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Acuity-Based Staffing: Improving Patient Outcomes and Staff Satisfaction

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Acuity-Based Staffing: Improving Patient Outcomes & Staff Satisfaction

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Executive Summary

Traditionally, nurse staffing practices have been based on a nurse-patient ratio model and have not incorporated patient acuity. More recent literature has shown that acuity-based staffing can improve patient outcomes and staff satisfaction. The Emergency Department (ED) is an area that has fluctuating patient acuity and volume. To incorporate acuity in to staffing in the ED, the acuity mix over the past year can be used to calculate required nursing hours, therefore providing the number of required nurses for that facility. The calculated number of staff can then be distributed over a 24 hour period. By incorporating acuity in to staffing, hospitals can ensure adequate staffing levels to maximize savings and promote improved patient outcomes and staff satisfaction.

Rationale

A sizable portion of a nurse administrator's job is staffing. How that staffing is executed not only has an effect on the staff's moral and overall satisfaction with their job, but it can also have a negative impact on patient outcomes. Current staffing practices have been based on a traditional model or nurse-patient ratio model. More recent literature has shown the benefits of an acuity-based staffing model, yet it has been slow to be implemented in the majority of hospitals. By changing to an acuity-based staffing model, the acuity of the patients can be taken into account, so the unit can utilize the staff appropriately to provide the best care possible while being fiscally responsible. This can improve patient outcomes and overall staff satisfaction.

Currently, the majority of hospitals use a nurse-patient ratio staffing model. This model establishes a staffing matrix based on the type of unit and assigns a ratio of how many patients one nurse should care for. This model does not take in to account the acuity of the patients (Trepanier et al., 2017). For example, in most intensive care units, one nurse takes care of two

patients. One nurse could have two ventilated patients on multiple high-risk drip medications.

Another nurse could have patients that are in the ICU for observation or are just on one high risk

drip medication but are otherwise stable. These two assignments have vastly different workloads

but in the traditional staffing model are viewed as the same. Therefore, the PICOT question

under study is: In nurse leaders (P), how does an acuity-based staffing model (I) compared to the

traditional nurse-patient ratio staffing model (C) affect patient outcomes and staff satisfaction

(O) over a three month period (T)?

Literature Review

When searching for literature for this question, CINAHL, PubMed, & MEDLINE were

searched through the University of Texas at Tyler library website. The search terms used were

"nursing", "patient outcomes", and "staffing." Filters were used to ensure the articles were from

peer reviewed journals and were published within the last five years. Articles were narrowed

down based on relevance to the PICOT question.

There exists an association between nurse staffing and patient outcomes (He, Staggs,

Bergquist-Beringer, Dunton, 2016; Halm, 2019; Griffiths et al., 2016). Lower nurse to patient

ratios and improved work environments, such as those at Magnet facilities, are correlated with

better patient outcomes. When nurses have improved job satisfaction due to less burnout from

being understaffed, patients experience fewer adverse outcomes such as falls, increased length of

stay, and increased mortality (Halm, 2019; Cho et al., 2015). This is across different types of

units with diverse levels of acuity and seasonal changes. When staffing is inadequate, there is an

associated increase in adverse patient outcomes and mortality (He et al., 2016; Griffiths et al.,

2016).

One of the areas in which there is no consensus is which tool to use to measure acuity. One such tool uses the complexity of care involved with each patient and classifies them into categories. This includes acuity and cognitive workload to care for the patient and their families. These categories can then be used to make patient assignments so that nurses have equal workloads (Connor, LaGrasta, & Hickey, 2015). Other hospitals have implemented their own tools on paper or integrated them in to their EHR. A massive amount of data is available through EHRs and can be used to effectively implement an acuity-based staffing tool. The tool can continually update based on data being charted throughout the shift (Boivin, 2017; O'Keefe, 2016). These take the nursing assessment of the patient, complexity of care, and risk factors to assign a classification rating to the patient (Barton, 2013; Pappas et al., 2015). Staffing then can be adjusted accordingly during the shift and prior to the next shift.

Another important outcome is patient satisfaction. Patient outcomes include mortality, morbidity, and patient experience. Adequate staffing levels improve patient satisfaction. The number of registered nurse hours per patient day has a significant influence on the perception of nursing quality (Peršolja, 2018). When patient's needs are being met on a physical and emotional level, this improves patient outcomes.

Research specific to the ED has focused on staffing and its effect on patient wait times, door to disposition times, and number of patients who left without being seen (LWBS) as patient acuity and volume are variable. Low nursing hours (decreased number of nursing staff) have been shown to increase door to disposition times, the number of patients LWBS, and worse patient outcomes (Recio-Saucedo et al., 2015; Ramsey et al., 2018). Staffing based on number of beds rather than acuity have also been shown to cause distress for nurse staffing and affect

nursing retention. Improved staffing can decrease nurse burnout and improve patient satisfaction

(Wolf et al., 2017).

The majority of the research available on nurse staffing and patient outcomes are quality

improvement and observational studies. These forms of research are low cost and use existing

large data sets. However this makes it difficult to establish causal relationships between staffing

and patient outcomes (Brennan, Daly, & Jones, 2013). This is where the preceding evidence can

be used to implement a staffing change and evaluate the effect on patient outcomes to add to this

area of research.

Stakeholders

Stakeholders impacted by this change are the ED management team, hospital leadership,

and patients as this will directly impact patient outcomes. If this change to acuity-based staffing

is successful in one department it may be beneficial in other areas of the hospital. Within the

ED, input will be needed from interprofessional areas such as: management (to discuss costs and

budgeting), charge nurses and supervisors (to discuss how staffing will effectively be executed

during the shift), staff nurses from day and night shift (to get their opinions on benefits and

disadvantages of the new staffing system), and the educator (to assist in instructing staff on the

new staffing model). Permission will also need be gained from the director and manager of the

ED prior to implementation.

Planned Implementation

Implementing acuity-based staffing will involve seven steps based off of those used by

Fullam (2002). As the ED census changes considerably more than the inpatient units, calculating

the needed number of registered nurses per shift based on yearly acuity mix and required nursing

hours is the most effective. First obtain current data for the facility on wait times, door to

disposition times, and number of patients left without being seen (LWBS). Next, an acuity level

breakdown will need to be acquired from the electronic health record (EHR) system. This data

will include the number of patients seen within the last year per acuity level. The next step will

be to calculate the emergency nurse hours (ENH) based on the top three diagnoses per acuity

level and the amount of time it takes to care for that patient from door to disposition. This can be

calculated through direct observation or based on average length of stay (LOS) for those patients

with that diagnosis. Productive hours will then be calculated so as to deduct vacation time and

sick days. The data will then be inserted into a worksheet to calculate the number of needed

registered nurse (RN) full time employees (FTE) to staff the ED per shift. The number of staff

recommended will then be implemented for each shift over a three month period.

Step-by-Step Plan

- Step 1: Obtain current data on wait times, door to disposition times, and number of

  patients LWBS for the facility.

- Step 2: Through the information technology (IT) department or EHR system, obtain an

  acuity level breakdown for the ED over the last year. This will determine the number of

  patients seen under each Emergency Severity Index (ESI) acuity level from 1-5.

- Step 3: Obtain from IT or the EHR system the top three diagnoses for each acuity level.

- Step 4: Calculate the number of hours it takes for a nurse to care for that diagnosis from

  door to disposition through either direct observation or average LOS. Then average the

  time for those 3 diagnoses to obtain the required number of nursing hours per acuity

  level.

- Step 5: Calculate the number of productive hours per year for one full time employee

  (FTE). Add the total number of hours paid (3 shifts per week, 12 hour shifts, 52 weeks)

and subtract vacation time, lunch break per shift, and holiday time. This will vary per facility. This will give the total number of productive hours.
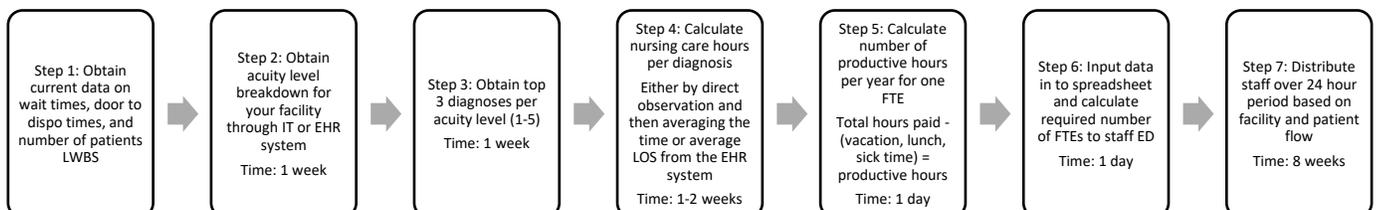
- Step 6: Using an Excel spreadsheet, make 4 columns as shown in Table 1. The first column includes acuity level along with the triage and charge nurse as these rolls do not provide direct patient care. The second column will be the number of patients seen for that acuity level over the last year. The third column will be the care hours needed per patient. The fourth column will contain the calculation of each row. The last 3 rows will contain the calculated needed RN hours per year by adding the totals of the fourth row. Then divide this number by the previously calculated productive hours for one FTE. This will give the total number of needed FTEs to adequately staff the ED.

- Step 7: Using the calculated number of FTEs, distribute that staff over a 24 hour period based on facility and patient flow.

Table 1

FTEs based on acuity

Type	No. of patients	RN care hours per patient	Total needed care hours
Category 1	5742	1.51	8670.42
Category 2	19,453	0.98	19,063.94
Category 3	5202	0.33	1716.66
Triage		1 RN 24 h/d	8760.00
Charge		1 RN 24 h/d	8760.00
Needed RN hours per year			46,971.02
1 RN FTE productive hours			1533.00
Needed RN FTEs			30|64

FTE, Full-time equivalent position; *RN*, registered nurse.

Flowchart

| Step 1: Obtain current data on wait times, door to dispo times, and number of patients LWBS | Step 2: Obtain acuity level breakdown for your facility through IT or EHR system Time: 1 week | Step 3: Obtain top 3 diagnoses per acuity level (1-5) Time: 1 week | Step 4: Calculate nursing care hours per diagnosis Either by direct observation and then averaging the time or average LOS from the EHR system Time: 1-2 weeks | Step 5: Calculate number of productive hours per year for one FTE Total hours paid - (vacation, lunch, sick time) = productive hours Time: 1 day | Step 6: Input data in to spreadsheet and calculate required number of FTEs to staff ED Time: 1 day | Step 7: Distribute staff over 24 hour period based on facility and patient flow Time: 8 weeks |

Planned Evaluation

To evaluate the effectiveness of the intervention, patient outcomes will be evaluated by comparing data on patient wait times, door to disposition times, number of patients who LWBS, and HCAHP scores prior to the acuity based staffing implementation and after. To evaluate staff satisfaction, surveys will be sent out to the staff to get feedback on the new staffing model and recommendations for improvement.

Descriptive statistics will include percentages of patients that were LWBS or eloped, a percentage decrease or increase in door to disposition time and patient wait times, and HCAHPS score percentage increase or decrease. Percentages will also be used when looking at staff that are satisfied or dissatisfied with staffing change.

Step-by-step Plan

- Step 1: After utilizing the acuity-based staffing spreadsheet to staff the unit based on acuity for three months, obtain information using the EHR system on average number of patient's LWBS or eloped, average door to disposition time, and average wait times and compare with averages prior to implementation. Calculate percentage increase or decrease.

- Step 2: Obtain data from HCAHP and compare with data prior to implementation.

- Step 3: Send out survey through work email to all ED staff to determine staff satisfaction with change. Give staff 2 weeks to return survey (see Appendix).

- Step 4: After receiving results of survey, calculate percentage satisfied and dissatisfied with staffing change.

- Step 5: Consolidate data to disseminate information to leadership and staff

Cost/Benefit Discussion

The top two priorities for chief financial officers in healthcare are controlling labor costs and concerns over reimbursement (Boivin, 2017). With reimbursement changing to a value-based payment system, the best way to accomplish these priorities is to implement an acuity-based staffing tool. That provides the best possible containment of labor costs while also ensuring good quality outcomes for patients. Changes in legislation have made it even more important to change current staffing practices. Fifteen states as of 2016 have passed legislation related to nurse staffing, Texas being one of them (O'Keefe, 2016). This will occur in more states in the future.

With changes in healthcare reimbursement, due to the Affordable Care Act of 2010, and increasing costs of healthcare, the ultimate goal of hospital administration is to decrease costs while also maintaining quality health care (Trepanier, Lee, & Kerfoot, 2017). The most expensive area for hospitals is labor, so the easiest way to cut costs is to cut back on nursing staff. Although this looks good from a number's perspective, this ends up affecting patient outcomes. When there are not enough staff available to provide quality care to patients, negative outcomes occur. These negative outcomes are a reflection on the quality of nursing care received and can have long lasting effects on the lives of patients (Pappas, Davidson, Woodard, Davis, Welton, 2015).

Overall Conclusion/Recommendations

Acuity-based staffing is a benefit that hospitals should be examining. Changes in healthcare costs and reimbursement are only going to continue and the best way to maximize savings while ensuring positive patient outcomes is to adjust staffing accordingly. Nurses can have a positive or negative impact on patient outcomes. When they are stretched too thin, they

cannot provide the best care to their patients. Acuity-based staffing is a way to mitigate this

problem. Executing this change in the ED can be the beginning to an organizational wide

change in nurse staffing that can improve patient outcomes and nurse satisfaction. Acuity-based

staffing should be implemented in all units in all hospitals throughout the country. With

increased awareness of the benefits of acuity-based staffing, this can hopefully be the future of

nurse staffing.

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Appendix

Please indicate your level of agreement with each of the following statements:

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
I am satisfied with the new staffing guidelines based on acuity.					
I can more effectively care for my patients under these new staffing guidelines.					
I plan on staying at my current job.					
I am less stressed under the new staffing guidelines					

If you have any further recommendations for staffing, please share below:

_____
_____
_____
_____
_____