New System to Manage Nurses’ Workloads

Optimizing Patient Care at Walter Reed

Jason J. Cunningham
Walter Reed National Military Medical Center, the nation’s largest military treatment facility, faced a major challenge maintaining its reputation for excellence: how to modernize the aging system used to manage hours for a nursing staff of more than 7,000 without adversely affecting patient care for more than 1 million beneficiaries each year.

The Clinical Support Program Management Office (PMO) and the former Customer Deployment Support Branch within the Solution Delivery Division (SDD) of the Defense Health Agency (DHA) answered the challenge with its May 22 release of the latest version of the Workload Management System for Nursing-internet (WMSNi)—WMSNi 2.0.

WMSNi 2.0 is a Web-based Patient Classification System (PCS) used to capture the number of nursing care hours needed by different patients, to facilitate the distribution of available nurses among the patients. Knowing how many hours of care each patient requires is essential to managing each nurse’s workload. WMSNi 2.0 automates and simplifies the paper and manual data entry process still used at many military hospitals and clinics.

**Background and Early Development**

In 1955, Esther Claussen conducted the first patient classification study at Walter Reed. Her work produced the report “Nine Category Scale of Patient Needs.” Modifications were made over the years until 1985 when the U.S. Army Nurse Corps and U.S. Navy Nurse Corps joined forces to develop the first paper-based iteration of WMSNi.

Over time, the critical indicators that formed the backbone of the system no longer reflected current practices. Changes in inpatient practices, technology and new regulations required a thorough review and revalidation of the nursing care hours associated with each indicator.

An Army research team was assembled to look at each of the 99 critical indicators at 26 military treatment facilities across the country. The team performed a series of time and motion studies for each nursing activity. According to one report in the U.S. Army Medical Department Journal, these observations were made on 60 different nursing duties and generated more than 3,200 time measurements. The data formed the foundation of the

*Cunningham* is a member of the Stakeholder Engagement Branch of the Defense Health Agency’s Solution Delivery Division. He covers advancements in health technology solutions at military treatment centers worldwide.
next few generations of PCSs. “Second generation systems were designed to focus on patient care,” Kelle Harper and Crystal McCully explained in their December 2007 article in the *Nursing Administration Quarterly*, “Acuity Systems Dialogue and Patient Classification System Essentials.”

“By the 1990s, third generation PCSs were critical due to shorter hospital stays and less stationary staff,” Harper and McCully reported. “Fourth generation systems now focus on prospective modeling, evolving to provide real-time matching of caregiver skill profiles to meet staffing needs for the current and upcoming shifts.”

WMSNi 2.0 is the latest advance in the progression.

**Patient Classification Systems and WMSNi**

Two types of workload management systems commonly are used in the nursing field: the summative task type and the critical incident or criterion type.

Harper and McCully explained that summative task PCSs “usually appear comprehensive because they list major tasks and tend to be easier to design and code to an interface.” However, they also noted that the criterion type can be more easily adapted to the organization.

Both systems provide similar benefits to users, including data-driven decision making, standardized documentation and—most crucially—integration with existing staff scheduling systems.

The WMSNi 2.0 is a summative task PCS that presents a patient’s care requirements in terms of the frequency of tasks. WMSNi 2.0 is the latest, fourth-generation version of the unintuitive legacy WMSNi system that has been in use at many military treatment facilities for years.

**The Need to Update**

Walter Reed Nurse Informatics Officer Army Maj. Angel Howell said the treatment facility was still using a paper-based, manual data entry system before implementing WMSNi 2.0. She called the process time consuming and prone to data entry errors and explained that Walter Reed “used the old DD2551 worksheet to capture nursing care hours and determine the acuity of each inpatient. This data was then manually entered into a database to determine the appropriate staff mix.”

In a 2011 U.S. Army Medical Department Center and School survey of 105 nurses, 66 percent of respondents agreed or strongly agreed that the legacy WMSNi was not optimal and

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**Figure 1. A Tale of Two Systems**

**Pre-Implementation Survey of the Legacy WMSNi System**

- **The legacy WMSNi is not optimal and does not meet our needs.**
- **How easy is it to use the legacy WMSNi system?**

![Survey Results](chart1.png)

**Post-Implementation Survey of the WMSNi 2.0 System**

- **WMSNi provides an effective way to document the inpatient clinical workload data.**
- **WMSNi is easier to use and meets my needs.**

![Survey Results](chart2.png)

The photographs and figures were produced by the Defense Health Agency’s Solution Delivery Division.
did not meet their needs. Forty-three percent rated it as frustrating and ineffective.

At Walter Reed, the system was ripe for a major upgrade. “We went from a paper process to WMSNi 2.0, skipping WMSNi 1.0,” Howell said. She noted that early WMSNi versions could not compare staffing needs at Walter Reed with those at other facilities, a feature they felt necessary.

“The greatest benefit of WMSNi 2.0 will be the ability to benchmark against other military treatment facilities with similar services/size,” Walter Reed Nurse Informaticist Sevgin Hunt added. “We are looking forward to an improved ability to trend and predict staffing needs with more reliable data.”

Lt. Cmdr. Stephen Dunham, who works in the Walter Reed Nursing Administration Business Cell, said he was often frustrated by an inability to compare or share data. “The greatest limitation of the before-state was that none of the data was formally recognized by DHA, AMEDD [Army Medical Department] or NAVMED [Navy Medical Department], so we could only use it as a local tool,” he said. “Now that we are using the same system as every other Army medical treatment facility,
we are on a level playing field. As the data mature, we can begin using it to better inform decisions.”

WMSNi 2.0 allows staffing managers to directly compare the staff they have scheduled against the staff the facility will need based on the required nursing care hours specified in the patient classification system. Managers can then reallocate staff and eliminate over- or understaffed units. Walter Reed’s leaders believe this tool will improve facility staffing projections, ensure staffing needs are met, and simultaneously document and analyze nursing workload, thereby improving patient safety.

**Smooth Deployment at Walter Reed**

The successful WMSNi 2.0 deployment in May was the culmination of more than 9 months of work by the Clinical Support PMO. In November 2016, the team began preparing for the transition. Clinical Support deputy program manager Yvonne Hobson and Customer Deployment Support PMO liaison and deployment operations chief Barbara Grossman and their respective teams held regular meetings to determine the predeployment checklist and the requirements needed to prepare the site to go-live with WMSNi 2.0. Starting 120 days from the launch date, the team met once a month to track the progress, risks and issues while working with Walter Reed to finalize all requirements and complete training for 544 staff members, 89 super users and 451 end users.

To ensure Walter Reed’s successful transition to the new system, the SDD WMSNi team did not treat the go-live date as a finish line. Instead, after the launch the level of communication was increased with the facility’s staff to ensure that the system worked as expected. After the system was online for a month, the team began a series of post-implementation meetings with the site staff to review their checklist and communicate post-deployment progress with the facility. Collaboration between the SDD team and Walter Reed staff was critical to the seamless transition.

“The [Walter Reed] staff was supportive, willing and in constant communication with the WMSNi team,” Grossman said. “They were responsive, happy, and willing to make it work.” Project manager Ken Ross agreed, saying he believes that, if not for the team, nothing would have been completed. He said the balance of great leadership and vision, along with the team effort by the WMSNi representatives, including the data base and system administrators and the organized team members in charge of meeting notes and scheduling, created a cohesive group prepared to work hard to make the deployment process run smoothly.

**Impact After Implementation**

To date, approximately 30 percent of the units are producing reliable data that could be used to determine the long-term impacts of the WMSNi 2.0 upgrade at Walter Reed National Military Medical Center.

“It is too early to assess the impact of the WMSNi 2.0 solution,” Hunt said. “It is difficult to do a pre- and post-analysis since the paper system does not use the same calculations as the computerized tool.”

The prospects look good for Walter Reed’s patients. A 2003 multisite study by Dr. Sung-Hyun Cho in partnership with the Agency for Healthcare Research and Quality found that an increase of 1 hour worked by registered nurses per patient day correlated with an 8.9 percent decrease in the odds of pneumonia among surgical patients. Improved accuracy in scheduling clearly can have a direct impact on patient care. WMSNi 2.0 also features special patient codes to account for the workload required by ambulatory and outpatient visitors. Howell anticipates significant benefits in forecasting staffing needs, which was difficult to do under the old system.

“WMSNi 2.0 is a prospective system,” she explained. “Thus we are optimistic that the deployment of WMSNi 2.0 will increase the accuracy in estimating workload and predicting daily, monthly and annual staffing needs. We also hope to streamline staffing requirements by comparing our nursing care hour requirements to other DHA facilities.”

As treatment facilities and program management offices throughout the Military Health Services look to harness the power of data in decision making, WMSNi 2.0 should provide both the reflective and predictive analytics needed to ensure staffing levels and staff expertise provide the best possible care to our Service members and their families.

The author can be contacted at Jason.j.cunningham5.ctr@mail.mil.