ENHANCING PATIENT SAFETY IN THE INTENSIVE CARE UNIT: A COMPREHENSIVE STUDY ON IMPROVING CRITICAL ALERT DOCUMENTATION BY PHYSICIANS

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in

Hospital and Health Management

By

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Under the Supervision and Guidance of

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Global Health Limited

Date: 22-Jun-2024

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Dr. Kashish Tak (ID-00063474)** is associated with **Global Health Ltd (GHL), Medanta - The Medicity** since 18-Mar-2024. She is engaged with us as Trainee - Medical Administration & Clinical Operations at the below mentioned official address:-

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Deputy General Manager - Human Resources

DECLARATION BY STUDENT

I hereby declare that this dissertation **titled 'Enhancing Patient Safety in the Intensive Care Unit: A Comprehensive Study on Improving Critical Alert Documentation by Physicians'** is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

(Signature)

Dr.Kashish Tak

Date:

IIHMR UNIVERSITY

CERTIFICATE

This is to certify that dissertation titled **"Enhancing Patient Safety in the Intensive Care Unit: A Comprehensive Study on Improving Critical Alert Documentation By Physicians"** is a record of the research work undertaken by **Dr. Kashish Tak** in partial fulfilment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and her approach to the research study has been sincere, scientific, and analytical.

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Abstract

Title: Enhancing Patient Safety In The Intensive Care Unit: A Comprehensive Study On Improving Critical Alert Documentation By Physicians

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Keywords: critical alerts, documentation compliance, ICU, patient safety, healthcare quality, training interventions

Background:

Intensive care units (ICUs) are high-risk environments where patients require complex and urgent care. Critical alert documentation by physicians is crucial for ensuring patient safety. The study focuses on the role of physicians in documenting critical alerts. This retrospective observational study aimed to evaluate and enhance compliance with documentation of critical alerts by physicians in the Intensive Care Unit (ICU). This study assessed current documentation practices, identified barriers to compliance, and implemented targeted interventions, primarily focusing on training and education initiatives.

Objectives:

1. Assess the current state of critical alert documentation by physicians in ICUs: Analyse existing documentation practices, identifying gaps and inefficiencies, and understanding the challenges faced by physicians in maintaining accurate records.

2. To identify factors associated with non-compliance in critical alert documentation by ICU physicians.

3. To explore the perceptions and attitudes of ICU physicians towards critical alert documentation.

4. To develop and implement intervention in improving the physician compliance with critical alert documentation

5. To evaluate the effectiveness of the intervention

Objective: This study aims to help improve patient safety in ICUs by providing evidence-based guidelines on how physicians can better document critical alerts.

Methodology: We audited the medical records of patients who received critical alerts in two medical ICUs over a specific period. We analyzed four key factors: whether nurses documented critical alerts and the name of the doctor informed, whether doctors acknowledged the critical alerts, and whether action plans were documented within an hour. To improve the situation, we conducted comprehensive training sessions for doctors and nurses on critical alert protocols. We stressed the importance of timely documentation and following established procedures.

Key Results: Before the intervention, physicians in the ICU only documented critical alerts about 9% of the time. Nevertheless, the situation changed after appropriate training sessions, awareness sessions, and daily meetings to discuss documentation, which led to enhancement of documentation compliance. Thus, it is possible to conclude that by the end of the study period the degree of compliance to critical alert documentation amounted to 54%, combining pre- and post-intervention data. Such improvement underlines how educational interventions cause a remarkable change in the ability of the healthcare providers to adhere to the documentation protocols.

Conclusion: Ensuring compliance of the alert documentation is vital in the ICU so as to increase the level of responding to the needs of the patients as well as the patient safety. The results shown in the given study have proved that targeted trainings and education contribute to the increase in the rates of documentation adherence. In the future the strategies should aim at the continual education of staff, utilization of protocols in communication regarding established guidelines and at the effective incorporation of technology in the support of lasting and progressively enhanced compliance with the documentation of alerts in clinical practice.

Acknowledgements

I am deeply appreciative of the healthcare professionals and staff at Medanta, The Medicity Hospital, for their generosity in sharing their time and expertise. Their cooperation and willingness to participate were vital to the successful completion of this research.

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Chapter 1:

Introduction

1.1 Introduction:

Enhancing patient safety in intensive care units (ICUs) is a critical concern in modern healthcare. ICUs are designed to provide life-saving care to critically ill patients, and any mistake can have severe consequences. The ICU environment is characterized by high-tech equipment, complex patient conditions, and a high volume of electronic health records. This setting requires efficient integration and cooperation of all members of the health care profession to provide quality care to patients. However, due to the constant change of patients' conditions in the ICU, where they attend to more patients, fragmented attention, communication breakdown, and medical errors occur. There are certain factors that define the level of documentation and completeness of the records in Intensive Care Units and they include the following. The critical alerts on the other hand are notifications that Health care givers need to attend to with a lot of priority. Whenever these alerts are not documented appropriately or timely, the consequences could be; wrong diagnoses, delay in treatment in the form of interventions and complications. This calls for a need for a CQI project that would improve the physician's compliance to alert documentation to facilitate the right treatment to patients.

This is because if the reports are not well documented or delayed, this results in delayed interventions, misdiagnosis, and other unfavourable outcomes. Furthermore, the quantity of data produced in ICU environments can be overwhelming, which affects record keeping and client documentation by health care givers. Another major problem identified in the ICUs was the negligence of physicians and their failure to document critical alerts, ending up being time-wasting towards the implementation of SOPs regarding the IPSG goal 2, which relates to effective communication. That is why such a non-compliance can led to missed or delayed interventions, which harms the patient's safety and outcomes.

As per the definition given by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), any result that marks a dangerous abnormality and that would imply immediate medical intervention to prevent loss of life or the occurrence of life-threatening complications is considered a critical test. This is unlike an abnormal result

which may cause no symptom and, in some instances, may not be of imminent danger to the patient's life.

Patient care management requires efficient and timely deliverance of such important information within the right health practitioner. The act of reporting a consequential result to a physician is usually referred to as generating a critical alert. JCAHO states that inadequate communication is the overall cause of most sentinel events.

provider information database is crucial to the hospital's capability for delivering alerts concerning important matters across the network quickly. The purpose of this study is going to focus on the current practices of physicians in contributing the documentations of critical alerts in the ICU. The purpose of this paper is to discover any gaps that may exist and to discuss recommendations on how to enhance the documentation practice.

The critical care hospital in Gurugram, Medanta Hospital, has recently installed critical alert management in every department for better patient care. This system ought to be affiliated with standardized operating procedures that are to be followed by all the healthcare givers. Key aspects of the Critical Alert Management system at Medanta include:-

1. Standardized Documentation: The alerts are well-coordinated in the organization of this hospital and key aspects of the information are documented using a pattern laid down by the health facility. This encompasses the type of critical alert, the time it was discovered and the measures that were taken next.

2. Timely Notification: The system guarantees that important notifications are disseminated to the right healthcare practitioners, which can help in early intervention by physicians. Computerized notification systems as well as visible escalation matrices ensure that early response is not a problem.

3. Dedicated Critical Care Team: Medanta is accurately headed by Critical Care Department that employs team of critical care specialists, cardiologists, technicians, nurses and other staffs. The concept of this team is to be able to provide round the clock and individualized approaches to patients with lethal diseases.

4. Continuous Quality Improvement: It may be emphasised that Medanta periodically assesses the efficiency of Critical Alert Management system of the company and determine the need for improvement. Implementing corrective measures. This also involves processing information of critical alert feedback from daily written reports, response times to patient charts and their health status to lay the foundation for constant enhancement of the system.

There are IPSG audits conducted on daily basis which is done to analyse the compliance in documentation of critical alerts according to the policy template which covers four parameters for compliance consisting of 1.Critical alert informed by occ to nurse is documented 2.Name of doctor informed documented by nurse 3.Critical alert acknowledged by doctor in file 4. Action plan documented by doctor on medical record within one hour.

Process flow for Communication of Critical Test Results

1. Identification of Critical Test Results:1.1 Critical values for Biochemistry and Hematology tests are configured in the Lab Information System, highlighted in purple adjacent to the parameter value.1.2 Clinical Laboratory (excluding Histopathology) utilizes an online critical alert module to identify parameters outside critical ranges.1.3 Histopathology critical reports are relayed via telephone by the laboratory consultant to the treating clinician.

2. Notification and Communication:2.1 Inpatient Scenario:2.1.1 Upon identification of critical results, Lab Technicians promptly notify the Operations Control Centre (OCC).2.1.2 OCC communicates the critical result to the treating physician and the nursing team leader within 30 minutes.2.1.3 The nursing team leader updates the floor doctor and records the critical result in the dedicated register.

2.2 Documentation and Acknowledgment:2.2.1 Nurses document telephonic critical results, recording patient details, informed doctor, reported values, date/time of communication, and the person delivering the information.2.2.2 A read-back procedure ensures the accuracy of documented critical results.

2.3 Outpatient Communication:2.3.1 OCC contacts the treating consultant for outpatient critical results.2.3.2 If the consultant is unreachable, escalation proceeds to the treating doctor, then to the Medical Superintendent, and finally to the Rapid Response Team in sequence.

2.4 Other Diagnostic Labs (Radiology, Cardiac, Neuro-diagnostics, Pulmonary Function Tests):2.4.1 Personnel conducting tests immediately inform the treating physician or team within 30 minutes of identifying critical results.2.4.2 Critical results are documented in the patient's medical record and in designated critical alert registers.

2.5 Point of Care Tests:2.5.1 Personnel performing Point of Care Tests communicate critical results directly to the attending consultant.2.5.2 Critical results are noted in the patient's progress notes for immediate action and ongoing patient care.

3. Monitoring and Compliance:3.1 Compliance with the critical test result communication process is regularly monitored to ensure adherence to established timelines and procedures.3.2 Continuous monitoring facilitates prompt intervention and appropriate patient management based on critical test outcomes.

This structured process ensures efficient and timely communication of critical test results, facilitating rapid clinical decisions and enhancing patient safety and care outcomes.

1.2 OPERATIONAL DEFINITIONS:

Critical value: A pathophysiological parameter exceeding a normal value (expected value) indicating a potential threat to patient safety and requiring immediate clinical intervention. Certain diagnostic tests within clinical laboratory, radiology, and specialized diagnostics (Cardiac, Neuro, and Pulmonary Function Tests) yield critical results as defined.

Critical Alert System: A collection of tools and protocols designed to notify healthcare providers of potentially life threatening or serious patient situation. It aims to ensure timely intervention and improve patient safety. It is essential to achieve the IPSG goal 2- Effective Communication which includes reporting critical results of diagnostic tests.

Documentation protocols: Established procedures for healthcare providers to document their response to critical alerts in patient's medical record. This typically includes:

1. Time and type of alert received
2. Initial assessment findings
3. Actions taken in response to the alert

IPSG Goal II: Enhance communication efficacy: Effective communication plays a crucial role in reducing errors and improving patient safety. For communication to be considered effective, it must be timely, accurate, comprehensive, clear, and well understood by the recipient. Generally, verbal orders are not permitted except in life-threatening situations, and in such cases, the read-back procedure must be strictly enforced to ensure accuracy. Furthermore, all verbal orders must be documented and countersigned by the issuing physician within 24 hours to maintain accountability and accuracy in patient care.

Intervention Phase: The intervention phase refers to the period during which targeted strategies and educational interventions were implemented to improve compliance with documentation of critical alerts among healthcare providers in the ICU.

Compliance Rate: Compliance rate in this study denotes the percentage of cases in which healthcare providers adhered to the documentation protocols for critical alerts, calculated as the number of compliant cases divided by the total number of cases audited, multiplied by 100.

Training and Education Initiatives: Training and education initiatives refer to structured programs designed to educate healthcare providers about critical alert protocols, including workshops, seminars, and one-on-one sessions aimed at improving awareness and adherence to documentation practices

Chapter 2:

Review of Literature

S.no	Author (year)	Study Location	Sample size	Sampling technique	Salient Features
1	Bhavin B, Adhyaru, Glenn Hilburn (2023)	GHS Hospital Trauma Center, US, Atlanta	1414	Selected all critical alerts reported in the span of three months (April-June)	1. This project aims improve TAT for critical lab results. Minimize workflow changes and reduce clinical laboratory staffing burden. By Implementing push notifications via EPIC mobile app, (1) (1) Haiku. 2. During the 3-month pilot period, monthly reinforced education sessions were provided to ICU treatment teams. These sessions included tip sheets and direct feedback on their compliance with electronic acknowledgment.

					3. The push notification process generated 1,414 notifications for critical lab results, with 6% (82) being electronically acknowledged, each electronic acknowledgment reduced the need for a lab service technician to make a page or call.
2	Vasthy Lozano-Fernández (2023)	Servicio Laboratorio Clínic, Hospital Lambayeque, Peru Immunología, Hospital Lambayeque, Peru	181,507	Not explicitly mentioned, appears to be comprehensive analysis	1. This study provides an in-depth evaluation of the effectiveness of a newly implemented protocol designed for reporting critical laboratory values in a clinical setting. 2. The protocol was meticulously crafted to ensure prompt communication of life-threatening

					results, which is essential for facilitating accurate and timely clinical decision-making. Emphasizing the critical role of adherence to protocols in clinical laboratories, the study highlights that deviations of up to 45% in reporting critical values can potentially lead to diagnostic errors with significant implications for patient care. 3. The research focused specifically on critical values pertinent to emergency services, strictly adhering to a predefined protocol list. 4. The study was conducted in two distinct phases: initial training sessions

					aimed at protocol familiarization and a comprehensive knowledge questionnaire. 5. Subsequently, a repeat questionnaire and thorough analysis of laboratory test reports were conducted to evaluate the protocol's impact on reporting accuracy and clinical outcomes (2)
3	Dinesh Chandra Joshi, Ravinder Singh Saini (2022)	Tertiary care teaching hospital, North India	Two phases: 394 and 286	Purposeful sampling and stratified random sampling	1. This study aimed to evaluate the knowledge and adherence of physicians, nurses, and technicians to the International Patient Safety Goals (IPSG) within a tertiary care hospital setting. 2. Conducted from March to May 2021 at a tertiary care teaching hospital in North India, this observational cross-

					sectional study utilized stratified sampling to ensure representation of doctors, nurses, and technicians. 3. A validated questionnaire was utilized to assess the understanding of healthcare professionals regarding IPSG. 4. Findings indicated a satisfactory level of awareness among doctors, nurses, and technicians regarding patient safety goals. To enhance competence in this area, 5. This study recommends implementing practical training sessions, workshops, lectures, and seminars. (3)
4	Puja Kumari,	Institute of Human	811	Non-probability	1. The study aims to enhance quality by

	Jha Rachna Agarwal (2022)	Behaviour and Allied Sciences teaching hospital, Delhi		sampling method	reducing the turnaround time (TAT) for critical result notifications by at least 30% and ensuring timely communication of these notifications to the relevant caregivers or clinicians. 2. The project employed the DMAIC model (Define, Measure, Analyze, Improve, and Control) for process improvement, using various quality tools including fishbone analysis, process mapping, Pareto charts, and Failure Modes and Effects Analysis (FMEA). (4)

5	Wania Imtiaz, Khawaja Shehryar Nasir, Fareeha Kanwal (2021)	Internal Medicine Department, Shaukat Khanum Memorial Cancer Hospital and Research Centre, Lahore, Pakistan	128	Randomised Sampling Technique	1. The study examines the problem of inadequate documentation of critical alerts by physicians in patient medical records, a vital component of patient safety. 2. Utilizing a Continuous Quality Improvement (CQI) methodology, the research aims to identify and address the underlying causes of this issue. 3. Several interventions

					were introduced to enhance compliance, including hospital-wide educational sessions, daily audits, and the implementation of a new module in the hospital's electronic medical record system. 4. The study reports that the average compliance rate improved from 57% to 88% within a few months of implementing these changes, and this improvement was maintained for the subsequent eight months. (5)
6	Terrance James Lynn and Jordan Erik Olson (2020)	Brigham and Women's Hospital	234	Convenience sample or survey-based sample	1. For this purpose, recently, a secure text messaging STM system was established to facilitate high efficient and safe communication

					between the clinical providers and the laboratory with an aim of reporting critical values CV. 2. This change was spurred by the realization that acquisition of timely information was essential, to allow for timely modification of the management plan of the patient. 3. Previously used paging, which required a callback for the acknowledgment of critical value alerts. 4. Introduced a secure texting application to share CV to providers' mobile phones so that they can get essential diagnostic details at their fingertips. 5. The results necessitated the adoption of STM

					particularly for CV notification reporting where TAT was depicted to have dramatically decreased. STM notifications were considered preferable by the providers as an efficient mode of notification more specifically through the improvement of the ability to respond and provide proper patient treatment.
7	Andrew M. Harrison, Charat Thongprayoon, Christopher A. Aakre (2017)	Medical ICU, Mayo Clinic; Rochester, MN, USA	40	Non-probability sampling	1. The purpose of this study was to assess the impact of EHR-based alerting systems to sepsis as the prior literature has not presented the EHR systems' advantage in improving other clinically important outcomes. 2. Specifically, the study was designed to evaluate the

					hypothesis that the use of an EHR based alert acknowledgment approach would take less time than compared with simple text paging in terms of critical care clinician's acknowledgement of severe sepsis alerts. 3. It evaluated the maturity of EHR-based systems that aim to issue the alert for sepsis based on the fact that, until that time, there have been no remarkable enhancements in clinically oriented results. 4. The study focused on implementation challenges which play crucial roles on effectiveness of the said alert systems. The study hypothesized that

					implementing an EHR-based alert acknowledgment system could reduce the response time of critical care clinicians to severe sepsis alerts compared to a conventional text paging system. 5. Study Design: This simulation study delivered real-time alerts through the EHR to patients in the medical ICU in one group, while the other group received simulated alerts via text paging. The primary outcome measured was the time taken for clinicians to acknowledge these alerts. 6. Secondary outcomes included data gathered through a structured mixed-methods survey and

					informal group interviews. 7. Although the EHR-based alert system did not achieve a sufficient response rate for primary outcome comparisons, secondary measures highlighted significant obstacles. 8. Conclusion: The study pinpointed key factors such as alert fatigue, interruptions, human errors, and information overload as major hurdles affecting alert acknowledgment in ICU environment. (7)
8	Dr. K. Rekha, Dr. K. Bharathi, Dr. K. R. Umadevi (2016)	Department of Radiology, University of Mississippi Medical	600	Simple Sampling	1. The University of Mississippi Medical Center (UMMC) saw a 27% reduction in critical alerts despite a 15% increase in imaging exams.

		Center, Jackson, MS			2. To address this, they implemented a program that included educating radiologists about critical alerts, reinforcing the process systematically, and adding a time-stamp macro to the dictation system. 3. This led to a rise in critical alerts, especially those requiring follow-up imaging, and boosted documentation compliance to 97%. (8)
9	Waleed Al-etreby, Abdulrahman Al-Harthy, Shabir Karim (2015)	Critical Care Department, King Saud Medical City, Riyadh, Saudi Arabia	109	Simple technique (selected all critical alerts in a month)	1. The study underscores the critical importance of patient safety in healthcare, highlighting the impact of critical lab results (CLR) on patient outcomes and the overall effectiveness and

					efficiency of healthcare services. 2. The primary objective of the study was to evaluate the current level of compliance with the CLR (Critical Laboratory Result) reporting policy within the Intensive Care Unit (ICU) at King Saud Medical City. Furthermore, the study aimed to identify areas for enhancement in order to strengthen adherence to the policy and optimize patient care processes. 3. Methodology: A retrospective observational design was utilized, examining data from January 2014 to December 2014. 4. The compliance rate was tracked using a

					log book, and an awareness campaign was launched to boost compliance. 5. Results: The compliance rate saw a substantial improvement, rising from 30% in January 2014 to 98% by the end of the year. (9)
10	Rachna Agarwal, Neelam Chhillar, and Chandra B. Tripathi (2015)		1,187		1. The primary objective of the study was to analyze factors influencing critical value notification in a clinical chemistry laboratory, assess their impact on notification quality, and propose strategies for process improvement 2. The study spanned 25 months, during which the laboratory recorded a total of

					1,279 critical values in clinical chemistry. 3. Results indicated that 64.61% of critical values were communicated to caregivers within 30 to 120 minutes after sample receipt, underscoring the critical importance of timely notification for patient safety. 4. Challenges identified included insufficient information on treating physicians and difficulties in contacting responsible caregivers. 5. Patient Safety: The study highlighted that delays in notifying caregivers pose significant patient safety risks, potentially leading to

					diagnostic errors. 6. Effective communication between laboratory staff and caregivers is essential to mitigate these risks and ensure patient safety. (10)

TABLE 3. 1 Review of literature

Chapter 3:

Methodology

3.1 Study Design

This study was conducted at Medanta, The Medicity Hospital, Gurugram a multispeciality hospital, from 1st April 2024 to 30th April 2024. The study was conducted as non-compliance of documentation of critical alerts by physicians in ICU was observed where doctors didn't mention the critical alert value in the medical records and also, the plan of action wasn't documented. Therefore, this study was conducted in order to improve the process of documentation. A Plan-Do-Check-Act (PDCA) cycle was carried out in the initial phase. Through observation and interactions with physicians and nursing staff in the Intensive Care Unit (ICU), a cause-and-effect analysis using a fishbone diagram was conducted to identify the reasons behind the lack of compliance with critical alert documentation by ICU physicians. The most significant issues identified were a lack of awareness of protocols, high workload, and insufficient training and education regarding hospital policies. A daily audit of patient files for critical alert records was conducted on 56 patients.

3.2 Research Questions

What is the level of compliance with documentation of critical alerts by nurses and doctors in the ICU? What are the factors that affect how well critical alerts are documented?

Quantitative Study: Retrospective Medical Records Audit

This study examines past medical records to evaluate how thoroughly, promptly, and accurately physicians in the Intensive Care Unit (ICU) document critical alerts. Two specific ICUs have been chosen for this retrospective audit. A random selection of 58 patient medical records will be scrutinized to uncover any deficiencies or inconsistencies in the documentation process. The audit aims to assess the quality and completeness of critical alert documentation in these records, as well as the timeliness of their entries. Ultimately, the study seeks to pinpoint areas where documentation practices can be enhanced and to gauge the effectiveness of the current system in upholding patient safety and care standards.

3.3 Setting

This research was conducted at the Intensive Care Unit (ICU) at Medanta; The Medicity is one of the biggest tertiary care hospitals in India. He has however only concentrated on two departments, namely ICU 7 and ICU 8, both of which are Medical Intensive Care Units in the hospital. The participating ICU's have a bed capacity of twenty-four, which has the potential of enrolling patients of both sexes, various ages and diverse pathological status. Through the selection of these medical ICUs, the study is in a position to obtain results which will be an overall portrayal of the hospital's practices on critical care. These revelations can then assist in the formulation of patient safety and care quality promotion initiatives of the organization. We can consider the patient population and clinical contexts identified in these ICUs as heterogeneous, which gives an adequate idea of the issues and prospects of physicians' documentation of crucial notifications.

3.4 Study Tools

Audit Tool: Developed to measure if protocols for critical alert process are being followed

- Recognition critical alert from OCC to the nurse is also documented.

- The name of the doctor informed documented by the nurse.

- The critical alert has been received and acknowledged by the doctor through the file.

- The patient, their people or any visitor will be advised to consult a doctor who will document it in the medical record within one hour of the incident.

3. 5 Root Cause Analysis

The second method will be informal interviews with nurses and doctors involving open-ended questions to allow them to express their perception on how critical alerts are communicated and documented. Such interviews will give important pieces of information and even important observations. Based on the above details, we will develop a fishbone diagram to provide the conceptual depiction of possible causes for non-compliance by doctors concerning the documentation of critical alerts. This diagram will help to find out

why healthcare providers are not compliant and how strategies will encourage compliance can be formulated.

3. 6 Duration of Study

The study was conducted for one month starting from 01-04-2024 to 30-04-2024. This timeframe is needed in order to optically review the electronic health records and the notes of different healthcare practitioners.

3. 7 Study Population and Sampling

The attention of the research is on patients who are admitted to Intensive Care Unit and who receive a critical alert throughout the episode of their stay.

Sample Size

Regarding our medical records audit, the sample of Medical ICU patients was purposefully identified who received critical alert during stay in ICU, and 58 patient records have been randomly chosen for analysis. This number of patients was selected to give accurate representation of the patient population while at the same time being manageable and as exhaustive as possible within the audit.

Sampling Technique

In this case, we will use random sampling to ensure that we obtain different records of the patients from the Intensive Care Unit. This approach is meant to offer a clear perspective and enhanced comprehension of documenting practices of critical alerts with the intent of enhancing patients' safety.

3.8 Data Collection Methods

Retrospective File Audit: A retrospective file audit on a sample of 58 patients' medical records was done under the ICU section. In this audit, the extent and nature of important aspects of critical alert documentation as a process was audited. Evaluated completeness, timeliness, and accuracy based on specific documented actions: recording of the critical alert and notification from the OCC to the nurse for passing on to the patient, identification of the informed doctor by the nurse, confirmation of the alert by the doctor only in the patient file,

and the documentation of an action plan by the doctor within one hour of receiving the alert. Quantitative analysis concerned matters of compliance, calculated in relative terms in relation to total cases audited.These metrics provided insights into the effectiveness of current documentation practices in the ICU setting, highlighting areas of strength and opportunities for improvement in ensuring comprehensive and timely recording of critical alerts.

Statistical Methods:

Used descriptive statistics to summarize compliance rates

3.8 Inclusion Criteria:

1. Patients:
- Patients admitted to the medical ICUs during the study period.
- Patients who received at least one critical alert during their ICU stay.
1. Medical Records:
- Medical records that clearly documented the occurrence of critical alerts.
- Records where the timing of critical alerts and subsequent actions (if any) were recorded.
2. Parameters for Assessment:
- Records where there is evidence of the critical alert being communicated from OCC to the nurse.
- Records where the nurse documented the name of the informed doctor.
- Records where there is documentation of the doctor acknowledging the critical alert in the patient's file.
- Records where there is documentation of an action plan formulated by the doctor within one hour of the critical alert.

Exclusion Criteria:

1. Patients:
- Patients admitted to other hospital units besides the medical ICU 7, 8
2. Medical Records:
- Records where the critical alert documentation did not meet the predefined criteria

(e.g., unclear communication of alert, lack of timestamp).

- Records where the patient's stay in the ICU was less than the minimum period required to assess compliance with the documentation parameters.

3. Parameters for Assessment:

- Instances where specific parameters (e.g., doctor acknowledgment of the alert, action plan documentation) were missing or not recorded within the defined timeframe (e.g., one hour).
- Records where data integrity issues or missing data prevented accurate assessment.

4. As the study concentrated on the critical care ICU, it excluded other wards and departments, such as Chronic Patient Care Wards and Outpatient Departments (OPD). Additionally, patients who did not receive any critical alerts during their ICU stay were not included in the study.

Data Analysis:

This study involves the analysis of patient medical records in the ICU to evaluate how physicians document critical alerts. Data will be manually entered into Excel spreadsheets, with a scoring system developed to assess the completeness, timeliness, and accuracy of documentation. Descriptive statistics will then be computed for both pre- and post-intervention data to summarize documentation quality. Moreover, the percentage of patient records with complete documentation will be calculated to gauge compliance levels

Chapter 4:

Results

Phase 1:

This phase of the study commenced with an initial analysis of ICU data pertaining to patient admissions and critical alerts(Figure.4.1, Figure 4.2). These graphs illustrates the correlation between ICU admissions and the number of patients receiving critical alerts for the month of February,March and April. It demonstrates fluctuations in patient flow and critical alerts. Such visual data aids in understanding the demand for acute medical attention within the ICU environment. The relationship between the number of patients receiving critical alerts and the critical alerts reported by OCC was also identified(Figure 4.3, Figure 4.4). Notably, it was observed that Critical Alerts reported were more than the patients who received critical alerts, on an average, each patient received approximately 3 critical alerts during the study period. This metric serves as a benchmark for evaluating the thoroughness of medical documentation practices in response to critical alerts.

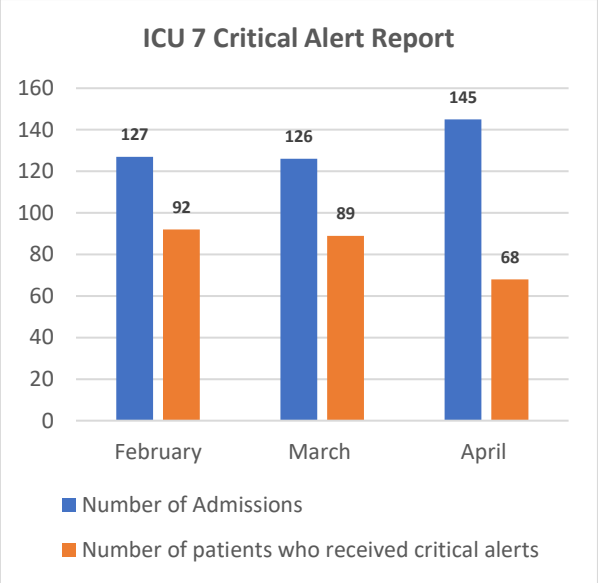

Figure 4. 2 Admissions in ICU 7 vs patients who received critical alerts in the month of February, March, and April

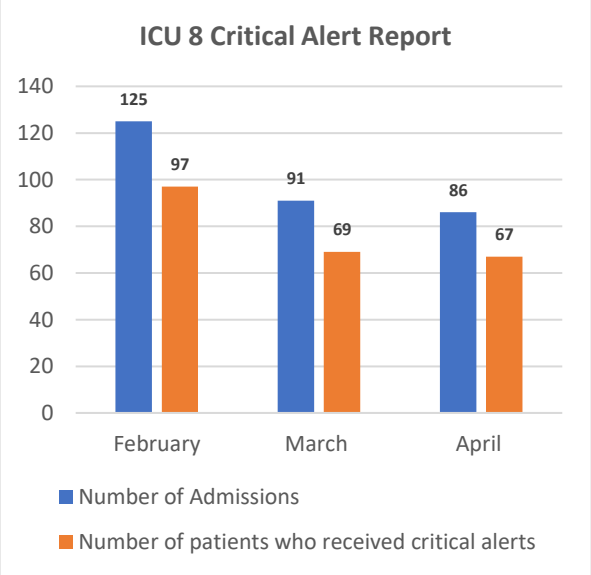

Figure 4. 1 Admissions in ICU 8 vs patients who received critical alerts in the month of February, March, and April

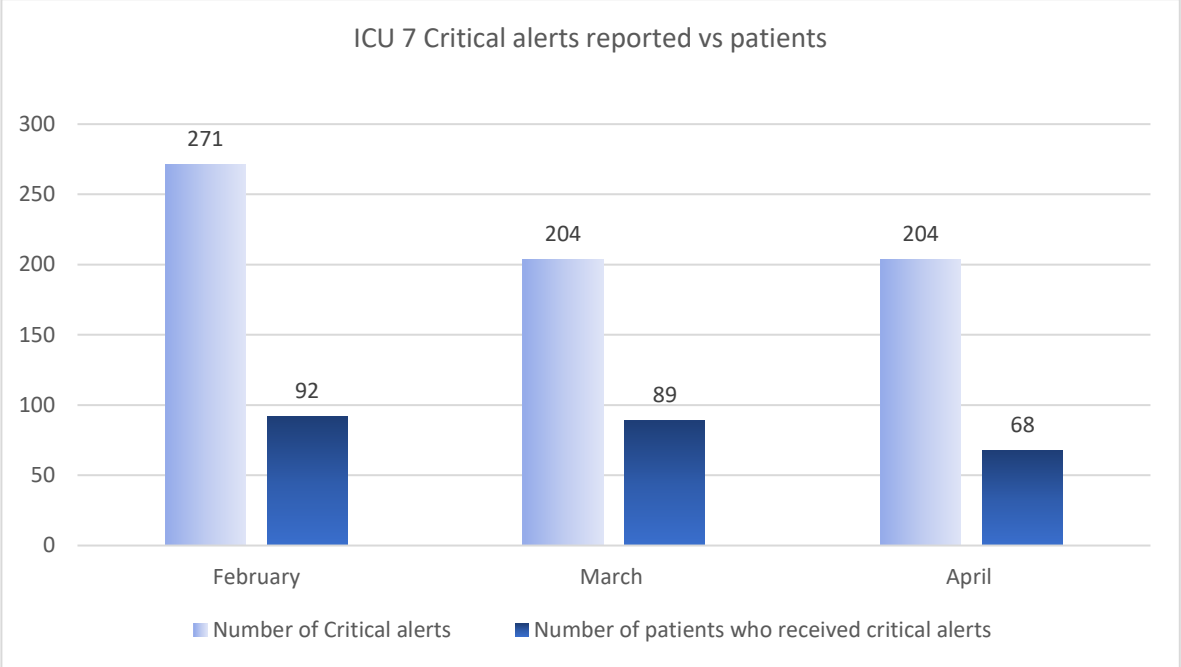

Figure 4. 3 Total Number of Critical Alerts Reported vs. Total Number of Patients Who Received Critical Alerts in ICU7

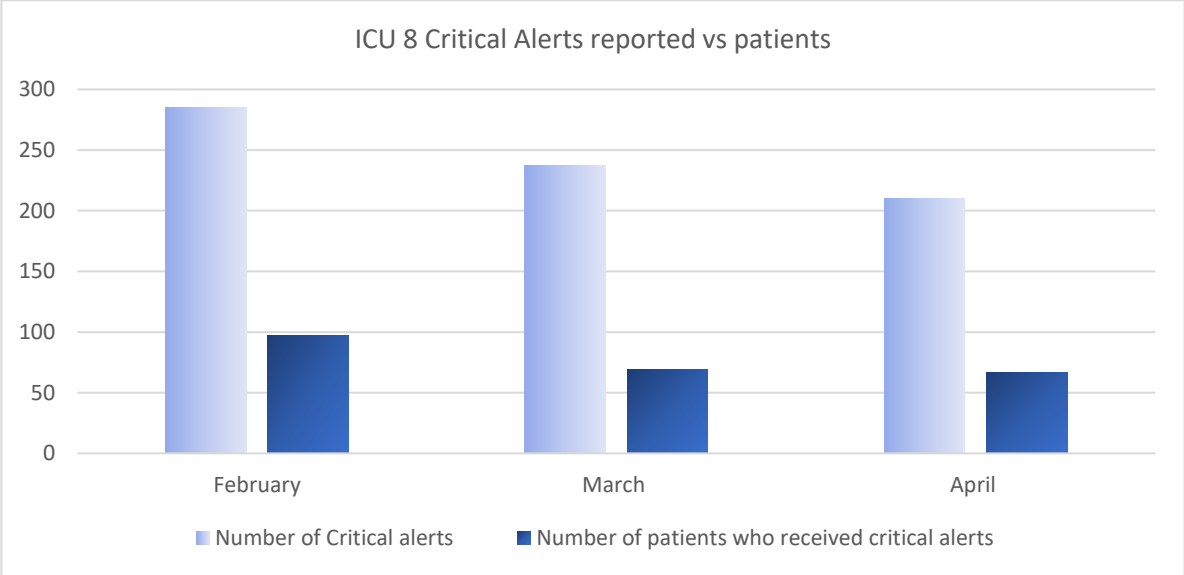

Figure 4. 4 Total Number of Critical Alerts Reported vs. Total Number of Patients Who Received Critical Alerts in ICU8

Phase 2:

2.1 Baseline Audit without Intervention

During the initial phase of the study, data collection involved auditing medical records of patients who received critical alerts in the ICU. This phase spanned 3-4 days and focused on assessing whether doctors documented critical alerts in the medical records along with their action plans. Compliance with documentation protocols during this phase was observed to be low.

This preliminary investigation revealed concerning trends: a notable frequency of critical alerts occurring, yet a substantial portion was not being documented adequately in the medical records by attending doctors. Upon conducting the audit, it was found that only 9% (as shown in Figure 4.7) of critical alerts were documented with corresponding action plans within the required timeframe. This significant lack of compliance underscored a critical gap in patient care and safety protocols within the ICU. This study was thus motivated by the urgent need to address these deficiencies and enhance patient safety through better documentation practices.

By meticulously auditing and analyzing how critical alerts and subsequent action plans were documented, the study aimed to identify obstacles, implement focused interventions, and ultimately improve compliance with documentation standards. This initial phase established the foundation for future interventions.

2.2 Fishbone Diagram for Root Cause Analysis of Non-Compliance in ICU Critical Alert Documentation

The fishbone diagram presents one of the systematic approaches to present the root causes of non-adherence to the documentation of critical alerts in the ICU. In a bid to get more details regarding contributors to this non-compliance, fish bone digramm/Ishikawa diagram was used in the analysis of root causes. This diagram (Figure 4. 5) categorizes potential causes into several key themes, which include:This diagram (Figure 4. 5) categorizes potential causes into several key themes, which include:

Analysis of Identified Issues

During the observational study, several significant issues affecting compliance with critical alert documentation came to light. Firstly, there was a notable lack of awareness and training among doctors and nurses regarding established protocols for documenting critical alerts and action plans in patient progress notes. This lack of knowledge contributed to inconsistencies in documentation practices throughout the ICU.

Communication difficulties also emerged as a major barrier to compliance. Nurses faced challenges in promptly communicating critical alerts to doctors after receiving notifications from the Operations Control Center (OCC). Factors such as heavy workloads and occasional forgetfulness were cited as reasons for delays or missed communications, especially during busy shifts.

Another concerning finding was the frequent occurrence of critical values being recorded in nursing registers without being escalated to doctors for timely action. This practice raised concerns about potential compromises to patient safety and the effectiveness of critical care management.

Night shifts showed higher rates of non-compliance with documentation protocols compared to daytime shifts, highlighting the need for targeted interventions during nighttime hours. Discussions with senior consultants revealed the complexities introduced by rotating shifts and varying staffing compositions, which posed challenges in maintaining consistent adherence to documentation standards.

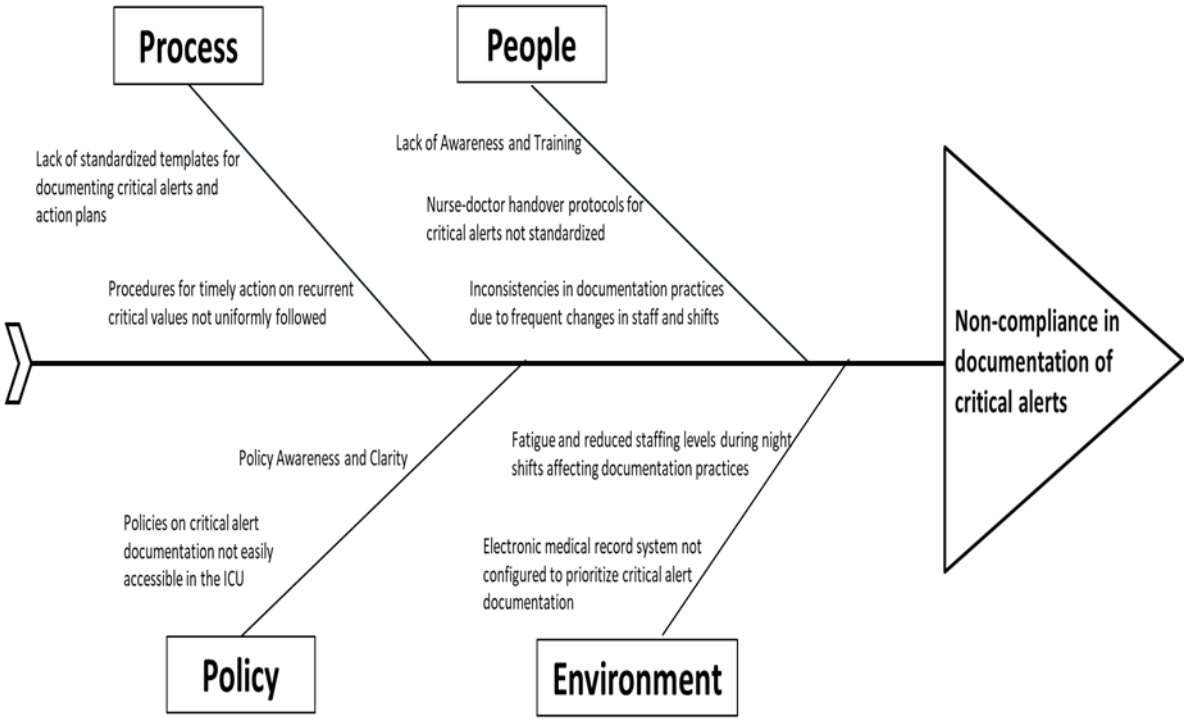

Figure 4. 5 Fishbone diagram Representing RCA of non-compliance in documentation of critical alerts

Phase 3: Intervention Implementation

Following the initial audit, an intervention was implemented to improve how critical alerts were documented. The focus was on educating both doctors and nurses about the importance of timely documentation and action planning. Additionally, clear protocols and guidelines were reinforced to ensure consistent practices across the ICU. This intervention aimed to address the identified gaps in awareness and adherence to documentation standards, ultimately enhancing patient safety and care quality.

Team Meeting: A team meeting was conducted involving senior consultants from the ICU and the nursing in-charge to discuss the findings from the baseline audit and emphasize adherence to documentation protocols.

Phase 4: Post-Intervention Audit

From the general overall compliance trends, the study came across a consolidated one-month compliance level of 56% among the healthcare workers. This metric takes into account deviations in the amount of compliance, either before or after specific interventions have been put in place. However, it will be relevant to note that, the days depicted in this figure (figure 4. 6) include occasions where full interventions were not made hence the compliance variability during transition phases.

Subsequent to the implementation of the planned intervention a 'post-intervention' audit was carried out to evaluate the success of the intervention in promoting/ altering appropriate compliance with documentation practices. The peculiarity of these results was that, after months of analysis, there was enough evidence that this method improved the documentation compliance regarding critical alerts during at least several weeks. Finally, compliance was at 9% in phase one on the recommendation. After the intervention, such as education sessions targeting the doctors and nurses regarding protocols on patients' safety, the level of compliance improved to 41% at the first follow-up week. Other interventions followed consisted of meetings with senior consultants and nursing staff to discuss the importance of team development with regard to the responsibilities of reaching compliance standards.

Over the following weeks, these efforts continued to yield positive results, with compliance rising to 76% by the end of April. This progression highlights the effectiveness of targeted interventions and collaborative approaches in enhancing adherence to documentation protocols within the ICU. Ultimately, these improvements contribute to enhanced patient safety and care quality. Further recommendations for enhancing compliance with documentation protocols and improving patient safety in ICU settings are discussed in greater detail.

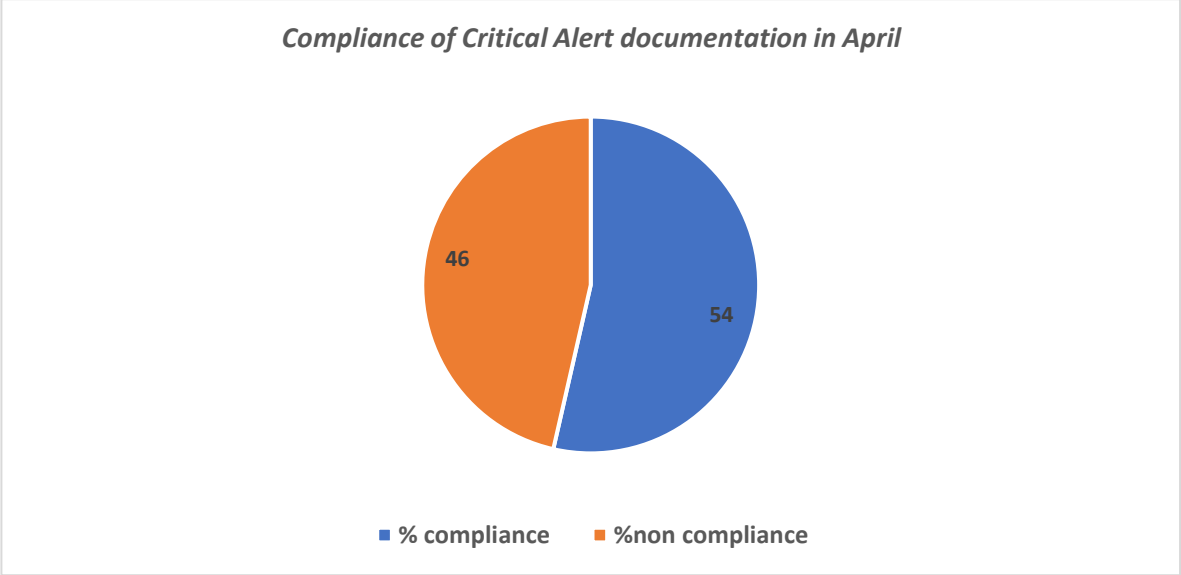

Figure 4. 6 Total percentage of compliance in documentation of critical alerts by physicians in ICU during the study

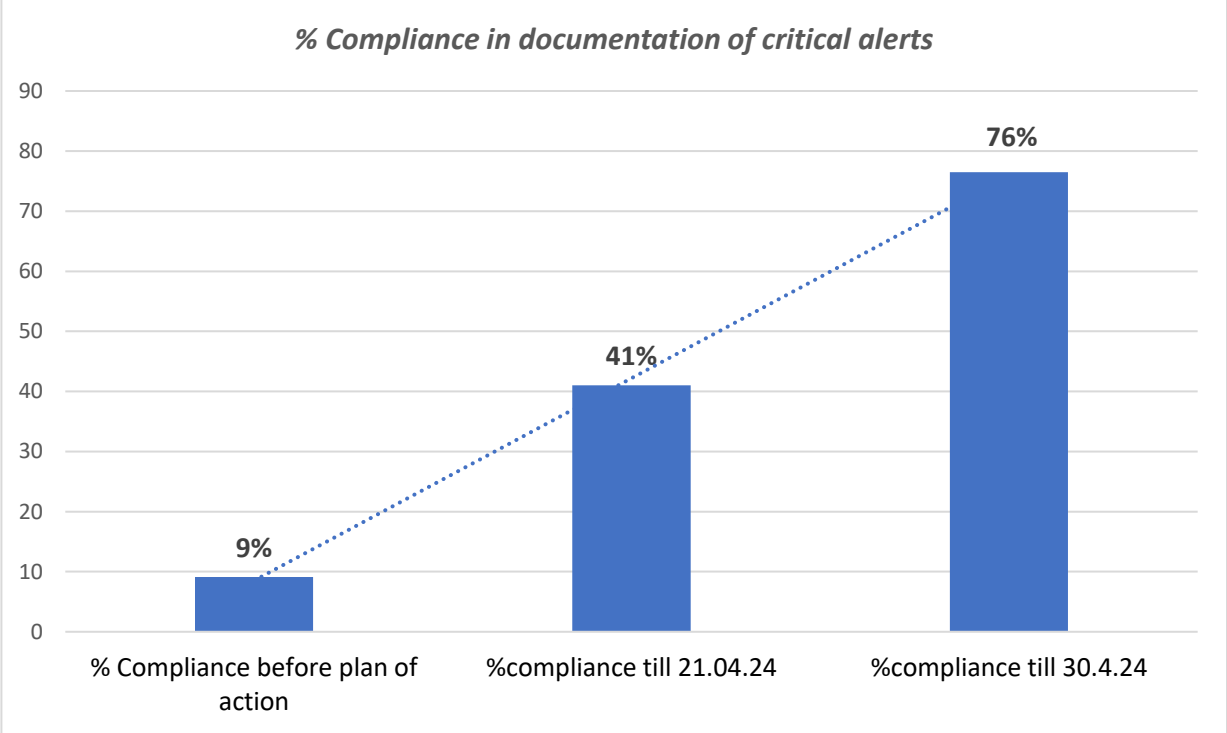

Figure 4. 7 Percentage compliance of physicians in documenting critical alerts in patient records during the study period showed significant improvement. Initially, the compliance rate was 9%. Following the interventions, it increased to 41% and eventually 76%

Chapter 5:

Discussion

The study aimed to enhance compliance with documentation of critical alerts by physicians in the ICU through targeted interventions. Initially, compliance was observed to be low, with only 9% adherence to documentation protocols. The low compliance rate observed during the baseline audit, coupled with the high number of critical alerts, justified the need for this study. It became evident that enhancing documentation practices was essential to improve patient safety in the ICU. By addressing the initial non-compliance and implementing targeted interventions, the study aimed to significantly improve the documentation of critical alerts by physicians, thereby enhancing patient safety outcomes in the ICU Following the implementation of training sessions, protocol dissemination, and team meetings, compliance progressively improved to 41% and eventually reached 76% by the end of the intervention period (Figure 4.7).

The significant increase in compliance suggests that educational interventions and procedural changes effectively influenced healthcare providers' adherence to documentation practices. These findings align with previous studies that have highlighted the importance of structured training and continuous education in improving healthcare quality and patient safety (Wania Imtiaz, Khawaja Shehryar Nasir, 2021) (5)

Strengths of the Study: One of the strengths of this study was its systematic approach to assessing compliance through rigorous medical record audits. The use of structured interventions and the involvement of senior ICU consultants and nursing staff ensured comprehensive coverage and implementation of best practices. Moreover, the longitudinal nature of the study allowed for the evaluation of sustained improvements over time, contributing valuable insights into the dynamics of healthcare provider behaviour change.

Limitations: This should be done bearing in mind that there are limitations despite the positive impact that has been observed. Firstly, the study is based on participants in one hospital, so there is a question of generalizability of the study results to the other healthcare organizations that can differ in terms of structure and population characteristics. Second, the use of retrospective data collection from patients' medical records was also not ideal, as it may have failed to capture the actual documentation process in real time and might have also

included biases, whereby due to patients or clinicians' lapses some details in documentation might be incomplete or even incorrect.

One major patient safety concern that was noted in the handling and recording of critical alerts in the ICU is the lack of proper documentation. This is a two phase retrospective study intending to provide information on current style of documentation and reasons for noncompliance among ICU physicians. Auditing the patient medical records accompanied by interventions aimed at enhancing the documentation of critical alert shall form the basis of this study's goal of enhancing the completeness, timeliness, and accuracy of the documentation. The expected outcome is an increase in the safe handling of patients, the response to certain events in the Intensive Care Unit, and the follow-up of patients by the care team.

Chapter 7:

Conclusion

The following are some of the key findings of the observational retrospective study involving compliance with documentation of critical alerts in the ICU: The study brought out some notable issues concerning non-adherence to protocols that are set in the hospital. The study focused on assessing compliance across four main areas: specifically, it incorporates how nurse communicates critical alerts, how nurse writing the name of the informed doctor, how the doctor recognises the critical alerts, and within how many hours they document of action plans. It recognized that different degrees of concordance with such areas were present. Concerning the overall compliance the results were intermediate, which means that the nurses were generally good in documenting critical alerts and the name of the doctor. However, weaknesses were observed in doctors' recognition of alerts and also in the implementation of action plans where documentation was not done as required in certain instances. Several challenges were noted:

1. Lack of Awareness and Training: Thus, special concerns can be identified concerning general awareness of nurses and doctors with regard to critical alerts documenting protocols.
2. Communication Issues: Nurses and doctors said there was either delay or no notification about the alert or sometimes they were notified at off shifts, at night for instance.
3. Process Complexity: While implementing the complex business workflows and the lack of adequate documentation tools was an issue with timely documents and response to important alerts.
4. Staffing and Shift Changes: The issue of staff turnover and shift work also influenced nonuniformity with documentation since the personnel involved include both acute and stable employees with difference in experience levels.

It is also agreed that application of educational sessions with consultants and other nursing leaders, as well as, team meetings enhanced the levels of compliance. Such measures were hoped to heighten consciousness, enhance the line of communication, and underlined time-sensitive data recording.

The findings of this study carry implications for clinical practice and healthcare management: The findings of this study carry implications for clinical practice and healthcare management:

1. Patient Safety: The key goal of encouraging the completion of better notes is in

enhancing the patient's care, especially when it comes to safety concerns.

2. Quality Improvement: Mitigating the challenges improves the quality of critical care delivery in the ICU.

3. Operational Efficiency: The use of documents and communication in a smooth manner is just efficient and minimizes mistakes.

Recommendations: Based on the findings and implications, here are the recommendations to enhance compliance with critical alert documentation in the ICU: 1. Implement pop-up alerts within the Electronic Medical Record (EMR) system to notify physicians of critical alerts immediately upon login, prompting timely documentation. 2. Conduct comprehensive training sessions for doctors and nurses on critical alert protocols, emphasizing the importance of timely documentation and its impact on patient safety and care continuity. Simplify and standardize documentation processes to facilitate easier and quicker recording of critical alerts, providing clear guidelines and templates for consistent and accurate documentation practices. 3. Training on Team Coordination for Patient Safety (IPSG 2: Effective Communication): Implement structured training programs aimed at enhancing team coordination and communication in the ICU setting. Emphasize the role of effective communication in ensuring timely relay of critical alerts between nurses and doctors, thereby facilitating prompt action and documentation.4. Integration of Critical Alert Column in Progress Notes or ICU Sheets: Introduce a dedicated section within the progress notes or ICU sheets for doctors to document critical alerts received for each patient. Standardize this documentation process to ensure clarity and completeness, enabling subsequent review and follow-up actions. 5. Physician Notification on HIS Login Screen: Develop a system where physicians not just the senior consultants receive notifications on their Health Information System (HIS) login screens to enter details of critical alerts and any actions taken should be acknowledged only then will the close the critical alert reporting. This proactive approach ensures that critical alerts are acknowledged and documented in a timely manner, promoting accountability and adherence to protocols.

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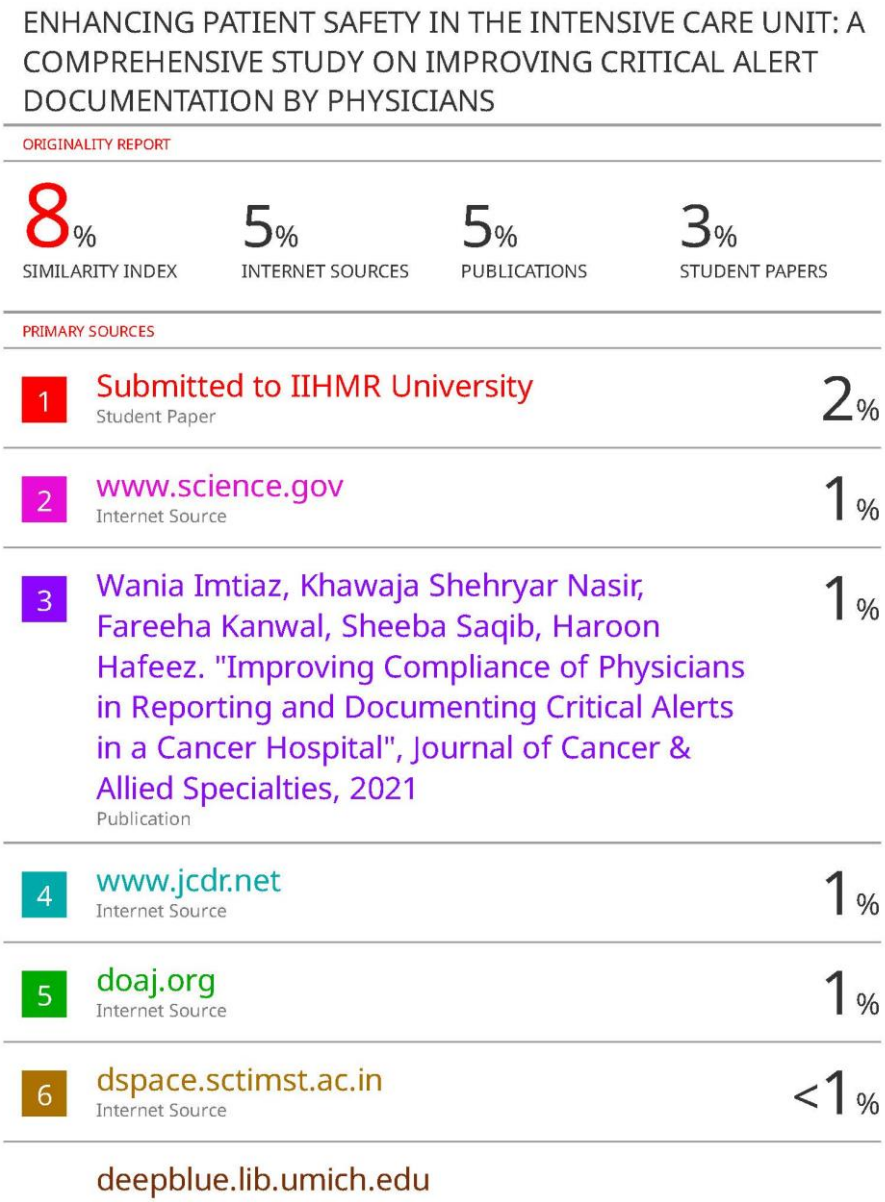
Annexures

1. Plagiarism Report: 8%



ENHANCING PATIENT SAFETY IN THE INTENSIVE CARE UNIT: A COMPREHENSIVE STUDY ON IMPROVING CRITICAL ALERT DOCUMENTATION BY PHYSICIANS

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