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Advancing data science in nursing: Analytics in education and clinical practice

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The nurse who is knowledgeable in the use of data science and analytics is equipped with the requisite skills in informatics to address and solve complex problems across the healthcare delivery system. The systematic use of analytics provides all members of the interprofessional team with the data and information necessary to drive decisions. Analytical data has the potential to improve workflow, enhance clinical decision making, increase productivity and promote optimal patient outcomes. The knowledge and use of analytics in nursing education and practice fosters clinical decision-making that is fact-based, insightful and innovative. The new expectations are that data will be collected, aggregated and analyzed across patient, clinical and financial systems with the specific purpose of providing better care for patient, families and populations. The challenge that lies ahead for all healthcare organizations is to fundamentally change the way in which they do business to a more sophisticated analytical electronic integrated delivery system. The availability of real-time reliable digital data that can be used to identify key trends and patterns, enhance fact-based decision-making, and in turn lead to better outcomes and cost reduction, is critical to the future of healthcare. Nurses have an opportunity to be at the forefront of using data science and analytical tools to advance evidence-based practice and foster the achievement of accountability measures. A keen understanding of the types of analytics, technological capabilities, and big data sets are foundational to the application of analytics in nursing education and practice.

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Using the best method to staff your unit and hospital

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Midnight census is commonly used to determine registered nurse staffing. Unit-level workload increases with patient churn, the movement of patients in and out of the nursing unit. Failure to account for patient churn (i.e., the inflow and outflow of patient admissions, discharges and transfers) in staffing allocation impacts nurse workload and may result in adverse patient outcomes. An analysis was conducted to compare the staffing implications of three measures of nurse staffing requirements: Midnight census, turnover adjustment based on length of stay, and volume of admissions, discharges and transfers. This analysis was done using unit-level data from a nationwide sample of 32 hospitals, where nursing units were grouped into three unit-type categories: Intensive care, intermediate care and medical surgical. Key findings indicated that the Midnight census alone did not account adequately for registered nurse workload intensity associated with patient churn. On average, units were staffed with a mixture of registered nurses and other nursing staff not always to budgeted levels. Adjusting for patient churn increases nurse staffing across all units and shifts. Based on this analysis, the use of patient admission, discharges and transfers to adjust the midnight census may be useful in adjusting RN staffing on a shift basis to account for patient churn. Nurse managers and leaders should understand the implications to nurse workload of various methods of calculating registered nurse staff requirements.

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