QI, PDSA, NAS and Potentially Better Practices

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**Education and QI Coordinator KPQC
Neonatal Abstinence Program Coordinator SMMC
Neonatal Nurse Practitioner SMMC and CMH

Vermont Oxford Network (VON) “Potentially Better” Practices in NAS Care

• Develop and implement a standard process for identification, evaluation, treatment and discharge of infants with NAS
• Care sites that promote parental engagement in care/avoid separation of mothers
• Engage mothers and family members in providing non-pharmacologic interventions “first-line” therapy at risk infants
• Create a culture of compassion and healing for mother/infant dyad
• Develop breastfeeding criteria/support
• Standardized process for safe discharge
• Universal education and training
• Develop/Implement a standard process for measuring and reporting rates of NAS and drug exposure

Project SMART Aims

- By October 2020, 85% of all Kansas birth hospitals enrolled in VON NAS Universal Training Program will have achieved “Center of Excellence” designation.

- By October 2020, less than 50% of infants at risk for NAS will be directly admitted to the NICU.

- By October 2020, the number of infants at risk for NAS that require pharmacological treatment will decrease by 25%.

- By October 2020, the LOS of Kansas infants with NAS treated pharmacologically will decrease by 2 days.
Data Results So Far

1. At-risk infants admitted directly to the NICU (%)

2. At-risk infants treated pharmacologically (%)

NAS PDSAs Projects

- Nursing education
  - Protocol
    - Emphasizing “Comfort Measures”
    - Keeping Baby with mom in Mom/Baby unit
    - Targeting Breast feeding
  - Scoring Education
    - Mother/Baby nurses (if no meds needed)
    - NICU nurses if meds needed

- Parent Education
  - Educational booklet
  - Educational check list
  - Identifying at risk infant/mom prior to birth
  - Giving education prior to birth (neonatal/prenatal consult)

- Pharmacological Interventions
PDSA Change Model Components

- Overall goal
- Components of problem
  - Barriers
  - Players
  - Etc
- Aim overall statement
- Goals for this cycle
- Measurement
- Four Components of PDSA Model
  - Plan: identify a plan
  - Do: initiate the plan
  - Study: study results
  - Act: decide if and how to continue

Problem Statement

- Define the problem
  - Medical—too many nosocomial infections in the NICU
  - Personal—too many people to feed, all sick of turkey
- Why was this project selected?
  - Medical—benchmarking showed problem area
  - Personal—wanted to try something new to eat
### Nursing Education Cycle 1
#### Plan Do Study Act (PDSA)

**Project Worksheet**

- **Project Leader(s):** Vance/Knappen
- **Project Facilitator:** Jackson
- **Multidisciplinary Team Members:** Education Team

#### PREPARATION

<table>
<thead>
<tr>
<th>Overall goal of project:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Statement of your vision to make things better:</strong></td>
</tr>
<tr>
<td>Provide consistent, competent care to babies at risk for NAS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem statement:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Define the problem</strong></td>
</tr>
<tr>
<td>No formal education for NICU/well baby/mother baby nurses</td>
</tr>
<tr>
<td>No ongoing competencies for any nurses</td>
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<tr>
<td>No formal education of new hires to woman’s and children’s service line</td>
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</table>

<table>
<thead>
<tr>
<th>Why was this project selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>We identified:</td>
</tr>
<tr>
<td>Inconsistency in scoring</td>
</tr>
<tr>
<td>A lack a feeling of competency in nurses, lack of experience.</td>
</tr>
<tr>
<td>Increasing population of patients requiring this service</td>
</tr>
<tr>
<td>Lack of ownership of the pt population</td>
</tr>
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**Problem Statement continued**

- **Constraints and barriers**
  - Medical—lots of people involved in care, status quo not good enough......lots
  - Personal—loss of comfort on new dish for lots of people

- **Players and roles**
  - Medical—nurses, NNPs, doctors, residents, fellow, other support staff
  - Personal—my family (get out of the way), guests, store

- Fill in worksheet
Identify Aim for Improvement

- Clear, specific, measurable terms
- Consider stretch goals, but be prepared
- Constancy of purpose matters
- Focus, not everything at once
- Example:
  - Medical—decrease blood stream infections by 25% in 6 months
  - Personal—Successfully cooked Turducken, pleasing 100% of the guests, preparation completed by 5pm

- Fill in worksheet

Nursing Education Cycle 1

<table>
<thead>
<tr>
<th>Constraints and assumptions (barriers)</th>
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</thead>
<tbody>
<tr>
<td>Education hours (paid)</td>
</tr>
<tr>
<td>Some individuals think competency evolves from experience rather than training</td>
</tr>
<tr>
<td>Competing priorities in education</td>
</tr>
<tr>
<td>Availability of staff to come in for training</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Players and roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses (mother baby, NICU, well baby)</td>
</tr>
<tr>
<td>Educators</td>
</tr>
<tr>
<td>NNPs and physicians</td>
</tr>
<tr>
<td>Babies/Parents</td>
</tr>
<tr>
<td>PCPs</td>
</tr>
<tr>
<td>SW</td>
</tr>
<tr>
<td>LC/PT/OT/SLP</td>
</tr>
<tr>
<td>Pharmacy</td>
</tr>
<tr>
<td>Managers</td>
</tr>
<tr>
<td>Administrators</td>
</tr>
<tr>
<td>DC planning</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aim Statement:</th>
</tr>
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<tbody>
<tr>
<td>Targeting mother baby, NICU, well baby nurses; We will provide initial education (for established nurses and orientation of new hires), and ongoing yearly competencies for 100% of these nurses by June 2015.</td>
</tr>
</tbody>
</table>

1) Educate everyone not educated currently
2) Create orientation process for new hires
3) Create yearly ongoing inter-reliability competencies; involving real patient scoring for all nurses in service line
Nursing Education Cycle 1

Specific goals for this cycle
Educate all mother baby nurses

Cycle # 1 10/13-present

Measurement
Identify project measures (how will you measure results?)

1. **Process measures**: keep track of which nurses attend lecture; competency in scoring for all Mother baby nurses; % of nurses comfortable with the scoring process

2. **Outcome measures**: % of babies at risk for NAS, kept in well baby status in room with mom; not requiring medication

3. **Balancing measures**: nurses comfort with patient load/acuity level, time for other education, meeting budget for education

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**PDSA = Rapid Cycle Improvement**

- Break down project into small cycles
- **Cycle 1, 2, 3, etc.**
- Team feels they are making progress
- Easier to track results
- Test change: If a problem occurs – not too far down the road
Pre-/Postmeasurement

• You need to know where you are when you start, in order to know whether your project has resulted in improvement
• Can be the most neglected part of a project; probably the most important
• Teams want to move directly to intervention, not take the time for pre-measurements

Project Measurement

• Collect pre- and post-measures
  • Should be the same in order to compare
• Process measures
  • Is the new process being done correctly?
• Outcome measures
  • Reflect outcome of overall aim
  • What you are trying to change?
• Balancing measures
  • What can go wrong?
Measurement

• Process Measure
  • Measure to determine if the process is occurring as expected or directed
    • Medical—number of observations that displayed adequate hand hygiene (right amount of product for right amount of time)
    • Personal—assess if correct equipment was used, and steps (cooking instructions) where followed

Measurement continued

• Outcomes
  • Identify desired outcome and identify if that outcome was achieved
    • Medical—decrease in infection rate
    • Personal—Guests enjoy meal
Measurement continued

• Balancing measure
  • Attempt to identify what could possibly go wrong as a result of the intervention
    • Medical—skin breakdown from frequency
    • Personal—food poisoning
  • May be unable to predict (unintended consequences)
    • Medical—skin irritation from new product
    • Personal—importance of temp prop placement/prolonged cooking

• Fill in work sheet

Examples of Measurement

• Process measures
  • Hand washing
• Outcome measures
  • Sepsis rate
• Balancing measures
  • Care providers skin breakdown
To Formulate a Plan

- Need to include:
  - Identify multidisciplinary team: identify who will be affected – representative on team
  - Literature search
  - Identify Pre and post-measurement
  - Baseline measures (process/outcomes)
  - Develop plan for change: identify intervention and develop plan to implement
  - Post intervention measurement
  - Develop communication plan

<table>
<thead>
<tr>
<th>Nursing Education Cycle 1</th>
<th>PLAN</th>
<th>Person Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literature search</td>
<td>Knappen reviewed 40 papers, shared 4 with group</td>
<td>Knappen 4/13-9/13 Jackson 8/13</td>
</tr>
<tr>
<td>Identify Pre/Post measurement (Baseline measures: process/outcomes)</td>
<td>1) Nurse comfort score 2) % at risk admitted to NICU 3) Education budget 4) Other education needs</td>
<td>Jackson/Knappen Jackson/Potter Fraiya, Vance Vance, Fraiya</td>
</tr>
<tr>
<td>Who is responsible for actually collecting the data?</td>
<td>Potter, Jackson, Vance, Fraiya, King, Delphia</td>
<td></td>
</tr>
<tr>
<td>How often will the data be collected? (hrly, daily, weekly, monthly?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcome 1) Monthly admit to NICU rates --automated by Jackson/Potter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process 2) Nursing comfort scores before training, after training and quarterly for one year--educator 3) Attendance at training—at training time--trainer 4) Competencies-yearly--educator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balancing 5) Nursing questionnaire regarding comfort with caring for this population in the context of their other pts--educator 6) % of total goal education accomplished --quarterly—manager/educator 7) % within budget—yearly-- manager/educator</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Do

• Initiate the plan--Document all activities (diary)
  • Test change: Trial on a small number
  • Multidisciplinary team members role
  • Data
    • Obtain pre-data
    • Analyze pre-data
    • Conduct intervention
    • Obtain post-data
  • Communicate and allow for feedback
  • Be creative
  • Document results

Study/Check

• What happened after you initiated the plan?
• Analyze the post-data (measurement)
  • Run chart
  • Control charts
  • Pareto charts
  • Bar graphs
• Compare data to theory and prediction (compare pre/post data)
• What were the lessons learned?
• The concept of “Study” ties directly to measurement
Act

• What happens now??
• Continue, modify, or redirect efforts
• New theories and ideas?
• Next cycle is implemented

Components of a Successful Project

• All affected by proposed change are represented on the multidisciplinary team
• Team agrees with overall aim
• Search the literature (level of evidence)
• Expert opinion/benchmark/collaborate
• Don’t forget to measure before the intervention (need pre- and postmeasures)
• Test change (small numbers first)
• Communicate/communicate/communicate
Other Tools that can be used as part of the PDSA Change Model

- Flow graphs: picture of the process
- Mental model survey: what is really being done
- Delphi Technique: gain consensus
- Run charts (plot the dots): data over time
- Control charts: data with identified parameters
- Bar Graphs: comparing data
- Pareto Charts: 80/20 concept

Use of the PDSA Worksheet

- Helps to guide new groups
- Helps to stay focused
- Documents: aim, objectives, and measurement,
- Forcing function to evaluate trial before unit-wide implementation
Thank You: Questions?

NAS Team
• Betsy Knappen, MSN, APRN (NAS Program Coordinator)
• Dr. Betsy Wickstrom (Perinatologist)
• Danielle Renyer, LMSW (NICU Social Worker)
• Kim Mason, RN, BSN (Discharge Planner)
• Dr. Julie Weiner (Neonatologist)
• Carrie Miner, MSN, RN, CCRN (Nursing Program Coordinator/Clinical Specialist)