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REVIEW ARTICLE

Patient Acuity System

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ABSTRACT

Patient acuity framework uses real-time patient data to make decisions about staffing levels and assignments. It allows for staff adjustments based on changes in patient condition during a shift. Various acuity system used in current health care sector is Patient based Acuity, Acuity based staffing & triaging. Prototype Tools, Nurse Patient Ratio system, Summative Care Tools & case based tool are some of the patient acuity tools used with a goal to assure the right number and type of staff needed to care for any given patient group. Self-designed patient acuity tool should be simple, efficient, indicators to be objective based & well defined operationally & keeping a tract of it by maintaining KPI. Adaptability & organizational support always pose a challenge in effective implementation of the patient acuity system. Benefits of having patient acuity system is that it ensures fair and equitable distribution of workloads when allocating patient assignments to a nurse of that shift, identifies service demand & allows for proper unit nursing staff planning.

KEYWORDS

• Patient Acuity System • Self-Designed Tool

INTRODUCTION

Acuity:

English definition of acuity is "the strength of a function or sense. E.g: good emotional acuity, mental acuity, or acuity of vision.

Acuity comes from the Medieval Latin term, *acuitatem,* which means sharpness.[1]

Acuity in healthcare sector means the measurement of the intensity of care a patient requires, based on the severity of their illness, based on dependency on staff, and based on need for frequent monitoring.

It is also used to determine nurse-to-patient staffing ratios & ensuring higher-acuity patients receive more resources & nurse handling these patient must not be overburdened.[2]

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Meaning:

Patient acuity refers to the severity of an illness or medical condition. It is often used to designate which clients should be seen first.

Example of a high-acuity patient: Patient came with complaints of low pulse & respiration is the one who is severely ill and should receive care before others.

Pioneer of modern nursing Ms Florence Nightingale's initial efforts was to assign patients to particular wards based on severity of illness.[3]

Various Acuity system used in Health Care sector are:

Acuity Based Staffing:

It uses real-time patient's data to make decisions about staffing levels and assignments. It allows for adjustments based on changes in patient condition during a shift.[4]

Aim is to balance the workload equally among staff & improving safety and satisfaction among nurses.

Patient Based Acuity:

Patient Based Acuity (or patient acuity) refers to the measurement of a patient's severity of illness, complexity of care, and dependency on nursing resources, rather than just the number of patients.

It tells you *how much* care a patient needs.

It is also used to determine the intensity of nursing care required, ensuring safe, individualized care and optimal staffing assignments based on need.[5]

This improves patient care, as it ensures the patients who require the most urgent attention are properly attended to in a timely manner.

Key Difference:

Feature	Acuity Based Staffing	Patient Based Acuity
Definition	It is a process of assigning nurses based on patient needs.	It's a measurement tool of intensity of care required by a patient
Purpose	To match staffing resources with actual workload	To classify patient based on clinical severity or care needs
Action	Reallocates nurses, manages staffing & improves efficiency	Assess patient needs & gives trigger for any staffing changes if required
Goal	Nursing staff management	Clinical assessment
Outcome	Improved safety, cost effectiveness & staff satisfaction	Accurate staffing data, patient classification & identification of patient needs

Triaging:

Triaging in health care is the process of rapidly assessing, sorting, and prioritizing patients based on the severity of their condition and urgency of need when resources are limited.

It is commonly used in emergency rooms by nurses to categorize patient based upon their health need.

Mostly 4 point triage system is followed:

Emergent: Patient to be attended within 5 minute or immediately

Urgent: Patient to be attended within 15 – 20 minute

Less Urgent: Patient to be attended within 30 – 45 minute

Non Urgent: Patient to be attended within 1 hour or later

Various triaging system available are Emergency Severity Index (ESI) Triage Algorithm, Field and Disaster Triage, The Australasian Triage Scale, The Canadian Triage System.[6]

Benefits:

Patient acuity system is a useful tool in clinical settings by allowing:

- Distribution of fair and equitable workloads when allocating patients assignment to a staff of that shift:

Staff who are overburdened with patient assignment are at risk for causing error or omission of certain patient related work.

Also it brings team dynamics among the group as everyone sees that work is distributed same irrespective of the designation, experience etc.

- Identifies service demand

It allows us to identify and plan care & services required for the day, or for evening and night periods, or for any selected day, month or year.

By having acuity system gives us advantage to be well prepared to manage the high census situations or emergency by keeping staff, stocks etc. arranged.

Most Supervisors or administrators headaches is to arrange the staff for crunch situations & by maintaining such scoring system will aid them to know the need priority and plan the work in coming shift properly.

- Identifies trends in patients admission or IP per shift, day, month and year

This aids in better planning, budgeting, recruiting & management of care beforehand.

It aids to know peaks and decline in patient acuity across shifts.

- Enables the development of acuity based budgets

By having an objective evidence of trends in patient census makes administrator better plan the staffing number and cater to the needs of the patients effectively.

- Unit staffing

Common indicators used in patient acuity levels:

Patient acuity scoring can have parameters like

Patient Pain Levels, Oxygen support, Hemodynamic monitoring, Vitals, Patient current condition status, Any Ongoing Drugs (any broad spectrum antibiotic, Inotropic drug, Chemo drug etc.), able to follow command etc.

And scoring can be done based on above parameters and acuity can be planned accordingly.

Types of Patient Acuity System:

The goal of Patient acuity system is to assure the right number and type of staff needed to care for any given patient group are available.

Each tool defines the nursing care for the organization and aims to capture the fluctuations in patient care requirements in their own way. Each tool type is designed to connect to staffing and scheduling in various ways.

1. Prototype Tools:

Differentiating patient on the basis of levels.

Level 1: Minimum Care

Level 2: Moderate Care

Level 3: Severe Care

Levels are based on different care requirements.

It is basically a subjective approach as there no actual tool but levels is a subjective matching of the actual care needs with the prototype description that most closely matches the actual patient care requirements**.**

Level 1: Minimum care: Patient listed under this level require basic care like Assisting in ADL, Feeding, Administration of oral medication, one or twice assessing vital signs in a shift etc.

Level 2: Moderate Care: Patient listed under this level require active support of nurse for carrying out ADL, feeding, administration of parenteral medications, at least 2–4 hour monitoring, support in movement etc.

Level 3: Severe Care: Patient listed in this is completely depended on the nurse for carrying out ADL, medications, feeding etc. E.g.: Unconscious patient.[7,8]

2. Nurse Patient Ratio system:

Following a standardized ratio like 1:1 for ventilator patient & 1:5 for General ward patients.

However fixed staffing numbers or ratios only identify minimum staffing levels and do not adjust for the ever changing nature of patient care needs or for crunch scenarios. As such, ratios alone are insufficient for staffing purposes.[9]

3. Summative Care Tools:

It assume that patient care requirements are best expressed as the sum of a series of observable tasks and activities. Each task is assigned a weight or number of points that is ultimately expressed as an increment of time such as minutes or hours. Those minutes or hours are added up, converted to hours, and are used to project the number of staff that generally equate to those hours.[7,8]

4. Case Based Tool:

Here tool is based on the case of patient.

Like admission patient, discharge patient, critically ill patient takes most of a nurse time in that shift hence must be put under highest category. And hence staff having such patient assignment must be assigned with less patient assignment.

CASE BASED PATIENT ACUITY TOOL:

Patient Acuity Levels

Description	Category	Level	Nurse Patient Ratio
Stable patient requiring routine care only	Minimal Care	Level 1	**1:6-8**
Requires frequent assessment, Nursing care & interventions. Requires moderate nursing attention & Time	Moderate Care	Level 2	**1:4-5**
Unstable patient requiring Complex care & frequent nursing care Requiring Significant nursing attention & Time	High Dependency Care	Level 3	**1:2-3**
Critically ill or admission/discharge Patient requiring maximum nursing time & attention. Leads to maximum nursing workload and attention	Critical Intensive Care	Level 4	**1:1-2**

Patient Acuity Scoring Tool

Criteria	Description	Score
Admission Patient	New admission requiring full assessment, documentation, medication reconciliation, education, Investigation, STAT Medication.	4
Discharge Patient	Discharge related paper work & co-ordination, patient education, Medication return & education etc.	3
Critically ill Patient	Patient on life support, unstable vitals, emergency medications, ICU care, extensive monitoring, Documentation	5
Frequent Monitoring Patients	Vitals or assessment or re-assessments to be done every 1–2 hours	3
Continuous Monitoring	Cardiac monitoring, neurological checks, invasive monitoring etc.	4
Continuous IV Infusions	Multiple IV medications, Chemo, blood products on flow, IABP	3
Intensive Procedures	Central line insertion & care, suctioning, wound care, ABG etc	3
Total Dependency Patients	Bedridden, complete ADL assistance, Unconscious, Paralysis or Paraesthesia patients	3
Isolation Precaution Patient	Requiring air, droplet or contact precaution	2
Vulnerable Patient	Agitated patient, patient on restraint, risk for fall, Wandering, Pediatric patient, Sensory Handicap	3
End of Life care	Care of Dying & Care of Body, Documentation & coordination	3
Post-operative Immediate Care patient	Immediate & First 24 - 48 hour postoperative monitoring patients	3
Emergency Events during Shift	Medical emergency, Code Blue, Emergency delivery in LR etc	5

In certain cases:

Day Care Patients (Observation patient, for administering IV Fluids, Blood Products administration, Any Medication Administration) & For **OPD Patients: Consider Level 1**

For Special Procedure (Dialysis patient, CATH Lab Patient, Endoscopy Patient, Surgery Patient etc.): **Consider level 3 or 4**.

Transplant (like BMT) & Air Borne patient kept in isolation: Consider level 5.

Patient Acuity Scoring Tool Classification:

Total Score	Acuity Category
0-5	Minimal Care
6-10	Moderate Care
11-15	High Dependency care
Above 16	Critical Intensive Care

Essential criteria required for forming a self-designed patient acuity tool:

- Simple & efficient:

Tool with simple to follow instruction are better acted and implemented. Efficient tool can actually solve the crisis in crunch situation.

- Indicator properly defined:

Measurable indicators must be operationally defined and explained where ever needed. Indicators can be selected as per the hospital departments existing. Training to the managerial nurses for better understanding of indicators and for better implementation.

- Indicators to be objective:

Indicators must be base on things seen or assessed by yourself & not on the basis of intrusion or subjective terms.

- Keep in mind the interactive work related to nursing care:

As nurse is the first & mostly available source of patient & relatives wherein a lot of interaction & communication happen between both. Hence when preparing patient assignments for conscious patient this point also to be kept in mind.

- By Maintaining KPI:

Key performance Indicators like Patient Admission discharge TAT, Nurse Patient Ratio etc. can be helpful aid in formulating dynamic staffing pattern & acuity.

CHALLENGES IN PATIENT ACUITY SYSTEM:

Adaptability:

Adaptability remains the concern of successful implementation of patient acuity system. Some acuity tool is prepared in such a way that it is difficult to follow and sometimes due to human behaviour & rationales it becomes difficult implementing.

Lack of organizational support:

In case of inadequate staffing it becomes impossible to maintain & follow any acuity system as acuity demands adequate staffing as per need but with less staffing it is impossible to meet the need as per acuity system.

DISCUSSION

- Nurse Patient ratio maintained can be taken up as a KPI and maintained monthly & evaluated to identify the crisis situation & better following or organizing of Patient acuity system.
- Teaching program to be focused on Patient acuity system & some simulation based skill sheet activity to be carried out & some mock drills to be done for better understanding & implementation of the tool. Nurse Educators & Nursing supervisors must be utilized in formation & teaching patient acuity system.
- Customized hospital own acuity tool can be Formulated by an internal team consisting of Nursing Administrators, Nurse Educators, members of quality team, DA. This team will also be responsible for revising it whenever needed.

CONCLUSION

Acuity-based staffing tools provide a workable solution to manage nursing workload and resource demand, providing a more precise, evidence based approach to nurse-patient assignments. Acuity system allows for an equal distribution of nurse patient assignments, improving group dynamics, boosting nurse satisfaction and operational efficiency, ultimately contributing to achieve organizational goals, more effective patient care, increased patient satisfaction and reduce errors.

Also by implementing patient acuity system we can ensure safe and quality based clinical environment by systematically identifying the different level of care needed for the patient, rather than based on patients head count. Acuity system also ensures that hospital can ensure that nursing resources are accurately allocated & used. This evidence-based approach minimizes missed nursing care, optimizes patient outcomes, and fosters a culture of safety.[10]

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