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CEAS students collect nursing data for Bronson study

Six years ago **Drs. Tycho Fredericks** and **Steven Butt,** industrial engineering faculty in the Department of Industrial and Manufacturing Engineering, received two grants to provide quantifiable data about nursing care activities of the Bronson Methodist Hospital nursing staff.

At the time approximately 17 WMU students used palm pilots to collect data on the time nurses spent with patients in two areas – a surgical intensive care unit and a general medical unit – based on the level of care required by the patients. The collected data assisted Bronson with strategic decisions and will be used to develop innovative scheduling and facility design models for hospitals.

The study, "Determining the Relationship Between Patient Acuity, Time Standards, and Productivity," was funded by two grants, one from the Bronson Healthcare Group and another from Bronson Research Fund.

"After Bronson moved into its new building in 2000, we started collecting data on nurses working in the new single patient rooms in the general medical unit," Butt said. "Once we collected and analyzed data for that study, we completed similar research on the surgical intensive care unit where they have a very different type of patient."

This summer, **Stephanie Means**, a doctorial research associate, is directing another extension of the study that started in 2006 and runs to the end of this year. It is focused on Bronson's neonatal unit. "The old neonatal unit had a typical open ward layout with five nurseries with 8-10 patients each," she said. "When Bronson moved into the new North Campus pavilion, mother and baby shared a single room, so we're looking at the difference between the two different setups – neonatal ward and single patient room – in terms of care and impact on nurses and patients."

Four industrial engineering students – **Carlee McClintic, Amanda Glick, Ashley Hoverkamp,** and **Yenni Chen** – are collecting information about the amount of time nurses spend with patients based on the level of care required. Assisting the group is **Sarah Meade**.

"What's unique and important about the work is that the students are using actual continuous direct observation," Means said. "We are tracking nursing activities."

Means described continuous direct observation as "a hybrid of work sampling and time study." The students use palm pilots that contain all the activities that the nurses perform. They follow the nurses all day and record everything the nurses do and the paths they take.

"It's like a big data recording drive," Means said. "We collect information on everything the nurses do directly with the baby and everything they do indirectly, which includes filling out charts and forms and performing unit activities."

Key players in the Bronson Healthcare Group nursing care study. Seated (from left): **Ashley Hoverkamp, Yenni Chen, Carlee McClintic,** and **Amanda Glick**. Standing (from left) **Dr. Tycho Fredericks, Stephanie Means,** and **Dr. Steven Butt**

Nurses also wear pedometers to track the distance they travel and heart rate monitors to measure energy expenditure and to determine which activities cause spikes. "We capture everything they do," Means said.

In the past, researchers have done random time sampling by checking every 5 minutes or so, and they've done studies with either or both independent observers and self-reporting by the nurses. "What makes this research special is the continuous direct observation," Means said. "It's labor intensive because we're often capturing data 7 days a week for 24 hours a day."

The data collected in the most recent study will also be compared with the data collected in the two earlier research studies. "We may find something from our early analysis, and we may have to collect more data," Means said. "We will have a lot of data to study and analyze."

The research team plans to write papers on the discoveries made. "The team will do a paper to compare and contrast what we've learned here with the previous two studies," Means said.

Eventually Means hopes that the results can be used to "make life simpler and less stressful for the nurses."

"We may be able to standardize some activities, and streamline some procedures," she said. "We're also looking at the built environment for future building projects."

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Send your thoughts or suggestions for future topics to the editor at jerrie.fiala@wmich.edu Thank you.