent weight adjustment of feeding volume
- Discontinue routine checking of gastric residuals
- Nutrition Road Maps to help improve protocol compliance (abandoned) (LOR 1)
- RD recommendations visible on eRounding report (LOR 2)
- RD to pend TPN for ELBW infants on white team (LOR 2)

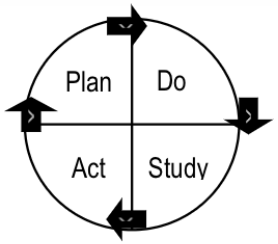
Gold shaded box – in progress
Gray shaded box - complete
Dashed line – future work

Current process



Proposed process





PDSA WORKSHEET

Team Name: Nutrition QI	Date of test: Dec 4 start	Test Completion Date: After first eligible patient
Overall team/project aim: Improve growth and nutrition of VLBW infants in NICU		
What is the objective of the test? To determine what system's issues exist (if any) associated with starting lipids within 12 hours of birth.		
What 90 day goal does the change impact? Improvement in time to lipid administration; sustaining growth during time of TPN shortage.		

PLAN:

Briefly describe the test:
Order 1 g/kg of lipids on admission for infants with birthweight < 1000g admitted to NICU.

How will you know that the change is an improvement?
Lipids will be started within 12 hours of birth.

What driver does the change impact?
Provision of early nutrition

What do you predict will happen?
Lipids will be ordered; systems issues will be discovered.

PLAN

List the tasks necessary to complete this test (what)	Person responsible (who)	When	Where
1. Infant identified who qualifies (<1000g birthweight)	Stahlman team (ED & MLG to notify)		
2. Lipids ordered correctly by Stahlman team.	ED to provide education		
3. Pharmacy receives order, prepares lipids, and hand delivers to bedside	JH to notify pharmacy		
4. RN starts infusion	CP to bedside round on 12/4		
5.			
6.			

Plan for collection of data: Will ask Matt and Wael to let us know when eligible infant is born. Eva to review chart and continue to collect time of lipid administration via TIPQC database.

DO: Test the changes.

Was the cycle carried out as planned? ☐ Yes

Record data and observations.

Boy S DOB 12/4/17; TOB 1954; IL hung at 2330
Boy G DOB 12/6/17; TOB 2059; IL hung at 0120

What did you observe that was not part of our plan?
Need to follow up with NNPs to see if there was problem ordering. Not aware of any problems.
Will plan work on busier day shifts with pharmacy?

STUDY:

Did the results match your predictions? ☐ Yes

Compare the result of your test to your previous performance: Decreased time of IL administration by > 24 hours.

What did you learn?
Plan seems to work even on off shifts.

ACT: ADOPT – Test went well

☐ Adapt: Improve the change and continue testing plan.
Plans/changes for next test:

☐ Adopt: Select changes to implement on a larger scale and develop an implementation plan and plan for sustainability

☐ Abandon: Discard this change idea and try a different one

Want to Learn More?

- TIPQC Bootcamp – May 21, 2025 in Knoxville, TN
- IHI Open School (ihi.org)

THANK YOU!

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