The Impact of Communication Barriers on Adverse Events in Hospitalized Patients

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• Richard Hurtig is a Professor Emeritus in the Department of Communication Sciences and Disorders at The University of Iowa and the President and CSO of Voxello, a biomedical device company developing technology to address the needs of patients facing communication barriers.

• Rebecca Alper is a Post-Doctoral Fellow in the Psychology Department at Temple University and serves as the statistical consultant on the NINR grant.
Learner Outcomes

1. Identify common adverse events
2. Describe communication barriers faced by hospitalized patients
3. Explain the impact of adverse events on the US healthcare system
Agenda

• Overview And Background On Barriers To Patient Provider Communication And Adverse Events
• Data On Incidence & Costs Associated With Adverse Events
• Data On Estimated Reduction Of Adverse Events And Cost Savings If Communication Barriers Are Addressed
• Impact Of Addressing Communication Barriers On Patient Perceptions
• Questions And Wrap-up
Background: Patient-Provider Communication

- Effective patient-provider communication plays a role in:
  - Medical Outcomes
  - Patient Satisfaction
  - Nurse/Caregiver Satisfaction

- Barriers to effective patient-provider communication include:
  - Physical Limitations (e.g. Access To Nurse Call)
  - Inability To Speak Or Write
  - Linguistic Barriers
Background: Patient-Provider Communication

Care Standards Mandate that patients must be able to summon help and effectively communicate with their caregivers.

- The National Joint Committee's Communication Bill of Rights (1992) identified communication as a basic right and declared that individuals with impaired communication have the right to functional assistive technology.

- The Joint Commission (2010) has deemed effective communication, cultural competence, and patient-and family-centered care vital components of safe, quality care and has made that part of their accreditation standards.
Background: Patient-Provider Communication

Ideally patients should be able to

• Summon help by accessing nurse call system.
• Communicate why they summoned help.

• Unfortunately many patients can’t

  • In intensive care units
    • 33% of conscious patients can’t access the nurse call
    • 33% of conscious patients can’t speak because of mechanical ventilation
  • In non-intensive care units
    • 9% of conscious patients can’t access the nurse call

(Zubow & Hurtig 2013)
Adverse Events-1

• The Institute of Medicine report, To Err Is Human: Building a Safer Health System, highlighted the pervasive problem of adverse events (AEs) in health care (Kohn et al, 2000).

• A key element of that report was the differentiation of preventable AEs from unavoidable AEs.

• What was startling was that the preventable AEs may have contributed to somewhere between 44,000 and 98,000 deaths in US hospitals each year.

• Adverse Drug Reactions, Ventilator Associated Pneumonias, Pressure Ulcers and Patient Falls are among the most prevalent preventable AEs.
Adverse Events-2

• The Department of Health and Human Services (HHS) report on the incidence of Medicare beneficiaries’ adverse events (Levinson, 2010) revealed that 13.5% of patients had experienced AEs.

• 1.5% percent of patients had experienced adverse events that contributed to their deaths.

• As a result of their inability to effectively communicate with medical providers, approximately 15,000 Medicare patients’ had died.

• Despite increased hospital awareness of patient safety, 18% of admitted patients were harmed by medical interventions with 63% of those injuries would have been preventable. (Landrigan et al., 2010)
Adverse Event Risk

• Patients with communication impairments **3x more likely** to experience a preventable **adverse event** than patients without communication impairment (Bartlett et al., 2008).
  
  • Physical barriers
  • Linguistic barriers

• Communication /Language Barriers also impact adverse events in the hospitalized pediatric population.(Cohen 2005).
Impact of Communication Barriers on Adverse Events

• Use AHA and HHS/AHRQ national data to
  • Obtain up to date incidence of AEs
  • Obtain current costs associated with treating preventable AEs
• Estimate % of inpatient population facing a communication barrier
• Partition incidence rates for the increased risk populations
• Estimate the incidence and costs associated with the increased risk
• Estimate the potential reduction in AEs if hospitals address communication barriers
• Estimate the cost savings to hospitals from the reduction in AEs
## Adverse Events & Associated Costs

<table>
<thead>
<tr>
<th>Adverse Event</th>
<th>Annual Number of Cases</th>
<th>Average Cost Per Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Ulcers</td>
<td>1,151,021</td>
<td>$17,000</td>
</tr>
<tr>
<td>Ventilator-Associated Pneumonia</td>
<td>38,958</td>
<td>$21,000</td>
</tr>
<tr>
<td>Patient Falls</td>
<td>254,995</td>
<td>$7,234</td>
</tr>
<tr>
<td>Adverse Drug Reactions</td>
<td>1,427,266</td>
<td>$5,000</td>
</tr>
</tbody>
</table>
Calculating Risk and Cost Reduction

1. Number of hospitalized patients in U.S.
2. Percentage of alert patients
3. Proportion of patients who need AAC

4. Calculate rate of AEs for patients who need AAC
5. Reported rates of selected AEs

6. Calculate annual reduction in AEs
7. Calculate annual cost reduction
## Annual AE Occurrence and Cost Reductions

<table>
<thead>
<tr>
<th>Adverse Event</th>
<th>Annual Reduction in Number of Cases</th>
<th>Annual Cost Savings ($ Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Ulcers</td>
<td>221,820</td>
<td>4,000</td>
</tr>
<tr>
<td>Ventilator-Associated Pneumonia</td>
<td>1,888</td>
<td>40</td>
</tr>
<tr>
<td>Falls</td>
<td>49,141</td>
<td>355</td>
</tr>
<tr>
<td>Adverse Drug Reactions</td>
<td>275,057</td>
<td>1,400</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>547,906</strong></td>
<td><strong>5,795</strong></td>
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</tbody>
</table>
Next Steps: Eliminate Barriers

Voxello noddle™ Clinical Trial (ongoing)
• Provide access to nurse call and speech generating device
• Study Groups
  • Traditional Access and Communication (Control1)
  • No Access and Impaired Communication (Control2)
  • Novel AT/AAC system (noddle™ & noddle-chat™)
• Outcomes Measures
  • Patient exit surveys
Patient Survey

• 5-Point Likert Scale (strongly agree-strongly disagree)

• Survey items
  • I was able to independently summon help when I needed it.
  • I had no way to let others know if I needed help or was in pain.
  • I was not able to independently get my nurse to assist me.
  • Having the ability to call my nurse made me feel more at ease.
  • Using my nurse call allowed me to help my nurse take better care of me.
  • Having access to my nurse call did not increase my independence.
Preliminary Results

control groups n=100, noodle=10
F(2,107) = 95.37 p<.0001
Tukey’s Studentized Range (HSD) Test

<table>
<thead>
<tr>
<th>GROUP Comparison</th>
<th>Difference Between Means</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control1 – Control 2</td>
<td>-8.2637</td>
<td>***</td>
</tr>
<tr>
<td>Control1 - noodle</td>
<td>-2.5392</td>
<td>***</td>
</tr>
<tr>
<td>Control 2 - noodle</td>
<td>5.7245</td>
<td>***</td>
</tr>
</tbody>
</table>

Comparisons significant at the 0.05 level are indicated by ***
Summary

- Reducing risk for patients experiencing communication barrier
  - 547,906 fewer AEs annually
  - $5.8 billion annual cost savings
- Facilitating patient-provider communication is both an ethical imperative and an essential part of a multi-pronged approach for reducing the human and financial cost of preventable AEs.
Questions

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References


Centers for Disease Control and Prevention (2016). *FastStats - Hospital Utilization*;


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