Structural Empowerment: Outcomes of Adding Nurse Practitioners to Interprofessional Teams

Pam Jones, MSN, RN, NEA-BC
April N. Kapu, MSN, RN, ACNP-BC
Objectives

• Summarize structural empowerment theory and its applicability in the development of NP models of care.
• Identify metrics and methods for measurement of NP associated outcomes.
• Quantify NP associated quality outcomes in terms of cost savings and cost avoidance.
VUMC

• Quaternary academic medical center located in Nashville, Tn with 3 hospitals:
  – Vanderbilt University Hospital (VUH)
  – Monroe Carell Jr Children’s Hospital at Vanderbilt
  – Vanderbilt Psychiatric Hospital.

• Outpatient locations and affiliations across the region.

• Nationally ranked Medical (14th) and Nursing Schools (15th).
Vanderbilt University Hospital

- 619 beds
- High acuity provider - Level 1 trauma center, burn center, organ transplant, high-risk obstetrics (fetal surgery), and LifeFlight (5 rotor wing, 1 fixed wing).
- 36,711 annual admissions, 60,479 ED visits and 35,112 surgical cases
- Vanderbilt Medical Group - 1,725,901 visits
- The hospital and associated outpatient areas - 5,420 FTEs and clinics 1700 FTEs

*Fiscal Year 2012*
APRN Practice

- Center for Advanced Practice and Allied Health Professionals (CAPNAH) – established in 2005.
- Over 700 APRNs practicing at VUMC.
- Faculty appointed and billing provider status for most.
- 85 APRNs in VUH.
- Collaboration and supervision required by state law.
Unique Scholarly Project Opportunity

• Three DNP students in leadership roles
  – Chief Nursing Officer (CNO)
  – Assistant Director for Advanced Practice
  – Associate Hospital Director for Perioperative Services
• CNO and Assistant Director – already partnered in development of acute care APRN practices
• DNP student led organization-wide project to develop an innovative care model with APRNs at the center.
Enterprise surveillance teams:
- telemetry
- LifeFlight
- bed mgmt.
- integrated presence

Unit-based teams:
- NP, charge nurse, transition cdtr., RN

Inpatient care team:
- MD/NP, RN, house staff, transition cdtr., social worker

Outpatient care team:
- MD/NP, RN, transition cdtr., homecare

Patient and family intervention teams:
- rapid response
- glycemic mgmt.
- comprehensive pain svc.

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vACT Poof of Concept Interventions

- Unit-based APRN led team providing both routine and enhanced care
- Structured huddles
- Coordinated activities with intervention teams to provide targeted interventions based on patient specific need
- Role clarification and team training for increased communication, efficiency and reliability
- Use of a dynamic risk profile to anticipate care needs
Long-term Evaluation (Post POC)

**Throughput**
- Length of stay

**Transitions**
- Readmission rates
- HCAHPS – discharge information

**Patient Experiences**
- HCAHPS – overall quality of care
- HCAHPS pain mgmt.
- PRC

**Team Effectiveness**
- Team devel. measure
- AHRQ culture of safety
- HCAHPS teamwork

**Cost and Quality Effectiveness**
- NDNQI fall and pressure ulcer metrics
- Rate of adverse events
- Core measures
- Cost per discharge
Structural Empowerment of Inpatient APRNs within an Academic Medical Center
Project 1 – Structural Empowerment and Unit-based APRN Role

Aims:

• Describe the structures associated with the role of the unit-based APRN using the inpatient nurse practitioner structural empowerment concept map as a framework.

• Create a preliminary unit-based APRN role description and implementation plan using Bryant-Lukosius and DiCenso’s (2004) PEPPA framework.

• Implement the unit-based APRN on the vACT pilot unit.

• Complete a written role description and proposed workflow map for the unit-based APRN at the time of implementation of the proof of concept vACT unit.
Synthesis of Evidence- Structural Empowerment

- Primarily descriptive, qualitative or quasi-experimental. Limited quantitative data
- Limited evidence specific to structural empowerment of APRNs – opportunity for further research and strengthens project

Bold – APRN specific
Concepts

• Structural empowerment is defined as those environmental and situational characteristics that promote empowerment (Manojlovich, 2007).

• Empowerment can be defined as enabling someone to act (Chandler, 1992, p.65).

• Laschinger (1996) states that employees must have “access to resources, information, support, and opportunity” (p. 26) to be empowered.
Structural Empowerment Interviews

- Interviews of 10 current Acute Care APRN within VUH
- Convenience sample based on schedule availability
- Components of interviews
  - Provided with definition of structural empowerment
  - Structured series of questions
  - Given concept map and asked to mark each element as Important (I), Somewhat Important (SI) or Not Important (NI)
  - Recorded, transcribed and sorted for themes
Interview Questions

• Given your experiences as an APRN, please describe what makes you feel empowered?

• Are there specific processes, structures or relationships that increase your feelings of empowerment?

• Please describe what decreases your feelings of empowerment.

• Can you provide suggestions for strategies to mitigate these barriers?

• Anything else you would like to add?
# Characteristics of Participants

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<td>Inadequate staffing</td>
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<td>Peer support/networking</td>
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<td>Marginalizing the role</td>
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## Importance of Elements of Concept Map

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<td>NP Leader</td>
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<tr>
<td>Alignment with Nursing and Medical Staff</td>
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<tr>
<td>Continuing Education</td>
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<td>Role Delineation</td>
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<td>Peer Support</td>
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<tr>
<td>Peer Review</td>
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<td>EBP and Dissemination</td>
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<td>Medical Director</td>
<td>1.7</td>
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<tr>
<td>Financial Value Creation</td>
<td>1.6</td>
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<td>Professional Involvement</td>
<td>1.6</td>
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<tr>
<td>Aligned Financial Incentives</td>
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Numerical rankings: I = 2, SI = 1, NI = 0
Limitations

• Academic medical center specific
• Intended as descriptive and performance improvement (not qualitative research)
• Potential influence of CNO role on participants responses
APRNS -- Certified NPs to Interprofessional Teams

• Health care in need of solutions to maximize cost-effectiveness while improving quality, safety and delivery of health care.
• Specific concerns regarding LOS, readmissions, HAC and AE related to inpatient care.
• IOM’s emphasis on critical role nurses will play in safe, quality care and coverage.
  – APRNS should practice to full scope of their license
  – Theoretical contributions of nursing
• Exploration of certified NPs in the acute care inpatient environment.
Purpose and Significance

• Investigate inpatient NP practice outcomes at Vanderbilt University Hospital as they relate to quality and reduction in health care costs.

• What is the evidence that this provider type can provide cost-effective, consistent quality care?

• The evidence should support future initiatives on behalf of nursing, advanced practice and health care, in addressing challenges to improve healthcare and reduce associated costs.
vACT Care Delivery Model

Enterprise surveillance teams
- telemetry, LifeFlight, bed mgmt., integrated presence

Unit-based teams
- MD/NP, charge nurse, case mgr., RN

Inpatient care team

Patient and family

Outpatient care team

Intervention teams:
- rapid response,
- glycemic mgmt.,
- comprehensive pain svc.

P. Jones & N. Feistritzer, 2012
Vanderbilt Anticipatory Care Teams

Inpatient Care Team

Dynamic Intervention Team (if needed)

Unit-Based Team

Patient
Can NPs effectively lead these teams?

- Inpatient Care Team
- Unit-Based Team
- Dynamic Intervention Team
Adding NPs to Inpatient Care Teams -- Literature Review

• Inpatient studies that have shown the impact NPs have had on standardization of evidence based guidelines and quality of care.
• In each selected study, NP associated quality outcomes were attached to financial outcomes attributed to cost savings or cost avoidance.
• Analyzed inpatient related issues -- LOS, Resource utilization, HAC and/or AE
### Source | Findings
---|---
Burns, et al., 2002 | Per pt. savings $16,293.
Burns, et al., 2003 | Over $3,000,000 in cost savings.
Butler et al., 2011 | Increase in charge capture by 48%.
Chen et al., 2009 | Total drug costs per patient for $208
Cowan, et al., 2006 | Increased hospital profit by $952 per pt.
Ettner, et al., 2006 | Net cost savings of $978 per patient.
Meyer, et al., 2005 | Total cost decreased by $5039 per pt.
Russell, et al., 2002 | Total cost savings of $2,467,328.
Sise et al., 2011 | Decreased complications by 28.4%, LOS by 36.2%, costs of care by 30.4%
APRN Role Definition

• Established specific implementation teams
• Interprofessional participants and stakeholder feedback
• Qualitative and quantitative data used to determine APRN focus
PEPPA Framework for APRN role design, implementation and evaluation

• Logically congruent with concept map
• Participatory, evidence-based, patient focused
• 9 step process
• Participatory action research (PAR) principles embedded
• Excellent roadmap
• Roles – stakeholders, participants and facilitator

Preparation

- Proforma for each practice
- Protocol development
- Established professional practice evaluation
- Outcomes identified and tools developed
- Job description and job requirement of ACNP
- 90 day credentialing and privileging
- Orientation, training and ongoing education
Project Design

• Retrospective, secondary analysis of 5 inpatient NP-led anticipatory teams
• Analysis of financial productivity
• Comparison of average length of stay (LOS)
• Assessment of quality outcomes associated with cost avoidance
Length of Stay

- Average length of stay
  - Actual and Risk-adjusted
    - MSDRG, age, complications, co-morbidities, complexity, etc.; UHC O/E calculation of acuity
  - Admissions, Transfers and Discharge (ADT) tracking software

- Statistician, Byron Lee, BS, MBA
Quality Data Collection Imbedded in Daily Progress Notes

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<thead>
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<th><strong>HERE</strong> for NCU NP Quality Metrics</th>
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<td>1 Insertion Date: 05/29/2011</td>
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<td>2 Insertion Date:</td>
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<td>Disposition Update Date: 06/01/2011</td>
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<td>Swallow Study/Cognitive Screen Date: 05/26/2011</td>
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<td>Prophylaxis: Lovenox</td>
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<td>Ulcer Prophylaxis: H2 blocker</td>
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Billing Hours can be placed here.

MyText SpellCheck
## NP Specific Dashboards

### NP MICU Mechanical Ventilation Patients with Stress Ulcer Prophylaxis

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<th>BY MICU Provider</th>
<th>% Mech Vent Pts with SAP</th>
<th>9/30/2012 Mech Vent Cases</th>
<th>% Mech Vent Pts with SAP FYTD</th>
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<td>Total</td>
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<td>157</td>
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5 Inpatient NP-Led Teams

- Dynamic Focused Team: RRT
- Dynamic Focused Team: GMS
- Unit-Based Teams: SICU, CVICU, NCU
- Primary, Unit-Based Team: Trauma
- Primary, Unit-Based Team: MICU
**Dynamic Intervention Team**

NP-Led RRT

- Provide immediate prescriptive provider on calls for early diagnosis and management
- NPs added 2011
- Charge nurses expressed 96% satisfaction
- NPs collected data on each call via secure database
- NPs billed for some calls

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<td>No data (39)</td>
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<td>Neurological (341)</td>
<td>Non-ICU, higher level of care (156)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Death (7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No data (21)</td>
</tr>
</tbody>
</table>
Proportion of STAT calls to overall STAT/RRT calls
NPs added 2011
Posted NP RRT Charges 2011

January  | February | March  | April  | May    | June   | July   | August | September | October  | November | December
$0.00    | $0.00    | $0.00  | $10,000.00 | $20,000.00 | $25,000.00 | $30,000.00 | $35,000.00 | $30,000.00 | $35,000.00 | $30,000.00 | $25,000.00
Posted NP RRT Charges 2012
Dynamic Intervention Team

NP-Led Glucose Management Service

- Provide diabetes management, reduce complications and length of stay
- Service began August 1, 2012
- NP billed for 202 calls
  - Posted charges $204,304.00
  - Gross collections $82,762.00
  - Salary and fringe expenses $50,000

<table>
<thead>
<tr>
<th>Time</th>
<th># consults seen by GMS NP</th>
<th>GMS NP Risk-adjusted ALOS</th>
<th>Hospital Risk-adjusted ALOS</th>
<th>Average # days from admission to consult</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 1, 2012 – January 31, 2013</td>
<td>202</td>
<td>1.11</td>
<td>0.94</td>
<td>4.3</td>
</tr>
</tbody>
</table>
Unit-Based Teams

3 ICUs -- NCU, SICU, CVICU

- Provide 24/7 ICU provider coverage, meet quality imperatives
- LOS pre and post adding NPs 24/7
  - Actual ICU LOS and risk-adjusted LOS
- Billing provider
- Quality dashboards

<table>
<thead>
<tr>
<th>Time frame</th>
<th>Team</th>
<th>ICU ALOS Pre-NP</th>
<th>ICU ALOS Post-NP</th>
<th>UHC O/E ALOS Pre-NP</th>
<th>UHC O/E ALOS Post-NP</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY9 (pre)</td>
<td>NCU</td>
<td>4.04</td>
<td>3.57</td>
<td>1.19</td>
<td>0.92</td>
</tr>
<tr>
<td>FY11&amp;12 (post)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>FY10 (pre)</td>
<td>SICU</td>
<td>4.64</td>
<td>4.47</td>
<td>1.39</td>
<td>1.25</td>
</tr>
<tr>
<td>FY11&amp;12 (post)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FY5 (pre)</td>
<td>CVICU</td>
<td>5.37</td>
<td>3.59</td>
<td>6.1</td>
<td>6.31</td>
</tr>
<tr>
<td>FY11&amp;12 (post)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Primary and Unit-Based Team

Trauma NP Team

- Increase throughput, access to provider, quality
- Experienced Trauma NPs added 12/1/11
- 1 year compared with 2 years prior to adding NPs
- Impact on LOS for each Trauma area, pre and post adding NPs daily
- Injury severity score, $p = 0.46$ for being different year to year

<table>
<thead>
<tr>
<th>Time frame</th>
<th>Overall Trauma service cases</th>
<th>Overall Trauma Service, T1,2,3</th>
<th>T2 Intervention Unit</th>
<th>Average hospital charges per case</th>
<th>CMI</th>
<th>ISS</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/1/09 - 11/30/10</td>
<td>2559</td>
<td>7.4</td>
<td>2.6 (1827 cases)</td>
<td>$106,162</td>
<td>3.94</td>
<td>19.124</td>
</tr>
<tr>
<td>12/1/10 - 11/30/11</td>
<td>2671</td>
<td>7.0</td>
<td>2.5 (1875 cases)</td>
<td>$106,673</td>
<td>3.69</td>
<td>18.879</td>
</tr>
<tr>
<td>12/1/11 - 11/30/12</td>
<td>3053</td>
<td>6.4</td>
<td>2.2 (2202 cases)</td>
<td>$97,306</td>
<td>3.35</td>
<td>19.045</td>
</tr>
</tbody>
</table>
**Primary and Unit-Based Team**

**MICU NP Team**

- Provide 24/7 ICU provider coverage, meet quality imperatives
- MICU had 34 ICU beds with 2 housestaff teams and 1 NP team
- Comparison NP team to 2 housestaff teams
  - LOS and risk-adjusted LOS
- Billing providers
- Quality dashboards

<table>
<thead>
<tr>
<th>Time period</th>
<th>MICU A ICU LOS</th>
<th>MICU B ICU LOS</th>
<th>MICU NP ICU LOS</th>
<th>MICU A R/A LOS</th>
<th>MICU B R/A LOS</th>
<th>MICU NP R/A LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY11&amp;12</td>
<td>5.12</td>
<td>6.24</td>
<td>3.66</td>
<td>1.07</td>
<td>1.16</td>
<td>0.99</td>
</tr>
</tbody>
</table>
MICU FY11-FY12

- Charges
- Gross Collections
- Salary + Benefits
Conclusions

• We found that adding NPs to inpatient care teams decreases costs associated with length of stay.
• NPs as billing providers can generate added revenue.
• NPs can improve quality of care through consistent application of evidence based standards.
Impact on Practice

• National health initiatives have provided the foundation for NPs to showcase their abilities and contributions.

• Structural empowerment provides the environment and resources necessary for NPs practice at the top of their license.

• NP associated outcomes quantified in terms of dollars can make a powerful statement in the valuation of NP practice.

• Inform healthcare initiatives to increase access, quality and cost-effectiveness.
Questions

• What is the utility and applicability of structural empowerment theory in the inpatient setting?
• How might structural empowerment theory affect the planning, development and implementation of NP models of care?
• How would you identify NP associated metrics and develop tools for measurement of outcomes?
• Why value NP programs and associated outcomes in financial terms?
• How might the DNP support leadership growth and development and what is the potential downstream impact to an organization?
References


• Collins, N., Forrester, M., Morton, M., Kapu, A., Martin, R., Atkinson, S., . . . Miller, R. (2013). Outcomes of adding acute care nurse practitioners to a level one trauma service with the goal of decreased length of stay and improved physician and nursing satisfaction. Manuscript submitted for publication, Department of Trauma and Surgical Critical Care, Vanderbilt University, Nashville, Tennessee.


• Joint Commission Resources. (2009). Are you on board with The Joint Commission’s FPPE/OPPE requirements? *Hospital Peer Review*, 34, 137-141.


• Shapiro, S., Donaldson N., & Scott M. (2010). Rapid response teams: Seen through the eyes of the nurse. American Journal of Nursing, 110(6), 28-34.


