

DNA of Nursing Operations and Hospital Design Come Together

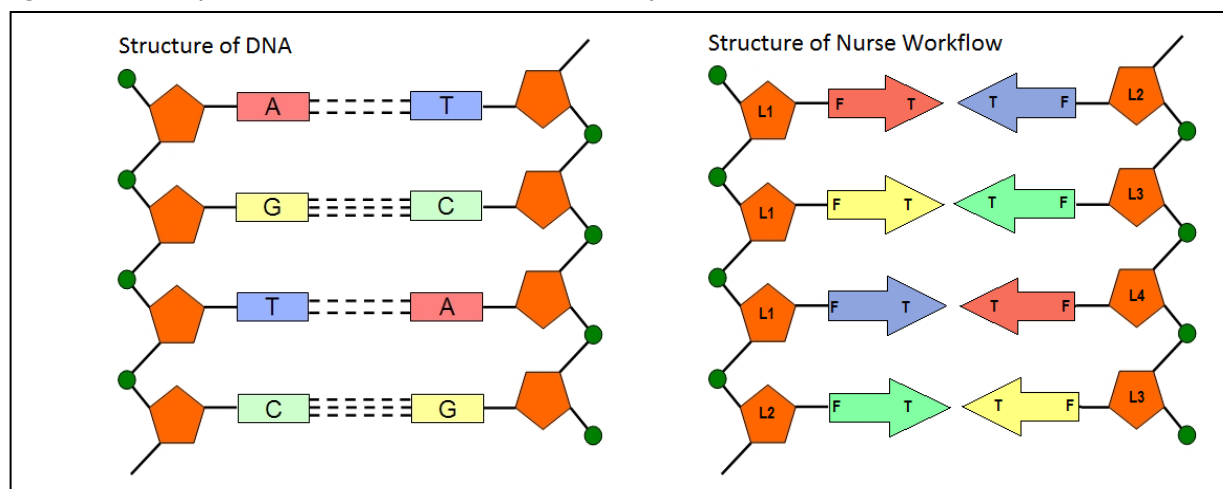
Nelson E. Lee

The DNA of Nursing Operations is captured in the Time Study RN National Benchmarking Database and is now available online for nursing organizations at hospitals and clinics worldwide.

Time Study RN is used by Nursing Organizations to measure the impact of change on Nurse Workload. It was originally developed in 2002 for an RWJ initiative called "Transforming Care at the Bedside" or "TCAB" for short. Over the last 13 years, 365 hospital units of all unit types have contributed data to the National Benchmarking Database. The database includes over 600 complete unit datasets from over 100,000 nurse shifts - over 1,000,000 observations. An additional 100 units have committed to completing data collection.

In 2008, a proximity indicator was added to Time Study RN to capture the impact of the built environment on caregiver workload. The proximity indicator measures the relative strength of location relationships, based on how caregivers work. The output is a sequence of relationships in a density function that looks "very" similar to a DNA sequence.

Figure 1. Comparison of Nurse Workflow Density Function to Human DNA.



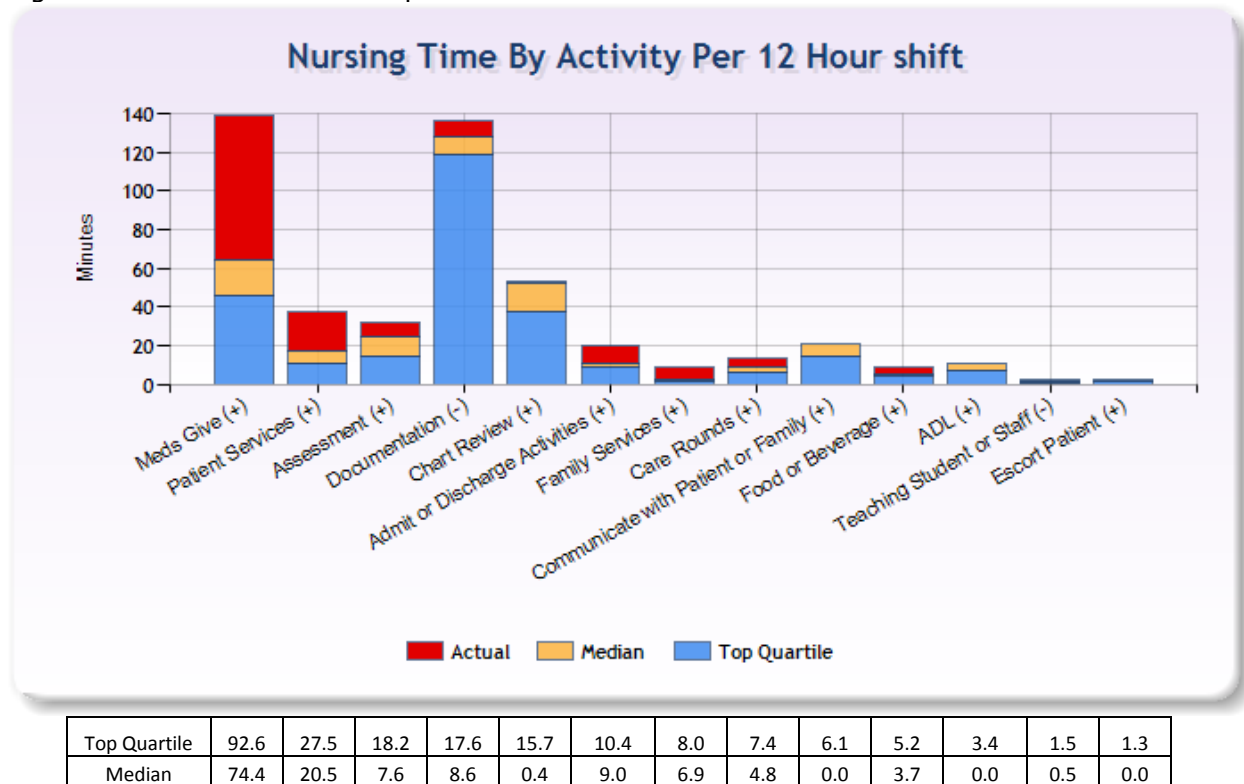
It turns out, that this density function works similarly to DNA in a human body because it contains "the code" about how caregivers work. It can be used to diagnose a host of problems in nursing operations including pinpointing the areas of nursing practice that are inefficient using heuristics developed in the program.

Nursing Unit Assessment – Pinpointing Inefficiency with the Unit's DNA

The new Unit Assessment report includes only activities in which nurses on this unit spend more time than the national top quartile based on the DNA of similar hospitals. The theory is that if the unit's nurses spend more time in an activity than the top quartile, then there may be inefficiency in the process that can be improved with changes in work flow or new

technology. The chart is organized from left to right by the activity that has the highest potential for improvement.

Figure 2: Unit Assessment Report



The Unit Assessment Report calculates the number of minutes that can be saved if nurses improve their performance on various activities. This report is used to identify specific areas to focus improvement activities.

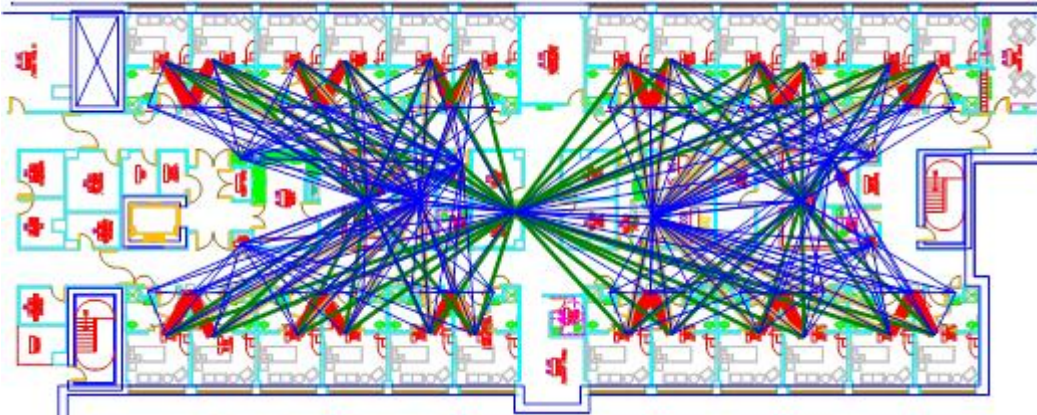
Unit Design DNA

One of the most innovative uses of the tool, is the ability to measure the impact the built environment has on caregiver workload.

Using the density function in Layout-iQ software, we are now able to measure the compatibility of hospital design based on the 2 most important factors found there. First, we can much more accurately calculate and predict the impact the design has on the distance and time of caregiving. Secondly, we can measure the “potential for improvement” in distance and time when applying the density function to a given hospital design.

These 2 factors of compatibility represent the holy grail of hospital design. Creating optimal hospital layouts given the DNA of caregiving is now possible for the first time. Within the 365 hospital unit participants in the National Benchmarking Database community, we have demonstrated that this method has improved the outcome on every project tested. In many cases, the results show huge improvements in performance.

Figure 1: Modeling the DNA of Nurse Work in Layout-iQ



Layout-iQ merges the DNA of Nurse work with a CAD drawing of the workspace and measures the travel distance imposed by the workspace. Layout-iQ provides a framework to experiment with various hospital unit designs and the impact on caregivers. The methodology was developed for healthcare but has now been added to textbooks for Industrial Engineering in manufacturing, warehousing, and general workspace design curriculums throughout North America.

Pre and Post Occupancy Evaluations

The methodology has been designed from end-to-end to provide simple and easy data collection, and standardized and validated criteria. It is the most comprehensive tool available today to evaluate the impact new technology, new workflows, and new Nursing policy have on Nurse workload. For this reason it is commonly used to evaluate the benefits and impact of new technology and new hospital designs in pre and post occupancy studies.

General Information

The Time Study RN National Benchmarking Database is free for any hospitals, consultants, and architects, that agree to submit data. Participation allows members to access all reports, data, and the density function (DNA) for their unit. All data is reported anonymously and the identities of participants are not disclosed to any other parties.

Participating hospitals and organizations can join researchers from the National Benchmarking Database to aggregate density functions (DNA) by unit type to learn more about how caregivers in specific unit types work on average. The outcome of this research will result in a baseline density function that can be used to learn more about nurse work generally and for benchmarking.

Special thanks go to our partners at the American Organization of Nursing Executives (AONE) and the CIT program. AONE is a division of the American Hospital Association (AHA).

Care, Innovation, and Transformation (CIT)... In 2007, the TCAB torch was passed to the American Organization of Nursing Executives (AONE) by the Robert Wood Johnson Foundation. Expanding upon the success of TCAB, AONE launched the **Care, Innovation, and Transformation (CIT)** initiative in 2010. CIT's foundation is grounded in the basic tenets of TCAB, but further supports the nurse leader in driving innovation, culture change, and health care reform implementation. This initiative teaches nursing and interdisciplinary teams how to innovate and measure change, strengthening the organization from the bottom-up. CIT serves as a resource for nurse leaders seeking to transform not only the way care is delivered, but also the culture in which they find themselves working, so that innovation and transformation become a daily pattern. CIT will enable hospitals to take the necessary steps now to prepare for the future.

For more information about CIT:

http://www.aone.org/resources/CCIT/docs_pdfs/AONE_CIT_Brochure.pdf

Examples of a comprehensive Unit Assessment from the Time Study RN National Benchmarking Database are available for download. We also provide support to architects and designers who use "the code" in their design process.

For information or to schedule a free webinar to learn about how the DNA of Nurse Operations improves the Hospital Design process contact Nelson E. Lee – Ph. (513) 624-6629; Em. nlee@rapidmodeling.com.