

Members in Action: Implement Operational Solutions

Midland Memorial Hospital – Midland, Texas

Predictive analytics creates value through nurse staffing system

The AHA's Members in Action series highlights how hospitals and health systems are implementing new value-based strategies to improve health care affordability. This includes work to redesign the delivery system, manage risk and new payment models, improve quality and outcomes, and implement operational solutions.

Overview

Midland Memorial Hospital (MMH) uses predictive analytics to align patients' needs with the skills and capacity of its nursing workforce. MMH embarked on this journey in 2009 to improve staffing capacity in light of increased patient volumes, higher patient acuity rates and reports of fatigue among nurses.

Twice a day, nurse leaders huddle with hospitalists and other clinicians to assess anticipated patient volumes and care needs, including required treatments and medication administration, as well as number of patients being admitted, discharged and transferred to other units. Leaders pull patient acuity data from electronic medical records and match them with evidence-based nursing staffing guidelines and historical patient volume data to provide guidance

Impact

Midland Memorial Hospital's use of predictive analytics to manage the nursing workforce has resulted in higher patient experience scores, lower labor costs, less overtime and higher nurse satisfaction scores.

The hospital also has seen a 32-percent reduction in overall nursing turnover and a 43-percent reduction in turnover among newer nurses.

Though unable to directly tie the staffing system to quality measures, hospital officials report that patient outcomes related to hospital-acquired conditions, pressure ulcers and falls have improved since the system was implemented. Central line-associated bloodstream infections fell by 22 percent, catheter-associated urinary tract infections decreased by 64 percent and ventilator-related infections dropped by 38 percent. Approximately 90 percent of patients report the care at MMH is very good or good.

In addition, nurse leaders' use of predictive analytics for staffing enabled them to create more realistic personnel budgets and more accurate financial plans. For example, hospital officials are now able to better balance how much time nurses and respiratory therapists will need to care for patients with pneumonia, or how much time nurses and physical therapists will need to care for patients who receive joint replacements.

Hospital leaders restructured nursing shifts as a result of this initiative, incorporating findings from doctoral research on nurse staffing conducted by MMH's Brandi McDonald, director of clinical operations. Nurses used to work 12-hour shifts. After analyzing feedback from nurses through its Nurse Staffing Advisory Council, the hospital now staffs nine-hour shifts, with one hour for overlap during shift changes. In addition, MMH instituted four- and six-hour nursing shifts to provide patient care during times of high demand. These changes resulted in higher nurse satisfaction, fewer nurses working overtime and no negative impact on quality.

on how many staff with which skill sets will be needed in the coming days and weeks. These data help determine nurse staffing schedules two to four weeks in the future.

Lessons Learned

By implementing and refining the acuity-based nurse staffing system, MMH leaders learned the value of building trust and sustaining strong communication among all affected departments: nursing, ancillary services, health information systems and finance.

“Including direct care nurses in some of those conversations is important in having them understand where the information comes from and how it’s used,” said McDonald.

Officials also advise piloting a predictive analytics initiative prior to launching it hospital-wide.



Midland Memorial Hospital senior leaders huddle twice a day to share information on patient flow and staffing.



Midland Memorial Hospital executive Bob Dent, center, meets with clinical staff to discuss the day’s anticipated patient volumes and care needs.

Future Goals

Given that the predictive analytics resulted in lower costs while enabling hospital leaders to maintain high quality outcomes and high satisfaction for patients, MMH plans to expand the use of predictive analytics with other clinical departments.

“I think we need to broaden the lens and look at interprofessional staffing based on patients’ needs,” said Bob Dent, senior vice president, chief operating officer and chief nursing officer. “I see this is going to evolve over time. We have seen tremendous results in patient experience, quality outcomes and nurse satisfaction.”

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