



Measuring How Far Nurses Walk

A Step in the Right Direction

Nurses walk too much, and that is a problem. A new tool has been developed that allows architects and hospital leadership to better evaluate unit layouts, both those in the design process and those that already exist, from the perspective of nurse walking distance. While not perfect, this new measure gives design professionals and healthcare leaders another tool to address an issue with repercussions for both nurses and patients.

A nurse can travel upwards of 4 miles during an average 12-hour shift; every step to retrieve supplies is a step away from a patient, a step in the wrong direction. Herman Miller Healthcare recognizes this to be an important issue and sponsored a study conducted by the Center for Advanced Design Research & Evaluation (CADRE), Texas Health Research & Education, and HSK, Inc. The goal was to better understand how physical design and operations processes interact to influence the total distance nurses walk.

The result is a new measure that realistically predicts nurse walking distance on hospital bed units. This measure offers architects, nurse leaders, and other hospital leadership an additional means of evaluation, enhancing the decision-making phase of bed procurement by identifying areas of the floor plan that need modification and providing comparison between alternative layouts, unit shapes, and circulations options. For a given unit layout, it also helps compare care models from the viewpoint of nurse walking and time spent at the bedside in order to optimize system efficiency and reduce waste.

Two major components influence the total distance nurses walk during their shift. The first is physical design—the actual distances between destinations on the floor: patient room to medication room, patient room to documentation station(s), and soiled linen to clean supply, for example. These distances result from a number of factors including the size of the unit (number of beds), whether accommodations are single patient rooms or semi-private, the degree of decentralization of nursing support spaces, and unit shape and circulation configurations.

The second component is frequency of activities that require the nurse to walk. This frequency determines the total distance traveled on a given shift. A number of operational factors affect the total frequency, such as the nurse-to-patient ratio, staffing, the type of patient population, and the shift (day, evening, or night).

These two components result in the following equation:

$$\text{Nurse Walking Distance} = \sum \text{Distance} \times \text{Frequency}$$

In other words, the distance between destinations on the unit floor, multiplied by the number of times each distance is traveled, results in a realistic prediction of how far nurses walk.

Various resources exist to aid in this calculation. The distance can be measured, and changed, using an electronic drawing of a patient care unit, whether it is in the process of being designed or already exists.

For information on frequency, a national survey of 700 registered nurses at hospitals in 46 states was conducted exclusively for this study. The data, carefully analyzed to account for variations such as different patient loading and presence of an aide, resulted in an estimate of how often nurses perform various activities in the course of a shift. While not perfect, the survey is a unique tool and represents the first time this type of information has been gathered.

To test the model, five units were selected. Each unit had an RFID system capable of tracking nurses during their shifts, allowing the actual distance traveled to be measured. This actual calculated distance was then compared to estimates generated by the model using frequency from the survey and distance from the electronic drawings of the five units.

The mean walking distance model performed successfully in four of five units, and offered a realistic prediction of walking distance during the process of design or process improvements. Certainly there is room for refinement, but this represents a valuable first step toward addressing an important nursing issue.