A New Concept of In-Patient Care: Acuity-Adaptable Patient Room Promotes a Healing Environment

Presented by
Nena Bonuel, PhD, RN, CCRN-E, CNS, ACNS-BC
Nurse Specialist II
Center for Professional Excellence
Houston Methodist Hospital

OBJECTIVES

At the conclusion of this presentation, the participant will be able to:

- Describe the relevance of the acuity-adaptable patient room concept in patient care delivery.
- List two benefits of this room concept in relation to our current health care challenges.
Describe and demonstrate the structure(s) and process(es) by which nurses are involved with the evaluation and allocation of technology and information systems to support practice or nurse’s participation in architecture and space design to support practice.

A Little History…

Texas Woman’s University Doctoral Students enrolled in Patient Room Design as an elective went to Batesville, Indiana at the Hill-Rom Design Center to develop the Patient Room of the Future.

Concept of Acuity Adaptable Room

- Emerging care model where patient is cared for from the same room from admission through discharge regardless of the patient level of acuity
- Care is brought to the patient
- Single or private room concept

Criteria: patient population must be homogeneous, predictable, stable

Wisdom from the Field…

A-A Patient rooms have positive clinical outcomes
- Infection control
- Patient preference and patient satisfaction
- Nurse and physician’s satisfaction
- Patient safety
- Decrease noise levels
- Decrease length of stay

EMERGING TRENDS

Patient of the Future
- Advance age
- Sicker-with comorbidity like diabetes, cardiac disease
- Obese, less mobile
- Diverse ethnicity-aware of alternative medicine
- Require more intensive interventions
- Educated and informed
- Internet connected
- Higher expectation

Demographic Trends- More Boomers, Fewer Nurses

U.S. demand and supply (millions)

- Aging Population
- Declining Enrollment
- Rising Nursing Boomers


Slides taken with permission from Dennis Saffert, Director, Design Innovations & Programs - Hill-Rom
The Forecast is GLOOMY...

Higher Acuity Patients
Shortage of Nurses
Skill-Mix Challenge
Aging Workforce
Demands on Infrastructure

2010 AFFORDABLE CARE ACT

"Three emerging care delivery models

1. Accountable care organization (ACO) promotes and encourages investment in infrastructure and redesigned care processes for high quality and efficient service delivery. (PPACA, Section 3022).
2. Medical or health home
3. Nurse-managed health center

GROUP WORK ACTIVITY
Hill-Rom Design Center Laboratory

Key changes
• Reduced overall size of room width to better fit in standard Hospital column grid layout from 18' - 0" to 16' - 0"

Key changes
• Bathroom moved to increase line of site to outside window & family zone

Key changes
• Increase Depth of room to increase flow in all zones of the room

Key changes
• Recessed clinical work area to improve privacy & decrease conflicts with corridor traffic & moved to foot of bed for better flow & lines of site to patient.

Patient Room Dimensions
Visibility Between Rooms
- Windows located in walls between adjacent rooms permit staff to conveniently observe multiple patients.

Hygiene Zone
- Located near entry to the room – convenient for staff hand washing
- Electronic hand washing monitoring

Key Features Modeled In The Final Design:

Staff Work Area
- Decentralized work station adjacent to patient room to eliminate unnecessary walking
- Windows provide good visibility of patient from work area
- Work area supports computer and charting activities
- Under counter pass through for linens reduces traffic in room and cross contamination risks

Room Entry
- 36" door panel with a 24" lock provides generous room entry for beds and equipment
- 36" single door used for routine daily passage

Clinical Zone
- Bed located in middle of the room, accessible from four sides
- Clear access to side of bed for X-Ray equipment or stretchers
- Custom Headwall provide a range of services based on patient level of acuteness
- Services to be located on both sides of patient

Patient Zone
- Maintain adequate distance around bed for proper flow around patient
- Provide visual stimulation for patient with Flat screen TV, customizable area at foot & line of site of exterior window

Key Features Modeled In The Final Design:
Bathroom Zone
- Located next to exterior window area – out of clinical work area
- Open shower design to maximize flexibility of entire area for Bariatric patients
- Hand rails throughout for maximum support for patients
- Mirror and shelf area above sink
- 48" sliding door leading into room

Family Zone
- Located next to exterior window area – out of clinical work area
- Wardrobe, storage and shelves provided for family or patient
- Include a mobile refreshment area, mini fridge, microwave & flat screen TV
- Pull out sleeper sofa

De-Centralized Work Area
- Decentralized work station adjacent to patient room saves steps to bedside
- Windows provide good visibility of patient from work area
- Work area supports computer and charting activities
- Under counter pass through for linen refreshments reduces traffic and cross contamination risks

Patient Room
- Located next to exterior window area – out of clinical work area
- Include a mobile refreshment area, mini fridge, microwave & flat screen TV
- Pull out sleeper sofa
QUE VADIS?

1. Room Design was presented to the Multi-Organ Transplant Unit at TMH
2. Nursing Director has similar vision of Acuity-Adaptable Patient Room concept
3. Full support from the Medical Director of Transplantation to the idea of Acuity-Adaptable care delivery to start with renal transplant patients.
4. Transplant Unit develop the High Acuity Transplant Unit Criteria for admission criteria, presented and approved by CMPI and TMH P & P (1-19-07)
5. Collaborative team developed Kidney Transplant Curriculum to address staff nurses competency (Implemented December 2006-May 2007)

Transdisciplinary Team to Teach
Kidney Transplant Nursing CORE Curriculum (KTNCC)

Two Clinical Pharmacists- (ICU/Transplant)
Transplant Physician Assistant
Surgical ICU Clinical Leader
CPE Nurse Specialist- LEAD
Clinical Development Specialist
Nursing Director
Associate Chief of Nursing

THE PROCESS

- 5-day classroom didactic (with pre & post tests)
- Final examination is closed book (95% passing score)
- Continuing education hours were awarded per class
- 3 months Clinical preceptorship in the ICU

11 tenured transplant nurses completed the program (5-30 years experience in Transplant Nursing)
Kidney Transplant CORE Curriculum

- 2-day Advance Cardiac Life Support
- Challenge Basic ECG Exam - for score below 85% - staff take the 3-day Basic ECG Class
- 12 LEAD ECG
- The Kidney Transplant Today
- Ethical Consideration of Kidney Transplantation
- Acute Renal Failure
- Treatment Options for Acute Renal Failure
- Physiologic Roles of Fluid and Electrolytes
- Hemodynamic Monitoring
- Pressure Monitoring Set-up
- Glucose Control in Transplant patient
- Post-Operative Management of the Kidney Transplant Patient
- Transplant Infectious Diseases
- Transplant Immunotherapy
- Surgical Complication of Kidney Transplantation
- Chronic Allograft Nephropathy
- High IMC Protocol

Transplant Nurses in Training

Transplant Nurses in Action
APPROVED!

Four transplant rooms were converted to Acuity-Adaptable rooms
*Unit started taking patients in June, 2007
…after 13 months of operation
☑ 4 more rooms were added, May 2008

ACUITY-ADAPTABLE PATIENT ROOM

2008: Quantitative Pilot Study*

Acuity-Adaptable Care Improves Renal Transplantation Outcomes

AIMS:

1. Improve patient outcomes and satisfaction through the implementation of a single-room, acuity adaptable patient room to provide care following renal transplantation.

2. Increase nurse satisfaction and an improved work environment resulting in decreased employee turnover and increased consistency of care.

3. Provide a healing environment by minimizing patient care interruptions and eliminating errors, injuries, and inefficient use of time related to patient transfers.


*Funded research proposal ($30,000 from HOUSTON Methodist Research Institute under NIH - Clinical Translational Science Award program)
Research Hypothesis

- Patients cared for in the Acuity-Adaptable Patient Room will have decreased costs for their total care experience compared to patients cared for in a transitional care process.
- Patients cared for in the Acuity-Adaptable patient Room will have decreased lengths of stay in comparison to patients cared for in a transitional care process.
- There will be no difference in patient satisfaction, nursing care, patient comfort, physiologic measures and nosocomial infection between those patients cared for in the Acuity-Adaptable Patient Room and those cared for in a transitional care process.

Research Design: DESCRIPTIVE

Sample:
The inclusion criteria would be:
- Renal patient with a primary diagnosis of end-stage renal disease
- Must be able to read and write at a 3rd grade level
- Must be 18-75 years of age.
- Post-transplant patients with an American Society of Anesthesiologist (ASA) score of I or II.

The exclusion criteria of the sample would be:
- Renal patient who are intubated post-renal transplant
- Renal transplant patient who developed severe hemorrhage in the immediate post-operative period.
- Renal transplant patients who develop cardiac problems immediate post-operative period.
- Renal transplant patient who develop other kinds of emergent conditions immediate post-operative period.

### Table 1: Baseline Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total (n=17)</th>
<th>Group 1 (n=48)</th>
<th>Group 2 (n=48)</th>
<th>p value</th>
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<tbody>
<tr>
<td>Age (years)</td>
<td>44.5 ± 2.4</td>
<td>48.7 ± 1.2</td>
<td>0.10</td>
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<tr>
<td>Male</td>
<td>17 (47.2)</td>
<td>68 (63.5)</td>
<td>0.12</td>
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<tr>
<td>Race</td>
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<td></td>
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<tr>
<td>White</td>
<td>17 (47.2)</td>
<td>45 (42.1)</td>
<td>0.77</td>
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<tr>
<td>Black or African American</td>
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<td>24 (22.4)</td>
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<tr>
<td>Hispanic or Latino</td>
<td>9 (25.0)</td>
<td>31 (29.0)</td>
<td>0.95</td>
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<tr>
<td>Other</td>
<td>1 (2.8)</td>
<td>7 (6.5)</td>
<td>0.87</td>
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<tr>
<td>Body mass index (kg/m2)</td>
<td>27.8 ± 5.7</td>
<td>25.9 ± 4.7</td>
<td>0.10</td>
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<tr>
<td>ASA</td>
<td>2 (&lt;0.0001)</td>
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<td></td>
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<tr>
<td>ASA score</td>
<td>2 (0)</td>
<td>18 (18.3)</td>
<td>0.10</td>
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<tr>
<td>Duration of surgery (min)</td>
<td>38.7 ± 21.2</td>
<td>41.1 ± 21.1</td>
<td>0.87</td>
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<tr>
<td>Length of stay (days)</td>
<td>4.1 ± 1.3</td>
<td>9.6 ± 11.0</td>
<td>0.0044</td>
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<tr>
<td>Cost</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Total</td>
<td>61291 ± 11508</td>
<td>82859 ± 24882</td>
<td>&lt;0.0001</td>
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<tr>
<td>Laboratory</td>
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<td></td>
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<tr>
<td>Cost</td>
<td>10146 ± 3477</td>
<td>12126 ± 7128</td>
<td>0.12</td>
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<tr>
<td>Direct</td>
<td>21489 ± 4755</td>
<td>26308 ± 9760</td>
<td>0.006</td>
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<tr>
<td>Medical conditions</td>
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<tr>
<td>Hypertension</td>
<td>31 (86.1)</td>
<td>98 (93.3)</td>
<td>0.18</td>
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<tr>
<td>Diabetes</td>
<td>26 (70.3)</td>
<td>48 (47.2)</td>
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<td>CVA</td>
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<td>Pulmonary disease</td>
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<td>11 (11.0)</td>
<td>0.67</td>
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<td>Peptic ulcer disease</td>
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<td>6 (6.5)</td>
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<tr>
<td>Hepatitis</td>
<td>1 (2.8)</td>
<td>9 (9.5)</td>
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Table 2:

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<th>Yes</th>
<th>No</th>
<th>Yes</th>
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<td>Day 1</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Day 2</td>
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<td></td>
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<td></td>
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</table>

Rationale for the Study

- Care of renal transplant patient is complex
- Large Southwestern Magnet Medical Center was challenged to innovate and create 4 acuity-adaptable patient rooms
- Innovation is aligned with the Accountable Care Act 2010
- No qualitative studies were found that examine the experiences of nurses caring for a patient in the acuity-adaptable patient room
Philosophical Foundation: Husserl
- Phenomenology
- Universal Essences
- Transcendental subjectivity
- Bracketing

RESEARCH QUESTION
What are the experiences of the transplant nurses caring for renal transplant patients assigned to acuity-adaptable rooms?

STUDY DESIGN: Descriptive Phenomenology
- Setting: 1500-bed Tertiary Hospital
  - 3-times MAGNET designated
  - 30-bed multi-organ transplant unit
  - 16 acuity-adaptable patient rooms
- Participants: n=10
  - Purposeful sampling
  - "Lived*Experience"

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>0-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
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<tr>
<td>Range = 35-55</td>
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</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>Chinese</td>
<td>1</td>
</tr>
<tr>
<td>Indian</td>
<td>1</td>
</tr>
<tr>
<td>Filipinos</td>
<td>1</td>
</tr>
<tr>
<td>Caucasian</td>
<td>1</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>ADN</td>
<td>1</td>
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<tr>
<td>BSN</td>
<td>1</td>
</tr>
<tr>
<td>MSN/NP</td>
<td>2</td>
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<tr>
<td>Certification</td>
<td></td>
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<tr>
<td>CCTN</td>
<td></td>
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<tr>
<td>Years in Transplant Nursing</td>
<td>5</td>
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<tr>
<td>Years in Transplant Nursing (years)</td>
<td>1-9</td>
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</table>
STUDY DESIGN:
Descriptive Phenomenology

Protection of Human Subject

Formal Ethical Approval was provided by two Institutions

- TEXAS WOMAN’S UNIVERSITY IRB
- THE METHODIST HOSPITAL RESEARCH INSTITUTE (TMHRI) IRB

STUDY DESIGN:
Descriptive Phenomenology

Interview Schedule

1. Tell me about your experiences in caring for a patient in an acuity-adaptable room. How do you think you care for patients differently in an acuity-adaptable room than in a traditional room? What do you like about it? What do you not like? Tell me how you use the technology that is available in acuity-adaptable rooms.

2. What would you change about the room design?

3. What do you think the future holds for the acuity-adaptable patient room? Tell me in as much detail as possible about how you cared for your last renal transplant patient using an acuity-adaptable patient room.

DATA ANALYSIS/PROCEDURE

INTERVIEWS

- Conversion of statements
- Formulation of meanings

Formulated meaning grouped based on interview structure

- Themes
- Theme Clusters

Exhaustive description of the phenomenon

Return to participants to validate description
Incorporate new data to the exhaustive description of the phenomenon
TRUSTWORTHINESS

- CREDIBILITY – PI went back to the study participants and check both data and the interpretation.
- TRANSFERABILITY – PI collected sufficiently detailed data to report data with accuracy.
Purposive sampling was used so the range of specific information about the experience can be maximized.

TRUSTWORTHINESS

- DEPENDABILITY – members of the dissertation committee, colleagues expert in qualitative research examined documentation, the data, findings, interpretations, and recommendations—and attests that it is supported by data and is internally coherent.
- CONFIRMABILITY – adequate audit trail is preserved to support the conclusions, interpretations, and recommendations and can be traced to their sources.

The FINDINGS:

The FINDINGS:

- INTERVIEWS (n=10)
- Significant statements (n=158)
- Formulated meanings (n=135)
- Formulated meaning grouped, based on interview structure
- Themes (n=14)
- Theme Clusters (n=3)
- Exhaustive description of the phenomenon
Findings: 14 Themes

**THEME 1:** The experience is perceived as positive (16 Coded Formulated meanings)

**THEME 2:** Patient satisfaction is improved (7 Coded Formulated meanings)

**THEME 3:** Sense of empowerment (41 Coded Formulated meanings)

**THEME 4:** Adequate education preparation improve the skills of the nurse (17 Coded Formulated meanings)

**THEME 5:** Early patient education (7 Coded Formulated meanings)

**THEME 6:** More privacy to the patient and the family (2 Coded Formulated meanings)

**THEME 7:** Positive perception of technology in the room (38 Coded Formulated meanings)

**THEME 8:** Improve patient outcome due to lower nurse to patient ratio (4 Coded Formulated meanings)

**THEME 9:** Support patient safety (7 Coded Formulated meanings)

**THEME 10:** Calm environment to heal (4 Coded Formulated meanings)

**THEME 11:** Insights of nurses to improve the room (11 Coded Formulated meanings)

**THEME 12:** An emerging care model in the future (5 Coded Formulated meanings)

**THEME 13:** Importance of the family presence in the room (7 Coded Formulated meanings)

**THEME 14:** Future potential for the room concept (10 Coded Formulated meanings)

Findings: 3 Theme Clusters

**THEME CLUSTERS # 1:**
- The acuity-adaptable patient room provides comfort to both patient and family.

**THEME CLUSTERS # 2:**
- Nurse felt a sense of empowerment in the care of renal transplant patient in the acuity-adaptable patient room.

**THEME CLUSTERS # 3:**
- There is a future potential for the acuity-adaptable patient room.

Findings: Examples of Statements and Meanings

<table>
<thead>
<tr>
<th>Theme Clusters</th>
<th>Significant Statements</th>
<th>Formulated Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-A room provides comfort to both patient and family</td>
<td>&quot;We are able to give our patient a certain degree of comfort through the night, and we can monitor them with a minimum amount of interruption.&quot;</td>
<td>The acuity-adaptable patient room provides a healing environment for the patient and the family by offering them a sense of comfort and privacy.</td>
</tr>
<tr>
<td>Nurse Empowerment</td>
<td>&quot;These patients—I can see them, whether they are improving or not—whether they are getting worse, I don’t have to rely on telemetry to call the nurse. I don’t have to rely on lab tests. I don’t have to rely on a lot of things external factors. I have the CVP. I have the art lines when my patient is a little dehydrated or overloaded.&quot;</td>
<td>The nurse feels a sense of empowerment in the acuity-adaptable patient room due to the availability of monitoring equipments and the ability to closely observe the patient’s condition.</td>
</tr>
<tr>
<td>Acuity-Adaptable has future potential</td>
<td>&quot;I think there are certain type of patients that the AA room could be very beneficial. Your orthopedic patients, most of the orthopedic patients come in the same room and discharge in between.&quot;</td>
<td>The nurse acknowledges the potential of the acuity-adaptable patient room for certain patient populations.</td>
</tr>
</tbody>
</table>
What are the experiences of the transplant nurses caring for renal transplant patients in acuity-adaptable patient rooms?

Nurses felt empowered in caring for patient in the acuity-adaptable patient room. It is this empowerment that they are able to build partnership with their patient and the family in providing quality care; transforming the environment so the renal transplant patient is put in the best position to heal.

Because a healing environment is created with the acuity adaptable patient room concept, the feasibility of this room in the future is promising.

CONCLUSIONS

- Acuity-adaptable patient room concept shows promise in providing a healing environment for the patient and family.
- Limitation of the study: purposive sampling
- Findings will provide a foundation for the design of further studies using either qualitative or quantitative studies.
- Replication of the study is needed to strengthen the support for this kind of patient room in the future

Implications for Nursing

- Affordable Care Act, 2010
- The Future of Nursing, 2010
- NDNQI: A-A pt. room is an emerging unit-type
- Hybrid Nurse…?
- Efficient utilization of the ICU beds, Patient transfer decrease, bed control minimize
- Acuity-Adaptable room – hot topic in conferences
OUTCOMES

- Results of the study is now in publication

Other Publications on Acuity-Adaptable Patient Room


PRESENTATIONS on ACUITY-ADAPTABLE PATIENT ROOM

PRESENTATIONS on ACUITY-ADAPTABLE PATIENT ROOM


 Invited Speaker - “Acuity-Adaptable Patient Room of the Future” Speaker at the 5th Far Eastern University Marian Association Grand Reunion held in Orlando, Florida, June 28, 2008.

 Oral presenter - “Using Technology to Support Acuity-Adaptable Care Delivery of Renal Transplant Patients,” speaker at the 18th International Nursing Research Congress Focusing on Evidence-Based Practice-Collaboration: A Transdisciplinary Roadmap to Discovery held in Austria Center, Vienna, July 11-14, 2007.

 Concurrent session speaker - “Patient Room of the Future,” at the National Indian American Conference held in Houston, May 5, 2007.

Acknowledgements

<Signature>

Methodist CENTER FOR PROFESSIONAL EXCELLENCE NURSING
Thank you!
Contact Information: nbonuel@tmhs.org