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Evaluation of Patient Safety Measures in the ICCU at Pune: A Comparative Study Against ISCCM Guidelines

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Abstract:
Introduction: This cross-sectional descriptive study evaluated patient safety measures in the Intensive Coronary Care Unit (ICCU) of a tertiary care hospital in Pune, India, over 90 days.
Methodology: A validated checklist from the Indian Society of Critical Care Medicine (ISCCM) was used to assess compliance with established guidelines.
Result: The ICCU demonstrated high adherence to infrastructure standards and environmental controls. However, gaps were identified, including the absence of a portable CT scanner and inadequate counselling room size, emphasizing the need for further improvements to align with global best practices.
Recommendations include investing in a portable CT scanner and expanding the counselling room. This study underscores the importance of adhering to standardized safety protocols in critical care settings to enhance patient outcomes and reduce adverse events.

Keywords: Patient safety, ICCU, ISCCM guidelines, critical care, safety measures.

1. Introduction

Patient safety is paramount in critical care settings like Intensive Coronary Care Units (ICCU), where patients are often vulnerable due to complex medical conditions requiring intricate procedures, multiple interventions, and continuous monitoring.(1)

The evolution of intensive care units (ICUs) since their inception in the mid-19th century has been profound, culminating in significant advancements during the mid-20th century, notably with the establishment of the first formal ICU in 1953 during a polio epidemic.(2) Initially conceived to manage polio patients, ICUs have evolved into specialized units catering to diverse medical conditions, such as cardiac, neonatal, and surgical intensive care. These units are pivotal in modern healthcare because they provide intensive, life-saving treatments to critically ill patients. However, they are also associated with inherent risks threatening patient safety and outcomes. These risks include medication errors, healthcare-

associated infections, patient falls, and procedural complications, all of which can prolong hospital stays and escalate healthcare costs.(3) Recognizing these challenges, the Indian Society of Critical Care Medicine (ISCCM) has developed comprehensive guidelines for ICU planning and design to optimize safety and care quality.

These guidelines are rooted in evidence-based practices and international standards and aim to optimize the physical environment, equipment, staffing, and protocols within ICUs.(4) By adhering to these guidelines, healthcare institutions can minimize adverse events and improve overall outcomes for critically ill patients.

2. Materials and Methods

Study Design: A cross-sectional descriptive study was conducted over 90 days in the ICCU of a tertiary care hospital in Pune, India.

Study Tool: A validated checklist from the ISCCM's "Experts Committee Consensus Statement on ICU Planning and Designing 2020" was used for data collection.

Data Collection: The checklist was systematically applied to evaluate existing patient safety measures in the ICCU. Each item was assessed for compliance with the ISCCM guidelines, and discrepancies were noted.

Data Analysis: Descriptive statistics were used to summarize findings, and gaps in compliance were highlighted. Recommendations were formulated based on these findings.

Ethical Approval: The study was approved by the Institutional Ethical Committee.

3. Observations

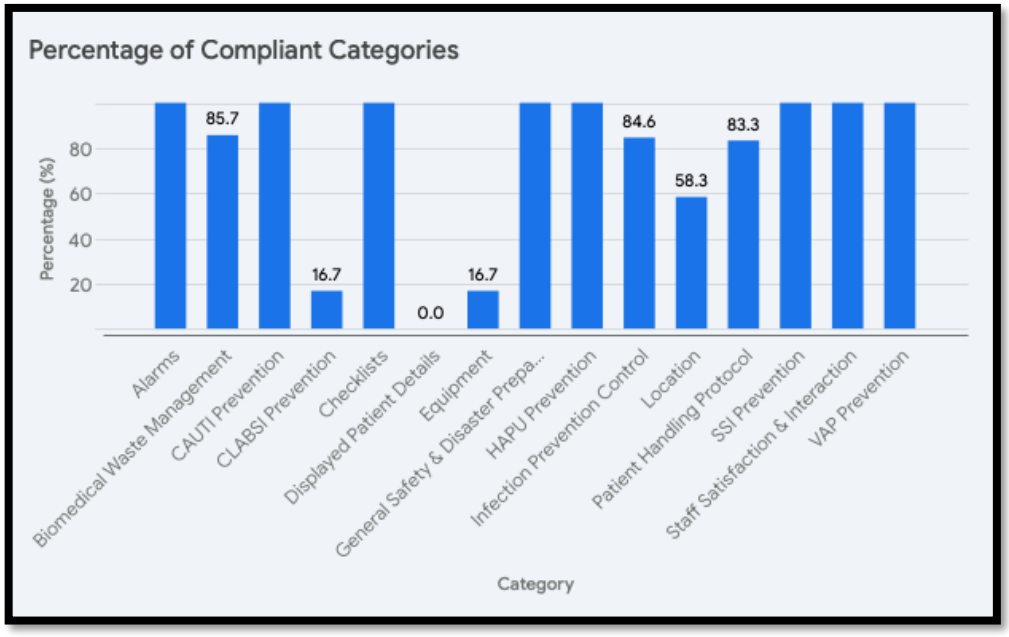

Figure 1 Percentage of compliant categories

The bar chart illustrates the compliance percentages of various patient safety categories within an Intensive Coronary Care Unit (ICCU). The percentage of compliance is measured against guidelines established by the Indian Society of Critical Care Medicine (ISCCM).

Key observations from the chart include:

- **High Compliance:** Several categories exhibit 100% compliance, fully adhering to ISCCM guidelines. These categories include Alarms, Checklists, General Safety and disaster Preparedness, HAPU Prevention, CAUTI Prevention, VAP Prevention, SSI Prevention, and Staff Satisfaction and interaction. This suggests that the ICCU is performing well in maintaining these essential aspects of patient safety.
- **Areas for Improvement:** Some categories have lower compliance percentages, signifying a need for improvement. Notable examples include CLABSI Prevention (16.7%) and Displayed Patient Details (0.0%). These areas require immediate attention to align with recommended safety practices.
- **Moderate Compliance:** Categories like Location (58.3%), Equipment (16.7%), Biomedical Waste Management (85.7%), and Infection Prevention Control (84.6%) show moderate compliance levels. While these areas generally adhere to guidelines, there is room for enhancement to achieve full compliance.

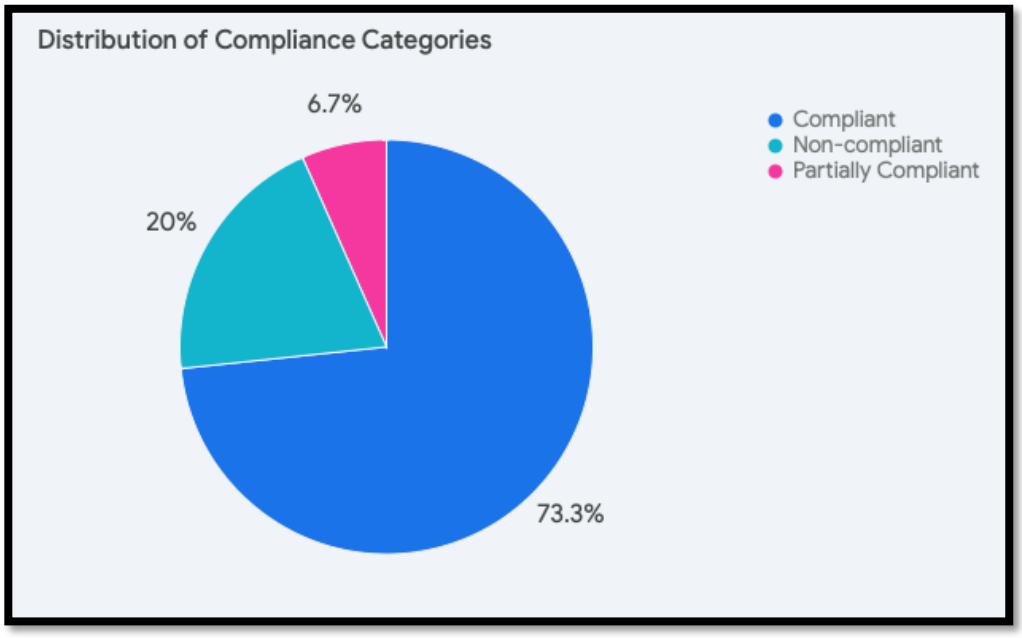

Figure 2 Percentage distribution compliance categories

The (Figure 2) pie chart displays the percentage distribution of compliance categories within a dataset. It shows that 73.3% of the items are compliant, 20% are non-compliant, and 6.7% are partially compliant. This indicates a high degree of overall compliance but highlights areas where improvements could be made to achieve full compliance.

Table 1 summarises the compliance status of 15 categories (in detail) in the ICCU according to the ISCCM guidelines checklist.(Appendix A)

4. Results

The ICCU shows strong adherence to ISCCM guidelines for patient safety, but there are areas needing improvement:

4.1 Infrastructure and Design

a. Implementing unbreakable partitions can enhance infection control.
b. Isolation rooms with unfavourable pressure for specific patients are recommended.
c. Establishing a family support zone could improve well-being.
d. While isolation rooms and HEPA filters are present, contactless scrub stations, hand hygiene facilities at each bed, and spotlights in some areas are lacking.
e. The absence of a sentry at entry/exit points poses security and infection control issues.

4.2 Equipment and Maintenance

a. Not all equipment has Annual Maintenance Contracts (AMCs) or reliable power backups.
b. Advanced equipment like portable CT scanners would be beneficial.

4.3 Infection Control

a. Weekly air cultures are not conducted.
b. The use of intermittent Clave connectors increases infection risk.

4.4 Staffing and Communication

a. The nurse-to-patient ratio of 1:2 needs to be consistently maintained.
b. Communication with families and open disclosure of errors face challenges.

5. Discussion

The ICCU's high compliance with infrastructure standards aligns with findings by Pronovost et al. (2006), emphasizing the importance of bed spacing, air filtration systems, and piped medical gases.(5) The unit's adherence to environmental controls, such as HEPA filters and proper air changes per hour, is consistent with global practices highlighted by Dellinger et al. (2013). (6,7)

However, the absence of a portable CT scanner and the inadequate counselling room size are significant gaps. Studies by Choi et al. (2014) emphasize the importance of in-unit imaging capabilities for timely diagnostics and treatment.(8,9)

6. Strengths

The ICCU at Pune complies strongly with ISCCM guidelines in most areas, including infrastructure, equipment, and environmental controls. This compliance ensures a high level of patient safety and care quality.

7. Limitations

The study is a single-centre evaluation and may not be generalisable to other ICUs. Some aspects, like staff satisfaction and communication challenges, were assessed subjectively.

8. Recommendations

1. **Portable CT Scanner**: Invest in a portable CT scanner to ensure timely diagnostics within the ICCU.
2. **Counselling Room Expansion**: Expand the counselling room to provide adequate space for patient and family consultations.

9. Conclusion

This study highlights the importance of adhering to standardised safety protocols in critical care settings. The ICCU shows commendable compliance with ISCCM guidelines, with a few identified areas for improvement. Implementing the recommended changes will enhance patient safety and care quality, improving patient outcomes.

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