



Use of NDNQI Data to Measure Clinical and Satisfaction Outcomes with a Competency-Based Orientation Program in the ICU

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- 531 bed academic teaching institution
- Level I Trauma Center
- Primary Stroke Center
- ANCC Magnet® Designated September 2005
- ANCC Magnet® Re-designated December 2009



Located in north central West Virginia, WVUH draws patients from all 55 counties in WV, all 50 states (primarily Maryland, Pennsylvania and Ohio), the District of Columbia, and currently serves an international patient population from 11 countries



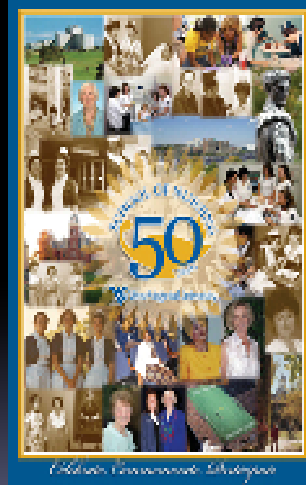
WVUH, which employs nearly 1500 nurses, is the first and remains the only **ANCC Magnet® designated hospital** in the state of West Virginia





West Virginia University School of Nursing

West Virginia University
School of Nursing
envisions optimal health,
enhanced quality of life,
and excellent health care
for the people of West
Virginia and the global
community



WVU School of Nursing Academic Programs

[BSN - Bachelor of Science in Nursing](#)

Prepares graduates to begin professional nursing practice and provides a foundation for graduate education in nursing.

[BS/BA - BSN: Bachelor of Science/Bachelor of Arts - Bachelor of Science in Nursing](#)

Offers a program of study for college graduates to obtain a BSN.

[RN to BSN - Registered Nurse/Bachelor of Science in Nursing](#)

Offers graduates of diploma and associate degree nursing programs the opportunity to complete requirements for the baccalaureate degree.

[RN to MSN - Registered Nurse/Master of Science in Nursing](#)

Program designed for the registered nurse who is a graduate of an associate degree nursing program and interested in a Master's program. Full-time or part-time enrollment available.

[MSN - Master of Science in Nursing](#)

Preparing advanced practice nurses in the areas of family nurse practitioner, geriatric nurse practitioner, pediatric nurse practitioner, neonatal nurse practitioner, women's health nurse practitioner, and nursing leadership.

[DNP - Doctor of Nursing Practice](#)

Prepares advanced practice nurses who practice at the highest level of professional nursing and advance the application of nursing knowledge for the purpose of improving health care for diverse populations.

[PhD - Doctor of Philosophy in Nursing](#)

Prepares nurse scholars/educators who will engage in the full faculty role of teaching, service, and research in schools of nursing.

Session Objectives

1. Discuss implementation of a Competency-Based Orientation Program to impact retention of nurses in ICU.
2. Describe use of NDNQI® data to measure outcomes of an ICU competency based orientation program.

Long Standing Partnership

- ❖ Dean is member of WVUH Board of Directors and VP/CNE is member of academic leadership team
- ❖ WVUH Nursing Leadership and WVU School of Nursing Administrative Team meet quarterly to discuss initiatives and brainstorm ongoing strategies to impact nurse recruitment and retention
- ❖ Director, Nursing Administration liaison to ADDNE
- ❖ Directors serve as adjunct faculty and guest lecture in administration / leadership classes at both undergraduate and graduate level classes
- ❖ Nurse Director standing member of SON Curriculum Committee
- ❖ Associate Dean is standing member of Nursing/HR Leadership Team that meets quarterly to discuss nursing R/R strategies
- ❖ Faculty member is standing member of WVUH Shared Governance Recruitment and Retention Team

Ongoing Discussion Points

- ❖ Awareness of generational impact on learning styles
- ❖ Introduction of simulation into academia
- ❖ Impact of Length of Orientation in Critical Care on operational budgets in the hospital setting
- ❖ Desire to utilize critical care faculty expertise for didactic education of graduate nurses
- ❖ Enculturation of translational research and outcomes measurements in the ANCC Magnet® framework

HRSA Funding Availability

- In the Fall of 2007 we decided to submit for funding for Competency-based Retention Enhancement in ICU (CORE-ICU)
- Proposal development was a true partnership
 - Expertise of Dean Narsavage with grant writing and funding accomplishments
 - Background of Director, Nursing Administration with clinical background in critical care and nursing staff development
- Support was garnered from all levels of administration to graduate nurses

Grant Overview

- Department of Health and Human Services
- Health Resources and Services Administration
- Notified of Funding on June 29, 2008
- Amount of Funding Total = \$261,736.00
- WVU School of Nursing and WVUHS (WVUH, UHC and WVUH-East)

Funding Acknowledgement

- Funded by HRSA DHHS/HRSA Nurse Education Practice and Retention Program
- "CORE-ICU", D11HP09553-01

Purpose

- To improve the recruitment and retention of registered nurses in critical care, and thus enhance patient care that is directly related to nursing activities in the ICU

Objectives

- Increase the number of nurses practicing in critical care as evidenced by improved retention and decreased vacancy rates
- Improve patient care as evidenced by decreased ICU infection rates for VAP, UTI and BSI as well as increased nurse satisfaction

Objectives (continued)

- Enhance collaboration and communication among RNs and other health professionals to develop the critical care nursing workforce in WV, preparing increasingly diverse orientees to deliver culturally competent critical care that benefits WV's urban, rural and underserved populations
- Evaluate and disseminate a "best-practices" Competency-based Orientation program, (CORE-ICU), for Critical-Care Nursing, using Knowledge-Skill-Attitude testing by levels to cost-effectively prepare and retain specialty nurses

Project Plan

July 1, 2008 – June 30, 2013

- Year 1 July-Sept 2008 – Final Planning Phase
 Oct-Dec 2008 – Initiation of Program - Preceptor Education/Mentor Development
 Jan – May 2009 – at least 10 participants from WVUH (Cohort #1)
- Year 2 June – Dec 2009
 • At least 20 participants at two starting groups from WVUH (Cohort #2)
 Jan – May 2010
 • At least 20 participants at two starting groups from WVUH (Cohort #3)
- Year 3 June – Dec 2010 - At least 20 participants at two starting groups from WVUH
 At least 5 participants from UHC
 At least 5 participants from WVUH-East
 Jan – May 2011 - At least 10 participants at two starting groups from WVUH
 At least 5 participants from UHC
 At least 5 participants from WVUH-East

Project Plan (continued)

- Year 4
 - June 2011 – May 2012
 - Evaluation Phase

- Year 5
 - June – December 2012
 - Continued Analysis and Evaluation Phase
 - Jan – June 2013
 - Analysis and Dissemination Phase

Target group for participation

- Recruitment will focus on new graduates as well as nurses desiring to transition into the critical care specialty area, who will make a 24 month commitment to WVUH

- Faculty and staff teams for competency –testing and teaching evidence-based curriculum

- Mentor development using mentoring workshops and cultural competency workshops for mentors and orientees

Identification of Departments

- SICU/MICU – 30-bed Intensive Care Unit which focuses on complex medical/surgical patients including multi trauma, hemo-dynamically unstable patients, and multisystem organ failure
- CTU/CCU – 16-bed Intensive Care Unit whose patients include open heart surgery (~350 annually), acute myocardial infarctions, IABPs, and complex thoracic surgeries
- Both departments are located on the same floor and nursing staff are “pulled “ for staffing coverage as needed

Expert Consultant Selection

- Evaluator
 - Previous relationship with WVUH
 - Doctoral prepared in organizational development with emphasis on evaluation
- Cultural Competence
 - Model of cultural competence
 - Reliable and valid tool for pre / post measurement
- Simulation Expert
 - Expert in critical care simulation
 - Willingness to provide “start up” scenarios

Curriculum and Faculty Selection

- Essentials of Critical-Care Orientation (ECCO) program from American Association of Critical-Care Nurses

- Critical Care Faculty from WVU School of Nursing
 - Current coordination of ICU leadership and instruction in critical care
 - Previous employees of SICU/MICU and Critical Care Nursing Resource Pool

Preceptor Educator Selection

- Clinical Preceptors
 - Unit based “expert”
 - Unit based educator role
 - In staffing 50% of the time
 - SICU/MICU – two
 - CTU/CCU – one
 - All 3 have range of 15-25 years of experience
 - All 3 have >10 years seniority in their respective units
 - All 3 are CCRN certified through AACN

CORE-ICU Work Group

- Georgia Narsavage, WVU SON - Program Director
- Mary Fanning, WVUH Nursing Administration - Co-Program Director
- Jerry Yoho/Francis Boyle/Aaron Seldon - SICU/MICU, WVUH Education Coordinators
- Deborah Moynihan/Lisa Hern - CTU/CCU, WVUH Education Coordinator
- Danielle Bane - Evaluator
- Josepha Campinha-Bacote - Cultural Competency Faculty
- Laurie Schumacher - Simulation Instructional Designer
- Gail VanVoorhis/Dan Summers - Simulation Coordinators

CORE-ICU Work Group (cont'd)

- WVU SON Core Faculty
 - Patty Herмосilla, Joy Maramba, Dan DeFeo, Lynne Ostrow, Barbara Summers
- WVUH Core faculty/mentors
 - Susan Willis, Linda Kuntupis, Doanna Cupp, Bonnie Sutton, Dan France, Catherine Mayle, Karen Bell, Debi White, Matt Rose, Katy Spal, Kayla Kesner, Gidget Kovach, Amelita Marton, Jennifer McWhorter, Jim Rankin, Tori Franks, Joyce Dursa, Heath Stuchell, Nick Cooper, Cassandra Starcher, Lisa Robinson, Michelle Sabatini-Gump, Kyleen Shelton, Anita Jo Aman
- Tammy Ord, Staff Assistant
- Loretta Reckart, Budget Assistant
- Mentors from UHC (Clarksburg) in year 3

CORE-ICU Mentor Selection Process

- Directors select/suggest Critical-Care RNs who would be appropriate Mentors
- The CORE-ICU Program Co-Directors will review qualifications of Potential Mentors and select those who meet the criteria:
 - RN (BSN preferred)
 - > 3 years experience in critical care nursing
 - CCRN preferred
 - Positive employee evaluations
- Directors will notify the selected Mentor, provide a written description of the program, responsibilities and benefits, and ask for willingness to participate

CORE-ICU Mentor Selection Process (continued)

- The Mentors then notifies Directors that he/she has accepted and participates in workshops for mentor development
- The Orientee may request a change in Mentors at any time, but should be aware that the program is most effective when the Mentor/Orientee relationship is long-term

GN Selection

- Graduate of an accredited SON
 - NOTE: Not all were from WVU School of Nursing
 - NOTE: Not all from WVU SON had leadership experience in ICU during senior year
- 2.5 GPA or above with As and Bs in Nursing
- Two letters of recommendation
- CPR Certification
- RN licensure before start of orientation
- Willingness to participate in testing for levels of orientation and completion
- Ability to make a 24 month commitment from date of hire

Core Retention Measures

- Vacancy and Turnover
 - Internal Data Base – utilized for Magnet® data reporting
 - SICU/MICU
 - CTU/CCU
 - Total
- Nurse Satisfaction
 - Annual Nurse Satisfaction Survey
 - Conducted through NDNQI® every spring (April or May)
 - Job Enjoyment – T Score

Patient Care Core Indicators

- Ventilator Associated Pneumonia
- Urinary Tract Infections
- Blood Stream Infections

- Data obtained from Infection Control Practitioners based on NDNQI® guidelines
- Submitted as quarterly NDNQI® as quarterly indicator
- Outcomes obtained from NDNQI® data summary reports on quarterly basis

Baseline Measures

- Core Retention Measures
 - Nurse Retention Rate = 75%
 - Nurse Vacancy Rates = 33%
- Patient Care Core Indicators
 - Nurse Satisfaction = 58
 - VAP = 7.6 infections/1,000 ventilator days
 - UTI = 21 infections/1,000 device days
 - BSI = 4.1 infections/1000 device days

CORE-ICU Program Plan

- Developing the skills for safe and effective critical care
- Didactic lectures and discussion sessions with all orientees in Critical-Care
- Structured simulated laboratory to test competency level and provide experience in performing skills needed to manage acute and critically ill patients, such as suctioning, ICP set-up and monitoring, and interactive hemodynamic simulations

CORE-ICU Program Plan (cont'd)

- Written surveys/exams – BKAT® to test competency and then questions formatted to replicate CCRN exams; CCTDI® to test disposition for critical thinking for competency testing; IAPCC-R® to measure cultural competency
- Debriefing with RN Mentors for individualized post exam analysis will help prepare GNs for the CCRN specialty certification examination they can complete at 12 months.

Knowledge, Skills, Attitudes

- Knowledge – BKAT® and ECCO
- Skills – SimMan
- Attitude – Critical Thinking Attitude (CCTDI®) and Cultural Competency (IAPCC-R®)
- Testing at beginning and end of orientation

The Basic Knowledge Assessment Tool, (BKAT-7)® For Adult Critical Care Nursing (Vs 7, 2006)

- 100 item paper and pencil test
- Measures basic knowledge in critical care nursing in the following areas: cardiovascular, monitoring lines, pulmonary, neurology, endocrine, renal, gastrointestinal/parenteral, and other
- The category 'other' includes areas as infection control, hypothermia, burns, and spiritual care
- Psychosocial aspects of critical care nursing practice are integrated into specific questions

BKAT® (continued)

- The BKAT® takes approximately 45 minutes to complete
- Total possible score is 100 points
- Multiple choice and fill-in-the-blank questions that measure both the recall of basic information and the application of basic knowledge in practice situations

Attitude Measure - The California Critical Thinking Disposition Inventory (CCTDI®)

- The CCTDI® is based on the conceptualization of critical thinking articulated in the Expert Consensus Statement on College Level Critical Thinking (1990) known as [The Delphi Report](#)
- This concept was supported by an independent replication research study of policy-makers, employers, and academics which was conducted at Penn State University, sponsored by US Department of Education
- The CCTDI® Total Score targets the consistent internal motivation toward critical thinking; the disposition to use or not to use one's reasoning and reflective judgment when solving problems and making decisions
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CCDTI® (continued)

- Used nationally and internationally for learning outcomes assessment, academic advising, program evaluation, professional development, training, psychological research, and an element in application, admissions, and personnel evaluation processes
- Provides data on an individual's critical thinking dispositional profile and on the critical thinking dispositions of groups
- 75 "Agree-Disagree" items
- 15-20 minutes to complete

(Revised) Inventory for Assessing the Process of Cultural Competence (IAPCC-R®)

- Designed to measure the level of cultural competence among healthcare professionals, specifically physicians, physician assistants, medical students, residents, licensed practical or vocational nurses, registered nurses, advanced practice nurses, nursing students, medical and nursing faculty, and clinical pharmacists
- The IAPCC- R® is a revision of the Inventory for Assessing the Process of Cultural Competence Among healthcare Professionals
- IAPCC® was developed by Campinha-Bacote in 1997; based on her model of cultural competence, *The Process of Cultural Competence in the Delivery of Healthcare Services*, 1998, 3rd Edition

IAPCC-R® (continued)

- However, the IAPCC® only measured only four of the five constructs of this model (cultural awareness, cultural knowledge, cultural skill and cultural encounters; not the fifth construct of cultural desire)
- In 2002, Campinha-Bacote developed the IAPCC- R®, in which she added five additional questions to the IAPCC to measure the fifth construct of cultural desire
- There are 5 items that address each construct
- Completion time is approximately 10 -15 minutes

IAPCC-R® (continued)

- The IAPCC-R® uses a 4-point likert scale reflecting the response categories of strongly agree, agree, disagree, strongly disagree; very aware, aware, somewhat aware, not aware; very knowledgeable, knowledgeable, somewhat knowledgeable, not knowledgeable; very comfortable, comfortable, somewhat comfortable, not comfortable; and very involved, involved, somewhat involved, not involved
- Scores range from 25 -100 and indicate whether a healthcare professional is operating at a level of cultural proficiency, cultural competence, cultural awareness or cultural incompetence
- Higher scores depict a higher level of cultural competence

5 – Level Competency-Based Orientation

- Level 1 – Baseline Assessment (weeks 1-2)
- Level 2 – Basic Critical Care Skills (weeks 3-6)
 - Patient Admission
 - Basic Nursing Care
 - Basic Dysrhythmia
 - IV / Art Line / CVP Management
 - Airway Management
 - Basic Drip Calculations

5 – Level Competency Based Orientation (continued)

- Level 3 – Intermediate Critical Care (weeks 9 – 14)
 - Neuro, Respiratory, CV, GI/GU
- Level 4 – Advanced Critical Care (weeks 15-16)
 - Cultural/Legal/Ethical
- Level 5 – Advanced Specialty (weeks 17 – 18)
 - EBP for Trauma, CABG, ECMO, IABP
 - Time Management / Cross-training

5 – Level Competency Based Orientation (continued)

- Each level has checkpoints to progress to next level
- Overall objective to base GN/RN progression on competency rather than “time”

OUTCOMES

Process Outcomes to Date

- Steering Committee Membership well established
- Faculty, leadership, preceptors and mentors fully engaged
- Funding and budget processes fine tuned
- Curriculum, pre/post testing and orientation experience documentation processes revised
- Mentor development program enhanced
- Class days altered based on GN feedback

Process Outcomes to Date (continued)

- Cultural competency model adopted at WVUH and education provided for nursing leadership, faculty, preceptors, mentors and graduate nurses
- Simulation lab / resources significantly expanded
- Critical care scenarios refined
- Cohort #1 and Cohort #2 complete
- Presented to ANCC Magnet® lead appraiser during WVUH's re-designation site visit in October 2009

Summary of GN/RN Participants

	SICU/MICU	CTU/CCU	Total
Cohort #1	5	3	8
Cohort #2	10	10	20
Total	15	13	28

Mentor Development Participants

SICU/MICU	CTU/CCU	Total
13	14	27

Core Retention Measures

Core Retention Measures	Baseline (prior to start of project)	YR. 1 (As of December 31, 2008)	YR. 1 (As of June 30, 2009)
Nurse Retention Rate	75 %	CTU/CCU = 90% SICU/MICU = 84.4% Combined = 87.2%	CTU/CCU = 86% SICU/MICU = 88% Combined = 87% 😊
Nurse Vacancy Rate	33%	CTU/CCU = 11.2% SICU/MICU = 15.8% Combined = 13.5%	CTU/CCU = 5.7% SICU/MICU = 6.3% Combined = 6.0% 😊

Core Retention Measures (continued)

Core Retention Measures	Baseline (prior to start of project)	YR. 1 (As of December 31, 2008)	YR. 1 (As of June 30, 2009)
Nurse Satisfaction*	58	CTU/CCU = 51.52 SICU/MICU = 45.10 Combined = 48.31	CTU/CCU = 48.60 SICU/MICU = 47.05 Combined = 47.83 ☹️

*NDNQI Annual Survey
 <40 = Low Satisfaction
 40 – 60 = Moderate Satisfaction
 >60 = High Satisfaction

Patient Care Core Indicators Ventilator-Associated Pneumonia

Patient Care Core Indicators	Baseline (prior to start of project)	YR. 1 (As of December 31, 2008)	YR. 1 (As of June 30, 2009)
Ventilator – Associated Pneumonia (infections/1,000 ventilator days)	7.6 (CCU 17.9)	CTU = 2.07 CCU = 2.60 SICU = 2.27 MICU = 4.11 Combined = 2.76	CTU = 2.87 CCU = 2.86 SICU = 1.3 MICU = 2.85 Combined = 2.47 😊

Patient Care Core Indicators Urinary Track Infections

Patient Care Core Indicators	Baseline (prior to start of project)	YR. 1 (As of December 31, 2008)	YR. 1 (As of June 30, 2009)
Urinary Track Infections (UTI) (infections/1,000 device days)	2.1	CTU = 1.39 CCU = 5.71 SICU = 2.32 MICU = 3.51 Combined = 3.23	CTU = 1.06 CCU = 1.13 SICU = 1.27 MICU = 4.14 Combined = 1.90 😊

Patient Care Core Indicators Blood Stream Infections

Patient Care Core Indicators	Baseline (prior to start of project)	YR. 1 (As of December 31, 2008)	YR. 1 (As of June 30, 2009)
Blood Stream Infections (infections/1000 device days)	4.1	CTU = 0.70 CCU = 3.06 SICU = 1.92 MICU = 2.00 Combined = 1.92	CTU = 0.00 CCU = 1.12 SICU = 2.54 MICU = 1.56 Combined = 1.31 😊

Publication of Data

- WVUH benchmarks with Academic Medical Centers on a consistent basis
- All of our NDNQI® quarterly and Nurse Satisfaction scores (graphs) are shared via WVUH's shared governance structure (Nursing Quality Council) and published on the nursing website internally
- To remain in compliance with ANA and NDNQI®, HRSA grant reporting is only our baseline and results – no benchmarks !!

Pre / Post Written Exam Results

	BKAT®	CCTDI®	IAPCC-R®
Cohort #1	65 to 69 (NS)	No total score data	68 to 72 (NS)
Cohort #2	62 to 69 (significant)	332 to 319 (NS)	75 to 71 (NS)

NS = Not Significant

Simulation Lab developed in a hospital ICU room

- Simulator for ACLS
- PCA pump (2)
- Epidural Pump (2)
- Single Channel IV Pump (2)
- Triple Channel IV Pump (3)
- ICU Monitor
- ICU Tram Rack / Module (1)
- Defibrillator
- Crash Cart
- Camino
- Ventilator
- External Pacemaker

Next Steps

- Implementation of successful passing of NCLEX-RN[®] Exam prior to hire date effective January 2010
- Cohort #3 recruited – start date tentatively Feb 2010
- Heightened focus on Mentor Development
- Integration of simulation concepts obtained at Mosby's Faculty Development Institute held in San Diego, CA on January 3-5, 2010
- Preparation to expand program to Pediatric Intensive Care Unit and Neonatal Intensive Care Unit at WVU rather than UHC and WVU-East
- Utilization of Simulation Education into yearly competency validation with experienced ICU nurses

Summary

- Received competitive funding during times of limited resources
- Excellent partnership between WVU-SON and WVUHS
- Support of ANCC Magnet[®] expectation to contribute new knowledge and drive innovative, research-based practice
- Opportunity to contribute to knowledge and science of critical care nursing education
- Use of NDNQI[®] Data to demonstrate nurse satisfaction and clinical outcomes
- Impact clinical quality outcomes of critically ill patients and retain ICU nurses at WVUHS

We are making a difference ...
one GN at a time ...



Questions



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