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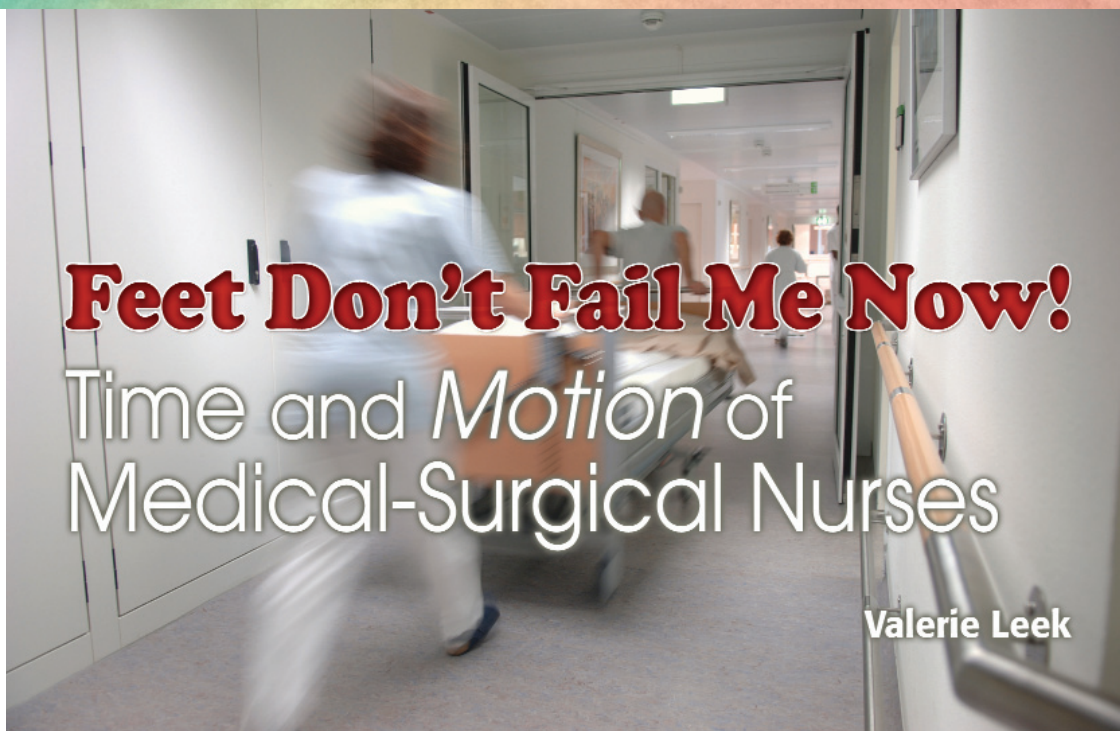

Feet Don't Fail Me Now!

Time and *Motion* of Medical-Surgical Nurses

Valerie Leek

What we experience on a daily basis has now been validated; during the course of an average shift, medical-surgical nurses walk – *a lot!* This article provides a summary of a study conducted by Hendrich, Chow, Skierczynski, and Lu (2008) entitled, "A 36-Hospital Time and Motion Study: How Do Medical-Surgical Nurses Spend Their Time?" The study was recently published by *The Permanente Journal* and is described as a quantitative study done to determine three parameters of medical-surgical nursing activities during typical 10 to 13-hour shifts. The three parameters studied were:

- The amount of time spent in the practice of nursing, including non-clinical time and wasted time (time spent looking for or traveling within or off the nursing unit for needed items).
- The daily distance and nature of the motion of travel by the average nurse both on and off-duty.
- The physiologic impact of the workload of medical-surgical nurses on the nurses themselves, in terms of stress, kilocalories burned, and general physical work.

Population and Site

The study employed a large population of 767 nurses from 36 medical-surgical units in 17 health care systems in 15 states. Staff chosen for the study were licensed nurses only. Further criteria for selection included that the licensed nurses had worked on the unit being studied for 8 weeks or more so that unfamiliarity with the unit would not affect the study. The length of the study on each unit was 7 full days of 10 to 13-hour shifts.

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Research Methodology

Protocol A

Four protocols were followed to obtain data pertaining to the parameters of study. Protocol A was an investigation into the time spent in documentation. Nursing staff were randomized into this protocol and given a personal digital assistant (PDA) that they were to activate at the start of documentation and stop when the documentation session was over. Documentation duties included admission, discharge, patient assessments, care-planning, teaching, multi-disciplinary consults, physician order initiation and follow-through, and other specific unit-based duties.

Protocol B

Protocol B was designed to assess where staff nurses were spending their time. Nurses randomly selected for this protocol were given a PDA that vibrated 25 times during the 10 to 13-hour shifts. When the PDA vibrated, nurses were to choose a category pre-programmed into the PDA. The categories included unit-related functions, wasted time, nursing practice (patient care, medication administration, vital sign measurement, physical assessment, and non-clinical activities), as well as their location (the patient room, the nurses' station), and to input if they were engaged in specific activities on the unit or if they were off the unit.

Protocol C

Protocol C was designed to determine the nurses' locations and movement to measure distance and time spent at the location. All nurses in the study wore radio-frequency identification tags. Since nurses spend a short amount of time in any one area and sometimes work in teams to deliver patient care, nurses were outfitted with four tags so that precise measurements could be taken.

Protocol D

Protocol D was designed to measure nurses' physiologic response to the rigors of their work. Nurses wore armbands 23 hours per day that measured their body temperature and recorded skin changes and motion. These readings were calculated into energy expenditure or kilocalorie use from which was extrapolated work parameters, such as distance traveled, speed of travel, rest and sleep time, and the amount of physical work the nurses encountered.

Findings and Recommendations Of the Study

Impact of the Physical Design of the Workplace

Many studies have been done regarding the configuration of nursing units. With more and more health care facilities expanding or consolidating, new facilities are being built. Architects and nurses have input into the design of these buildings, with close scrutiny given to the layout of nursing units. Surprisingly, the health care facility design configurations had no significant impact on motion or distance measurements. Rather, the routine of the unit, location of key areas, and assignments or workload of the nurses were thought to have more of an impact than the physical workplace.

Where Do Nurses Spend Their Time?

Documentation. Nurses spend most of their time documenting, which correlates with the most common location – the nurses' station. Only those health care systems without digital imputing stations were studied. In these facilities, 35.3% of the nurses' time was spent documenting. Documentation takes a large part of the nurses' days, especially admissions, which require a large amount of assessment and history-taking. There is significant overlap in documentation among disciplines within the health care facility. Nurses must check physicians' orders, enter them into the computer system, and then recheck that they are carried through. Every discipline that is present in the health care facility has an impact on documentation time, from nutritionists to physical therapists, so it is important to remember that all documentation was considered, not just that directly related to the care and comfort of the nurses' patients.

Medication administration. This activity includes both the preparation and administration of drugs to patients. The percentage of the shift consumed by this activity is 17.2%. Medication administration can take an enormous amount of time, especially if medications are missing from the patient's drawer, or generic medication names are ordered and brand name drugs are sent. This necessitates the nurse taking time to research the drug name as well as any other pertinent information needed to safely administer the drugs. Even electronic dispensing units are time-consuming. If medications for pain are required, the nurse must go to the dispensing unit when the patient asks for the medication. To complicate this further, many medications require witnessing by another licensed staff person (for example, insulin and opioids).

Care coordination. Care coordination includes gathering laboratory data and delegating tasks, and is reflective of the impact of nurse/patient ratios. The time spent in this activity was 20.6% of the shift. Generally, at the beginning of the shift, staff members are assigned to their patients and report is taken. Following report, a quick shift assessment of the assigned patients is done. It is then that the morning laboratory values are reported. Many therapies must be initiated or discontinued based on these values. Critical and abnormal values are reported to the health care provider (HCP), who then determines the required intervention. When contact with off-site HCPs is necessary, it is often time-consuming to get into contact with the HCP associated with the patients who need adjustment of therapy.

Distance. The total average distance traveled by the nurses in the study was 2.4 to 3.4 miles during a 10-hour day shift. On night shift, the average distance dropped to 1.3 to 3.3 miles. This was contrasted with the average off-duty travel distance of 1.2 miles. The impact on nurses of total energy expenditure was evident in the degree of work

Figure 1.
Issuing a Proclamation for Change*

Recognizing that the United States is currently undergoing the largest hospital building and renovations boom in its history, while the demand for nurses simultaneously continues to outpace supply, many health care leaders see this as a timely opportunity to improve the quality of patient care. Based on the results of the *Time & Motion* study, these leaders have developed principles to guide decisions about hospital design and technology, and issued a proclamation to be shared with hospitals, health systems, and health care organizations. It states:

In order to transform the hospital-patient care environment and improve the delivery of safe, high-quality, patient-centered care, we believe in the need for:

1. **Patient-centered design.** Hospital and technology design should be organized around patient needs – helping patients and their families feel engaged in the caregiving process rather than removed from it – and be tailored to address unique factors and diverse patient populations.
2. **System-wide, integrated technology.** Architects and technology vendors should work closely with nurses, physicians and other caregiving departments (i.e., pharmacy, lab, housekeeping, admitting) in all aspects of designing workspace and technologies in order to ensure a system-wide approach to meeting patient needs.
3. **Seamless workplace environments.** To consistently provide the highest quality care to patients, the physical design of medical-surgical units should be completely integrated with caregiver work processes and the technologies they use, so caregivers always have the right medication, materials, and information in the right place, at the right time.
4. **Vendor partnerships.** The design and operation of technology devices should be intuitive, error-free, and part of interoperable systems – so that health care providers can access information in hospital or outpatient settings – and not waste time serving as human bridges that link multiple technology devices in different locations.

While the principles outlined in this proclamation sound simple in theory, *implementing these principles requires that the silos that America's hospital staff operate in – technology, nursing and facilities – be removed.* Only then can hospital leaders work cross-functionally to design the best systems for delivering high-quality care that is safe, standardized, and cost-effective. The proclamation enables the work of all hospital staff, as well as our vendors and suppliers, to align with the best interests of our patients.

In an effort to improve both clinical outcomes and overall patient care, we believe that the following principles must be adhered to and endorsed in hospitals nationwide:

- Patients and their families will interact more often with nurses and other care providers who spend more time in direct patient care because impediments have been systematically eliminated.
- Documentation will be a byproduct of care – generated at the point of care and in real-time – rather than an additional work process.
- Needed patient supplies and medical equipment will be available on demand, whenever and wherever health care providers and their patients need them.
- Medications will be administered as part of a seamless system that provides accurate and timely information about the patient, such as allergies, potential reactions, and preferences.
- Communications systems will link health care providers as appropriate, being sensitive to communications preferences and needs, while enabling efficient, effective communications across and between disciplines resulting in coordinated patient care.

**This proclamation was endorsed by the Academy of Medical-Surgical Nurses*

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and looping repetition associated with the workplace schedule and culture. Medical-surgical nurses often feel they have run a marathon after a busy shift. These findings conclude the average amount of time spent in any one place was 20 to 30 seconds, so this means there is a rapid stop-and-go pattern to the distance traveled.

Impact on patient safety. Areas where the least amount of time was spent included patient care (19.3%), vital signs, and physical assessment (7.2%). With the bulk of the nurses' time spent on documentation, medication administration, and care coordination, it is clear that direct care and assessment of patients by licensed nurses in the medical-surgical units suffers as a result. Client care needs, minor or not, are more liable to go unnoticed because of the other duties that either place the nurse at the nurses' station or in the medication room.

Based on the study Hendrich et al have developed principles and a Proclamation for Change to guide decisions about hospital design and technology (see Figure 1). AMSN endorsed this Proclamation for Change.

Recommendations and Conclusion

Some recommendations to transform the health care environment include a more patient-centered approach with integrated technologies to enable the nurse to spend more time with the patient and less time at the nurses' station.

Documentation

Wireless input systems for documentation would enable staff to enter data without leaving the patient and increase assessment time. Studies should be done on documentation practices to decrease the overlapping data when other disciplines are consulted. It is not uncommon for a nutritionist, a speech therapist, and a physical therapist to write about the same problem in many different places in the chart. A multidisciplinary approach would prevent fragmentation of the total care of the patient by placing all data for a particular problem on one document. Documentation is one area where, despite the push to decrease the amount of paper-pushing, actually has a paradoxical increase. It seems many more forms are added to the nurses' documentation loads.

Medication Administration

Recommendations include development of a seamless medication administration system, where all patient data, pertinent laboratory values, vital signs, and drug information be kept electronically at the site of medication preparation. Other proposals include the placement of cabinets in patients' rooms for frequently used medications, such as those to treat pain. A plan to integrate medication systems from supplier to administration can be achieved by research studies and integration of technologies.

Care Coordination

Wireless tracking devices for HCP could facilitate and expedite patient care in both non-acute and acute situations where medical intervention is needed. Studies of delegation, nurse/patient staffing, and outcomes assessment must be performed to eliminate the amount of time and repetitive movement the nurse typically has during a shift. Again, technology-based interventions can decrease the time spent coordinating care at the nursing station, and more time can be spent with the patient. The patient is the priority, and steps taken to ensure that concept need to be studied. Interaction with the patient and the patient's family has been shown to increase patient satisfaction as well as improve outcomes of care.

Wasted Time

The layouts of the nursing units and availability of supplies add to wasted time during shifts. It is not unusual for nurses to search for items not only on their unit, but to go to other units to retrieve needed supplies. If the unit is poorly stocked, time is wasted waiting for supplies to be delivered to the unit. Time is a precious commodity for nurses who have their patients' needs as their priorities. Studies must be done to limit time spent performing non-nursing functions.

> *A holistic approach is needed whereby people, process, and technology come together harmoniously in a physical space to produce the maximum medical-surgical unit efficiency (Hendrich et al., 2008, p. 33).*

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Reference

Hendrich, A., Chow, M., Skierczynski, B.A., & Lu, Z. (2008). A 36-hospital time and motion study: How do medical-surgical nurses spend their time? *The Permanente Journal, 12*(3), 25-34.