Nurse Practitioners in the Emergency Department: a solution to long wait times and high walk out rates?

Authors
Sarah Campbell
Dr. Paul Atkinson
Jacqueline Fraser,
Dr. Rose McCloskey,
Dr. Joanna Middleton
Dr. Connie Stewart

Presenter: Sarah Campbell
Introduction

• Canadian Emergency Departments
  • Overcrowding
  • Long Wait Times
  • High Walk out Rates

• Can the addition of Nurse Practitioners to this Emergency Department reduce wait times and walk out rates?
Introduction

• Ducharme et al (2009)
  • Compared Nurse Practitioners (NPs) and Physicians Assistants in 6 Ontario EDs
  • Wait time, length of stay, walk out rates
  • Both had positive outcomes, NP effect was greater
  • Key results around NP shifts
    • Patients 2.1 times more likely to be seen within wait time benchmarks
    • Length of stay decreases by 48.8%
    • Walk out rate is 71% higher when a NP is not on duty

Introduction

• Steiner et al (2008)
  • Wait time, length of stay, walk out rates
  • NPs worked collaboratively with EPs on patients of all acuity levels
• Findings:
  • No difference in walk out rates or length of stay
  • 7 minute reduction in wait times
  • 12% increase in patient volume

Methods

• Prospective design
• Administrative data collected over 3 months
  • Includes all cases from ED in that period
  • Separated according to whether or not a NP was on duty
• Wait times
  • Survival Analysis-Cox Proportional Hazard
  • Registration date/time to MD seen date/time
• Walk-out rates
  • Binary Logistic Regression
  • Category of disposition manner
Methods

• Main Independent Variable
  • Shift Type – defined as whether or not a NP is on duty
• Covariates
  • Day of Week
  • Time of Day
  • Clinician Type (excluded from walk out analysis)
  • Disposition Manner
  • Acuity Level (according to CTAS)
  • Time_z (standardized normal distribution of wait times; used in walk out analysis)
Preliminary Results

Table 1. Mean wait times according to whether or not a NP is on duty.

<table>
<thead>
<tr>
<th>Shift Type</th>
<th>Mean Wait Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP on duty</td>
<td>80 minutes</td>
</tr>
<tr>
<td>No NP on duty</td>
<td>103 minutes</td>
</tr>
</tbody>
</table>

Table 2. Mean walk out rates according to whether or not a NP is on duty.

<table>
<thead>
<tr>
<th>Shift Type</th>
<th>Mean Walk out Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP on duty</td>
<td>4.7 %</td>
</tr>
<tr>
<td>No NP on duty</td>
<td>8.1%</td>
</tr>
</tbody>
</table>
Preliminary Results cont.

- Survival Analysis of Wait Times
  - Shift Type (NP=1, No NP =0)
  - B = 0.232; Exp(B) = 1.261; p<0.001
- Results separated according to acuity score
  - CTAS1, CTAS 2, No Triage
    - B = -0.018; Exp(B) = 0.982; p=0.845
  - CTAS 3
    - B = 0.302; Exp(B) = 1.353; p<0.001
  - CTAS 4, CTAS 5
    - B = 0.427; Exp(B) = 1.534; p<0.001
Preliminary Results cont.

• Other significant findings
  • CTAS 1&2 patients have shorter waits than CTAS 3 patients
  • Patients who are admitted or expire have shorter waits than those who were discharged.
  • Walk-out patients are associated with longer waits compared to discharged patients
  • Longest wait times are on Mondays
  • Patient who register in the afternoon are associated with longer waits
Preliminary Results cont.

- Binary Logistic Regression of Walk-out Rates
  - Shift Type (NP=1, No NP =0)
  - B = -0.328; Exp(B) = 0.720; p=0.091
- Significant findings
  - Lower walk out rates associated with
    - CTAS 1 and 2 patients
    - Morning registrations
  - Higher walk out rates associated with
    - Mondays
    - Late Evening registrations
  - Time_Z – for every 96 min. (σ) a patient waits after 101 min. (μ) they are 87.2% more likely to walk out.
Conclusions

• Overall, results indicate that NPs have had a positive effect on wait times, especially for lower acuity patients.

• Results also show a reduction in the mean walk out rates, although regression analysis does not confirm this as significant.
Limitations

- D4 Shift – extra physician on duty

<table>
<thead>
<tr>
<th>Shift Type</th>
<th>Percentage of cases with extra physician</th>
<th>Percentage of cases with no extra physician</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP on duty</td>
<td>11.7</td>
<td>88.3</td>
</tr>
<tr>
<td>No NP on duty</td>
<td>11.2</td>
<td>88.8</td>
</tr>
</tbody>
</table>

- Based on 1 NP
- Patient volume not analyzed
- Data collection in summer months
Continuing Research

- Include data on extra physician and patient volume
- Include 2 additional months of data to include 2\textsuperscript{nd} NP and also account for potential seasonal differences
- Analyze length-of-stay data
- Analyze patient satisfaction and staff acceptance surveys
Summary

• Can the addition of Nurse Practitioners to this Emergency Department reduce wait times and walk out rates?
  • YES! ...but additional research is needed to better understand the effect on walk out rates and to account for other potential confounding variables.
Acknowledgements

• Thesis Supervisors and Committee Members
• Co-authors
• Marc Arsenault – Information Services at the Saint John Regional Hospital
• Dr. Rick Audas - MUN
• John Landry and Ed Biden – Atlantic Regional Training Centre
• Health Promotion Research Fund
Questions