

Implementation of Work Sampling in an Acute Rehabilitation Unit: Assessing Nursing Efficiency

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To establish appropriate staffing guidelines, roles, reduced labor costs and reduced cost per unit of service, i) identification of work with appropriate staff members, and ii) development and utilization of a patient acuity system were studied in an acute rehabilitation unit of a hospital in central Illinois. Acuity of patients ($n = 127$) was categorized by using assisting levels of minimal, moderate and maximal based on the Functional Independence Measure (FIM) score. The FIM score was reevaluated each week. In the 1st month, volume and time studies were done on all rehabilitation patients. In the 2nd month, roles of the registered nurse (RN) and the unlicensed assistive personnel (UPA) were clarified; and in the 3rd month, patients' acuity levels were reestablished and staffing management was adjusted. This system also clearly identified patients' acuity and the role of RNs and UPAs. Hours per unit of RN service was cut from 8.85 to 7.49 per 8 h shift. Cost per unit of service was decreased from \$163.6 to \$105.2. A total annual savings of \$268,410 indicated a big financial impact on the unit with almost the same level of patient satisfaction as before. The results of the study suggest that the work sampling method for a management and organizational development program can be used to objectively assess work load of RNs as a first step.

Key words: registered nurse; unlicensed assistive personnel; work sampling

Due to downsizing in the acute care sector of health care, hospital nurses now face fewer alternative positions in areas where they currently work. Acute care hospitals increasingly employ patient care delivery models such as unlicensed assistive personnel (UAP). In institutions introducing such models, the responsibilities of nurses are changing from providing total patient care to delegating certain patient care tasks which have nurse-defined outcomes (Spitzer-Lehmann and Yahn, 1992). The nurses develop nursing care plans and then select activities that they delegate to the UAP. This practice presumably lowers costs of patient care per day and increases nursing productivity.

The issue of "cost" becomes a concern when nurses are used for nonnursing tasks. Several studies have shown that professional nurses

spend a significant amount of their time in indirect care (Mayer, 1992; Quist, 1992; McMurray, 1992). A team approach with effective use of the UAP can increase nurses' productivity and decrease downtime (Spitzer-Lehmann and Yahn, 1992).

The purpose of this study was to establish appropriate staffing guidelines, roles, reduced labor costs, and reduced cost per unit of service by the delegation of work to appropriate staff members and development and utilization of a patient acuity system.

Goals were defined as follows: i) Provide maximum utilization of registered nurse time through efficient utilization of the UAP; ii) Decrease patient-care hours from the current level of 8.85 h to the target level of 7.5 h; iii) Improve the flow of care delivery.

Abbreviations: FIM, Functional Independence Measure; LPN, Licenced Practical Nurse; RN, registered nurse; UAP, unlicensed assistive personnel

Subjects and Methods

This study was conducted from September 1996 to January 1997 in an acute rehabilitation unit of a hospital in the town of Urbana, IL where the population was approximately 100,000. Acuity of patients ($n = 127$) was categorized into 3 assisting levels (minimal, moderate and maximal) based on the Functional Independence Measure (FIM) score. The FIM score (Table 1) is a set of 18 items (currently, 55 items) which uses a 7 point scale. The 7 point scale for items measures the assistance (help) level required for completing a task by a patient. The scores of 7 and 6 are categorized as minimal assistance, 5 through 2 as moderate assistance, and a score of 1 as maximal assistance or dependency. In addition to these categories, safety, teaching/emotional support, medication, treatment assessments and discharge care planning or coordination were added to define acuity of nursing care. The FIM score of patients was reevaluated each week at a team conference.

During this study period, the rehabilitation unit had a staff allocation or full time employee of 8 registered nurses (RNs), 1.5 UAPs, and 1 secretary to cover 24 h or 3 consecutive shifts. Each staff member was assigned an 8 h shift per day. The average daily number of patients was 6 to 15 (maximal capacity), that is, a 40 to 100% occupancy rate. Recording data included day, evening and night shifts during each phase. All staff members were informed of the study and its purpose, and training sessions and periods were provided by a Nurse Educator and Nurse Managers. Staff member tasks were categorized as follows: i) a report, ii) shift preparation, iii) direct nursing care, iv) nonlicensed nursing tasks, v) patient admission, vi) direct patient discharge, vii) documentation, viii) communication with patients, staff, patients' family members, physicians, and other department personnel, ix) operation of equipment, x) patient rounds, xi) consultation with a case coordinator, physicians and supervisors, xii) critical thinking, xiii) supervision/delegation, xiv) clerical work and xv) meetings.

The data was collected in three phases: i) the 1st phase—volume loads and actual work

Table 1. Items included in FIM

1. Bladder management
2. Bowel management
3. Eating
4. Grooming
5. Bathing
6. Dressing upper body
7. Dressing lower body
8. Toileting
9. Locomotion: walk/wheelchair
10. Stair climbing
11. Transfers: bed, chair, wheelchair
12. Transfers: toilet
13. Transfers: tub or shower
14. Comprehension
15. Expression
16. Problem solving
17. Memory
18. Social interaction

FIM, Functional Assessment Scale Manual. Version 4. Rehabilitation Institute of Chicago.

time were recorded, ii) the 2nd phase—roles of the RNs and UAP were clarified, and iii) the 3rd phase—patient acuity levels were reestablished, and staffing management was adjusted.

Results

The distribution of tasks of RNs and UAPs are tabulated (Table 2). Based on the volume load and actual work time, RNs spent more than 30% of their time (at least 2 h and 25 min during an 8 h shift) for nonlicensed nursing tasks that are mainly UAP duties such as oral feedings, bathing, transferring and transporting patients in addition to clerical duties such as patient admission and discharge. Direct patient care accounted for about 30% of the time or 2 h and 25 min during an 8 h shift. Documentation accounted for 13% or 58 min of the time spent, and verbal reporting patients' conditions to the following staffs represented 12% or 54 min.

Nonlicensed tasks represented the majority of UAP time spent on the unit, accounting for 35% or approximately 3 h during an 8 h shift. Direct care accounted for 13% of their time. Thus, a total of 48% of UAP time (3 h and 50 min) was spent on patient-care activities. Clerical tasks represented a substantial portion of the time spent by unit secretaries, when the secre-

Table 2. Distribution of tasks of RNs and UAPs in an 8 h day shift

Type of tasks	Percentage in an 8 h shift (%)	
	RN*	UAP
Direct patient care	26 [†]	13
Non-licensed tasks	30 [‡]	35
Documentation	13	0
Report	12	0
Communication, consultation	45	0
Secretarial tasks	— [‡]	29
Others	—	—

RN, registered nurse; UAP, unlicensed assistive personnel.

* RNs spent more than 8 h during an 8 h shift.

[†] Including some nonlicensed tasks.

[‡] Including some secretarial tasks.

tary was present. The clerical tasks required approximately 2 h and 19 min during the day and 52 min in evenings. The proportions of time allocated to each activity were similar, when day, evening and night shifts were compared; however, variations were noted in the distribution. For RNs, a greater percentage of direct patient care was noted in the evening shift (34%) as compared to day (26%) or night shift (30%). Documentation represented a substantial portion of time in the day and evening shifts. Verbal reporting patients' conditions to the following staffs represented a greater amount of time in the evening than in the day or night shift. Communication and consultation occurred most frequently in the day shift. Furthermore, patient admissions and discharges occurred more in the day than in the evening shift, while no patient admission and discharge occurred in the night shift.

Overall, the data indicated that:

- * RNs were performing too many nonlicensed tasks and/or clerical functions.
- * UAP and unit secretary work was not distributed evenly for each shift.
- * RN tasks were different based on patients' acuity, spending about 2.5 times more time with dependent patients than minimal assist patients.
- * RNs required overtime, because they spent too much time on nonlicensed tasks.

From the data, a shift management index was created with an increase in number of UAPs who could manage clerical work (the hospital provided cross training sessions), since a new unit secretary was not hired (one secretary resigned during this study). Effective distribution of nursing staff (using on-call status) was suggested. Nurses were encouraged to delegate nonlicensed nursing tasks to appropriate personnel (continuing education was planned and provided by the Continuing Nursing Education Department). Patients' acuity levels were re-evaluated every week or whenever patients' conditions changed.

Using this program, patients acuity and roles of the RNs and UAP were clearly identified. Hours per unit of service by RNs were reduced from 8.85 to 7.49 per 8 h shifts. The cost per unit of service was decreased from \$163.6 to \$105.2. The total annual savings were \$268,410 with similar patient satisfaction as before.

Discussion

Currently, the outpatient sectors (Home Care) of the US health care delivery system as well as the Japanese health care system are growing much faster than the acute care sectors. Besides, if health care costs continue to rise as in the United States, this effect would impel hospital employees to provide complex care to more acutely ill patients under tighter time constraints, and would often reduce the number of RNs. This trend will be seen in Japanese health care in near future; Japanese nurse leaders will also be under pressure to decrease patient care hours yet increase nursing productivity as seen in the United States. This change in the health care environment is affecting professional nursing practice and the relationship of the RN to the UAP, that is, nursing assistants, unit secretaries, Licensed Practical Nurses (LPNs) and others. However, the RN still retains the responsibility for the total nursing care of patients. In Japan, work assignment of the RN is not well defined as compared to the United States, where RNs and LPNs have defined roles in the health care system. To be accurately

assessed for work, Japanese RNs need to continue to define what their job description is. The present results suggest that the work sampling method for a management and organizational development program can be used to objectively assess the work load of the RNs as a first step. Moreover, the work sampling study could become an affective and accurate tool for management redesigning, which helps nurse administrators to obtain a clear vision, to identify problems and to provide steps for unit redesign. Effectiveness of nursing time should improve the quality of patient care.

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