

Handover in the Intensive Care Unit: Information and Time Mismatch

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Intensive care unit (ICU) is one of the most dynamic acute care settings in the hospital. ICU patients are complex and their progress changes continuously. Efficient transfer of the information about patient problems during handover forms the core basis of timely intervention and treatment in high intensity acute care settings. Unfortunately, due to the variable mix of experience and interest of trainees and registrars working in ICUs on a shift/rotation basis, there can be loss of valuable information [1]. There are studies exploring the impact of handover between different treating teams upon ICU admission [2] and upon discharge to the ward [3, 4]. While the nursing fraternity ensure an evidence based approach is followed and the evidence linking handover to clinical outcomes is constantly explored with research studies [5-7], a similar effort is lacking on evaluation of improvement strategies in handover amongst the junior medical fraternity during shift change in ICU. Thus, a succinct handover can help alleviate the burden of missed timely follow-ups, consults, investigations and treatment.

There is need for further research on the handover quality amongst doctors and its impact on clinical outcomes in ICUs. It becomes imperative to put efforts to standardise the process of handover. Training focussing on the efficient and succinct handover can be instituted during orientation and a quick checklist can be created to ensure the salient points are not missed. This can help shape the communication skills of the registrars. This can also help open up opportunities for future jobs as the registrars get to display their effective presentation skills to their seniors and the consultants only during handover in most ICUs. I present here some simple strategies that has helped me shape not only my handover but also my career. It's important to ensure that the handover is structured, succinct and conveys all the necessary information within a limited time-frame. It is a skill that can definitely be refined with practice and time.

The ISBAR format has been recommended for handover amongst junior medical staff across the globe [8]. I will elaborate my strategy into structuring this ISBAR handover to suit ICU practice.

Suggested Format

I: Identification: Include name, age, duration of stay in hospital and ICU, independence in the activities of daily living (ADLs), usual place of residence, baseline supports needed, mode of transport to ICU.

S: Situation: Reason for the admission to ICU. Here it's important to elaborate the supports that the patient needs which cannot be offered in any other ward. This will help the team revisit the need for continued ICU stay/discharge to the ward.

B: Background of the relevant past history. It's important to only highlight the past history that will have an impact on patient care while in ICU. For E.g.: Mentioning that the patient was on blood thinners for atrial fibrillation (AF) will become important in a bleeding patient but the past history of hypothyroidism in the same patient might not have immediate relevance. Thus, this information can be omitted during the handover while they can be reviewed in detail during ward round.

A: Assessment: Current Diagnosis and treatment instituted during ICU stay, complications, current issues (organ involvement) and impending investigations, consults and advance care directives should be elaborated here.

R: Recommendation: Plan-Immediate treatment measures that needs to be instituted in the next shift. Mentioning the antibiotics, targeted fluid balance and family meeting plans here will assist in ongoing timely management.

Example

I: Mr X is a 55 year-old-male, Day 1 in ICU and Day 5 in the hospital, Independent ADLs at home, transferred from respiratory ward.

S: With acute type 1 Respiratory failure and septic shock with multi-organ dysfunction (Acute Kidney Injury (AKI)) from right lower lobe pneumonia.

B: On a background history of Type 2 Diabetes Mellitus and previous cerebro-vascular accident (CVA) on regular Aspirin and with independent function.

A: He was transferred to ICU after a medical emergency team (MET) call for desaturation on 6L oxygen on the ward via hudson mask and ongoing hypotension despite 3 litres crystalloid resuscitation in the last 24 hours. He initially was brought in by ambulance to emergency department (ED) with history of fever and cough for 2 days. Covid and respiratory pathogen swabs were negative. Chest X-ray showed a right lower lobe opacity. He was started on non-invasive ventilation (NIV) in ICU but got intubated 8 hours post NIV due to rapid deterioration. His blood gas initially showed metabolic acidosis with a PaO₂/FiO₂ ratio of 150 on 40% FiO₂, which has improved to 250 on 28% FiO₂. Lactate of 6 mmol/L on ICU admission has reduced to 3.2 mmol/L after institution of vasopressor (noradrenaline at 6 mcg/kg/min) support to target a mean arterial pressure (MAP) of 65 mmHg. He also presented with AKI to the hospital with progressive reduction in urine output to 10-15 ml/hour in the past 24 hours. His baseline creatinine was 100 mmol/L and has increased to 320 mmol/L this morning. He is 1.5L positive. He has advanced care

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directives and is for full resus measures.

R: My Plan is to continue pressure support mode of ventilation until we plan for vascath insertion and dialysis, plan extubation post dialysis, someone needs to call the family (son is the next of kin) and he was updated yesterday. He is on renal adjusted dose of Piperacillin and Tazobactam which needs adjustment once dialysis is instituted. He will need psychiatry review post extubation for his schizophrenia.

Handover should be short, not lasting for over 2-3 minutes/patient. This will ensure 10 patients can be covered in 30 min. Focus more about the issues and current plan for the next shift and only mention relevant background. If every single person on the team knows the patient, then it is acceptable to provide only updates from the previous shift. Writing down the handover and reading it off the paper can help practice crisp delivery for beginners.

It's important to use keywords in handover to help make it succinct. This will help express the relevant issues in a language that is understood by the whole team.

1. Advance care directives- For intubation/cardio-pulmonary resuscitation (CPR)/dialysis/vasopressors/full resuscitation.
2. Baseline ADLs- whether from a high level care nursing home/dependent on home oxygen/child's C cirrhosis/malignancy with palliative treatment intent etc.
3. Shock- vasodilatory(sepsis)/hypovolemic/cardiogenic/obstructive.
4. Hypotension- vasopressor support/refractory or not/use of

steroids.

5. Source of sepsis- urinary/respiratory/skin and soft tissue/abdomen/neuro (meningitis).
 6. Organ failures- supports for cardiac/respiratory/neuro/abdomen (renal/liver).
 - a. Cardiac- Echocardiography (ECHO)/Inferior venacava (IVC) collapsibility/Ejection fraction (EF)/If post cardiac surgery- details about the surgery.
 - b. Respiratory- Intubated and ventilated/NIV – CPAP or BIPAP/ nasal high flow requirement, blood gas findings.
 - c. Neuro- best neurological response/sedation score/Glasgow Coma Scale (GCS)/focal neurology/pupils/Intracranial pressure (ICP) monitor/no bone flap/cerebrospinal fluid (CSF) drainage, external ventricular drain (EVD) etc.
 - d. Abdomen- radiological imaging/renal replacement therapy/diuresis/surgeries/bowel movement/aperients/stoma/drain output and feeding
 7. Diagnosis keywords: Poly-trauma- list all injuries from head to toe and mode of injury, pain management strategies, spine injuries and precautions- log roll, bed-break, head elevation, out of hospital cardiac arrest- downtime, CPR- number of shocks and adrenaline doses, targeted temperature management.
 8. Routine post-operative high dependency unit (HDU) admission after elective surgery for monitoring.
 9. Thromboprophylaxis and ulcer prophylaxis.
- This document is only a preliminary format that can be used as a guideline to ICU handover.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the Journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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