Improving Patient Safety

Influencing Behavioral Intention for the Prevention of Central Line-Related Bloodstream Infections

Judy S. Smith, MSN, RN, CRNI
Clinical Nursing Manager, Vascular Access
Seton Healthcare Family, Austin, Texas

Background & Significance

- According to the CDC:
  - 250,000 cases annually in the U.S.
  - Significantly increase length of stay
  - Significantly increase morbidity and mortality
  - Estimated cost $37,000.00 (USD)
  - Cost in human suffering
  - PREVENTABLE!

Background & Significance

- What is the portal of entry for CRBSI?
  - Organisms from the skin migrate through catheter exit site.
  - Organisms from the environment adhere to needleless connector or catheter hub and are flushed into bloodstream.
    - Most common mechanism

Previous Research

Scrub Times that result in pathogen transfer	Scrub times that do not result in pathogen transfer
❖ Menyhay & Maki (2006) ✓ 3 - 5 second scrub resulted in pathogen transfer in 67% of cases. ❖ Simmons et al (2011) ✓ Pathogen transfer even with 15-second scrub.	❖ Kaler (2007) ✓ No pathogen transfer with 15-second scrub.

CDC and INS: Optimal disinfection time is an unresolved issue.

New Research: Purpose

Optimal Disinfection Times for Needleless Intravenous Connectors

Study Purpose: To examine the associations among alcohol scrub times (5 seconds, 8 seconds, 10 seconds, 12 seconds and 15 seconds) and the application of an alcohol antiseptic barrier cap with bacterial transfer through needleless connectors.

Smith, JS, Irwin, G, Viney, M, Watkins, L., Pinno-Morris, S, Kirksey, KM, Brown, A. (2012). Optimal disinfection times for needleless intravenous connectors. *Journal of the Association for Vascular Access*, 17(3); 137-143.

Methodology

- Inoculated 6 groups of needleless connectors (27 connectors per group) using 0.5 MacFarland solution of S. epi, S. aureus, and P. aeruginosa.
- Allowed to air dry overnight.
- Disinfected each group for specific period of time using alcohol swab and friction or application of alcohol antiseptic barrier cap.
- Flushed with sterile saline onto blood agar plate.

Results

❖ **Longer scrub times yielded less pathogen transfer** (Chi-Square=36.40, df=4, p=0.00).

❖ **Relative to 10 second scrub time:**
  ✓ Scrub time of 5 seconds was 4.07 times more likely to result in pathogen transfer (Wald Chi-Square=10.037, p=.002).
  ✓ Scrub time of 8 seconds was 3.40 times more likely to result in pathogen transfer. (Wald Chi-Square=7.456, p=.006).
  ✓ Scrub times of 12 & 15 seconds were less likely to result in pathogen transfer (clinically significant, but no statistical significance in this study).

Bottom Line

We Must Scrub the Hub!

Research: Autonomy and Self-Efficacy as Influencing Factors in Nurses' Behavioral Intention to Disinfect Needleless Intravenous Systems.

Purpose

To examine the relationships among autonomy, self efficacy, socio-demographic attributes, beliefs, values, and behavioral intention by registered nurses to use best practice disinfection techniques in needleless intravenous systems.

Smith, J.S., Kirksey, K.M., Becker, H., Brown, A. (2011). Autonomy and self-efficacy as influencing factors in nurses' behavioral intention to disinfect needleless intravenous systems. Journal of Infusion Nursing, 34(3); 193-200.

Theoretical Framework

❖ Fishbein and Ajzen's Theories of Reasoned Action and Planned Behavior
❖ Six Components
  ✓ Beliefs about outcomes
  ✓ Evaluation of outcomes
  ✓ Normative beliefs
  ✓ Motive to comply
  ✓ Behavioral Control
  ✓ Behavioral Intention

Smith-Becker Instrument

❖ Examples of Questions:
  ✓ **Belief** – "Disinfecting the needleless cap of an intravenous line every time I access it takes time away from other important patient care activities" (Extremely likely…extremely unlikely)
  ✓ **Evaluative** – "Taking time away from other important patient care activities is…"
  (A great concern for me…not a concern for me)

Smith-Becker Instrument

❖ Examples of Questions:
  ✓ **Normative Belief** – "Regarding disinfection of needleless intravenous caps, staff nurses on my unit believe that I should…"
  (definitely disinfect every time I access…definitely not disinfect)
  ✓ **Motive to Comply** – "Doing what staff nurses on my unit believe I should do is…"
  (very important to me…not at all important to me)

Smith-Becker Instrument

❖ Examples of Questions:
  ✓ **Behavioral Control** – "I have easy access to the supplies I need to disinfect needleless intravenous caps every time I access them" (strongly agree…strongly disagree)
  ✓ **Behavioral Intention** – "The likelihood that I will disinfect the needleless intravenous caps of my patients' lines every time I access them is…" (extremely likely…extremely unlikely)

Findings

There were small negative correlations between age ($r = -0.17$, $p = 0.03$) and years of experience ($r = -0.23$, $p = 0.003$) with behavioral intention to consistently use optimal disinfection techniques.

Findings

There was a positive correlation between concern for preventing introduction of bacteria into the bloodstream and behavioral intention to disinfect the needleless cap every time ($r = 0.26$, $p = 0.001$).

Implications for Practice

Traditional nursing education focuses on cognitive and psychomotor domains of learning; however, emphasis on the affective domain is vital to preventing bloodstream infections.

Exemplar

❖ Teaching in the affective domain
  ✓ DVD – "real-life" experience with hospital-acquired infection
  ✓ One-minute written response from RN residents and newly hired experienced RNs
  ✓ Summary of responses

The Statistics Have Faces

4/12/2013

Exemplar – New RN Residents

- "**I will always see her face when I am in a hurry**."
- "***It's easy to forget that people's lives are literally in our hands.***"
- "…**put a face to hospital acquired infections**."
- "…made me want to take the extra 30 seconds to wash my hands when I am busy."

- "I will consciously remember that my actions can either heal or harm."
- "Reminded me of how powerful one simple action can be."
- "…**brings what we do to life**."

Exemplar – Experienced RNs

- "**I feel empowered to be safer in my care and pass that on to my peers**."
- "It made me want to be more careful in my practice."
- "…**more powerful when I see an actual event that could have been prevented**."

- "**A great and powerful message**.
- "A great reminder that hand washing and scrub the hub goes along with "Do no harm.""

Findings

Beliefs (social norms) of all colleagues (e.g., Unit leaders, physicians, PICC nurses) were significantly correlated with behavioral intention, but perceptions of staff nurses' attitudes MOST influenced decisions to Scrub the hub ($r = 0.45$, $p = 0.00$).

Implications for Practice

Staff nurses' practice decisions are
MOST INFLUENCED

By Their PEERS!

Exemplar

- Conducted one-on-one, targeted conversations with preceptors.
  - Thanks for serving
  - Power of influence
  - Latest evidence based practice
  - Resources
  - Barriers to best practice

- Written brochure, "Venous Access Specialty Guide for Preceptors."

Top 5 Lessons Learned

Number 5
The biggest barrier to a 15 second "hub scrub" is TIME.
- Distractions (like the phone in her pocket)
- A long task list
- Perception that there is not enough time
- Need to prioritize so many important patient care activities

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Top 5 Lessons Learned

Number 4
Staff nurses want to know what happens to their patients.
- Nurse patient relationship
- Immediate consequence of not scrubbing?
- Caring

Top 5 Lessons Learned

Number 3
Preceptors are not always up to date on the latest best practices and policy changes.

- Learn from preceptees
- Want to see the evidence
- Want unit based teaching
- Love the "scrub your hub" campaign
  - Culture change
- Example: Mask with cap change

Top 5 Lessons Learned

Number 2
Preceptors want to do the right thing.
- High Reliability Organizations
  - 200% Accountability
- Willing to give and receive correction
  - Other disciplines
- "We all just want a good outcome for the patient."

Top 5 Lessons Learned

Number 1
Thanks for asking!
- Someone took the time
- Want to have a voice
- Want feedback
- Appreciate recognition for their work

Implications for Practice
- Time management/Prioritization
- Follow-up with patient stories
- Keeping preceptors updated
- HRO – teaching other disciplines
- Preceptor feedback & appreciation

Questions?

Thank You!
jssmith@seton.org

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