



How Unit Level Nursing Responsibilities Are Structured in US Hospitals

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Objectives: To describe (1) the extent to which acute and intensive care units use the elements of nursing models (team, functional, primary, total patient care, patient-focused care, case management) and (2) the deployment of non-unit-based personnel resources.

Background: The lack of current data-based behavioral descriptions of the extent to which elements of nursing models are implemented makes it difficult to determine how work models may influence outcomes.

Methods: Nurse managers of 56 intensive care units and 80 acute care adult units from 40 randomly selected US hospitals participated in a structured interview regarding (1) day-shift use of patient assignment behaviors associated with nursing models and (2) the availability and consistency of assignment of non-unit-based support personnel.

Results: No model was implemented fully. Almost all intensive care units reported similar assignment behaviors except in the consistency of patient assignment. Non-intensive care units demonstrated wide variation in assignment patterns. Patterns differed intrainstitutionally. There were large differences in the availability and deployment of non-unit-based supportive resources.

Conclusions: Administrators must recognize the differences in work models within their institutions as a part of any quality improvement effort. Attempts to test new work models must be rigorous in the measurement of their implementation.

Throughout much of the 20th century, the nursing profession used a series of names to describe how care is delivered to patients in hospitals. These "care models" mainly reflected the role of the registered nurse (RN) in regard to the patient and other nursing care providers stationed on a discrete unit. These other nursing care providers included licensed practical/vocational nurses (LP/VNs) and unlicensed providers such as nurse aides (NAs). Functional (assignment of RNs to discrete tasks such as medication administration rather than patients),¹⁻⁴ team (assignment of the RN as a leader of groups of other nursing care givers to give care for a group of patients),^{1,5,6} and primary (consistent assignment of an RN to provide/be responsible for all nursing care to 1 or more patients)^{7,8} nursing models each experienced widespread but, by no means, universal use in US hospitals after World War II.⁹

As the century drew to a close, the provision of case management as a nursing service and various experiments in the integration of nonnursing personnel within the nursing unit led to the adoption of other models. Among these models were total patient care and patient-focused care.⁹ The latter 2 phrases were sometimes used interchangeably and sometimes indicated very different characteristics. One use of the total patient care designation was to indicate a situation in which the nurse was responsible for all care for a patient or patients during a shift.⁹ This method, also known as case method, originated with Nightingale and was widely used in the late 19th and early 20th centuries. The

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other use for this phrase meant that the unit staff or individual nurse was responsible for many care activities, including some not usually associated with nursing such as respiratory therapy activities.¹⁰ Sometimes the phrase “patient-centered care” was also applied to this practice, but at other times, patient-centered care was used to indicate greater inclusion of patients in determining their care needs.¹⁰

The term “case management,” whose origins may be traced to 19th century community nursing, was also applied in a variety of ways.^{11,12} In some models, staff nurses were designated the case manager; in others, the case management aspect of care was assigned to a specific nurse on the unit, and in others, the case manager was assigned across units. Adding to the definitional confusion, all the terms were sometimes used simultaneously because their implementation was not mutually exclusive, for example, a unit might be said to case manage patients but operate a team model. The nature of the case management also varied. In some descriptions, discharge planning appeared to be prominent. In others, management of care throughout the episode of illness requiring hospitalization was emphasized.¹²

It is important to describe accurately the work deployment models for nursing personnel for 2 reasons. The first concerns efforts to improve patient outcomes. Without knowing how people are deployed, it is difficult to determine who is responsible for key elements of outcome production and impossible to determine what changes might make a difference. As Tiedeman and Lookinland⁹ have demonstrated, there is little evidence to suggest which model of care is most effective in any given situation. Almost 15 years ago, an editorial writer suggested that there are no pure nursing care delivery models.¹³ The extent to which this is true now and how mislabeling of nursing models might explain why models of care do not explain variation in outcomes remains unresolved.

The second reason lies in a basic management principle: workers who understand the responsibilities and attendant required skills of their own jobs as well as those of workers in other roles are less likely to make errors and facilitate rapid redeployment of personnel to fill openings across an organization.¹⁴ The military’s ability to quickly form effective units of care providers is one example of this approach’s benefit.

Another unknown is the extent to which the work models are supported by nursing services outside the unit. The constellation of these services, as well as those provided by nonnurse patient care support personnel (eg social workers), might influence the work of the unit-based nursing personnel

structure. For example, if there is no access to a clinical nurse specialist or a social worker, the leader of a unit-based team may need to fulfill more roles requiring diverse skills.

In summary, there are no current data-based behavioral descriptions of the extent to which the models are used to deploy personnel to accomplish nursing work in hospitals. Although organizations such as the American Hospital Association have sometimes collected information about what hospitals call their nursing care delivery models, there is no information about how or even if these names are consistent with standard descriptions of the models’ characteristics.

Methods

As part of a larger study of the role of capital, labor, and process variables in explaining variation in patient falls, therapy disruptions, and physical restraint use, 40 acute care nonfederal hospitals with an average daily census of more than 99 patients were selected randomly from 6 metropolitan areas (Chicago, Dallas–Fort Worth, Denver, Houston, New York, and Phoenix) that represent the western, southern, midwestern, and northeastern regions of the United States. The random selection was stratified to include at least 1 large teaching hospital in each area. Metropolitan areas were chosen because of the concentration of the population in such locations; the hospital volume level was chosen because almost 90% of the US population receives care in hospitals of this size.

A 2-month wave approach (no more than 3 hospitals per city began data collection activities in the wave) was implemented from 2003 to 2005. No wave commenced in July or December because factors such as holidays or the presence of many orientees limit comparability. As part of the conditions of participation, each hospital designated a nurse as the hospital’s site contact.

A full description of the methodology has been published.¹⁵

Data Collection Procedure

The project was approved by the investigators’ institutions for conformity with human subjects and health information privacy standards and by each participating institution’s review body. Data collection regarding work models involved structured interviews and staffing data reviews with unit leadership on at least 1 adult medical, 1 surgical, and 1 general intensive care unit (ICU) at each hospital. The non-ICU units were chosen based on their status as being the institutions’ highest users of physical

restraints in an earlier phase of the study. If no general ICU existed, 1 medical and 1 surgical ICU were included; in a few cases, 3 ICUs were used to insure medical and surgical ICU specialization representation. One of 4 senior project team members conducted all interviews and staffing reviews. The principal investigator conducted data collection at 28 hospitals and acted as the reliability anchor for the other team members. Interrater reliability checks indicated more than 98% agreement.

The leadership interview and data review lasted approximately 60 to 90 minutes. It included other topics such as unit physical design and labor quantification. These topics are the subjects of forthcoming articles.

Model Item Development

The items (Table 1) were developed based on the items piloted tested and subsequently used by Minnick et al¹⁶ in earlier studies of patient outcomes. The continued consistency of the items with current definitional standards was investigated through a review of nursing model descriptions in standard nursing textbooks published between 1999 and 2003. The behavioral requirements of each model are not mutually exclusive, and some elements are not found in every definition of a particular model. Thus, some Table 1 elements were drawn from multiple models, but only the model most frequently described as utilizing the behavior is listed.

After cleaning procedures were applied, the data were analyzed using a standard statistical package (SPSS, 2002). The resulting data set represents 56 ICUs and 80 acute care adult units.

Results

Nursing Models

None of the traditional characteristics of the established models were implemented to the extent that a majority of units could be said to be using any particular model (Table 2). This is despite the characterization of the nursing model listed on hospitals' Web sites and those made by administrators. Almost all ICUs reported that they identified a "primary" nurse for each patient but did not use any of the other characteristics of primary nursing (eg, identification of an associate for other shifts, a minimum time commitment for primary nurse assignment, and assignment of only the primary or associate nurse as nursing care givers). The major differences among ICUs were in the commitment to trying to assign the "primary" nurse to the same patient whenever the nurse was on duty and the extent to which case management was applied to

Table 1. *Work Model Items^a*

Model	Items
Functional	RNs are assigned to tasks (eg, all treatments, all medications for a group of patients) rather than to patients LP/VN is assigned patients, and an RN "covers" for certain tasks The NA is assigned patients, and an RN "covers" for certain tasks
Primary	An RN is identified as a "primary nurse" for every patient Once an RN is identified as a "primary nurse," he or she cares for the patient whenever he or she is on duty An associate nurse can be identified for each patient The nurse must work a specified percentage to be a primary nurse The primary or associate nurses are the only nursing care givers for the patient
Team	Nursing care is organized around modules or teams The LP/VN is assigned tasks to be performed for a group of patients The NA is assigned to tasks to be performed for a group of patients At least some RNs have care giver partners (ie, an RN works with the same assistive person, and schedules are made to facilitate this pairing)
Case management	There is a case management practiced on this unit An RN(s) who is a member of our unit is a case manager An RN who is assigned to several units is a case manager Some but not all patients have a case manager All patients have a case manager
Total patient care/patient-focused care	There are unit-based personnel who stock clean provide hospitality activities transport other If yes, do these people also perform nursing activities? What are their titles? Approximately what percent of their daily work is devoted to the nonnursing activities?
Patient-focused care	For each item, interviewers asked if this was a unit-based person or a person assigned to several units or was a person assigned as needed from a central pool clinical nurse specialist psychiatric nurse liaison discharge planner social worker chaplain pharmacist dietitian radiology technician physical therapist inhalation therapist

Abbreviations: LP/VN, licensed practical/vocational nurse; RN, registered nurse; NA, nurse aide.

^aInterviewers specified that these items be answered based on day-shift practices. Respondents were asked to agree or disagree with each statement.

Table 2. Use of Nursing Care Model Elements in ICUs and Non-ICUs^a

Elements	% Reporting Use	
	Non-ICU (n = 80)	ICU (n = 56)
RN assigned tasks	1.3	1.8
Primary nurse identified	83.8	92.7
Primary nurse assigned same patient (as much as possible)	66.3	76.4
Associate nurse(s) identified	2.5	7.3
Specified minimum hours for primary nurse	2.5	97.5
Primary and/or associate-only nursing care giver ^b	12.5	38.2
LP/VN assigned patients ^b	80	60
	(n = 39)	(n = 5)
NA assigned patients ^b	42.5	9.8
	(n = 80)	(n = 41)
Modules/teams used ^b	58.8	8.9
Modules <7-8 patients	60.9	60.0
	(n = 46)	(n = 5)
Case management utilized	88.8	87.3
Case manager is unit staff member	21.1	12.5
All patients have case manager	77.5	72.9
Care partners	0	0

Abbreviations: ICU, intensive care unit; LP/VN, licensed practical/vocational nurse; RN, registered nurse; NA, Nurse aide.

^aTable 1 provides a broader description of the work model element; size of the subsample (n) varied for LP/VN and NA items because almost no ICUs and only 50.6% of non-ICUs use LP/VNs. Twenty-five percent of ICUs did not employ NAs.

^b $P \leq .001$. The P value was obtained in χ^2 analyses of non-ICU/ICU differences.

the census. In 73%, case management was available for all patients, and in 13%, no case management service was offered to any patient. Intensive care unit managers who indicated they strove for consistent patient assignment indicated it was often not successful because the short length of patient stay and the realities of 12-hour shifts (used almost exclusively in 89% of ICUs studied) made achievement of the goal difficult. Only 5 ICUs reported use of any LP/VN, but in 3 of these, the LP/VN was assigned to patients.

In addition to the differences noted in ICUs, non-ICUs varied considerably from one another in how LP/VNs and nursing assistants were used. Nurse aides and LP/VNs deployment was not necessarily consistent within a given unit. For example, in 22% of the 45 units that employed both types of person-

nel, both types were assigned to patients rather than to tasks. An RN was said to perform functional tasks such as intravenous medication administration that were considered outside the scope of practice of the LP/VNs and NAs; however, none of these units' managers noted the RN was assigned to tasks. In 57.7% of units that employed LP/VNs, the LP/VN had a patient assignment with the RN performing specific tasks, but aides were said to be assigned to tasks for groups of patients managed by the RN or LP/VN.

The differences among non-ICUs were intra-institutionally as well as interinstitutionally based. For example, in 10 of the 40 hospitals, the 2 non-ICUs studied reported opposite practices regarding efforts to always assign the RN to the same patient; an equal number reported opposite approaches (to RN-designated tasks or to patients) in how nursing aides were assigned. In 3 hospitals, 1 of the 2 units studied reported that no case management service was provided.

Stocking activities performed by unit-based staff was said to occur in 50% of non-ICUs and 60% of ICUs. Cleaning (9.1% of non-ICUs and 7.3% of ICUs) and hospitality/concierge services (7.8% of non-ICUs and 5.6% of ICUs) were not often reported to be a unit-based responsibility. Unit clerks and unit (not nursing) assistants were most likely to be reported to be assigned stocking work. Unit (not nursing) assistants were most often assigned to cleaning. No unit manager reported that central stocking services were replaced by unit activities. Patient transportation was a unit-based duty on 31% of non-ICUs and 53% of ICUs, although all units reported that some sort of transport service was provided either centrally or by specific departments (eg, radiology). The requirement that an ICU patient be accompanied by an RN whenever the patient leaves the unit resulted in the report that RNs were responsible for transport in every ICU. Nurse managers were unable to make approximations of the percent of daily work spent in these activities. Most reported that they believed stocking, cleaning, and hospitality service activities accounted for less than 5% of worker time.

Nonunit Personnel

In 70% of ICUs, all staff nurses were responsible for intravenous line insertion, and in 76%, they were also responsible for drawings from central lines. The respective figures in non-ICUs were the same. Intensive care units were more likely than non-ICUs to report consistent assignment of clinically supportive personnel to the unit. For example, the same respiratory therapist(s) would be assigned to

a given ICU. Units of either designation were unlikely to report the person was a part of the unit staffing or to be cross-trained for multiple roles such as respiratory therapy and physical therapy (Table 3).

Discussion and Conclusions

The application of the findings of this randomized study is limited to hospitals meeting the location, size, and service selection criteria. Small, rural, specialty, and federal hospitals may organize work assignments differently and are suggested as sites for future studies. The study can only be generalized to day shifts. The deployment practices used on other shifts may be very different and should be explored.

Research and Quality Improvement Implications

The findings that few units use a pure work assignment model and that practices vary within a hospital suggest that researchers avoid designs that (1) use established model names as a nursing work model variable and (2) name one nursing model per hospital. Future studies might consider capturing at least the 4 elements that varied most in their distribution in this study: (1) attempts to consistently assign the RN to the same patients, (2) the employment of LP/VNs and aides, (3) the assignment of LP/VNs and aides to patients rather than RN determined tasks in non-ICUs, and (4) the extent of case management. We recommend researchers ascertain if a unit manager's commitment to assign RNs consistently to the same patients is realized.

Investigation regarding the extent of case management is also warranted. Researchers also need to consider ICU–non-ICU differences in the selection of elements. For example, few ICUs use LP/VNs, making the number of units needed to examine how LP/VNs function in these settings larger than might be anticipated.

Although future work may also indicate if mathematically meaningful assignment behavior clusters exist, researchers need to be mindful of the original reasons for studying the elements of work model characteristics: their possible impact on outcomes. The individual work model characteristics as well as any interaction effects of the elements should be tested as explanatory variables in outcomes studies.

An additional direction for future research is suggested by the finding that non–unit-based personnel deployment differences exist, especially between ICUs and non-ICUs. The decision regarding whether this type of support should be incorporated in emerging work model variables or used independently can be answered best by examining their individual and combined impact on explaining variation in patient outcomes.

Methodological improvements should also be explored. One of these concerns is accounting for the time spent in patient transport; the activity units were most likely to identify as requiring RN personnel. An area for item development concerns the extent of case management and description of the case management behaviors that are implemented.

Table 3. Assignment of Clinical Assistive Personnel in ICUs and Non-ICUs

Personnel Type	% Reporting Use					
	Non-ICU (n = 78)			ICU (n = 54)		
	Unit Based	Regularly Assigned to Unit	Not Consistently Assigned/Not Available	Unit Based	Regularly Assigned to Unit	Not Consistently Assigned/Not Available
Clinical nurse specialist	5.1	39.7	55.1	7.4	31.5	61.1
Psychiatric nurse liaison	0	36.4	63.6	0	31.5	68.5
Discharge planner	3.8	85.9	10.3	1.9	79.2	18.9
Social worker	0	91.0	9.0	0	83.3	16.7
Chaplain ^a	0	52.6	47.4	0	73.6	26.4
Pharmacy ^a	0	51.3	48.7	1.9	74.1	24.1
Dietitian	0	77.9	22.1	0	88.9	11.1
Radiology technician	0	1.3	98.7	0	3.7	96.3
Physical therapist ^a	0	60.3	39.7	0	38.9	61.1
Inhalation therapist ^a	1.3	34.6	64.1	0	75.9	24.1
Other ^b	2.6	60.3	37.2	0	66.0	34.0

Abbreviation: ICU, intensive care unit.

^a $P \leq .001$. The P value was obtained in χ^2 analysis of non-ICU/ICU differences.

^b“Other” includes support such as lift and traction technicians.

Administrative and Educational Implications

Nurse administrators who are asked to convey the nursing work deployment model used at their institutions should proceed with great caution, given the differences between ICU and non-ICU units and differences between non-ICUs. Administrative recognition that more than 1 worker deployment model is used within the institution will help direct internal quality improvement efforts. The work lives of 2 non-ICU RNs in the same institution are very different if 1 RN works on a unit with no case management support and is dealing with an LP/VN who has his or her own patients and expects the RN to “cover” him or her for certain tasks, while the other works on a unit where all patients are case managed and there are no LP/VNs. These differences may result in differences not only in safety and patient quality, but also nurse recruitment, satisfaction, and retention.

If administrators expect to understand how work is assigned on their units, they must explicitly remove value judgments in their discussions with their nurse managers. Although the items related to LP/VN and NA assignments indicated RNs were, on many units, assigned to perform certain tasks (“cover”) for these personnel, less than 2% of unit leaders responded that RNs were assigned to tasks when asked this early in the interview. The few who reported the practice did so with some hesitation given the stigma of functional nursing in institutions that espouse some other model.

The extent to which today’s educators present nursing models to students based on rigorous research about the impact of the models needs to be explored. For example, nurse managers would sometimes state they were taught that primary nursing was best and so were hesitant to admit the use of other assignment behaviors. Nurse administrators should consider the extent to which managers’ education, whether recent or long ago, influences their reports.

Without prompting (especially when the item regarding identification of a primary nurse was read), many unit leaders would pause and then tell the

interviewer, “we have ‘X’ nursing model, but it is not the kind you think” or “not the kind we were taught in school.” Participating in the interview seemed to free some managers to begin to reconsider nursing models. Some asked the interviewer what kind of a model the interviewer believed they had. A few times, the nurse managers said “this is what works for us” when answering the items about the use of assistive nursing personnel. Nursing administrators need to (1) create opportunities to learn what assignment practices their nurse managers believe works and why and (2) provide support to collect data that either verify or refute these beliefs.

Administrators should explore the type of functional work RNs perform in situations in which assistive personnel are assigned to patients. The study methodology did not allow for an in-depth analysis of the nature of the tasks. Often managers explained tasks included delivering specific medications or treatments; sometimes, the description was of patient teaching or care mapping responsibilities. It is important to know if there is consistency in this work before determining how this practice may influence patient outcomes.

Explaining the Past; Looking Toward the Future

It is impossible to determine if contradictory findings about the impact of well-known models of care delivery summarized by Tiedeman and Lookinland were largely a result of a failure to determine if the named models were, in fact, being operationalized as designed.⁹ The organizational and sociological literature indicates work models make a difference in costs, products, and human resources. Nursing should not abandon its attempts to develop and test new work models but should demand methodological rigor in work model description and measurement. An approach rooted in the measurement of behaviors will help determine if specific work deployment and assignment practices individually or in concert can be formulated to improve patient outcomes and nurses’ working conditions.

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