Capstone Project: A Clinical Microsystems Approach to Implementing a Respiratory Simulation Education Program (R-SEP)

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Background: Simulation Literature Supports Skills related to:

- Aviation
- Medicine
- Nursing
  - RN Level
  - NPs
- Health Professional CPR training
PICO Question

Does providing simulation sessions improve respiratory assessment, diagnostic, and treatment skills in Nurse Practitioners at Hospital X?
Clinical Microsystems Framework

Macro-Meso-Micro

Macro system

Meso system

Microsystem

NPs
Clinical Microsystems

• Microsystem level
  – Simulation Center at Hospital X
    • PDSA cycle
Local Problem

- Information provided revealed a need for improvement in respiratory assessment
- No existing residency program for NPs
- Simulation Center not part of NP orientation
Intended Improvement

• Initial project: NPs requested skills in-service (i.e., chest tube insertion)
• Revised project: improve respiratory assessment, diagnostic, and treatment skills for NPs
• Specific Aim: An increase of scores on OSCE checklist by 15% after the second scenario
Project Timeline

- January 2014-April 2014
- May 2014
- June-July 2014
- August 2014
- September 2014
- October/November 2014
- December 2014
Search Strategy

• Databases: 5 databases, Electronic search
• Use of HS librarian
• Search terms: simulation, nurse practitioners,
• Refined search results: simulation + nursing ed + NP
• Few Studies reviewed however included NPs
  – 1 with NPs
  – 1 with NP students
Critical Appraisal of 11 Studies

• 11 studies reviewed simulation improved knowledge, skills, confidence, and satisfaction.

• 5 studies simulation ↑skills
  – RCT
    • Jeffries & Rizzolo (2006) improvement RN students
  – Quasi Exp
    • Corbridge et al. (2008) bedside skills of NP students
    • Frost et al. (2011) noted increased murmurs detection residents
    • Pascal et al. (2011) PA&NP skills in emergency
  – Descriptive
    • Gordon and Buckley (2009) non-technical skill in emergency
Setting
Participants

Nurse Practitioners

100% Female (n=7), 85% Certified NPs (n=6)
**Demographics**

**Ethnicity, (n=7)**
- Caucasian: 72%
- Asian: 14%
- Other: 14%

**NP Type, (n=7)**
- FNP: 57%
- Other: 11 to 15: 29%
- Acute Care: <5: 14%

**Years as NP**
- <5: 57%
- 11 to 15: 29%
- 16 to 20: 14%
- Other: 14%

1/12/2016
Process for Implementation

1st
• Scenarios were adapted from Harvard Simulation Casebook (2012)
• Obtained Content Validity of Cases with NP expert @NYUCN

2nd
• OSCE Checklist Adapted from Khan et al. (2013)
• Obtained Content Validity to use with NPs

3rd
• Obtained Inter-rater reliability among project team members, 90% among raters

4th
• Began Recruitment via Survey Monkey®, email, and phone calls
Intervention: Development and Implementation of a R-SEP included
Methods of Evaluation

- OSCE checklist adapted from Khan et al. (2013)
  - 62 item Checklist for PNA
  - 59 item Checklist for COPD
  - 3 sub-components: History, PE, and DX
Methods of Analysis

• Using SPSS
  Descriptive statistics used for demographics
  
Microsoft Excel
  Using ratio and proportion scoring to equal 100%
Overall OSCE Results

1/12/2016

n=7

1 2 3 4 5 6 7

CAP Scenario1 COPD Scenario2

40% 40% 54% 40% 46% 44% 51% 55% 58% 46% 49%

40% 29% 66% 46% 51% 41% 58% 46% 49%
Results

OSCE Scores on 3 Subcomponents
n=7

1/12/2016
Results

• History: 85% (n=6) NPs improved in history taking after debriefing
• Physical exam: 57% (n=4) improved after debriefing
• Diagnostic/treatment: 85% (n=6) improved after debriefing
Strengths of the Project:

- NP Forum Buy-in
- Established Content Validity
- 90% Inter-rater Reliability
- 100% participant completion
- Generated policy recommendation
Limitations/Weaknesses

• Not Mandatory
• Lack of Administrative Support
• Scheduling barriers
Recommendations

• Mandatory Competency
• Simulation lab time for NPs
• Implement NP residency using simulation
Summary Statement

• The R-SEP does improve the assessment skills of NPs at Hospital X and more Simulation programs should be developed for NPs
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Any Questions?