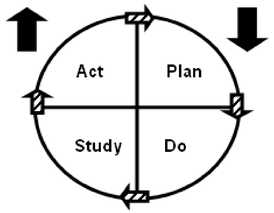
Improvement Science Education: A Roadmap to Changing Patient Outcomes

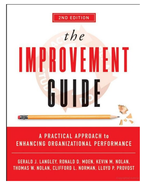
Follow the mile markers toward success

Ed Mendez, RN, MPH; Pat Schaffer, RN, MSN

Cincinnati Children's — change the outcome®

The Improvement Model

1. What are we trying to accomplish?
2. How will we know that a change is an improvement?
3. What changes can we make that will result in improvement?
4. 



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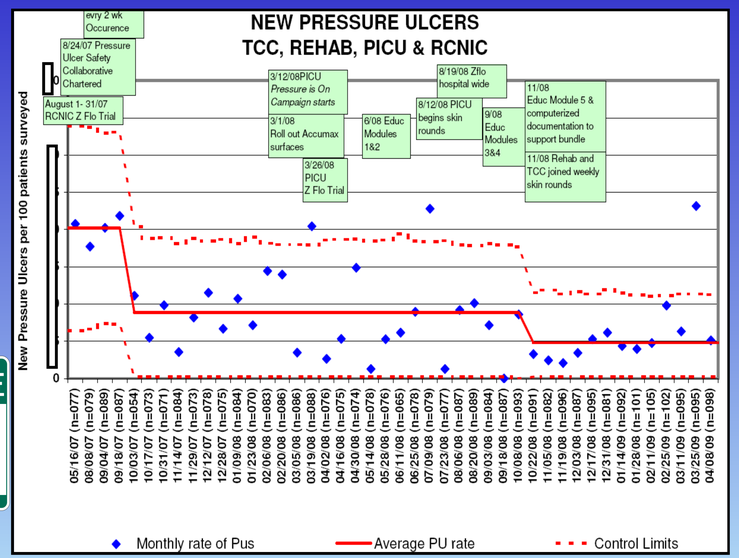

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An Outline of Design Concepts for Improving Reliability

Level 1. Vigilance and hard work
(1, or 2, failures out of 10 opportunities or 80 – 90%)
- Awareness and training
- Feedback of data
- Personal reminders by an expeditor
- Standardization (broad, general)

Level 2. Human factors and reliability engineering
(5, or less, failures out of 100 opportunities or 95%)
- Redundancy
- Checklists and reminders (built into the process)
- Differentiation such as color coding
- Real time identification of failures such as drug interactions
- The default is the desired action, for example standard order sets
- Standardization of essential tasks

Level 3. Sophisticated behavioral designs
(5, or less, failures out of 1,000 opportunities or 99%)
- Take advantage of habits and patterns
- Make the system visible
- Clear and unambiguous communication
- High reliability organization Weick
  - Preoccupation with failure
    Example - Study the circumstances leading to each hospitalization for an asthma exacerbation
  - Reluctance to simplify
    "Dangerous until proven safe rather than safe until proven dangerous"
  - Sensitivity to operations
    Moment by moment monitoring of the front line rather than the big picture;
    Example - Red/yellow/green system for monitoring stress levels in patient care units
  - Commitment to resilience
    Example - Contingency plans for maintaining access, scheduling of unpredictable surgery cases into separate rooms, or code teams
  - Deference to expertise wherever it can be found
    Example - Patient or parent involvement in design

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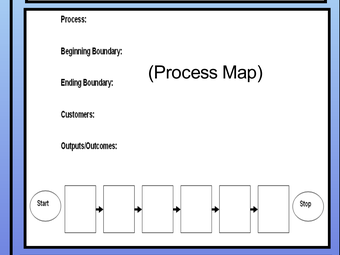
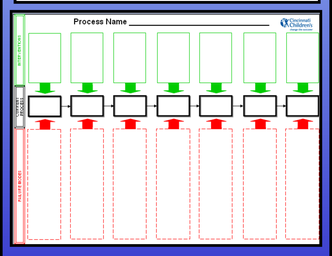
Answers the first question:
What are trying to accomplish?

- S - Specific
- M - Measurable
- A – Actionable
- R – Relevant
- T – Time bound





Key Driver Diagram / Analysis

Improving Reliability of Hourly Peripheral IV Site Assessments

Specific Aim

To achieve 90% reliability of conducting a standardized peripheral IV assessments on A4N by 2/1/09.
(% of q1 hr checks completed)
(% of quality checks completed)

Global Aim

Overall Outcome:
To eliminate all grade II-IV infiltrates for PIV's

Key Drivers

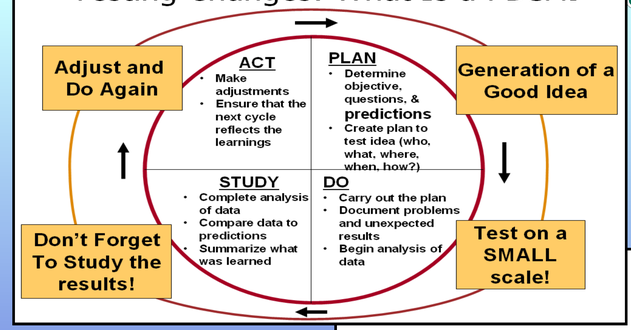
- Highly reliable standardized staff assessment of Peripheral IV sites
- Patient/caregiver engagement in peripheral IV assessment
- Leadership engagement with monitoring unit peripheral IV infiltration rates and staff compliance with PIV assessment

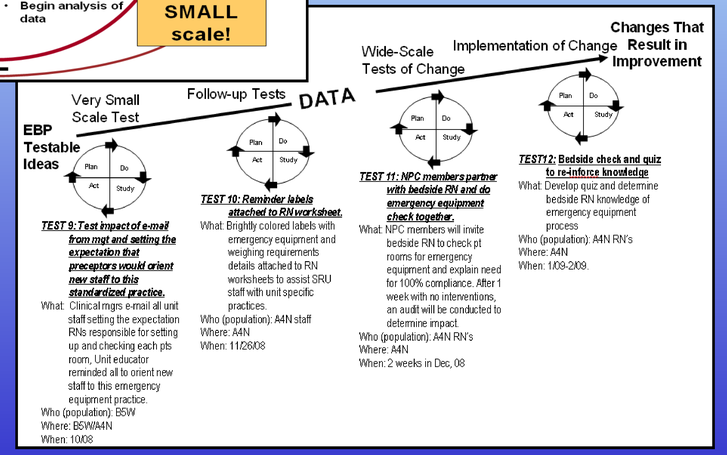
Design Changes/ Interventions

- Created PIV site assessment badge card for RN with touch, look, compare (TLC) components (quality) LOR2
- Required patient shift to shift report at bedside with PIV assessment LOR2
- Buddy/PCA system coverage for PIV site checks LOR2
- Inclusion of PIV hourly site check in safe handoff report LOR2
- Quick strike education for leaders, educators and RN's on PIV assessment/compliance monitoring
- Secret monitors to observe hourly PIV site checks (quantity and quality) LOR2
- Bar code sticker on PIV's to track hourly assessments automatically (future) LOR3
- Optical/ Thermal Detection of Intravenous Infiltration LOR3
- Peripheral IV poster with touch, look, compare (TLC) for patient room LOR1
- RN to discuss hourly PIV site check poster with patient caregiver upon admit & shift change LOR1
- Leadership/ Designee ongoing monitoring of :
  1. PIV infiltration events via ICIS PIV infiltration report/ weekly run charts
  2. Staff compliance with poster and badge card interventions LOR2
- PCF to PCF shift to shift report of PIV failures/ rate LOR2
- Clinical Director/ PCF Huddle each am to discuss past 24 hours failures/ barriers and future 24 hour PIV issues LOR3

Drivers involved in PDSA's
Current work
Completed steps
Future steps

Testing Changes: What Is a PDSA?





Plan for Sustainability

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