AUTOMATED PATIENT REPOSITIONING: IMPROVES QUALITY, SAFETY AND SATISFACTION FOR BOTH PATIENTS AND CAREGIVERS IN TWO HOSPITAL SYSTEMS

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DISCLOSURE

We have no actual or potential conflict of interest in relation to this program/presentation.

OBJECTIVES

- Compare a multi-site replication study to other types of research studies
- Examine the prevalence of injuries among direct care providers.
- Describe patient and caregiver perceptions of an automated patient re-positioner (APR).
- Discuss implications of the APR to nursing practice
BACKGROUND OF THE PROBLEM

- Registered Nurses and Nursing Assistants have the highest incidence rate and median days away from work for non-fatal occupational injuries
- Almost 7x as many MS injuries as construction workers alone (33,000 vs ~5,000)
- 53% of all injuries to nursing assistants are MS (BLS, 2013)
- Research on static loads (boxes) has been focused on men (AJN, 2003)

SMOOTH MOVES
Nursing is just as dangerous as any other job.

CUMULATIVE MUSCULOSKELETAL INJURY
BACKGROUND OF THE PROBLEM

• Training
• Equipment
• Regulatory

Daily patient transfers associated with increased risk for back injury (n=5,017)  
[Andersen, Budolf, Jakobsen, Holtermann, Clausen, Klemensen, 2013]

• Prevalence of back pain among nurses is greatest in low back, followed by shoulders and neck  
[Davis & Kotowski, 2015]

Recommendations:
• Closer follow-up of MS injuries in nurses needs to occur:
  • Patients live longer
  • More chronic disease
  • Bariatric patients
  • Early mobility requirements

BACKGROUND: SPH INTERVENTIONS

Evidence supports multi-component SPH interventions:  
[Tullar, Brewer, Amick, Irrvin, Mahood, Pompeii, Wang, 2010]

• Organizational commitment to reducing patient handling injuries
• Purchase of lift and/or transfer equipment
• Training program that includes SPH and/or equipment usage:
• Training alone—has no effect on MS health  
[Tullar, Brewer, Amick, Irrvin, Mahood, Pompeii, Wang, 2010]
BACKGROUND: REGULATORY CONSIDERATIONS

The Nurse and Health Care Worker Protection Act
- Reduce costly career ending injury and preventable harm
- Only national act addressing SPH
- Goal: Eliminate manual lifting by direct care workers through use of modern technology and safety controls. (ANA, 2015)

OSHA
- Fines hospitals that do not adopt/implement solutions to prevent injuries
  - $7,000-$70,000 (Caspi, 2015)

BACKGROUND: SPH INTERVENTIONS/POLICY

13 year institutional review of a tertiary care and affiliated community hospitals (n=1,543)
- 72% of all caregiver injuries were MS
- 53% of workers' compensation cost

Policy change → "minimal manual patient lifting environment"
- Immediate and marked decline in mean costs per claim and costs per FTE

BACKGROUND: WHY SPH INTERVENTIONS DON'T WORK

Lift equipment use
- High frequency of manual lifting despite access to lift equipment (Wilson, 2015)
  - Only 3% of nurses used lift equipment
  - 60% of nurses suffered high pain levels at end of shift
BACKGROUND OF OUR STUDY:
Podium presentation at the Magnet Conference in 2015 by nurses from The Christ Hospital, Cincinnati, OH.
- Automated patient re-positioner (APR) technique
- Research compared manual “boosting” vs. APR for moving patients up in bed
- South Carolina hospital nurses in attendance and reached out to TCH to request study replication

WHAT IS A REPLICATION STUDY?
- Replication is a term referring to the repetition of a research study, generally with different situations and different subjects, to determine if the basic findings of the original study can be applied to other participants and circumstances (Cherry, 2018).

WHO ARE WE?
The Christ Hospital Health Network is a 555 bed not-for-profit acute care facility in Cincinnati, OH
Bon Secours Saint Francis Hospital is a 204 bed, acute care, non-profit hospital in Charleston, SC
BACKGROUND OF THE PROBLEM: INSTITUTIONAL DATA

<table>
<thead>
<tr>
<th>TCH</th>
<th>BSSF</th>
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<tbody>
<tr>
<td>• Back injuries on one</td>
<td>• Back injuries on the</td>
</tr>
<tr>
<td>medical-surgical</td>
<td>progressive care unit</td>
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<tr>
<td>nursing unit increased</td>
<td>had been a consistent</td>
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<tr>
<td>5X from previous year</td>
<td>problem since 2013.</td>
</tr>
<tr>
<td>• Back injuries related</td>
<td>• Back injuries related to</td>
</tr>
<tr>
<td>to patient</td>
<td>patient repositioning</td>
</tr>
<tr>
<td>2011  1 injury</td>
<td>• 2013 &amp; 2014  4 injuries</td>
</tr>
<tr>
<td>2012  5 injuries</td>
<td>• 2015 &amp; 2016  3 injuries</td>
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STUDY PURPOSE

A multi-site study to measure and compare patient and caregiver perceptions of safety, efficiency, and satisfaction following implementation of an innovative automated patient repositioning (APR) technique

MANUAL BOOSTING
AUTOMATED PATIENT RE-POSITIONER (APR)

WHAT IS THE APR?

METHODS

Approval for a multi-site study was obtained from each hospital’s Institutional Review Board (IRB) and Risk Management Departments.

A replication study:
- Used electronic survey design
- TCHHN shared:
  - IRB approved research protocol and informed consent statements
  - Recruitment documents
  - Data collection instruments
  - Electronic survey access
  - Provided statistical analysis.
METHODS

Setting:

- Survey data was collected and shared on the use of the APR at two institutions in two states (Ohio and South Carolina).
- Comparable Medical Surgical units at each institution
  - 26 beds (TCHHN) and 18 beds (BSSF)

METHODS

Population:
For the purpose of this presentation, we will focus on comparisons of our intervention groups at both sites (26 beds at TCH and 18 beds BSSF):
- TCH Patients –vs- BSSF Patients
- TCH Caregivers –vs- BSSF Caregivers
- ALL Patients –vs- ALL Caregivers

METHODS

Instruments:

Patients:
- Paper survey- Part of administrative rounding
  - 14 items

Caregivers:
- Electronic survey- PCA & RN caregivers
  - 29 items
INCLUSION/EXCLUSION CRITERIA

Inclusion:
• Using APR
• Mentally and physically capable of completing surveys
• Capable of written/verbal communication
• In hospital at least 24 hours

Exclusion:
• Mentally/physically incapable of completing surveys
• Uncontrolled pain or emotional distress
• No previous use of the APR

METHODS

Instrument:
Electronic survey (SurveyMonkey)
• Measured perceptions of manual boosting vs. APR
• Likert Scale 1 (strongly disagree) to 5 (strongly agree)
• Variables: Safety, timeliness, overall satisfaction

1. Safety
• Safety of repositioning technique

2. Timeliness
• Number of caregivers required to manually boost patients
• Perceived amount of time
• Required to be boosted
• Acceptable amount of time to be boosted

3. Satisfaction
• Indicators: Comfort, convenient, privacy, desirable, preserves dignity
• Overall recommendation

Patient and Caregiver Survey Results
COLLECTIVE DATA FOR TCH AND BSSF

<table>
<thead>
<tr>
<th>Intervention (APR) Caregivers</th>
<th>Intervention (APR) Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>62 Caregivers</td>
<td>76 patients</td>
</tr>
<tr>
<td>Average Age = 36</td>
<td>Average Age = 63</td>
</tr>
<tr>
<td>28 PCAs and 34 RNs</td>
<td>Gender = 58% Female</td>
</tr>
<tr>
<td>Average Experience = 6.5 years</td>
<td>Previous hospitalizations = 6.6</td>
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PERCEPTIONS OF PATIENTS AND CAREGIVERS

Caregivers and Patients at both sites were in agreement (no statistical difference) on the following:

- Acceptable length of time to be boosted in bed = 4 minutes
- Time to reposition manually = 6-7 minutes
- Time to reposition with Hercules = 2 minutes
- Safer to be repositioned with Hercules (4.5)
- Provides more privacy = 4.6 (RN/PCA) 4.4 (PT) (avg 4.5)
- Provides more patient dignity = 4.7 (RN/PCA) 4.4 (PT) (avg 4.5)

DIFFERENT PERCEPTIONS OF CAREGIVERS AND PTS

APR scores were very positive with both caregiver and patient populations; however, there were statistically significant differences on the following:

- Number of caregivers to reposition manually:
  - $= 3$ (RN/PCA) 2 (PT) ($p = .001$)
- More convenient to be repositioned with APR:
  - $= 4.8$ (RN/PCA) 4.5 (PT) ($p = .017$)
- Re-positioning occurs more timely with APR:
  - $= 4.8$ (RN/PCA) 4.5 (PT) ($p = .004$)
Slightly Different Perceptions Between Caregivers and Patients

Overall satisfaction with APR:
4.9 (RN/PCA) 4.6 (PT) (p = .001)

Would recommend APR to patients:
4.9 (RN/PCA) 4.7 (PT) (p = .001)

QUALITATIVE FINDINGS: PATIENTS

• “I think it should be mandatory in all hospitals. The main benefit is for the nurse. It saves their backs, especially with heavier patients.”

• “Takes so little time. You don’t have to wait for them (caregivers) to get someone to come in and help”

• “Less back injuries for workers!”

• “Inventor must have been a nurse.”

QUALITATIVE FINDINGS: CAREGIVERS

Reported History of Injuries
• “Previously injured myself while being 1 of 4 nurses moving morbidly obese patient up in bed”
• “I feel strain in my back when lifting/pulling patients up in bed”
• “I had a back injury requiring 2 years of therapy”

Supported the use of APR:
• “It makes my job a lot easier & is not taxing on my back”
• “Can reposition patient by myself, saves time”
• “I think every unit should get these beds. The staff love them. Patients and families even comment on how great they are.”
CONCLUSIONS

50% of all respondents at both facilities (n = 63) reported being injured while repositioning

• APR was perceived as safer, and more efficient
• No reported injuries associated with repositioning at BSSF or TCH since APR installation
• APR more desirable than manual boosting and preferred by caregivers and patients
• Overall satisfaction extremely high for both caregivers and patients

DISCUSSION

Challenges/Opportunities

• Getting IRB approval
• Legal proprietary concerns
• Reassurance to legal beagles—anonymous, data, no PHI
• With hospital acuity, RNs had difficulty participating, so PI had to do it (but was also a benefit)
• Patients on surgical unit—dx of cancer, or in pain and didn’t want to participate
• Took much longer to recruit than anticipated at both sites—patient care came first
• Required regular meetings and advising between hospitals for support and guidance – time commitment
• Some floating caregivers had to be carefully excluded due to exposure to APR

FUTURE IMPLICATIONS

Research and Clinical Application:

• Research was based on perceptions of staff and patients.
• Future research could track actual time required to boost manually vs- APR
• HAPIs
• Track injuries longitudinal for boosting (this needs to be teased out for proper tracking)
• Retention rates of RNs
Questions

Watch this video of Saint Francis Staff...

https://www.youtube.com/watch?v=BRFQj5iaE3o&feature=youtu.be

THANK YOU!
APR Demo