Measuring Outcomes Through CNS Competencies: A Productivity Model

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The Foundation of CNS Practice

- Spheres of Influence
- CNS Core Competencies
- CNS Essential Characteristics
- AACN Essentials of Masters Education
Defining CNS Competencies

• Scope of Practice & Service
  – Patient/family
  – Nursing/Nursing Practice
  – Organization/System

• Core Competencies
  – Use knowledge of differential diagnosis & treatment in comprehensive, holistic assessment of patients in context of disease, diagnosis and treatment
  – Design, implement & evaluate innovate programs of care to achieve, safe, quality and cost effectiveness
  – Serve as a leader/consultant/mentor/change agent in advancing nursing practice.

Defining CNS Competencies

• Core Competencies
  – Advance nursing practice through innovative evidence-based interventions, best practice guidelines and modifications of standards that direct the care of nursing personnel & others
  – Lead multidisciplinary groups to facilitate collaboration with others to attain outcomes
  – Interpret the dimension of nursing care requiring resources at the system level & provide leadership to assure the system adequately supports the delivery of nursing care
  – Expand the practice of nursing through ongoing generation of knowledge and skills to maintain clinical competencies that lead to outcomes
Defining CNS Competencies

- Core Competencies
  - Expand the practice of nursing through ongoing generation of knowledge and skills to maintain clinical competencies that lead to outcomes
  - Demonstrate professional citizenship and fiscal responsibility in a health care system by focusing on health policy and resource management to ensure quality, cost-effective nursing care

- Essential Characteristics
  - Clinical expertise in a specialty, Leadership skills, Collaboration skills, Consultation skills, Professional attributes, Ethical conduct, Professional citizenship in specialty and in the profession of nursing

The AACN Essentials of Masters Education

- Research
- Policy, organization & financing of healthcare
- Ethics
- Professional role development
- Theoretical foundation of nursing practice
- Human diversity & social issues
- Health promotion and disease prevention
- Advance health assessment
- Advance physiology and pathophysiology
- Advance pharmacology
Productivity Model

• Structure
  – Job description
  – Characteristics of the work setting (area/pt load, resources)
  – Organizational placement
  – Time spent in CNS role functions

Structural Component

The stronger the structural elements the greater probability that an APN can be effective in providing care and achieving outcomes.
Productivity Model

• Process
  – CNS ability to perform role (process) within 3 spheres of influence
  – Demonstration of the CNS essential characteristics and CNS competencies
  – CNS activity lead to a change in staff nurse behavior
  – Interpersonal factors: professionalism, communication skills, job satisfaction
  – Evaluation through self assessment, customer assessment and administrative review
Patient/Client Sphere of Influence

- Expected Outcomes
  - designing cost effective programs of care
  - prevention, alleviation or reduction of symptoms or functional problems
  - unintended consequences and errors are prevented
  - seamless transition across continuum of care
  - published reports of new clinical phenomena or interventions

- Competencies
  - uses appropriate research based tools, techniques to identify, describe and intervene
  - develops & test innovative assessments & interventions
  - synthesizes data from multiple sources
  - selects, develops & applies appropriate evaluation measures of nursing therapeutics
Nurse/Nursing Practice 
Sphere of Influence

• Expected Outcomes
  – knowledge & skill needs are profiled
  – articulate research base for innovations
  – nurses are able to articulate nursings’ unique contribution
  – job satisfaction
  – nursing personnel are engaged in learning
  – reduction in cost of care through purchase & use of resources

• Competencies
  – designs & uses tools to identify gaps in knowledge
  – identify need for change or modification in equipment or products & proceeds with the change process
  – anchors performance efforts on data-based information
  – assists staff to critique &/or apply research
  – mentors nursing staff in career development

Organizational/Network 
Sphere of Influence

• Expected Outcomes
  – patient care processes reflect continuous improvement that benefits the system
  – innovative models of practice developed/best practice
  – benchmarking against like institutions
  – organizational decision makers are informed of practice issues with impact on outcome & cost
  – system-wide change initiatives

• Competencies
  – assess effectiveness of teams & lead nursing/multidisciplinary groups in innovative patient care programs
  – creates, advises & influences system-wide policies
  – reduces barriers & support facilitators to change across the continuum of care
Productivity Model

- **Outcome**
  - Results of CNS practice within the 3 spheres of influence
  - Changes in practice measured through clinical outcomes:
    - Safety
    - Quality improvement
    - Decrease complication rates
    - Satisfaction
    - Retention
    - Financial benefit
    - Quality of Life
    - Functional status
    - Resources: LOS, readmission, ER visits

### HENRY FORD HOSPITAL
Clinical Nurse Specialist Goals and Evaluation Tool

<table>
<thead>
<tr>
<th>NAME:</th>
<th>S.S. #</th>
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<tbody>
<tr>
<td>REPORT/EVALUATION</td>
<td>GOALS:</td>
</tr>
<tr>
<td>DATE/QUARTER</td>
<td>YEARLY</td>
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#### 1. Structure Evaluation

<table>
<thead>
<tr>
<th>Practice</th>
<th>Percent of Practice</th>
<th>Average Score</th>
</tr>
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<tbody>
<tr>
<td>Practice</td>
<td>x</td>
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<tr>
<td>Education</td>
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<tr>
<td>Consultation</td>
<td>x</td>
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</tr>
<tr>
<td>Research</td>
<td>x</td>
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<tr>
<td>Professional Development</td>
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**TOTAL SCORE:**

<table>
<thead>
<tr>
<th>Key:</th>
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<tbody>
<tr>
<td>5 = Outstanding</td>
</tr>
<tr>
<td>4 = Excellent</td>
</tr>
<tr>
<td>3 = Fully Satisfactory</td>
</tr>
<tr>
<td>2 = Minimally Satisfactory</td>
</tr>
<tr>
<td>1 = Not Satisfactory</td>
</tr>
</tbody>
</table>
II. Practice

Competency Statement: The CNS will function as a clinical resource by assisting the staff to implement the nursing process for a patient or group of patients:

a. Develops/completes/maintains unit competencies.

Process:
Outcome:

b. Develops standards/Area/protocols and procedures for unit population.

Process:
Outcome:

II. Practice

c. Demonstrates clinical expertise to plan and follow up on care for the complex patient.

Process:
Outcome:

d. Provides support in the implementation, ongoing utilization, and evaluation of the care management patient care system.

Process:
Outcome:

e. Other practice activities.

Process:
Outcome:

Average Score: Practice = ________

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Outcome Measures

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Outcome Measures

Clinical: Indicator of improvement or lack of improvement regarding a health problem

Functional: Indicators of well-being & ability to participate in ADL and resume desired role

Financial: Indicator of economic profitability or cost avoidance

Criteria for Selection of Evaluation Measurement

- **Significance**: Relevant to the customer, priority, affect important aspects of Healthcare, helps in identifying ways to improve care
- **Range**: adequately assesses scope of service, discriminates variables in performance (sensitive), measures factors under some control of the APN
- **Quality**: document reliability and validity, accounts for confounding variables, severity adjusted
- **Feasibility**: cost-effective, able to measure, able to get the denominator
Clinical Measures

- Unexpected Death/Failure to Rescue:
- Mortality/Morbidity
- Readmission to the ICU or Hospital
- Central line infection rate: CLA-BSI
- Ventilator associated pneumonia rate (VAP):
- Urinary Tract Infection rate: CA-UTI
- Patient & family satisfaction:
- Fall Injury rate
- Hospital acquired skin injury
- Pain management

Functional Measures

- **Staff professional growth:** % BSN’s, % staff in school, % number of CN II & CN III and evidence of professional based activities
- **Staff participation in change:** Staff lead projects/practice guidelines and leadership roles in shared governance structure
- Functional Health Status: Short form 12 or 36 used with a designated patient population
- Satisfaction/responsiveness of the professionals
Financial Measures

- **Nurse turnover**: Loss of an FTE from the unit
- **Nurse wastage rate**: Loss of an FTE within the 1st year of employment on the unit
- **Cost avoidance/orientation**: Estimated amount of money saved in orientation cost based on turnover rates when compared to national figures
- **ICU Length of stay**: LOS compared with a MICU in a similar type facility
- **Variance in reimbursement vs. cost of care delivery**
- **Denied reimbursement**
- **Cost avoidance programs**: reducing infection, workmen’s compensation injuries, lawsuits

Nurse Sensitive Care Indicators

- Death among surgical patients with treatable serious complication
- Pressure ulcer prevalence
- Falls prevalence
- Falls with injury
- Restraint prevalence (vest & limb only)
- UTI rate/ICU
- Blood stream infections (BSI) from invasive catheters (ICU and high risk nursery)

Nursing Quality Forum 2004
Nurse Sensitive Care Indicators

- Ventilator-associated pneumonia (VAP and high risk nursery)
- Smoking cessation for AMI
- Smoking cessation counseling for heart failure and pneumonia
- Skill mix
- Nursing care hours per day
- Voluntary turnover

Nursing Quality Forum 2004

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Nurse Sensitive Care Indicators

- Practice Environment Scale-Nursing Index (5 sub-scales)
  - Nursing participation in hospital affairs
  - Nursing foundation for quality of care
  - Nursing manager ability, leadership and support of nurses
  - Staffing and resource adequacy
  - Collegial nurse-physician relations

Nursing Quality Forum 2004
Components of Successful Long Lasting Change

Factors Impacting the ability to Achieve Quality Nursing Outcomes at the Point of Care

Value
Attitude & Accountability
NSO/CPI

Support Tools to Help with Data & Benchmarking

- American College of Cardiology National Cardiovascular Data Registry (ACC-NCDR)
- National Trauma Registry of the American College of Surgeons (TRACS)
- APACHE III
- Project Impact (SCCM)
- American Thoracic Surgeons Adult Cardiac National Data Base
- National Healthcare Safety Network (NHSN)
- University Health Consortium (UHC)
Example Measurements

• Heart Failure Program:
  – Hosp rates due to CV dx, HF readmission rates, mortality, Beta blocker utilization, angiotension converting enzyme inhibitor use & dosing, quality of life measures, cost of care, time to readmission, #of ER visits, anxiety/depression scale, smoking cessation

• Ventilator Management Program
  – APACHE/actual vs. predicted vent days, Vent day outlier rate, Re-intubation rate within 24 hrs, Documented aspiration rate, VAP rates, reduction in ICU LOS with sedation protocols

Example Measurements

• Outcomes in the Elderly:
  – Measurement of functional status
  – Measuring ADL
  – Quality of life

• CV Surgery Program: Measure Impact of Fast Track
  – Early extubation
  – ICU LOS
  – Pain & comfort
  – % respiratory complications
Professional Development of the Staff: Keeping the Experienced Practitioner at the Bedside

- Quality Improvement Projects
  - protocol development
  - healing environment project
  - skin projects
  - product evaluations
  - mechanical ventilation pathway
  - Pain management

- Nursing Research
  - neuromuscular blockade study
  - interventional music study
  - cooling blanket study
  - powerlessness study

- Publications
  - clinical exemplars
  - standards of care/care guidelines
  - abstracts presentations
  - newspaper articles
<table>
<thead>
<tr>
<th>Professional Development of the Staff: Keeping the Experienced Practitioner at the Bedside</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>• Professional Presentations</strong></td>
</tr>
<tr>
<td>– local professional monthly meetings</td>
</tr>
<tr>
<td>– Fall &amp; spring seminar</td>
</tr>
<tr>
<td>– poster presentation at national conferences</td>
</tr>
<tr>
<td>– submit abstracts to national meetings</td>
</tr>
<tr>
<td><strong>• National Awards</strong></td>
</tr>
<tr>
<td>– AACN’s award for excellence in clinical practice</td>
</tr>
<tr>
<td>– Nursing Spectrum awards</td>
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<tr>
<td>– Local awards</td>
</tr>
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| Cost-Benefit Analysis: The Link to Balancing Clinical and Financial Outcomes |
The Idea…..The Proposal

• Identify the clinical advantage
• Achieve a financial breakeven or a benefit
• Measure outcomes…Prove yourself
• Implementation plan

The Clinical Advantage

• Science or community standard
• Motivation: benefit to the clinician: patient, professional self, unit, organization
• Clinical Champion: start to finish
• Patience and perseverance
Achieving a Financial Breakeven or Benefit

- Determine important clinical components to measure
- Can you put a cost to these measures?
- Think creatively...out of the box..there is no black and white. There is no set formulas for breakeven analysis
- Find a financial champion to help with analysis and credibility!!!!
- Breakeven point for capital projects 2 years

Measuring Outcomes

- Measure the current practice/situation
  - 6 –12 months historical perspective
  - Pilot study
- Measure the projected outcomes (clinical creates financial)
  - Utilize the hard savings
  - List the soft savings as a bonus
- Pre and Post measures need to be as close as possible
Hard & Soft Savings

- **Hard Savings**
  - Supplies
  - LOS
  - Readmissions
  - Complication rates

- **Soft Savings**
  - Nursing time (labor)
    - Documentation
    - Care delivery personnel change
    - Administration of medications
    - Administrative time
  - Physician time
    - Clinical time
    - Administrative time

Implementation Plan

- What are you asking for?
  - Change in policy
  - More money/what kind
  - More staff
  - Resource support
- Clinical Champion
- Detail roadmap
  - Outline the plan/timeline
  - Follow-up/clinical & financial
  - Report back the results to the clinical and financial people
Financial Analysis of Cost Avoidance Related to Retention Activities

• % difference in turnover & wastage versus the national average
• cost-out orientation dollars
• cost-out recruitment dollars
• convert percent difference to number of persons and multiply amount of orientation & recruitment dollars spent per one employee

5 Year Orientation Cost Avoidance: $1,920,000.00

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>National Turnover Rate (Hospital Nursing)¹ ²</td>
<td>12%</td>
<td>12%</td>
<td>18.3%</td>
<td>18.3%</td>
<td>18.3%</td>
</tr>
<tr>
<td>MCC turnover rate</td>
<td>7%</td>
<td>7%</td>
<td>8%</td>
<td>9%</td>
<td>6%</td>
</tr>
<tr>
<td>% difference converted to RN positions that would of required orientation</td>
<td>2 RN's</td>
<td>2 RN's</td>
<td>8 RN's</td>
<td>8 RN's</td>
<td>10 RN's</td>
</tr>
<tr>
<td>Estimated cost of ICU nurse orientation³</td>
<td>$64,000</td>
<td>$64,000</td>
<td>$64,000</td>
<td>$64,000</td>
<td>$64,000</td>
</tr>
<tr>
<td>Yearly orientation cost savings secondary to retention</td>
<td>$128,000</td>
<td>$128,000</td>
<td>$512,000</td>
<td>$512,000</td>
<td>$640,000</td>
</tr>
</tbody>
</table>
QUALITY IMPROVEMENT PROJECT

Reducing Central Line Associated Blood Stream Infections

Nosocomial Infections: Central Lines

- Pre-central line infection rate:
  - 6.8 per 1000 catheter days
- Pre-implementation practice
  - Gown, glove, mask and small drape
  - Routine change of central lines every 4 days
  - Dressing change every 4 days/prn when soiled with gauze dressing
Nosocomial Infections: Central Lines

- No routine changes of central lines
- If infection suspected, perform guidewire exchange and culture the tip
- If tip positive, remove line and perform a new stick
- No routine dressing changes/use of transparent dressing to view the site
- Three strikes and the most experience practitioner places the line (HFH guideline)

<table>
<thead>
<tr>
<th>Nosocomial Infections: Central Lines</th>
<th>Device Utilization</th>
<th>Bloodstream Infection</th>
<th>Rank Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benchmark MICU</td>
<td>&gt; 50</td>
<td>5.9</td>
<td>50-75%</td>
</tr>
<tr>
<td>(Pre change) HFH MCC</td>
<td>&gt; 90</td>
<td>6.8</td>
<td>50-75%</td>
</tr>
<tr>
<td>(Post change 2000) HFH MCC</td>
<td>&gt; 90</td>
<td>2.90*</td>
<td>10-25%</td>
</tr>
<tr>
<td>(Post change 2002) HFH MCC</td>
<td>&gt; 90</td>
<td>1.33</td>
<td>10-25%</td>
</tr>
</tbody>
</table>

Cost avoidance associated with low Central Line rate: $1,240,000.

* Significant at p < 0.0001
Reduction of Microbial Colonization in the Oropharynx & Dental Plaque Reduces VAP

Methodology:
• MICU Mechanically ventilated patients between 01/2003 to 12/2003 provided a comprehensive oral care assessment & intervention
• Compared against 01/2002 to 12/2002 who received standard care
• Intervention: Oral care kit including covered yankauer, deep oral cleansing catheters (q6hrs), suction toothbrush (q12hrs) and oral suction swabs and mouth moisturizer (q4 hrs)
• No other interventions introduced during study period.

Garcia R et al. Presentation APIC 2004 Abs

Reduction of Microbial Colonization in the Oropharynx & Dental Plaque Reduces VAP

Results:
• No difference in demographics between groups
• Vent utilization for pre and post intervention groups in the 75 to 90% based on NISS
• 2002: VAP rate 8.3 per 1000 ventilator days
• 2003: VAP rate 4.4 per 1000 ventilator days
• 42.1% reduction in overall rate

Garcia R et al. Presentation APIC 2004 Abs
Cost Avoidance

• Attributable cost of a healthcare-acquired pneumonia is estimated to be $40,000 (Rello, Chest, 2002).

• Based on the avoidance of approximately 21 VAP cases since the intervention

\[
[21 \times \$40,000 \text{ (infection cost)}] - [\$117.025 \text{ (product cost)}] = \$722,975.
\]

UNIT PROCESS IMPROVEMENT:
Skin Care

Assessment of the problem

- Incidence rate was 23%
- Incidence air low specialty bed utilization > 320 bed days per year
- 90% of our population at high risk for breakdown (Braden < 12)
- All patients were on a standard hospital mattress
- Current fecal & urinary incontinence products ineffective
UNIT PROCESS IMPROVEMENT: Skin Care

The Process Improvement

- Use of static air overlay to reduce pressure upon admission to the unit
- Mattress replacement project to provide cost savings without affecting quality
- Criteria for use of low air loss therapy introduced
- Education on prevention & treatment
- Education tools placed at the bedside
- Product evaluation & purchase of incontinence barrier products
- Standardized risk assessment

UNIT PROCESS IMPROVEMENT: Skin Care

Outcomes Achieved

- Decrease in incidence rate < 5%
- Reduction in low air loss therapy bed days (46)
- Sense of pride & valuing of skin care
- 7 member skin committee for education & quality outcome measurement
- Initial cost savings
## UNIT PROCESS IMPROVEMENT: Skin Care Cost Analysis

<table>
<thead>
<tr>
<th>Treatment Costs*</th>
<th>Prevention Costs</th>
<th>Cost Savings**</th>
</tr>
</thead>
<tbody>
<tr>
<td>$78,000.00</td>
<td>$11,666.00</td>
<td>$66,334.00/yr</td>
</tr>
<tr>
<td>Based on 5 ulcers per month/ per year</td>
<td>Static air mattress &amp; Moisture barriers/ per year</td>
<td>8 bed MICU</td>
</tr>
</tbody>
</table>

**Figures based on variable cost for treatment per ulcer of $1,300.00  
**Additional $6,500.00 cost savings with reduction in low air loss bed days

### Cost Analysis

**Sample Cost Savings Calculation**

<table>
<thead>
<tr>
<th>Description</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Declotted and saved 10 central lines at a minimum savings of $224.28 each</td>
<td>$2,243</td>
</tr>
<tr>
<td>Inserted 79 PICC lines at $2,351 each</td>
<td>$185,729</td>
</tr>
<tr>
<td>$2,829 surgical insertion cost-$275 PICC insertion cost = $2,554 savings/line</td>
<td></td>
</tr>
<tr>
<td>Monitored and reduced or discontinued specialty beds, negotiated free beds for indigent patients</td>
<td>$7,958</td>
</tr>
<tr>
<td>Prevented 10 admissions and expedited 52 discharges at a minimum savings of $450/case</td>
<td>$27,900</td>
</tr>
<tr>
<td>Discontinued unnecessary oxygen on 10 patients at $50/day/patient</td>
<td>$500</td>
</tr>
<tr>
<td>Total</td>
<td>$224,330</td>
</tr>
</tbody>
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Prevost S, CNS 2002;16(3):119-124
Organizational Support

Administrative Environment

- Adequate orientation/matching specialty with area
- Consistent shared expectations/contracting
- Accountable
- Dilutional factor considered
- Secretarial/Computer support
- Data support management
- Navigational support/system resource
Quarterly Report of APN Activity:
Showing the Value

New Century Advanced Practice Nurse Group*
Third Quarter Report—Executive Summary

During the past 3 months, the 16 APNs at New Century Hospital:

- Provided 4,353 interventions for 1,597 inpatients and 111 outpatients
- Facilitated 44 support group meetings
- Expedited 52 hospital discharges
- Presented 41 in-service programs for 282 attendees
- Presented 12 continuing education programs, attended by 76 staff, awarded 637.5 contact hours
- Invasive 79 PVC lines
- Contributed to at least $204,030 in cost savings

Additional details describing these interventions and outcomes are provided in the following pages of this quarterly report.

*This data reflects the actual work of an APN group; however, the name of the institution has been changed.

Prevoit S, CNS 2002;16(3):119-124

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