Ensuring Safe Intra-Hospital Transfer for Patients on Non-invasive Ventilation

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Background

Baby Memorial Hospital (BMH), 500-bedded hospital with 40 departments, 11 modern ICUs as well as an accident and trauma care unit is located in Kozhikode, Kerala. It was through a series of medical complications and three mortalities prevailed due to the lack of oversight on medical devices connected to patients during intra-hospital transport from 2022 to 2023, BMH recognized the need to ensure that staff took special care of the connected medical device to prevent complications during transport of the patient. Thus, a new practice was implemented in 2024 where increased awareness and a conscious effort to handle machines responsible for patient safety and outcomes were prioritized.

Distinctiveness of the practice

The unique practice implemented by the Baby Memorial Hospital focused on engagement learning and careful consideration during transportation of patients. Unlike many hospitals where medical devices were often overlooked, BMH prioritized their proper management, redefining its approach to enhance patient safety and standard hospital practices. The hospital has implemented a practice where nurses and staff have to adhere to a new checklist that must be filled out before, during, and after the transportation of a patient. The **ESCORT** (symbolic to Equipment, Systematic, Communication, Observation, Recent investigation, Team) checklist encompasses all facets of transportation regarding well-being of the patient and the machine like BiPAP attached to the patient.

- Equipment- Nurses must check the equipment such as battery levels in the device and oxygen levels in the cylinder. Emergency drugs and oxygen should also be made available and ambu-bag serviceability should be checked. Cardiac monitor should be connected to all the leads.
- Systematic- Confirm the identity of the patient, that the airways are secure, and their intravenous access points.
- Communication- Inform patient and/or family of patient to obtain verbal or signed consent for transfer. Communicate within departments and teams to confirm time of arrival and transfer requirements.
- Observation- Record a full set of observations during transfer. The doctors and nurses both crosscheck the observations.
- Recent investigation- Handover documentation must be fully completed. Confirming recent investigative tests and studies done on patients such as MRI, CT scans, X Rays, etc.
- Team- Skills of the transfer team must be measured, protective clothing is on the patient, and confirm that the unit is safe to leave.

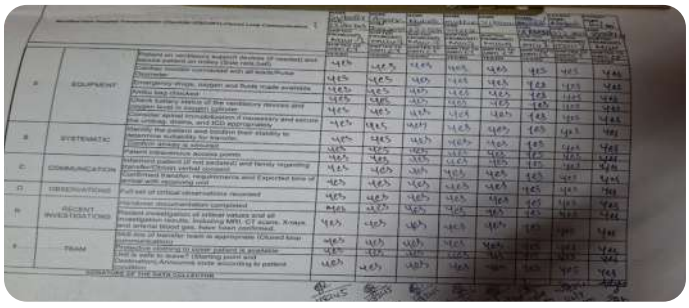

Fig. 1 ESCORT checklist in use during transfer of patient

Further, to ensure proper implementation, the hospital had also created newer methods of training, such as moot court & precautionary tale, that kept nurses and staff engaged in the learning process.

Moot court

Fig. 2 Moot court proceeding as a training for staff

Precautionary tale

Fig. 3 Precautionary tale skit as a training for staff

Measured Effects

- The implementation of improved medical device management at the BMH led to a significant reduction in BiPAP-related mortality. Prior to the implementation of practice, the hospital reported one BiPAP related mortality in 2022 and two similar incidents in 2023. Following the implementation of enhanced oversight and staff training in 2024, there were **zero** BiPAP-related mortality incidents. This improvement reflected the effectiveness of structured medical device management in reducing preventable deaths and improving patient outcomes.
- The hospital had reported that audit compliance has also increased to 100% since the implementation of this practice.
- Further, Patients experienced safer transport due to the proper handling of essential

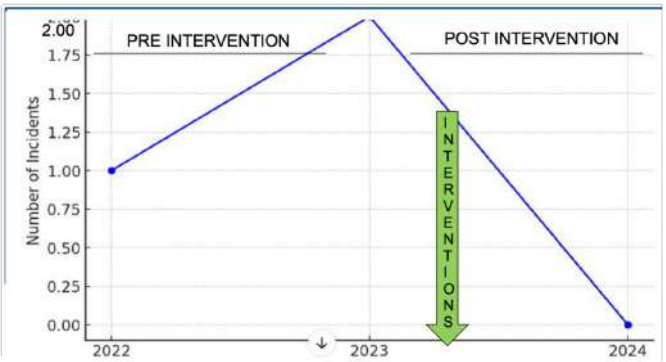

Fig. 4 Precautionary tale skit as a training for staff

medical devices significantly reducing the risk of complications and mortality.

- The benefit of this practice extended to the healthcare staff because of the specialised training on medical device management, creating a more secure working environment.
- For hospital administrators, this initiative minimizes legal risks associated with inadequate device oversight.
- Additionally, improved patient outcomes and reduced mortality rates contribute to the hospital's reputation, reinforcing its commitment to high-quality care.

Challenges

When implementing medical device management as a standard practice for nurses, BMH encountered two primary challenges.

- ***Staff Resistance to Change:*** *Initially, staff resisted adopting new protocols, as they were accustomed to previous medical device handling practices. Gaining their support required a strategic approach. The hospital emphasized the significance of proper device management through educational scenarios, incorporating real-life case studies and legal implications. These narratives proved highly effective in changing mindsets, helping staff recognize that adherence to protocols was not only vital for patient safety but also crucial in protecting their careers from legal risks. Over time, continuous education and reinforcement enabled successful integration of best practices, ensuring a culture of accountability and safety within the hospital.*
- ***Technological Familiarity with Devices:*** *Another challenge was ensuring staff had a thorough understanding of the technological aspects of the devices. To bridge this gap, BMH introduced department-specific training programs tailored to the unique needs of each unit. These sessions equipped staff with the knowledge and practical skills necessary to operate, monitor, and maintain medical devices effectively. Additionally, training facilitated better coordination between departments, ensuring seamless interdepartmental processes during patient transport.*

Through these focused efforts, BMH successfully addressed key barriers to change, reinforcing a culture of accountability, safety, and continuous learning in medical device management.

Lessons Learned

These lessons highlighted the importance of **technology-driven patient care** and the need for clear protocols to enhance hospital operations.

- ***Medical Device Oversight:*** *BMH recognized that patient monitoring was only one aspect of a comprehensive safety system. Previously, nurses and transport teams focused primarily on patient care, often overlooking the importance of medical devices in ensuring positive outcomes. With a shift in mindset, staff began prioritizing both patient well-being and device functionality. They became more conscious of medical devices, incorporating regular checks on functionality, battery life, and proper usage during transport. This broadened approach led to improved downstream patient care and helped reduce preventable complications, reinforcing the hospital's commitment to patient safety and best practices.*
- ***Strengthening Interdepartmental Collaboration:*** *Effective communication and coordination between departments played a crucial role in reducing device-related complications and ensuring smoother patient transfers. Teams proactively communicated to provide real-time updates on patient movement between units. For instance, when transferring a patient from the ICU to the radiology department, the radiology team was notified in advance, allowing them to prepare for the patient's arrival. Staff also ensured that critical devices, such as BiPAP machines, had proper power sources available upon arrival, preventing disruptions in care. This*

structured communication approach significantly enhanced patient safety and workflow efficiency across the hospital.

Sustainability of Practice

BMH embedded the proper handling of medical devices and safe patient transport protocols into key hospital documents and training programs, ensuring consistency across all staff levels. Currently, BMH focuses on BiPAP machine management, as device-related mishandling contributed to three patient deaths in previous years. However, the hospital aims to broaden its focus to include other critical medical devices, enhancing overall patient safety.

Conclusion

The implementation of structured medical device management at BMH has led to transformative improvements in patient safety, staff efficiency, and hospital operations. By combining tangible results with cultural shifts, the hospital has successfully elevated its standard of care, setting a benchmark for other healthcare institutions.

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1

Target Population

Patients undergoing intrahospital transport, hospital staff handling medical devices and administrators ensuring patient safety.

2

Phenomenon of Interest

Implementation of structured medical device management and staff training to prevent BiPAP-related complications during patient transfers.

3

Context

Interdepartmental transfer Safety for Inpatients.

Conclusion

By combining tangible results with cultural shifts structured medical device management at BMH has led to transformative improvements in patient safety, staff efficiency, and hospital operations, setting a benchmark for other healthcare institutions.

Key Findings

1

Enhanced Staff Competency and Collaboration

Engagement-based training methods (Moot Court & Precautionary Tale) improved staff awareness, device handling skills, and interdepartmental communication leading to safer patient transfers and improved hospital workflows.

2

Zero BiPAP-Related Mortality

After implementing structured medical device management and staff training in 2024 BiPAP-related deaths dropped from three (2022-2023) to zero improving patient safety.

3

100% Compliance with Audit Protocols

The introduction of the ESCORT checklist and training programs ensured full adherence to transport safety protocols, reducing errors and complications.