Magnet vs. Non-Magnet: What is the Performance Difference?

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4 Themes in Research Literature on Magnet Hospitals

• Professional practice
  – RN autonomy, control over practice and RN-MD relationships
• RN job satisfaction, retention and turnover
• Outcomes
  – Perceived quality of care and patient mortality
• Effect of nursing administration on the practice environment
Focus of Current Study

Magnet/non-Magnet differences:
• Nursing workforce characteristics
• Trends in characteristics
• Factors associated with improving the nursing workforce

Presentation Aims
1. Discuss characteristics of nursing workforce
2. Describe NDNQI® database and study design
3. Describe trends in the nursing workforce
   • Magnets vs. Non-Magnet Hospitals
4. Identify hospital characteristics associated with improvement in workforce characteristics
The Nursing Workforce

Nursing Processes

- Assessment
- Surveillance
- Intervention
- Patient/Family Education
Nursing Workforce Characteristics

Concepts

• Surveillance

• Skill—assessment, treatment

• Knowledge

• Expertise

Measures

• Nursing hours per patient day

• Skill Mix

• Use of Agency staff

• RN Education

• RN Certification

• Experience

Nursing Workforce Indicators

• Total Nursing Hours per Patient Day
  – “Patient/Nurse Ratio”

• RN Hours per Patient Day

• Skill Mix
  – %RN
  – %LPN/LVN
  – %UAP

• % Nursing Hours Supplied by Agency Staff

• % RNs with BSN, MSN, or PhD

• % RNs with National Certification
Longitudinal Study Design

Research Questions

1. How do hospitals approaching Magnet recognition change their nursing workforce?

2. Do hospitals with Magnet recognition maintain the characteristics of their nursing workforce after recognition?

3. Do trends in Magnet hospitals simply mirror trends in non-Magnet hospitals?

4. What types of hospitals maintain or improve the characteristics of their nursing workforce?
Sample

Quarterly Database Design

- Data collected at Unit level (8 types)
  - Critical Care
  - Step Down
  - Medical
  - Surgical
  - Medical-Surgical
  - Other
    - Rehab
    - Pediatric
    - Psychiatric

- Longitudinal
  - Quarterly data
    - 29 Quarters
NDNQI Facilities

- Over 1,000 Hospitals participate in NDNQI
- Participation in a nursing outcomes database, like NDNQI, required for Magnet recognition
  - 93% of Magnet facilities participate in NDNQI
- 20% of NDNQI Facilities are Magnets

Sample

- Magnet facilities, designated between 3rd Quarter 2003 and 2nd Quarter 2004
  - 41 hospitals
  - 484 units
- Non-Magnet facilities (never designated or an applicant)
  - 175 hospitals
  - 1,295 units
Sample Structure

Limitations

- Limited information on which hospitals are Magnet applicants or preparing to apply
  - May decrease ability to detect differences
Measures

Hospital Characteristics

- **Staffed Bed Size**
  - Groups of 100s, from <100 to 500+

- **Teaching Status**
  - Academic Medical Center
  - Other Teaching
  - Non-Teaching

- **Ownership**
  - For Profit
  - Not for Profit & Government
Magnet Hospitals Different Than Non-Magnet Hospitals

- Larger
- Higher percentage of academic medical centers
- A lower percentage of medical/surgical units

### Staffed Bed Size

<table>
<thead>
<tr>
<th>Percent</th>
<th>Magnet</th>
<th>Non-Magnet</th>
<th>All (AHA)</th>
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<tr>
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<tr>
<td>&gt;= 500</td>
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Teaching Status

Ownership

Government hospitals included in Not for Profit category.
Trajectory Analysis

- For each staffing indicator, we fit a curve to the trends over a 15 quarter period
  - 7 quarters pre- and post-recognition for Magnet facilities
  - 15 quarters, centered on 4th Quarter 2003 for non-Magnet facilities

- Model
  - Random effects model, with each unit receiving its own intercept and slope
  - Assumption—data missing at random

Total Nursing Hours Per Patient Day
7 Quarters Pre- and Post-Recognition

Magnet trend, not significant.
2nd period, Magnet & non-Magnet trends significantly different.
On average, Magnet significantly higher than non-Magnets
Neither Magnet nor non-Magnet trend significant. On average, Magnets significantly higher than non-Magnets.

Skill Mix: % RN Hours

Both Magnets and non-Magnets increase %RN in 2nd period. However, Magnet increase is significantly greater than non-Magnet. Equal averages.
Skill Mix: % LPN/LVN Hours
7 Quarters Pre- and Post-Recognition

Magnets had significant decrease in 2nd period. Relative to Magnets, non-Magnets experienced higher decreases throughout the period. Non-Magnets significantly higher than Magnets.

Skill Mix: % UAP Hours
7 Quarters Pre- and Post-Recognition

Magnets had a significant decrease in the 2nd period. Relative to Magnets, non-Magnets significantly increased %UAP in both periods. Magnets significantly higher than non-Magnets.
% Agency Hours
7 Quarters Pre- and Post-Recognition

Magnets had a significant decrease in both periods. Trend for non-Magnets not significantly different than trend for Magnets.

% BSN+
7 Quarters Pre- and Post-Recognition

Magnet trend stable. Non-Magnets had significant decrease in 2nd period. Magnets significantly higher than non-Magnets.
Significant increase in 1st period for both Magnets and the Magnet trend was greater than the non-Magnet trend. Magnets significantly higher than non-Magnets.

**Answers to First 2 Research Questions**

- Hospitals approaching Magnet recognition:
  - Decreased the use of agency staff
  - Increased the use of BSNs

- After recognition, Magnet hospitals:
  - Continued to decrease the use of agency staff
  - Increased the % RN hours
  - Decreased the % LPNs/LVN and UAP hours
Answers to 3rd Research Question

• There were some general trends in nurse staffing. Both Magnet and Non-Magnet facilities:
  – Decreased the hours supplied by:
    • Agency staff
    • LPNs/LVN

Answers to 3rd Research Question

• Some Magnet and Non-Magnet trends differed in the 2nd period:
  – Magnets held total nursing hours steady, while non-Magnets increased total hours
  – While both groups increased %RN hours, Magnets’ increase was significantly higher than non-Magnets
  – Magnets decreased the %UAP hours, while non-Magnets increased %UAP
Answers to 3rd Research Question

- Magnet facilities increased the use of certified RNs, or held a steady percentage, while non-Magnet facilities decreased the use of certified RNs

4th Research Question: Factors Associated with Improvement In Nursing Workforce

- Academic Medical Centers
- Larger Facilities
- Medical/Surgical Units
No Evidence of Major Pre-Magnet Ramp Up

- No significant increase in TNHPPD or %RN
- Magnets increased the % of RNs who were certified and decreased the % Agency hours.

Magnets Continued to Improve

- Magnet facilities maintained nursing workforce characteristics
  - Increased %RN
Discussion

• Magnets are a select group of hospitals. They differ from non-Magnets in
  – Facility characteristics
  – Nurse staffing characteristics
  – Many nursing workforce trends

• Appropriate analysis of Magnet “effect” on patient outcomes should take those differences into account

• NDNQI data can be used conduct such analyses
Questions and Comments

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