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The Clinical Nurse Leader^SM: Impact On Practice Outcomes in the Veterans Health Administration

EXECUTIVE SUMMARY

▶ The Clinical Nurse Leader (CNL) role was designed to meet an identified need for expert clinical leadership at the point of care.

▶ The Veterans Health Administration (VHA) became early adopters of the CNL role, foreseeing the value of this pivotal clinical leader at the point of care to meet the complex health care needs of America's veterans and shape health care delivery.

▶ Impact data were collected and assimilated from seven Veterans Administration Medical Centers to support how CNLs impact the delivery of quality and safe patient care and how practice changes could be sustained.

▶ Data collection and analyses resulted in many lessons learned.

▶ The new CNL role was implemented in a variety of settings in the VHA system.

▶ Integration of the CNL role in all areas of practice in every care setting has the promise of streamlining coordination of care for veterans across all spectrums in the provision of care.

TOTAL HEALTH SPENDING IS projected to compose 18.7% of the gross domestic product by 2014 (Heffler et al., 2005). Reimbursement changes, biomedical knowledge, staffing shortages, uninsured Americans, and mandates for quality and safe care will continue to challenge nurse leaders to redesign health care delivery models in a cost-effective manner.

Recognizing this need for change, the American Association of Colleges of Nursing (AACN) created the Clinical Nurse Leader (CNL) role in partnership with the academic and practice sectors. The first new role to be implemented nationally in more than 3 decades, the CNL was designed to meet an identified need for expert clinical leadership at the point of care. As a master's-prepared nurse generalist, the CNL is prepared to deliver and direct evidence-based

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NOTE: The authors and all *Nursing Economic$* Editorial Board members reported no actual or potential conflict of interest in relation to this continuing nursing education article.

practice, evaluate patient outcomes, and assess risk, while improving the overall coordination and delivery of care for an individual/group of patients at the microsystems level (AACN, 2007). The Veterans Health Administration (VHA), championed by the chief nursing officer, became early adopters of the CNL role, foreseeing the value of this pivotal clinical leader at the point of care to meet the complex health care needs of America's veterans and shape health care delivery. An early partnership with six academic settings was formed in response to the call for quality, safety, and efficient health care delivery. These include Vanderbilt University, University of South Florida, University of Portland, University of Minnesota, and Southern Illinois University at Edwardsville.

Across VHA, the CNL is regarded as the pivotal clinician; an "attending" staff nurse at the point of care responsible for patient-driven, evidence-based, outcome-oriented nursing practice. It is not an "add-on" to the existing care team organizational structure, a competitor to the clinical nurse specialist (CNS), nor another layer of management. Using this design, the CNL role can significantly transform existing organizational nursing practice in all patient care settings and improve outcomes. Areas of potential impact include cost/financial outcomes such as length of stay, patient flow, readmission rate, and registered nurse (RN) turnover; patient/staff satisfaction and nurse retention; quality/internal process outcomes; and innovative practice transformation.

The CNL initiative began as a pilot project in 2004 at 50 Veterans Affairs Medical Center (VAMC) sites. In early 2008, impact data were collected and assimilated from seven VAMCs to support how CNLs impact the delivery of quality and safe patient care and how practice changes could be

Table 1.
CNL Role/Responsibilities in the VA System

Care provider who remains at the bedside or point of care
Clinical consultant and mentor for direct care nurses
Care coordinator for a specific, defined group of patients/families
Integrator for patient-driven care across the health care continuum (lateral integrator)
Quality/process improvement expert in clinical microsystems
Leader and role model for cost efficient, care delivery systems

Figure 1.
Balanced Scorecard
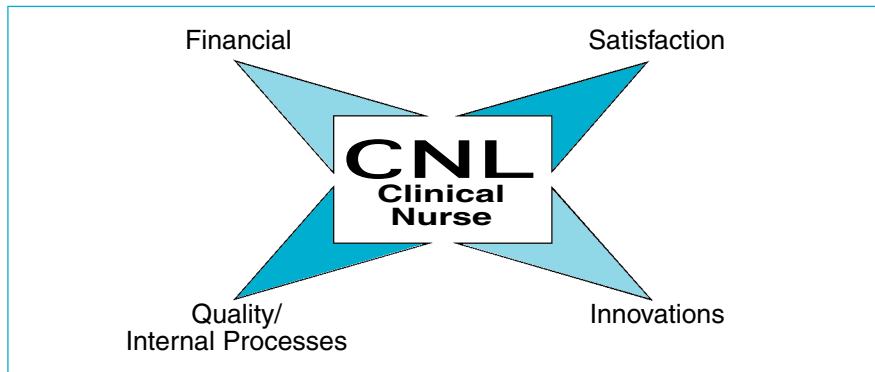
SOURCE: Adapted from Kaplan & Norton (1992)

sustained. In this article, the introduction of the CNL role in a multi-site health care system, development of a CNL evaluation process, and analysis of impact data are described. The roles and responsibilities of the CNL in the VHA are described in Table 1.

Role Introduction, Environment Readiness, and Evaluation Framework

The CNL pilot began with a series of focused discussion groups, dialogues with union partners, discussions with senior medical center leaders, requests for input from unit-based nursing staff, and interdisciplinary team members occurring over a 3-month period. Results from these discussions became key drivers as individual sites introduced and readied the environment for a new role. An important finding derived from an environmental readiness assessment was the

need for consensus on role definition and differentiation among the CNL, nurse manager, and CNS in clinical microsystems. Recognizing the need to evaluate the impact of the role on patient outcomes, the VHA Office of Nursing Services chartered a team to lead the national implementation and evaluation of the project in the Department of Veterans Affairs (VA) health care system. Simultaneously, the AACN formed a CNL Evaluation Task Force and invited VHA participation. The Kaplan and Norton Balanced Scorecard (1992) was adapted as a guiding framework for evaluation across CNL partnership sites (see Figure 1).

Kaplan and Norton originated the scorecard as a strategic planning and management system to align business activities to the strategies of an organization, and as a way to monitor organizational performance against strategic goals. The scorecard was intended

Table 2.
Balanced Scorecard Evaluation

Domain	Indicator	Definition
Financial	Nursing hours per patient day	Total number of productive hours worked per patient day by all staff (RN/LPN/LVN/NA) providing direct care (VANOD, 2008).
	Cancellation of procedures	Patient does not show or cancels within 24 hours of appointment.
	Sitter hours	One-to-one, constant observation patient care hours for confused or delirious patients.
Quality processes	Pressure ulcers, hospital acquired	Any lesion that developed since a patient's admission to the facility and is caused by unrelieved pressure resulting in the damage of underlying tissue. They may be located over bony prominences or under a medical device/equipment and are staged according to the extent of observable tissue damage (National Database of Nursing Quality Indicators, 2005).
	Patient falls	Unplanned descent to the floor including assisted falls with or without injury to the patient (VANOD, 2008).
	Discharge teaching	Pre-discharge patient instruction for patients diagnosed with congestive heart failure – includes six actions: activity, diet, weight monitoring, medications, symptoms, and followup care.
	Ventilator-associated pneumonia	Nosocomial pneumonia in a patient on mechanical ventilatory support by endotracheal tube or tracheostomy for more than 48 hours (AACN, 2006).
	Restorative care factors	Nursing actions directed at patients participating in self-feeding in a community dining setting in long-term care units.
Satisfaction	Patient and staff	Patient and staff satisfaction scores as reported in patient satisfaction and VA Nurse Satisfaction Surveys.
Innovations	Journalized innovative entries by practicing CNLs	Written documentation by CNLs of adoption of evidence-based practice on unit, changes in the microsystems, effects on staff participation in education, and quality improvement initiatives, etc.

to give managers a more "balanced" view of organizational performance. The scorecard initially measured aspects that companies evaluated to create future value: financial, internal business processes, customers, and learning. This framework was adapted to align the activities of the CNL with organizational performance.

The four domains of the scorecard capture measurable and appreciable impacts of the CNL role and functions. The financial domain assesses cost benefits and includes metrics that have a direct effect on the financial statement. The second domain, quality processes, focuses on measures that indicate how patient care is managed and delivered. The third

domain involves satisfaction of patients and staff. The final domain encompasses the learning and growth of an organization through the innovations that are developed and adopted. In this article, we focus on financial and quality process domains. With the exception of the financial indicator for nursing hours per patient day (NHPPD), all data reported in this article were drawn from quality reports generated at the unit level, not from an electronic source.

Medical centers implementing the role were asked to select an indicator to measure from each of the three quantitative domains of the model (financial, satisfaction, and quality/internal processes).

Examples of indicators for each domain were provided to the sites along with a standardized definition and one or more data sources. CNLs were asked to journalize innovations that demonstrated an impact on clinical microsystems such as changes in policy and protocols using evidence-based practice, sustained practice changes by nurses and treatment team members, and formation of innovative academic and clinical enterprises. Table 2 lists the indicators and definitions for each domain.

The first VA adopter of the CNL role volunteered to use the indicators and ascertain if data could be easily retrieved from automated repositories, and whether or not any of the indica-

tors needed further refinement before final adoption by AACN. Findings revealed: (a) data were stored either electronically or manually, (b) the CNL needed to be identified by separate coding for role impact determination, and (c) diagnostic categories would be required to capture disease-specific outcomes. Following a robust discussion and review of data collected, adjustments were made to the initial indicators.

In 2006, VHA facilities with practicing CNLs were invited to participate in the evaluation of the project. Fourteen sites had fully implemented the CNL role in at least one clinical area and agreed to participate and were entered into the evaluation project. Two periods of time for data collection were requested: pre-CNL (at least 3 months) and post-CNL (6 months or greater) implementation. The goal was to determine if a statistically significant difference between the pre-CNL and post-CNL periods existed.

During the evaluation, seven of the sites withdrew for a variety of reasons: one CNL retired and others accepted positions in different facilities or opted to transition to another role. Data from the remaining seven sites were assimilated in early 2008. These data represent a range of capture periods and a broad sampling of indicators. The majority of CNLs elected to focus on only one indicator in the quality/internal processes domain. For the purposes of this article, the data have been aggregated to demonstrate the preliminary clinical microsystem impact of the CNL within the seven participating VHA sites.

Results

The CNL(s) in each facility selected indicators in one of the three quantitative domains of the scorecard to collect data. The foci could be based on external peer review data, administrative goals, or clinical complications. Table 1 displays the domain, indicators

selected by the CNLs, and standardized definitions. Data analysis and specific comments are provided in the body of this section.

The following results from individual CNLs are results at their associated VAMC, and not the result of a compilation of national data. The location and details for the individual efforts by the CNLs are discussed within the context of each example.

Nursing hours per patient day. The NHPPD were collected at two participating facilities. The findings revealed that for the fiscal year prior to the implementation of the CNL role, NHPPD was 6.09; following the CNL role introduction the average was 6.74 hours (two-sample t-test, p=0.0006). Post CNL role implementation on assigned units, RN hours per patient day increased from 3.76 to 4.07 (two-sample, t-test p=0.0115). The data suggest that the CNL role positively affected the RN hours per patient day. Changes were attributed to the CNL's facilitation of problem solving, decision making, and improvement of patient flow. It is important to note that a basic premise of the pilot was that the CNL was not intended to represent an increase in personnel. Our interpretation of these findings is that incorporating a CNL into the nurse staffing pattern resulted in more efficient, outcomes-driven hours in direct care.

Cancellations: Perioperative and gastrointestinal (GI). Scheduled procedures require alignment of clinical resources to provide appropriate personnel, space, and equipment. Adherence to schedule also requires that patients come with the proper preparation at the appropriate time. Appointment cancellations and no-shows are costly to the quality of patient outcomes and to facility operation. This is an area where CNLs working at the microsystems level have an opportunity to affect positive change. At one facility, CNLs were assigned to perioperative and GI settings aimed at decreasing the

cancellation rates in the operating room and GI suite. Following an assessment of the factors leading to the surgical cancellation rate, the CNL in the perioperative area began contacting patients as soon as possible after initiation of the surgical request. The CNL conducted a review of perioperative instructions and confirmed postoperative instructions with the patients prior to the posting of the surgery schedule. After a year of this specific intervention, the number of cancellations due to patient-related reasons that included "not being NPO," "patient wants surgery rescheduled," and "patient actions" were decreased by 55%. Because the CNL specifically addressed these areas to reduce cancellations, it is hypothesized that there will be a further significant overall reduction in the proportion of cancellations.

For year 2006, there were 638 cancellations (76 due to specific areas of interest) out of the 4,430 scheduled surgeries for a cancellation rate of 14.4%. For year 2007, the cancellation rate dropped to 11.4% or 472 (108 due to the areas of interest) cancellations out of the 4,150 scheduled surgeries. This 3% reduction of cancelled cases represents an estimated $461,775 in cost avoidance (based on the facility cost of an hour-long procedure) and better utilization of operating room resources. In the current fiscal year to date, the cancellation rate has dropped to 9.4%. A two-sample t-test for a reduction in proportions due to the areas specifically addressed by the CNL was significant at p=0.0004, and the reduction in proportion of overall cancellations was significant at p=0.0045 (see Figures 2 & 3). Viewing cancellation as a binary indicator, a logistic regression model was estimated to investigate the impact of procedures implemented by the CNL. The pre-CNL period was 84% more likely to have a cancellation (p=0.009), and the post-CNL period was 53% more likely to have a

Figure 2.
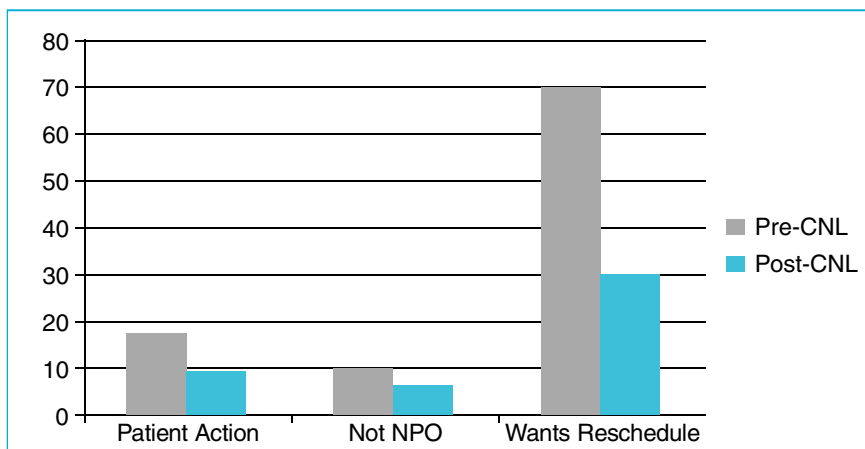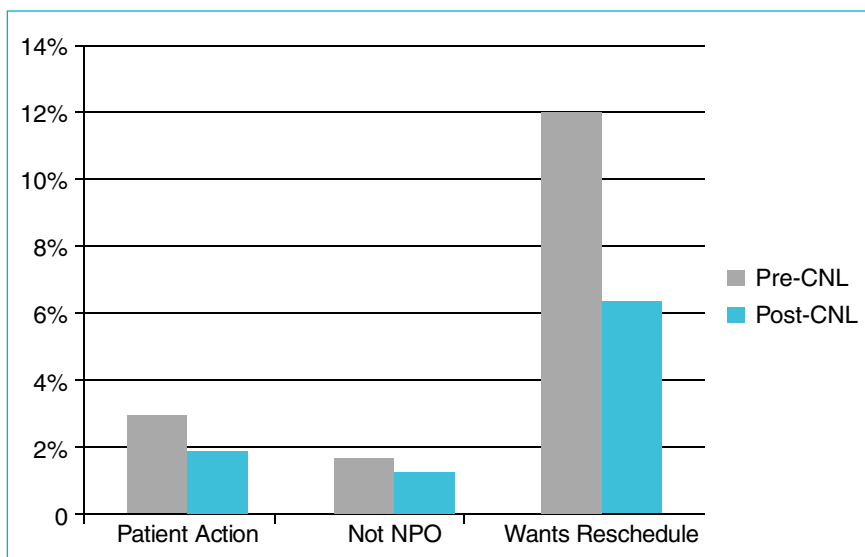**Frequencies of Cancellations by Stated Reasons**

Figure 3.
Percentage of Cancellations by Stated Reasons

cancellation due to the reasons specifically addressed by the CNL (p=0.001). These figures were collected and trended separately by the surgical service clinical applications coordinator, thus reducing the possibility of bias by the CNL.

But the story does not end there. The CNL collaborated with an interdisciplinary group to flow chart the preoperative process and develop a plan to further improve the efficiency and decrease cancellations in the surgical areas. Ultimately, the chief medical offi-

cer (CMO) at the facility became interested in promoting the process this group proposed. The CMO championed a policy change requiring "boarding" of surgical cases 48 hours in advance instead of less than 24 hours. This allowed earlier confirmation of cases by the CNL to ensure perioperative medication management and allowed the patient more time to make necessary arrangements. The CNL has now been charged with developing a centralized surgery scheduling unit to coordinate scheduling,

hence reducing unused operating room block time.

The CNL assigned in the GI suite identified a similar problem in the colonoscopy screening program. There was a high rate of no-shows and cancellations. The CNL began a program of contacting patients to confirm their tests and review pre-procedure instructions. After assessment and intervention by the CNL, the no-show and cancellation rate decreased from 30% to 14%. The impacts of the perioperative and the GI interventions are vivid examples of how the CNL as lateral integrator can transform care processes at the microsystems service-level and engender support from the medical staff. As a consequence, medical staff became ambassadors for the CNL role (Miller, 2005).

Mixed financial and quality processes. Originally this article was to report quality process outcomes, but it was quickly determined that most, if not all of these quality processes have financial implications that should be considered along with the effects on quality. As such, both financial and quality aspects are presented for the next three indicators (sitters, pressure ulcers, and patient falls) followed by only quality measures for the remainder.

Sitters. Patients with confusion or delirium secondary to medical or psychiatric diagnoses or co-morbidities on medical-surgical and subacute units frequently require one-to-one or constant observation by sitters. Behaviors accompanying confusion or delirium often present a safety risk to the patient or others. Nurses managing care for such patients are challenged by potential safety risks, the extensive cost of sitters, and a negative impact on staffing resources. In one setting, the CNL collaboratively developed and initiated a clinical decision protocol for patients with the diagnosis of dementia.

The effectiveness of the CNL protocol was evaluated through assessment of sitter hours. The

Figure 4.
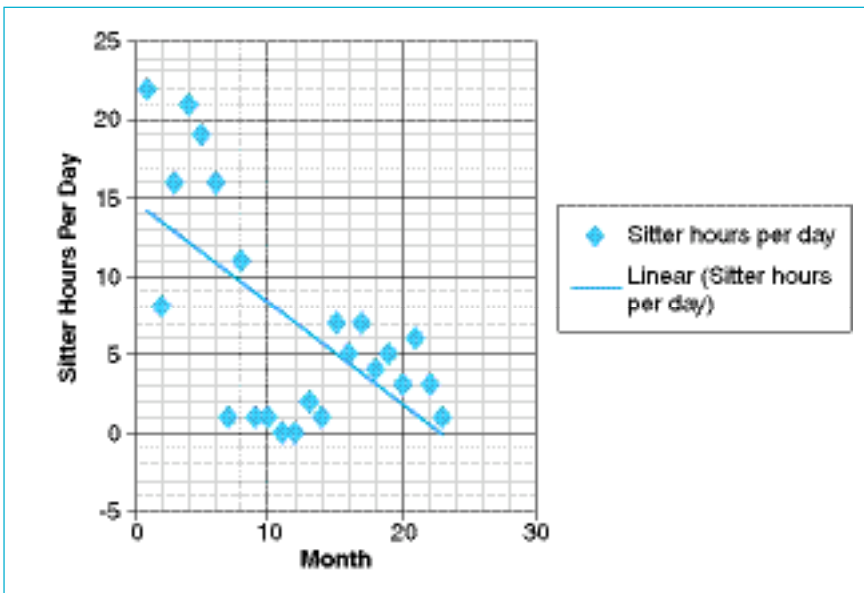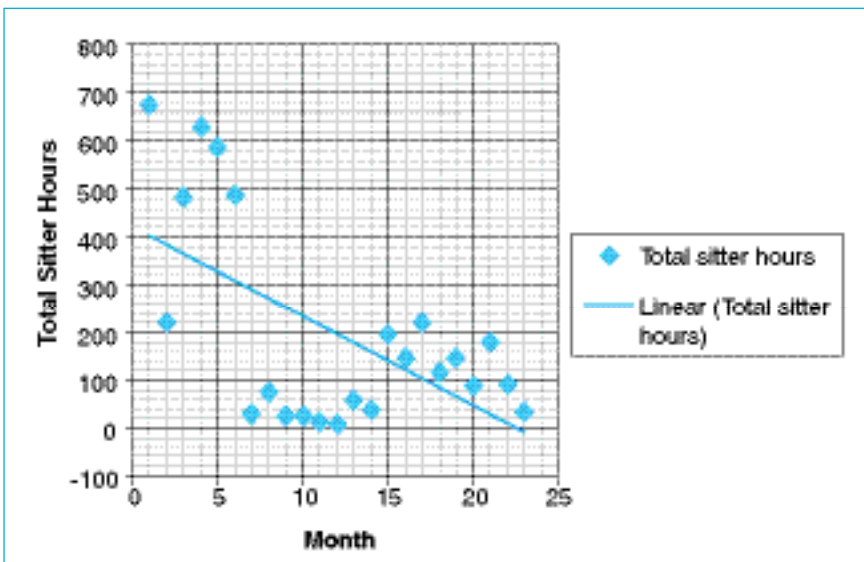**Number of Sitter Hours per Day**

Figure 5.
Total Number of Sitter Hours

numbers of sitter hours were recorded monthly. Outcomes were modeled adjusting for time since implementation. In the statistical models the number of sitter hours was modeled as a continuous outcome in linear regression (slope = -0.65, *p*=0.001). Whether the number of hours is modeled as a continuous outcome in linear regres-

sion or as a count in Poisson or as a fraction in a binomial model, the trend over time is that sitter hours decreased. In fact, over 1 year, sitter hours were reduced from 676 per month to 24 hours per month after the CNL interventions (see Figures 4 & 5). Given the average hourly sitter cost of $15.71, the reduction in sitter hours reflects a

potential monthly saving of $10,243 for this facility. Lowered sitter hours did not jeopardize the safety of staff or patient, lending support to similar findings in the literature (Boswell, Ramsey, Smith, & Wagers, 2001; Salamon & Lennon, 2003; Torkelson & Dobal, 1999).

Pressure ulcers. Hospital-acquired pressure ulcers increased length of stay for hospitalized patients by 63% from 1993 to 2003 with the average cost of each hospitalization estimated to be $37,800. This resulted in an annualized sum of $2.2-$3.6 million for pressure ulcer treatment (Bryant & Nix, 2007; Whittington & Briones, 2004). Clearly this is an area of potential impact by the CNL and was chosen as a focus of change at five of the seven facilities. The CNLs emphasized assessment using the implementation of wound care protocols during rounds, ongoing education of staff, and monitoring interventions based on assessments. One site collected data on pressure ulcers prior to protocol and procedure implementation by the CNL. Post intervention, data revealed a change in pressure ulcer prevalence from 12.5% to 4.2%. The results of the CNL efforts (two sample test of proportion; *p*=0.0025) speak for themselves and when considering the cost of a hospital-acquired pressure ulcer, the actions are fiscally sound.

Patient falls. Patient falls are of significant concern in health care settings because of the increased morbidity, mortality, and long-term effects that often result when an injury occurs. By 2020, the annual direct and indirect cost of fall injuries is expected to reach $43.8 billion (Englander, Hodson, & Terregrossa, 1996). The incidence of patient falls was collected by CNLs at two VAMC facilities. Data were reported as the total number of falls per 1,000 bed days of care as well as by the falls that resulted in an injury to the patient. Factors contributing to

patient falls varied and included patient confusion due to dementia, drug side effects, need for closer nursing observation, and weakness or pain related to diagnosis or surgical procedure. Falls per 1,000 patient days decreased, though not significantly from 1.93 to 1.37 (*p*=0.2102) in the 3 months post-implementation of the CNL role as compared with the 3 months pre-implementation. The interventions that affected these outcomes such as the enforcement of patient safety initiatives include the "Falling Leaf Program." This program involves placing a leaf logo outside the patient's room to designate a patient with either the history or potential to fall during the hospital stay. This program educated nursing and ancillary staff to observe patients every time they walked past if there was a leaf posted on the door. The CNL attributed some of the decrease in falls to closer observation of pain management, especially with elderly patients. Pain medications in the elderly patients can result in confusion and these patients must be observed closely for their medication responses.

Discharge teaching. The provision of evidence-based discharge education by nurses can improve clinical outcomes and decrease costly re-admissions for patients with chronic heart failure (Gardetto & Carroll, 2007; Koelling, Johnson, Cody, & Aaronson, 2005; VanSuch, Naessens, Stroebel, Huddleston, & Williams, 2006). One CNL tracked discharge teaching compliance by nursing staff. Documentation included instructions for activity, diet, weight monitoring, medications, symptoms, and followup. Initial findings indicated a documentation compliance rate of 13%. If the data reflected actual care, then the majority of patients were not receiving adequate discharge instructions. The CNL developed a series of educational materials for staff use, and with the assistance from a clinical computer

Figure 6.
**Decrease in Pneumonia Pre and Post-CNL**

specialist, developed an automated template for documentation by nurses. Post intervention, compliance rose to the 90th percentile and later sustained at 100% compliance.

Ventilator-associated pneumonia. Ventilator-associated pneumonia (VAP) contributes to increased morbidity, mortality, and extended length of stay for intensive care unit patients (Institute for Healthcare Improvement, 2008). The cost of an extended stay in the surgical intensive care unit due to VAP is significant. On average, a patient with VAP can add an estimated $40,000 per incident to the cost of care (Tablan et al., 2004). At one VAMC facility, a CNL identified the need to address a high incidence of VAP in the surgical intensive care unit and developed a program to reduce VAP rates. Program interventions included guidelines from the Centers for Disease Control and Prevention for reducing VAP related to changing ventilator circuits, and suction practices to avoid lavage with condensation; replacing disposable manual resuscitation bags with non-disposable

ones; frequent oral care; and elevating the head of the bed for intubated patients (Wood, 2004). The incidence of VAP was 21.7% prior to the onset of the CNL program and 8.7% post-CNL interventions. The percent decrease represents a change from 28 out of 103 ventilator patients per year to 9 out of 102 patients per year for that facility (see Figure 6).

Restorative dining. Within a transitional care unit, known in the VA as a community living center, fostering independent eating is an important consideration in patient function because residents are prone to malnutrition and dehydration. These conditions can easily progress to increased risk for pressure ulcers, infections, and other co-morbidities. Many VHA facilities have programs designed to assist veterans attain and maintain maximum ability to eat independently. The CNL used interventions to improve independent eating. These interventions included working with nutrition services to stagger the delivery of meals, planning for all patients to be in the dining room for meals, with volunteers and
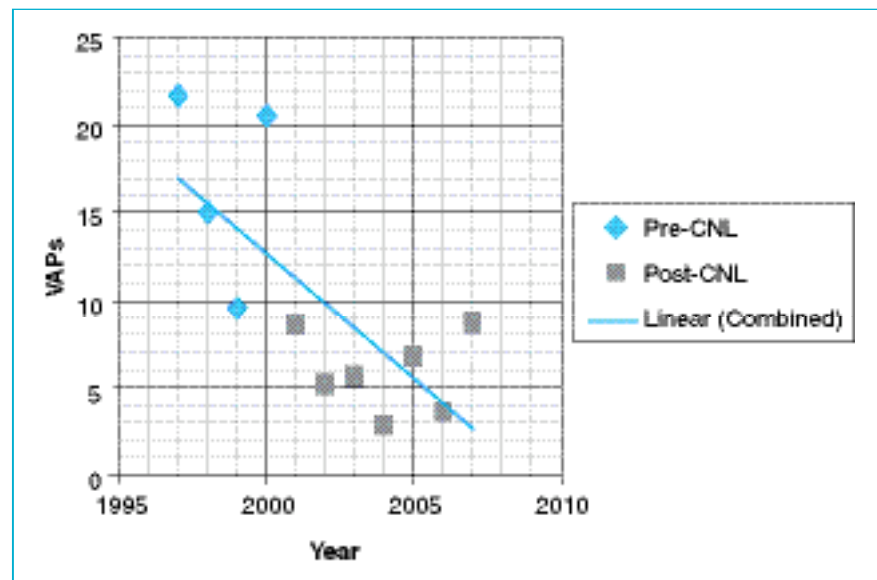
families included in the dining experience. Early results indicated an 8% increase in participation the first month.

Satisfaction. The CNLs struggled to report both patient and nurse satisfaction data that were unit specific. VA Medical Centers conduct staff satisfaction surveys annually and the results may not be unit or area specific. Patient satisfaction data are collected throughout the year but are often not tracked to a specific unit. Therefore these measures cannot reveal trends nor be sensitive enough to capture the impact of the CNL at the unit level and will not be used at this time as a quantitative indicator.

Innovations. Multiple stories have been journalized by both practicing and CNL students that capture the unique and rich experiences. Examples of innovations include working collaboratively with teams to reduce care fragmentation, customizing care at the microsystems level, and engaging physicians who have embraced the role and become advocates for shifting resources to attain additional CNLs. In addition, CNLs report increased opportunities for collaborative publishing and presentations at national conferences, for faculty appointments, and for grant writing have occurred since role implementation.

Observations and Future Directions

Data collection and analyses resulted in many lessons learned. The new CNL role was implemented in a variety of settings in the VHA system. Each CNL identified issues and indicators pertinent to their practice setting and patient population. While this provided a rich cross-section of data, it did not allow for aggregation of data with more confidence in the trends that were identified.

The challenges encountered in evaluating initial outcomes have clearly validated a need for a single, unique tool or method of data collection. This tool must provide consistent definitions for outcome measurements and data must be gathered at all points of care where CNLs practice. Integration of the CNL role in all areas of practice in every care setting has the promise of streamlining coordination of care for veterans across all spectrums in the provision of care. In addition, documenting CNL outcomes in the VA Nursing Outcomes Database (VANOD, 2008), a standardized, automated nursing-sensitive database, is an imperative requisite to communicate the utility of the CNL role across settings and support evidence-based practice. The VHA Office of Nursing Services plans to establish a network of nurse researchers that will assist CNLs to collect outcomes data, analyze the data, and disseminate findings via VANOD.

The adoption of a major change in the professional practice model such as the full integration of the CNL role into the patient care model of the nation's largest health care system is a challenge that the VHA Office of Nursing Services has eagerly accepted to transform nursing practice for the future. VHA nurse leaders across the entire system are highly encouraged to establish the link between their medical facilities and their academic nursing partners. Future directions by VHA Nursing include the goal of infusing the CNL role at all levels of care in all VA Medical Centers by the year 2016. **$**

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