Implementing a New Paradigm: Measuring the Results of One Hospital’s Change to a Private-Room NICU

Presented by:
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Christner, Inc.
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Cardinal Glennon
Children’s Medical Center

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Old Unit

44 Patients in Open Ward
259 DGSF/ Patient
Located in 1953 Building
Objectives

- In Available Footprint
- Provide 60 NICU Beds
- Improve Patient Environment
- Appropriate Support
- Maintain Staffing Ratio
- Staff Satisfaction
- Family-Centered Care
Agenda

Discuss Effects of Private Rooms on…
1. Staffing Efficiency
2. Staff Satisfaction
3. Patient Care
4. Family Satisfaction
Space Research

<table>
<thead>
<tr>
<th></th>
<th>CGCH</th>
<th>NICU A</th>
<th>NICU B</th>
<th>NICU C</th>
<th>NICU D</th>
<th>NICU E</th>
<th>NICU F</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Patients</td>
<td>44</td>
<td>49</td>
<td>48</td>
<td>50</td>
<td>33</td>
<td>29</td>
<td>62</td>
</tr>
<tr>
<td># of Rooms</td>
<td>10</td>
<td>24</td>
<td>15</td>
<td>49</td>
<td>30</td>
<td>26</td>
<td>55</td>
</tr>
<tr>
<td>Room SF</td>
<td>N/A</td>
<td>220</td>
<td>140</td>
<td>165</td>
<td>214</td>
<td>142</td>
<td>186</td>
</tr>
<tr>
<td>DGSF/Patient</td>
<td>259</td>
<td>260</td>
<td>367</td>
<td>383</td>
<td>484</td>
<td>492</td>
<td>805</td>
</tr>
</tbody>
</table>

- **Family space**: ✓ ✓ x ✓ ✓ ✓ ✓
- **Dept. Office**: ✓ x ✓ x x
- **Staff support**: ✓ ✓ ✓ x ✓ ✓ ✓
- **On-call**: ✓ x x x x x
- **Academic Offices**: x x x x x x
- **SF Clean**: 5 3 10 5 8 11
- **SF Meds**: 0 4 2 3 3 8
- **SF Nutrition**: 0 1 0 0 4 0
- **SF Equipment**: 10 8 11 11 10 4 18

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415 DGSF/ Patient Available
Rectangular space was most suitable for patient rooms.
Adjacency Research

Staff Priorities at the Bedside:
#1 Charting
#2 Supplies
Staffing Research

At least 12 beds per pod were needed to maintain their current staffing ratio.
Cluster/ Pod Layouts

Color coding corridors helped with wayfinding and staffing.

Twins
18-beds

Twins

14-beds

14-beds

14-beds

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Staff Turnover

NICU Staff Turnover

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Staff Satisfaction

Staff were surveyed in May 2007 and April 2008. Before and after the September 2007 move. (144 responses before 136 responses after.)

I fear being isolated from my co-workers.

My co-workers are available when needed.

Percentage who agree or strongly agree
Family Perception of Patient Care

From Press Ganey Family Surveys
In Old Unit (July 1, 2006 - June 30, 2007)
In New Unit (January 1, 2008 - December 31, 2008)

- **Skill of the Nurses**
  - Old Unit: 94.4%
  - New Unit: 95.1%

- **How Well Staff Worked Together**
  - Old Unit: 94.9%
  - New Unit: 96.0%
Aesthetic Context

Colorful, but No Theme

Lobby and Patient Corridor in Previous Addition
Aesthetic Research

- Timeless, neutral style
- Use of wood for casework
- Subtle application of theme through artwork, rather than permanent design features
Unit Entrance

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Family Spaces

Parent Lounge

Public Waiting

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SSM Cardinal Glennon Children's Medical Center

THE AMERICAN INSTITUTE OF ARCHITECTS
Academy of Architecture for Health
Mock-Up

Rough Foam Core

Detailed Foam Core

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Mock-Up

With Ceilings and Light Fixtures

With Casework, Plumbing, and Electrical Fixtures

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Patient Room

From Press Ganey Family Surveys
In Old Unit (July 1, 2006 - June 30, 2007)
In New Unit (January 1, 2008 - December 31, 2008)

Appearance of the Room

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Old Unit</th>
<th>New Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>87.4</td>
<td>95.1</td>
</tr>
<tr>
<td>10</td>
<td></td>
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<td>20</td>
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<td>60</td>
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<td>70</td>
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<tr>
<td>80</td>
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<tr>
<td>90</td>
<td></td>
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<tr>
<td>100</td>
<td></td>
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</tr>
</tbody>
</table>

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Family Perception of Patient Room

From Press Ganey Family Surveys
In Old Unit (July 1, 2006 - June 30, 2007)
In New Unit (January 1, 2008 - December 31, 2008)

Overall Satisfaction with the Patient Room
- Overall: 89.2% in Old Unit, 95.1% in New Unit

Comfort for Overnight Visitors
- Comfort: 80.1% in Old Unit, 89.4% in New Unit
Staff were surveyed in May 2007 and April 2008. Before and after the September 2007 move. (144 responses before 136 responses after.)

- Noise is currently an issue in the unit.
  - 92.2% agree or strongly agree in the Old Unit.
  - 9.1% agree or strongly agree in the New Unit.

- Lighting is currently an issue in the unit.
  - 67.1% agree or strongly agree in the Old Unit.
  - 10.7% agree or strongly agree in the New Unit.
Patient Room Lighting

**Old Unit**

- **Level 1**: 8fc
- **Level 2**: 46fc
- **Level 3**: 193fc
- **Bed Light**: None
- **Spill**: Adjacent 212fc
- **Total**: 222fc

**New Unit**

- **Level 1**: 5fc
- **Level 2**: 35fc
- **Level 3**: 53fc
- **Bed Light**: Level 1 560fc, Level 2 1,980fc
- **Spill**: None

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[Logos and sponsors]
Patient Room Sound

Relative dB Scale
- average home: 50 dB
- normal conversation: 60 dB
- clothes dryer: 60 dB
- washing machine: 65 dB
- vacuum cleaner: 70 dB

Average Decibel Level

<table>
<thead>
<tr>
<th></th>
<th>Old Unit</th>
<th>New Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>67.4 dB</td>
<td>58.6 dB</td>
</tr>
<tr>
<td>Low</td>
<td>55.0 dB</td>
<td>44.0 dB</td>
</tr>
</tbody>
</table>

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What about clinical outcomes?
Handwashing was surveyed in May 2007 and April 2008. Before and after the September 2007 move. (144 responses before 136 responses after.)

Handwashing is better in the single patient room.

- Old Unit: 49.3%
- New Unit: 65.0%

Percentage who agree or strongly agree
Infection Rates

Nosocomial PBI Infections per 1000 Line Days

Move
Patient Care

Ventilator-Associated Pneumonia (VAP)
Per 100 Vent Days

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Staff Satisfaction

Staff were surveyed in May 2007 and April 2008. Before and after the September 2007 move. (144 responses before 136 responses after.)

My job gives me satisfaction.

<table>
<thead>
<tr>
<th>Old Unit</th>
<th>New Unit</th>
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<tbody>
<tr>
<td>85.5</td>
<td>92.7</td>
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</table>

I am satisfied with the level of care I provide.

<table>
<thead>
<tr>
<th>Old Unit</th>
<th>New Unit</th>
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<tbody>
<tr>
<td>89.6</td>
<td>94.1</td>
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</table>
Family Perception of Patient Care

From Press Ganey Family Surveys
In Old Unit (July 1, 2006 - June 30, 2007)
In New Unit (January 1, 2008- December 31, 2008)

- Time Physician Spent with Child
  - Old Unit: 87.1%
  - New Unit: 87.4%

- Felt Ready for Discharge
  - Old Unit: 94.6%
  - New Unit: 92.9%
Family Satisfaction

From Press Ganey Family Surveys
In Old Unit (July 1, 2006 - June 30, 2007)
In New Unit (January 1, 2008 - December 31, 2008)

Likelihood to Recommend

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Old Unit</th>
<th>New Unit</th>
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<tbody>
<tr>
<td>0</td>
<td>95.9</td>
<td>97.2</td>
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Agenda

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Conclusions

• With a limited space resource it is possible to create a unit that functions well
  – Better environment for patients and staff
  – Better parent engagement

• However, there was less impact on infection rates than expected

• We fit the care model into our culture… but with much effort
Our Advice for Planning a NICU

- Be inclusive
- Visit other facilities
- Set clear objectives
- Understand your culture
- Training! Training! Training!