

A new patient-acuity tool promotes equitable nurse-patient assignments

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Have you ever struggled to classify a patient's acuity level? If so, you're not alone. Have you ever looked at your patient assignments and wondered, "Why are the assignments so unfair? How will I care for all my patients effectively?" Again, you're not alone.

Most nurses expect patient assignments to be equitable, with each nurse bearing a fair share of the workload so all patients can receive excellent care.

Nurses' job satisfaction depends partly on their workload and their perceived ability to deliver high-quality care. Nurse-sensitive indicators (including pressure ulcers, falls, medication errors, nosocomial infections, pain management, and patient satisfaction) depend largely on nursing care and are affected by nurses' ability to recognize and intervene when a patient's condition changes. Nursing workloads directly influence a nurse's ability to assess thoroughly and promote excellent patient outcomes. When patient assignments aren't equitable, nurses may feel inadequate and frustrated.

Problems also can arise when all nurses are assigned the same number of patients without regard for acuity levels. Yet determining patients' acuity to promote more equitable assignments can be challenging. Some hospitals or nursing units use an established acuity tool. Others rely on charge nurses' judgments of patient acuity.

Our nurses were getting restless

At Indiana University Health Ball Memorial Hospital in Muncie, we moved our progressive care unit (PCU) to a newly constructed area of our regional medical center. A short time later, we noticed increases in patient volumes, comorbidities, device support, and overall acuity. The patients' nursing-care requirements varied widely, so assigning the same number of patients to all nurses would mean unequal assignments.

Although we were using an acuity assessment tool, our increasingly dissatisfied nurses deemed it ineffective. It called for nurses to rank each patient as a 1, 2, or 3 based on their individual perception of the patient's status or difficulty of care required. But the tool wasn't providing useful information because nurses' perceptions varied; also the cultural norm tends to make nurses rate most patients a

When a 2 acuity rating isn't truly a 2



2. In addition, when more staff nurses were needed, we lacked an objective measure to make a case for obtaining additional staff. When our hospital tested a new nurse-satisfaction survey, nurses' discontent with their workload became apparent.

Then a PCU direct-care nurse approached the unit-based council (UBC) and asked for an evaluation of our acuity tool. The nurse manager and UBC agreed that equitable patient assignments and adequate unit staffing could be addressed by improving the tool. Following the Iowa model of evidence-based practice (EBP), the UBC formed a team of staff nurses, charge nurses, unit manager, clinical nurse specialist, and nurse researcher to explore the inquiry.



What the evidence told us

The team's literature review found a limited amount of research pertaining to acuity tools for PCUs, even though hospital expenses decrease and high-quality nursing care increases when leaders are empowered with better, more detailed knowledge of patient acuity and nursing workloads. A recurrent theme in the literature: nurses' voices add value to processes and nurses should be involved in assessing their own workloads and making decisions about resources. Evidence also suggested that involving staff in developing an acuity assessment tool would yield a valued, more efficient instrument that could improve nurse satisfaction and job retention.

Formulating a plan

During our literature review, we found a tool to adapt for our adult PCU. On a flip chart in the nurses' lounge, we displayed our existing tool alongside the new tool we'd revised from the literature search. Staff viewed both tools and provided input into what made a patient's care difficult, time-consuming, or complex. This gave us a better picture of PCU patients and helped us ensure all tasks were represented, from the least to the most time-consuming. Brainstorming meetings clarified key elements of acuity that guided continued evolution of the new tool.

Tool-development strategies

In our new tool, criteria categories included complicated procedures, education, psychosocial/therapeutic interventions, number of oral medications, and complicated I.V. drugs and other medications. Rating options on the tool run from 1 through 4, with 1 indicating low acuity and 4 indicating high acuity. Ratings are based on nursing time needed to complete a task, emotional and physical energy expenditure required, expertise required, frequency of tasks and interventions, and follow-up assessments related to a specific task. Ratings for all five criteria categories are summed up to obtain a total acuity

Acuity criteria categories

This chart shows the five acuity categories in the new acuity tool developed for the progressive care unit at Indiana University Health Ball Memorial Hospital. In each category, nurses rate each patient from 1 (lowest acuity) to 4 (highest acuity).

Acuity category	Examples of care required
Complicated procedures	1: Pulse oximetry, telemetry 2: Trach care, nasogastric tube, fall risk 3: Continuous biphasic positive airway pressure, tracheotomy care, ostomy care, chest tube, peritoneal dialysis 4: Total care; restraints; confused, restless, combative
Education	1: Standard 2: New medications 3: Discharge today, pre- or postprocedure status 4: New diagnosis, multiple comorbidities
Psychosocial or therapeutic interventions	1: Three or fewer per shift 2: Three to five per shift 3: Six to 10 per shift; delirium; end of life 4: More than 10 per shift
Oral medications	1: One to five 2: Six to ten 3: 11 to 15 4: 16 or more
Complicated I.V. drugs and other medications	1: Glucometer with coverage 2: Two to five I.V. medications 3: Heparin protocol, more than five I.V. medications, total parenteral nutrition 4: Blood products, tube feeding, cardiac drug or insulin drip

score for each patient, ranging from 1 to 60. Then the total scores are clustered into acuity category scores, which range from 1 to 4, with 1 being the lowest acuity and 4 being the highest. (See *Acuity criteria categories*.)

Now we were ready to test the new tool. Initially, charge nurses from each shift tested it with the same patients on different shifts. When we found that scores between shifts weren't congruent, we tested the tool again, with charge nurses on the same shift assessing the same patients separately. This trial yielded an inter-rater reliability of 85%—an acceptable congruency level across nurse raters.

This trial provided insight into acuity differences between shifts and helped determine how to use the tool. With our previous acuity

tool, tasks and procedures of the rater's shift determined acuity, with no consideration of upcoming tasks or procedures for the next shift. So for the new tool, the team and staff agreed nurses would proactively score acuity for the oncoming shift by calculating current and projected needs and medications.

Measuring outcomes

We identified three outcome measures as indicators of the effectiveness of the new acuity approach.

- First, the team developed an eight-item survey to measure nurse satisfaction with the new acuity assessment process, which nurses completed 1 month before the new process began and then 1 month, 6 months, and 12 months later.
- Next, the team identified items

on the standardized annual employee engagement and satisfaction survey, specifically targeting workload and perception of quality of care delivered.

- Finally, we tracked nurse-sensitive indicators affected by workload, including falls and hospital-acquired pressure ulcers.

Translating scores into patient assignments

To translate acuity scores into equitable patient assignments, charge nurses collected the acuity tools that direct-care nurses completed for each patient, and calculated total acuity scores and acuity category scores near the end of their shift. Then the charge nurses designed nurse-patient assignments by considering both the category score from 1 to 4 and the total acuity score of 0 to 60 for each patient, aiming to keep category scores balanced across nurses. Charge nurses also considered the geographic location of rooms on the unit, need for continuity of care, and congruency between nurses' expertise and patient needs. (See *Current acuity tool* on last page.)

Unit-wide rollout

Before we rolled out the new tool, direct-care nurses on our team provided education to all PCU nurses. Teaching strategies included showing video clips of patient scenarios, presenting case studies so nurses could practice using the tool, and playing a game-show exercise to stimulate discussion of the benefits of acuity scoring. Nurses voiced favorable responses to the new tool, specifically the benefits of empowerment, assurance of quality care, patient safety and satisfaction, nurse retention, and equitable assignments. The team encouraged staff to provide feedback on the new process and expect revisions to ensure its effectiveness and sustainability.

To hardwire the new acuity assessment process, team members rounded on nurses each shift for 1 week and then three times monthly. The team answered questions,

Acuity tool: Lessons learned

Team members involved in developing the new patient acuity tool learned the following lessons from the experience and provided suggestions for future projects.

- Engage feedback from all stakeholders throughout the process.
- Use a model, such as the Iowa model of evidence-based practice, to guide the project.
- Allow direct-care nurses to lead education sessions.
- Select a leader to run meetings, create a written record of decisions, and lead communication among team members.
- Keep raising questions about practice. Be willing to get involved and find solutions.
- Know that some people will never get on board with a new process. Be prepared to move on without them.

audited acuity scores, and coached nurses to achieve a highly standardized approach to scoring. During orientation, preceptors trained newly hired nurses to use the acuity assessment tool.

Charge nurses kept a log of assignments, acuity scores, and overall unit activities, overtime, and informal comments on workload. In huddles held daily for the first week, charge nurses and the nurse manager reviewed acuity scores and the process. A numerical benchmark emerged as an indicator for requesting more staffing, based on total acuity scores and acuity category scores of all patients on the unit.

Evaluation and sustainability

At the end of the first month, scores on surveys of nurse satisfaction with the new acuity assessment process showed marked improvement in nurses' reports of the equity of patient assignments (7% satisfaction before rollout, 55% satisfaction after) and the consistency with which the acuity assessment process occurred (21% consistency before rollout, 89% consistency after). Almost 80% of nurses reported that completing the new acuity tool wasn't a waste of time. The team implemented suggestions for refining the process and set a target goal of 85% nurse satisfaction by the 6-month evaluation.

The sustainability plan for year 1 calls for quarterly reevaluation of the acuity assessment process and semiannual reevaluation thereafter, including scoring processes, staffing

level benchmarks, nurse satisfaction per survey, and nurse-sensitive outcomes. It also calls for nurses to review reports of outcome data regularly during staff meetings. When revisions are indicated, the team will provide additional education.

As the process of creating ideal nurse-patient assignments evolves, the team will explore the benefits of the synergy model, which matches nurses' strengths and competencies with patient and family characteristics. The team may conduct qualitative research studies to better understand the complex judgments charge nurses make when creating nurse-patient assignments, with the goal of standardizing the process for sustainability and optimal outcomes.

In evaluating the overall project experience, team members listed lessons learned and captured key ideas to use in future projects. (See *Acuity tool: Lessons learned*). The team validated usefulness of the Iowa model in developing the tool and process, and recommended adopting a model for translating evidence into practice. Nurses on the team reflected that a highly satisfying aspect of the project was identifying a clinical issue and playing an active role in addressing it as valued partners in the change process. ♦

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Current acuity tool

The chart below shows the hospital's new acuity tool. Rating options are 1 through 4, with 1 indicating the lowest acuity and 4 indicating the highest acuity. Ratings are based on nursing time needed to complete a task, emotional and physical energy expenditure required, expertise required, frequency of tasks and interventions, and follow-up assessments related to a specific task. Ratings for all five criteria categories are summed up to obtain a total acuity score for each patient, ranging from 1 to 60. Then the total acuity scores are clustered into acuity category scores, which range from 1 to 4, with 1 being the lowest acuity and 4 being the highest

Acuity category	1	2	3	4
Complicated procedures	<ul style="list-style-type: none"> <input type="checkbox"/> Pulse ox <input type="checkbox"/> Foley <input type="checkbox"/> Oral care <input type="checkbox"/> Telemetry 	<ul style="list-style-type: none"> <input type="checkbox"/> > 4 L O₂ nasal cannula <input type="checkbox"/> BIPAP/CPAP @ naps/night <input type="checkbox"/> Routine trach care ≤ 2 times/shift <input type="checkbox"/> PICC/central line <input type="checkbox"/> NG tube <input type="checkbox"/> Incontinent <input type="checkbox"/> PCA <input type="checkbox"/> Rectal tube <input type="checkbox"/> Isolation <input type="checkbox"/> Fall risk 	<ul style="list-style-type: none"> <input type="checkbox"/> High-flow O₂/vent <input type="checkbox"/> Continuous BIPAP <input type="checkbox"/> New trach or frequent suctioning <input type="checkbox"/> Trach care ≥ 3 times/shift <input type="checkbox"/> Wound/skin care <input type="checkbox"/> Ostomy <input type="checkbox"/> Assist w/ ADLs <input type="checkbox"/> Vitals or neurochecks q 2 h <input type="checkbox"/> Continuous bladder irrigation <input type="checkbox"/> Chest tube <input type="checkbox"/> Peritoneal dialysis <input type="checkbox"/> Opioid/alcohol withdrawal assessment <input type="checkbox"/> Unfinished admit 	<ul style="list-style-type: none"> <input type="checkbox"/> Total care <input type="checkbox"/> Restraints <input type="checkbox"/> Total feed <input type="checkbox"/> Confused, restless, combative <input type="checkbox"/> High fall risk/SOMA bed <input type="checkbox"/> Post code/rapid response team
Education	<ul style="list-style-type: none"> <input type="checkbox"/> Standard (i.e., DM, HF) <p>Prechecked=1</p>	<ul style="list-style-type: none"> <input type="checkbox"/> New meds, side effects 	<ul style="list-style-type: none"> <input type="checkbox"/> Discharge today <input type="checkbox"/> Family education <input type="checkbox"/> Pre-/postprocedure 	<ul style="list-style-type: none"> <input type="checkbox"/> New diagnosis <input type="checkbox"/> Inability to comprehend <input type="checkbox"/> Multiple comorbidities
Psychosocial or therapeutic interventions	<ul style="list-style-type: none"> <input type="checkbox"/> ≤ 2 interventions per shift 	<ul style="list-style-type: none"> <input type="checkbox"/> 3-5 interventions per shift 	<ul style="list-style-type: none"> <input type="checkbox"/> 6-10 interventions per shift <input type="checkbox"/> Diagnosis of delirium <input type="checkbox"/> End of life 	<ul style="list-style-type: none"> <input type="checkbox"/> > 10 interventions per shift
Medications (oral)	1-5	6-10	11-15	≥ 16
Complicated IV drugs & other meds	<ul style="list-style-type: none"> <input type="checkbox"/> Glucometer with coverage 	<ul style="list-style-type: none"> <input type="checkbox"/> 2-5 IV meds 	<ul style="list-style-type: none"> <input type="checkbox"/> K+ protocol <input type="checkbox"/> Heparin protocol <input type="checkbox"/> > 5 IV meds <input type="checkbox"/> TPN 	<ul style="list-style-type: none"> <input type="checkbox"/> Blood/blood products <input type="checkbox"/> Tube feeding/meds <input type="checkbox"/> Cardiac drip (amiodarone, Cardizem, dopamine) <input type="checkbox"/> Insulin drip

**Total acuity score/
Total category score**

Acuity category scores:

1: 1 to 15 2: 16 to 30 3: 31 to 45 4: > 45 or new admission