Pressure Ulcer Reduction Improvement Strategies at a Pediatric Academic Medical Center

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

Sources: Institute for Healthcare Improvement (IHI), Institute of Medicine (IOM), CCHMC’s Strategic Plan, Pursuing Perfection Website, I2S2 website, Patient Safety Collaborative, Patient Services PI Web page

Cincinnati Children’s Hospital Medical Center

- 511 Registered Beds
- 11,000 Employees; Over 3,000 RN’s
- Ranked 2nd in NIH Pediatric Funding
- Received the 2008 Picker Award for Excellence in honor of significant achievements in family-centered care
- Awarded Magnet Designation February 2009
Objectives

• Describe how improvement science was used to reduce pressure ulcers including:
  – developing a SMART aim
  – use of a key driver diagram
  – tests of change
  – a prevention bundle of strategies

• Identify how medical devices contribute to risk of patients developing pressure ulcers.

Housewide Prevalence Survey
January, 2007

• Conducted our first survey for Pressure Ulcers
  – 206 patients

• Results
  – All pressure ulcers: 10.7%
  – Facility Acquired pressure ulcers: 9.2%
Identified a Comparative Benchmark:
2003 National Pediatric Pressure Ulcer Multisite Prevalence Survey

- 1064 patients surveyed
- All Pressure Ulcers: 4.0%
- Facility Acquired: 2.7%

McLane, et al, JWOCN, July/August, 2004

Housewide Early Prevention Steps
April, 2007

- Educational module created and available to all staff

- Two admissions questions added to electronic documentation
  1. Does your patient have a pressure ulcer?
  2. Does your patient have any other types of skin breakdown?
Patient Safety Collaborative
August, 2007

Pressure Ulcer Safety Collaborative
Leaders: Pattie Bondurant, MN, RN & David Pruitt, M.D
Subject Matter Expert: Ann Marie Nie, RN, CWOCN

1. RCNIC (Regional Center for Newborn Intensive Care)
2. PICU (Pediatric Intensive Care Unit)
3. TCC (Trach/vent Transitional Care Center)
4. A4C Inpatient Rehabilitative Unit

The Improvement Model

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?
Doing an Improvement Project
Team Roadmap

Develop Aim & Measures

Develop Learning Structure With Key Drivers

Understand process for improvement

Identify testable ideas

Design PDSA cycles

Execute PDSA Cycles

Make decisions based on learning

More PDSA Cycles

Select Change for Scale-Up

Planning for Implementation/Sustainability

Planning for Spread

To view another example of this process see our NDNQI Poster #88:
Improvement Science Education: A Roadmap to Changing Patient Outcomes

Aim Statements

• Answers the first question:
  – What are trying to accomplish?

• S - Specific
• M - Measurable
• A – Actionable
• R – Relevant
• T – Time bound
Patient Safety
Pressure Ulcer Collaborative
Aim Statement

To reduce the number of pressure ulcers in RCNIC, PICU, TCC and A4 Rehab by 50% (from May 2007) by February 2008

Using Evidence Based Decision Making we developed Components of our Pressure Ulcer Prevention Program

1. Risk Assessment
2. Head to Toe Assessment/Skin Care
3. Nutrition
4. Mechanical Loading and Support Surfaces
5. Education

Pressure Ulcer Prevention Points, National Pressure Ulcer Advisory Panel, 2007
Key Driver Diagram
Skin Pressure Ulcer Safety Collaborative

Drivers/Processes
- Skin Assessment
  - Risk assessment
  - Appropriate assessment tools
  - Regular assessment of skin
  - Embedded into daily care
- Patient Care (direct skin)
  - Moisture
  - Pressure
  - Positioning
- Patient care (non-direct skin)
  - Nutrition
  - Hydration
  - Optimal/Pain Control
- Involvement - Patient and family
  - Education/Awareness
    - Bedside caregivers - initial
    - Bedside caregivers - annually
    - Physician
    - Post Q 2 week prevalence results
    - Parent Brochure

Design Changes
- A 'bundle' of these design changes
  - Q2 week prevalence of new PU
  - Risk Assessment Daily (Braden Q)
  - Neonatal Braden
  - Q24 hr. Head to Toe Skin Assessment
  - Documentation Daily
  - Parent Involvement in Skin Care
- Products
  - Optimal surfaces
    - Mattress rollout (Accumax)
    - W/C cushions (Burns, Stimulite)
    - Positioning devices (Z-FLO)

AIM
To reduce the number of pressure ulcers in RCNIC, PICU, TCC and A4 Rehab by 50% (from May 2007) by February 2008

Testing Changes: What Is a PDSA?

Adjust and Do Again
- ACT
  - Make adjustments
  - Ensure that the next cycle reflects the learnings

PLAN
- Determine objective, questions, & predictions
- Create plan to test idea (who, what, where, when, how?)

Generation of a Good Idea

STUDY
- Complete analysis of data
- Compare data to predictions
- Summarize what was learned

DO
- Carry out the plan
- Document problems and unexpected results
- Begin analysis of data

Test on a SMALL scale!

Don’t Forget To Study the results!

Adapted from © 2001 Institute for Healthcare Improvement
TEST 1
What: Risk Assessment - 3 tools
Who: RNs/PTs each unit
Who: Rep from each unit
Where: TCC, Rehab, PICU, RCNIC
When: 9/12/07

TEST 2
What: Risk Assessment - 3 tools
Who: RNs/PTs each unit
Who: Rep from each unit
Where: TCC, Rehab, PICU, RCNIC
When: 9/20/07

TEST 3
What: Risk Assessment - 1 tool
Who: 10 pts each unit
Who: Rep from each unit
Where: TCC, Rehab, PICU, RCNIC
When: 10/17/07

TEST 4
What: Risk Assessment & BradenQ & Neonatal BradenQ
Who: Population: 10 pts each unit
Who: RNs/PTs each unit
Where: TCC, Rehab, PICU, RCNIC
When: 11/9/07

Pressure Ulcer Collaborative Team

NEW PRESSURE ULCERS
TCC, REHAB, PICU & RCNIC

6/26/07 Pressure Ulcer Safety Collaborative Chartered
6/1/07 Roll out Acoumax surfaces
6/1/08 Pressure in On Campaign starts
6/12/08 PICU Begins skin rounds
6/12/08 WOB Begins skin rounds
6/12/08 Educ Modules 1/2
6/13/08 Educ Module 3/4
6/29/08 Educ Module 5 & computerized documentation to support bundle
7/10/08 ZO Trials
11/16/08 Rehab & TCC joined weekly skin rounds

Pressure Ulcers per 100 patients surveyed

| August 06 | 25 | 5 |
| March 07 | 20 | 5 |
| September 07 | 15 | 5 |
| October 07 | 10 | 5 |
| November 07 | 5 | 5 |
| December 07 | 0 | 5 |

- Monthly rate of PUs
- Average PU rate
- Control
Housewide Spread
January 2009

Pediatric Pressure Ulcer Prevention Bundle

Comprehensive Assessment

Risk Assessment
- > 28 days of age, use modified Braden Q upon admission and daily
- ≤ 28 days of age, treat as high risk
- All NICU/EC patients: treat as high risk

Skin Assessment
- Daily head-to-toe

Device Protection Assessment
- Every shift

Interventions

Positioning | Moisture | Surface | Nutrition | Family
---|---|---|---|---
Based on the modified Braden Q: assessment, reposition patients at moderate to high risk a minimum of every 2 hours. Reposition patients at low risk a minimum of every 4 hours.

Manage and minimize moisture by checking common moisture sites every 2-4 hours, and intervening as needed.

Use pressure reduction surfaces for beds and chairs.

Good nutrition is the first line of defense for prevention of pressure ulcers.

Involve and educate families on pressure ulcer prevention strategies and treatments.

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Cincinnati Children's Facility Acquired Pressure Ulcer Prevalence

- Facility Acquired (includes Device Related Pressure Ulcers)
- Non-Device Related Facility Acquired (unavailable before 11/07)
- National 2003 Peds, Pres. Ulcer Prevalence Multisite Survey (McLane, 2004) (n=1,084)

Sharing Housewide Process Measures with Unit Leaders & Staff
Intermediate Improvement Science Series Project

August 2009

Led by: Pat Schaffer, RN, MSN
Team includes: Ed Mendez, RN, MPH

Improving Medical Device Assessment on A4C Rehab Unit to Impact the Reduction of Pressure Ulcers (in process)

Mechanical Device Assessment

- Mechanical Device Assessment to be performed every shift

- Devices:
  - trachs, Cpap/BiPap mask, pulse ox probes, casts, splints, oxygen tubing, etc.
Process Name: Medical Device Assessment and Documentation

**INTERVENTIONS**

1. Identify expectations
2. Identify list of medical devices for unit
3. Standardize assessment times; Build into practice.
4. System to log/mitigate; Feedback to staff
5. Clarify what to document and where to document if within normal limits
6. Clarify what/where to document interventions;
7. Build into team rounds and change of shift report

**CURRENT PROCESS**

- Identify expectations
- Identify list of medical devices for unit
- Build into team rounds
- Clarify what/where to document interventions
- Build into team rounds and change of shift report

**SUCCESS CASES**

- RN identifies patient’s devices
- Assess skin under & around device
- If WNL document as such in ICIS
- If not WNL document interventions
- Communicate information

**FAILURE MODES**

- Not done
- Doesn’t know which devices to check
- Patient not available
- Assessment not done or not done on all devices or not done in each 12 hour shift
- Standard time not established to do assessment
- Not taking accountability for doing assessment
- Not documented
- Left blank if WNL
- Documented information in wrong place:
  - In med record
  - If WNL
  - Documented interventions:
    - In wrong place:
      - In med record
      - If WNL
      - Documented information in wrong place:
        - In med record
        - If WNL
      - Documented interventions:
        - In wrong place:
          - In med record
          - If WNL

**KEY DRIVER DIAGRAM**

Project Name: Improving Medical Device Assessment (MDA) on A4C Rehab to Impact Reduction of Pressure Ulcers
Project Leader: Pat Schaffer MSN, RN

**SMART AIM**

By January 2010, we will increase % of A4C Rehab patients with a medical device assessment being done on each shift to 80% or higher.

**GLOBAL AIM**

Decrease risk of facility-acquired pressure ulcers that are related to medical devices.

**KEY DRIVERS**

- Clearly defined expectations for MDA
- Standard consistent process for doing MDA each shift
- Optimal Electronic Documentation
- Accountability for doing the assessment and documentation
- Staff recognize the value of the assessment to reduce pressure ulcers
- Standard consistent process to review results of MDAs & request missing data

**INTERVENTIONS (Reliability level)**

- Identify & educate staff on the expectations regarding: What is MDA? & How often must it be done?
- Standardize time of each shift assessment
- Develop & implement back-up system to identify and mitigate if MDA missed
- Identify & Educate staff: What must be documented and where in medical record?
- Identify barriers in current ICIS documentation to inform future EPIC optimization of MDA documentation
- Give feedback to staff as to whether they did or did not do the assessment and document appropriately
- Share run charts of pressure ulcers
- Share results of RCAs done on device related pressure ulcers & strategies to prevent them.
- Review & request results of MDAs in team rounds & shift handoffs
- TBDs
Next Steps to continue to reduce risk of Pressure Ulcers at CCHMC

- Further developing skin champions on all inpatient units
- Continued housewide implementation of the Pediatric Pressure Ulcer Prevention Bundle (providing compliance with process measures)
- Focusing further on prevention strategies related to mechanical devices
- Further analysis of pressure ulcer data to identify causes of failures
- Continue housewide quarterly prevalence survey
- Cost savings analysis underway
- Continue skin research activities & publish our learnings
- Optimize documentation for medical device assessment in our new Electronic Medical Record (EPIC) implemented 1/10/10.
Questions?