BRITISH JOURNAL OF HOSPITAL MEDICINE

DOCTORS IN TRAINING

Top Tips for Your First Intensive Care Medicine Post as a Doctor

Isobel Pilkington[1,*], Vivien Graziadei[2], Hanin Ramadan[3], Joseph Furey[4], Henrik Reschreiter[5]

[1]Department of Radiology, The Mater Misericordiae University Hospital, Dublin, Ireland
[2]Intensive Care Unit, Hutt Valley Hospital, Lower Hutt, New Zealand
[3]Intensive Care Unit, Northwick Park Hospital, Middlesex, UK
[4]General Surgery, Wellington Regional Hospital, Wellington, New Zealand
[5]Intensive Care and Anaesthetics, University Hospital Dorset, NHS Foundation Trust, London, UK
*Correspondence: isobel.pilkington@nhs.net (Isobel Pilkington)

Abstract

An Intensive Care Medicine (ICM) rotation provides fantastic learning opportunities for doctors of all specialties. Understanding your role in this highly specialised field will assist you in gaining maximal benefit from your time in ICM while ensuring the best outcomes for your patients. It can be quite daunting reviewing deteriorating patients and admitting patients to the Intensive Care Unit (ICU). This article provides tips and advice for doctors new to the specialty, and will be a useful guide for medical, surgical, and emergency medicine trainees before they begin working in the ICU for the first time. We provide a structured, systematic framework which can be used comprehensively to assess ICU patients.

Key words: critical care; intensive care unit; assessment; decision making; handover; multidisciplinary team; education

Submitted: 5 December 2022 Revised: 2 September 2024 Accepted: 9 September 2024

Introduction

Working in Intensive Care Medicine (ICM) is an invaluable experience for all doctors in training. This is an opportunity to be involved in the management of the most critically unwell patients in the hospital and understanding the intricacies behind managing multiple organ failure. During your ICM placement, there will be procedural opportunities varying from line insertion to endotracheal intubations. You will also have the chance to develop your communication skills especially when having difficult discussions with patients and their relatives. There is a lot to learn from the Intensive Care Unit (ICU), this article will help you make the most of your placement.

Top Tips to Thrive in Your ICM Post

Safety

Only take on procedures and tasks which you are competent and confident to undertake. Support from experienced doctors and nurses is always available—ask for help. You should suggest ideas to help your patients but ensure approval from

How to cite this article:
Graziadei V, Pilkington I, Ramadan H, Furey J, Reschreiter H. Top Tips for Your First Intensive Care Medicine Post as a Doctor. Br J Hosp Med. 2024. https://doi.org/10.12968/hmed.2022.0525

a senior doctor before enactment. Patients are usually in the ICU because they are critically unwell; acting beyond your competency can lead to harm. As a member of the Medical Emergency Team (MET), it is important to familiarise yourself with your emergency bag contents—before first use. If you are not formally airway trained, inform your colleagues of this at the start of a MET shift.

Procedures

Get involved in practical procedures early, such as arterial and central line insertions. Watch the more experienced ICM doctors insert vascular lines and manage airways. Be their assistant and ask them to explain the procedure to you. Learn the equipment they use and once ready, ask someone senior to supervise you. It is possible to become competent at line insertions during a short ICM post with enough proactivity. An experienced airway trained doctor should always be present when attempts at managing airways are made.

Teamwork

There is a large multi-disciplinary team (MDT) in the ICU; doctors, nurses, physiotherapists, speech and language therapists, dieticians, pharmacists, healthcare assistants. Everyone has a role and a purpose. It is important to familiarise yourself with what expertise each of these roles can provide the patient on their journey. Nurses in particular are beside their patient twelve hours a day, coupled with years of experience they will often pick up subtle signs of early patient deterioration.

Self-Directed Learning

Your proactivity will determine how much you learn during your ICM post. In ICM you will be exposed to a wide variety of conditions, complex patients, treatments, procedures, medications, and specialities that you may have rarely encountered. Be inquisitive, and take the time to learn how equipment such as ventilators and renal replacement machines work. Join the patient reviews by their parent teams, they will have expertise that they can add: discuss management strategies and further investigations required. Support them reviewing their patient: they may not have had previous exposure to ICM and you can help explain how their patient is progressing.

Referrals

When reviewing patients referred to the ICU, it is essential to focus on what is in the patient's best interest.

(1) What requirements does this patient have that cannot be met by ward care?
(2) Is the cause for their deterioration reversible?
(3) Does the patient have the physiological reserve to withstand ICM care?
(4) Is there any reason that this patient would not be suitable for ICM?
(5) What are the patient and/or their family's wishes?

ICU can offer cardiovascular, respiratory, and renal support beyond that which is possible on a ward. Discuss each referral with a senior. Do not accept a patient for

ICU admission until supported by a senior decision maker. Even more importantly, any declined referrals should also be discussed with senior doctors.

Out of Hours Tips

(1) Admissions

Patients require comprehensive reviews on admission including complete physical examinations. Their path prior to ICU must be documented alongside their medical history and functional baseline. If you are concerned, seek help from a senior.

(2) Nights

Ensure you are happy with management plans for each patient and their "ceiling of care" at handover. It is useful to establish contingency plans for patients at risk of deterioration with senior colleagues during handovers. All patients in the ICU will require an overnight review.

Cardiac Arrest

Being part of the MET is a highly educational part of the rotation. In cardiac arrests, your role is often managing the airway until an airway-trained colleague arrives. Being confident in bag-valve-mask ventilation and using basic airway adjuncts is imperative in these situations. At MET calls your role is to provide specialist input, identify when a patient requires organ support and whether this support can be given on the ward or in ICU. Guide the parent team with the management of unwell patients to help prevent a future ICU requirement. Ensure you obtain a thorough history.

Family Discussions

Join the experienced ICU doctors during family meetings for critically unwell patients. They are experienced at breaking bad news and building a rapport with patients' families. These are difficult interactions but developing the skill of breaking bad news is an essential component of medicine. Check with seniors before updating families to ensure you can relay the situation accurately. The PEWTER (Table 1) mnemonic provides a framework for difficult discussions (Keefe-Cooperman et al, 2018; Kumar and Sarkhel, 2023).

Handover in ICM

This is a key skill to develop during your ICM rotation, as miscommunication is a leading cause of serious adverse events (Humphrey et al, 2022). Relevant information must be handed over in a clear concise manner, use memory aids to help reduce this risk (Bannard-Smith et al, 2009; Jigajinni and Sultan, 2010). An up to date assessment of patients and treatment plans must be imparted with minimal interruption. This can be facilitated using mnemonics such as I-PASS, see Table 2 (Jewell et al, 2016; The Joint Commission, 2017).

Table 1. The PEWTER table—a mnemonic that can be used as a framework for how to navigate difficult family discussions.

PEWTER		
P	**P**repare	Gather information on the clinical situation. Organise a quiet location. Involve others based on patient's wishes. Avoid interruptions as much as possible.
E	**E**valuate	Identify what the listener already knows with open-ended questions. Determine how much more information is wanted. Maintain eye contact.
W	**W**arning	A short statement as a signpost. Example: 'I have some bad news. I'm afraid there have been some serious changes'. Allow for a period of silence.
T	**T**elling	Inform listener of event/changes. Avoid medical jargon. Give information in chunks with frequent signposting.
E	**E**motional Response	Pay attention to verbal and nonverbal cues. Allow for silences for processing of information. Validate emotions felt by listener by reflecting back emotions via connecting statements.
R	**R**egrouping	Discussion on next steps.

Reviewing Inpatients on the ICU

ICU patients require comprehensive reviews each day as clinical courses can change rapidly with the complexity of multi-organ system involvement. Ensure to understand the cause and duration of ICU admission. Are they progressing, deteriorating or stagnating?

A systems-based approach to review ICU patients is often favoured due to its comprehensive nature. Patients will usually be assessed and examined by the trainee doctor during the ward round who documents their findings, concerns and plan. Senior members of the team are present on the rounds to aid and guide this process. This allows for a fantastic learning opportunity with real-time feedback on clinical assessment and decision-making by an ICU consultant.

Systems based review of ICU patients can be useful to ensure completeness. Assessment should be tailored to the patient's condition and focused on the organs requiring the most support. Here is an example of a systems review:

Airway

• Does the patient have an independent airway? Are they intubated? If intubated document the size of endotracheal tube in millimetres and depth of insertion

Table 2. The I-PASS table—a mnemonic that can be used to facilitate the handover process in the Intensive Care Unit.

I-PASS		Explanation
I	**I**llness severity	Stable At risk of deterioration Unstable Active deterioration Palliation
P	**P**atient summary	Summary statement Events prior to ICU admission Events during ICU admission Most recent systems assessment Plan
A	**A**ction list	To do list Urgency and ownership of jobs
S	**S**ituation awareness and continency planning	What is currently ongoing Plans if future deteriorations
S	**S**ynthesis by receiver	Summary of handover by receiver Further questions addressed Receiver to state key actions to do

ICU, Intensive Care Unit.

(hint: centimetres at the incisors). Ascertain that the depth has not changed since previous documentation. Altered depth may require optimisation procedures and a chest x-ray.

• What emergency options would be available if the patient lost their airway? Note potential difficulties by looking at the grade of intubation. If they have a tracheostomy or have had recent head/neck surgery, ensure you understand the new anatomy.

Respiratory

• Assess respiratory rate and work of breathing trends.

• Are they self-ventilating? What are the saturation (SpO_2) aims?

• Ascertain their oxygen requirements (Fraction of inspired oxygen, FiO_2). By which means it is being delivered. If intubated, document what ventilation mode they are on. If you are unsure, ask!

• Record the mode of ventilation, tidal volumes, the ventilation pressures; Positive End-Expiratory Pressure (PEEP) and peak pressure and the inspiratory:expiratory ratio. Ventilation trends are important to track the patient's overall trajectory.

• Auscultate their lungs for air entry, signs of infection, atelectasis, or fluid overload.

• Check arterial blood gases for oxygenation (Partial pressure of oxygen, PaO_2) trends.

• Are there any other adjuncts such as chest drains present?

Table 3. Table showing how to calculate a Richmond Agitation-Sedation Scale (RASS) score and a description for what the score means.

RASS SCORE		Description
+4	Combative	Violent, danger to self or staff
+3	Very agitated	Pulls at tubes, catheters
+2	Agitated	Frequent, non-purposeful movements, fights ventilator
+1	Restless	Anxious, apprehensive but not aggressive
0	Alert and Calm	
–1	Drowsy	Sustained wakening to voice with eye opening and contact >10 seconds
–2	Light Sedation	Awakens to voice eye opening and contact <10 seconds
–3	Moderate Sedation	Movement or eye opening. No eye contact
–4	Deep Sedation	No response to voice, Movement/eye opening to physical stimulation
–5	Un-rousable	No response to physical stimulation

Cardiovascular

• Preform a full cardiovascular exam with a 12 lead Electrocardiogram (ECG).

• Is the patient's systolic blood pressure (BP) >90 or Mean Arterial Pressure (MAP) >65? Are they effectively perfusing?

• Are vasoactive drugs (such as noradrenaline or metaraminol) being utilised to achieve this? What has been the trend of this support?

• Does the patient have an arterial line for accurate/timely BP monitoring? Changes in the arterial line tracing such as 'swings' and increases in MAP >10 post fluid bolus are suggestive of hypovolaemia.

• Patients in ICU will have many adjuncts. Central venous lines can be used for administering medications, monitoring and dialysis. It is important to identify what access each patient has and whether it is necessary.

• Check each vascular line, catheter, and drain daily for signs of infection/irritation. Alert a senior if an area around a line appears cellulitic.

Neurological

• Is the patient being sedated? If so, record the agent/s and dosage/s.

• Are they requiring regular boluses to avoid agitation?

• Has a sedation hold been carried out within the last twenty-four hours? Record their Richmond Agitation Sedation Scale (RASS) see Table 3 (Taran et al, 2019).

• If unsedated, record their Glasgow Coma Scale (GCS) as in Table 4. Consider a delirium assessment such as Confusion Assessment Method for the ICU (CAM-ICU) in Fig. 1. It consists of four domains, start at domain one and follow the flowsheet in a stepwise manner.

Renal

• Patients should have detailed fluid balance and hourly urine outputs documented. A minimum output of 0.5 mL/kg/hr should be aimed for, however, outputs tolerated may vary depending on ongoing pathological processes.

• Creatinine and urea trends should be analysed.

Table 4. Glasgow Coma Scale (GCS) scoring system.

GCS Domain	Response	GCS Score
Eye opening	Spontaneous	4
	To speech	3
	To pain	2
	None	1
Verbal response	Oriented	5
	Confused	4
	Inappropriate	3
	Incomprehensible	2
	None	1
Motor response	Obeying	6
	Localizing	5
	Withdrawal	4
	Flexing	3
	Extending	2
	None	1
Total score	Coma or death	3
	Alert and oriented	15

- Has the patient required diuretics or dialysis?
- Which fluids are being given and why?
- Have abnormal electrolytes been replaced?
- What is the trend of the daily weights?

Gastrointestinal

- Assess how your patient is receiving nutrition.
- If they have a nasogastric tube, document the type and rate of feed.
- Are there concerns for an ileus? Should prokinetics be considered?
- Patients on parenteral nutrition need daily electrolytes, regular blood glucose monitoring, as well as triglyceride and liver function test monitoring in addition to ongoing assessment of need of parenteral nutrition.
- Record when was the patient's last bowel movement. Are they on aperients?
- ICU patients who do not have enteral nutrition need stress ulcer prophylaxis, usually in the form of a proton pump inhibitor.

Haematology

- Check the patient's full blood count and clotting screen.
- Aim for Haemoglobin (Hb) targets of >70 g/L. If there is a cardiac history consider transfusions if Hb <80 g/L (Cable et al, 2019).
- Platelets must not be below 20×10^9/L prior to any procedure, some procedures require higher platelets.
- Ensure thromboprophylaxis has been considered and prescribed if indicated.

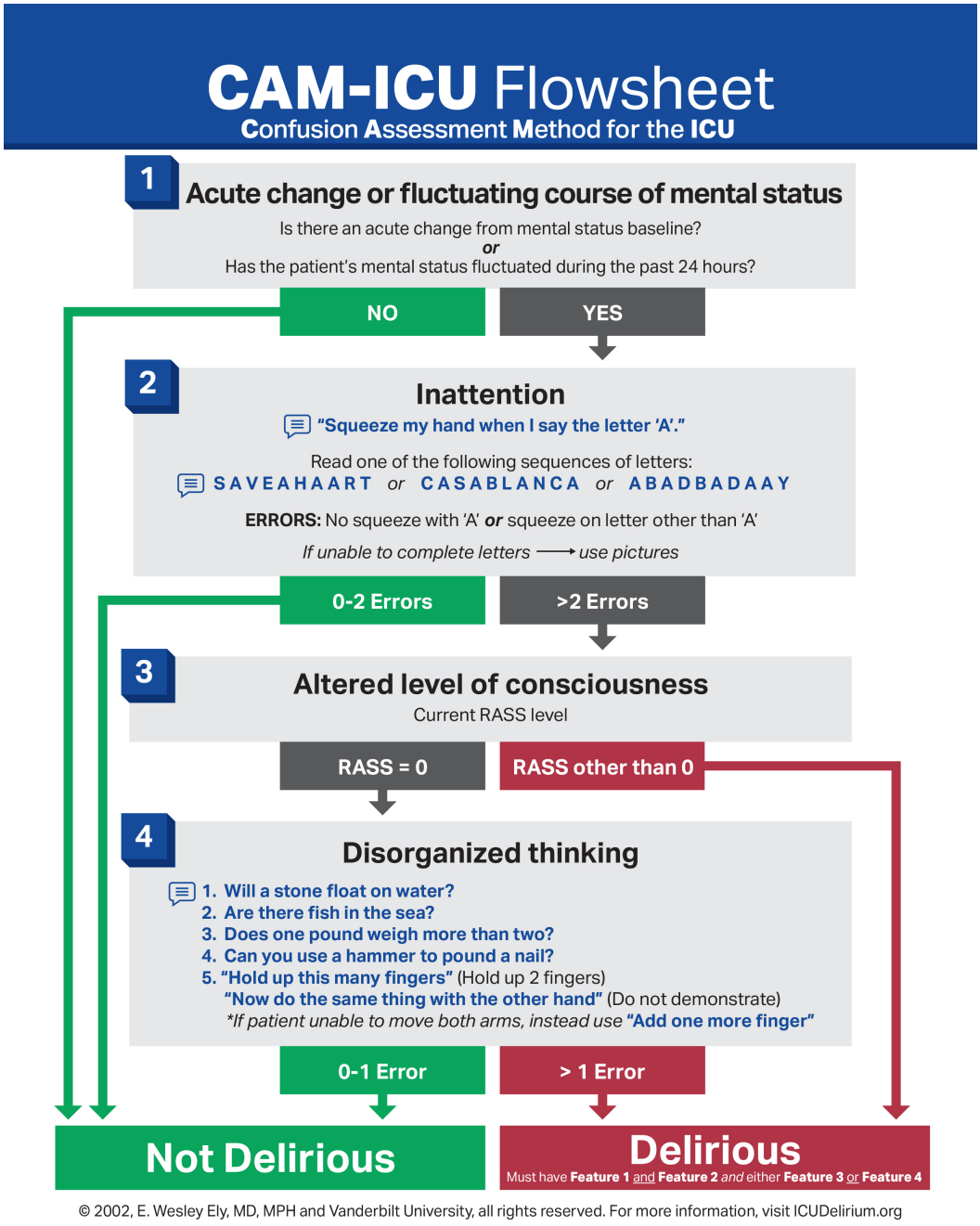

Fig. 1. Confusion Assessment Method for the ICU (CAM-ICU) flowsheet which can be used to assess the patient for delirium. ICU, Intensive Care Unit; RASS, Richmond Agitation Sedation Scale. Reproduced with permission from Vanderbilt University Medical Center and https://www.icudelirium.org.

Microbiology

- Examine microbiology results and rationalise antibiotics.
- Assess any recent temperature spikes and assess if inflammatory markers are improving or worsening.
- Attend the ICU microbiology ward rounds, ensure you are up to date with your patients' state so that you can offer valuable input.

Table 5. List of commonly used drugs in the ICU including use, preparation and mechanism of action.

Drugs	Preparation	Use	Mechanism of Action
Propofol	500 mg in 50 mL	Sedation/general anaesthetic agent	GABA receptor agonist
Fentanyl	500 microgram in 50 mL NaCl 0.9%	Potent opioid analgesia agent	Opioid receptor agonist
Remifentanil	4 mg in 40 mL NaCl 0.9%	Ultra-short acting opioid analgesic agent	Opioid receptor agonist
Midazolam	50 mg in 50 mL NaCl 0.9%	Sedative and general anaesthetic agent	Benzodiazepine – acts as GABA receptor agonist
Morphine	50 mg in 50 mL NaCl 0.9%	Long-acting opioid analgesia agent	Opioid receptor agonist
Dexmedetomidine	200 microgram in 50 mL NaCl 0.9%	Sedative agent	Alpha-2 adrenoreceptor agonist
Ketamine	200 mg in 50 mL NaCl 0.9%	Dissociative anaesthetic and analgesia agent	NMDA receptor antagonist
Noradrenaline	4 mg in 50 mL of dextrose 5%	Treat severe hypotension. Given via central access	Mainly alpha-1 adrenoreceptor agonist. Causes potent peripheral vasoconstriction
Metaraminol	20 mg in 40 mL	Treats severe hypotension	Alpha-1 adrenoreceptor agonist. Can be given peripherally
Vasopressin	40 units in 40 mL NaCl 0.9%	Treats severe hypotension. Given via central access	Causes increased systemic vascular resistance via V1/V2 receptors in the kidney causing increased water reabsorption
Adrenaline	4 mg in 50 mL Dextrose 5%	Treats severe hypotension	Alpha-1 adrenoreceptor agonist

GABA, Gamma-aminobutyric acid; NMDA, N-methyl-D-aspartate; NaCl, Sodium Chloride.

British Journal of Hospital Medicine | 2024 | https://doi.org/10.12968/hmed.2022.0525

Table 6. FAST HUGS IN BED—a mnemonic that can be used to ensure detailed patient daily reviews.

FAST HUGS IN BED Please	
F	**F**luids and **F**eeding
A	**A**nalgesia and **A**nti-emetics
S	**S**edation and **S**pontaneous breathing trials
T	**T**hromboprophylaxis and **T**etanus prophylaxis
H	**H**ead up (30 degrees) if intubated
U	**U**lcer prophylaxis
G	**G**lucose control
S	**S**kin/eye care and **S**uctioning
I	**I**ndwelling catheter
N	**N**asogastric tube
B	**B**owel care
E	**E**nvironment—temperature, delirium cares
D	**D**e-escalation—treatments no longer indicated
P	**P**sychosocial support

Plan

• There are almost always suggestions you can make to help improve patient care.

• Are there any additional tests or investigations that could help guide management?

• Has the MDT been involved yet? Can physiotherapists aid the ventilation wean?

• Ensure to review the patients drug chart and rationalise medications. A brief summary of commonly used medications in the ICU is shown in Table 5.

Checklists

Memory aids for pertinent daily checks have also been shown to improve ICU patient outcomes when notes are written freehand (Zucco and Webb, 2014). After conducting a systems based review of a patient "FAST HUGS IN BED Please" is a memory aid which can help avoid missing commonly forgotten aspects of patient management shown in Table 6 (Vincent, 2005).

Discussion

Utilising a systems-based approach to review ICU patients, and applying helpful mnemonics provides great structure when starting an ICM placement. Always remember to ask for senior supervision when performing new skills. Out of hours and MET shifts provide a fantastic learning opportunity, take the opportunities available to you but remember patient safety is always our priority.

Conclusion

A rotation in ICU is an excellent opportunity to gain experience in the management of critically ill patients. It offers all rotating doctors the opportunity to treat severe presentations of the patients they will be encountering in their home specialty.

Key Points

- Review patients with a systematic approach.
- Be aware of your limits and seek help when out of your depth.
- Be proactive to learn new skills.
- Practice devising plans for ICU patients under supervision.
- Gain experience by assisting in difficult family discussions.

Curriculum Checklist

This article addresses the following requirements from the general internal medicine curriculum:

- Delivering effective resuscitation and managing the acutely deteriorating patient.
- Providing continuity of care to medical in-patients, including management of comorbidities and cognitive impairment.
- Managing medical problems in patients in other specialties and special cases.

Availability of Data and Materials

All data in this study are available upon request by contact with the corresponding author.

Author Contributions

VG, IP, HR, JF and HR designed and performed the research. All authors drafted the manuscript. All authors contributed to important editorial changes in the manuscript. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

Not applicable.

Acknowledgement

Not applicable.

Funding

This research received no external funding.

Conflict of Interest

The authors declare no conflict of interest.

References

Bannard-Smith J, Booth CMA, Saha B, Washington S. Quality of patient handover on intensive care units in northwest England. Journal of the Intensive Care Society. 2009; 10: 186–188. https://doi.org/10.1177/175114370901000307

Cable CA, Razavi SA, Roback JD, Murphy DJ. RBC Transfusion Strategies in the ICU: A Concise Review. Critical Care Medicine. 2019; 47: 1637–1644. https://doi.org/10.1097/CCM.0000000000003985

Humphrey KE, Sundberg M, Milliren CE, Graham DA, Landrigan CP. Frequency and Nature of Communication and Handoff Failures in Medical Malpractice Claims. Journal of Patient Safety. 2022; 18: 130–137. https://doi.org/10.1097/PTS.0000000000000937

Jewell JA, Percelay JM, Hill VL, Preuschoff CK, Rauch DA, Salerno RA. Standardization of Inpatient Handoff Communication. Pediatrics. 2016; 138: e20162681. https://doi.org/10.1542/peds.2016-2681

Jigajinni S, Sultan P. The intensive care unit handover: the most stressful part of the shift. British Journal of Hospital Medicine. 2010; 71: M25–M27. https://doi.org/10.12968/hmed.2010.71.Sup2.46506

Keefe-Cooperman K, Savitsky D, Koshel W, Bhat V, Cooperman J. The PEWTER Study: Breaking Bad News Communication Skills Training for Counseling Programs. International Journal for the Advancement of Counselling. 2018; 40: 72–87. https://doi.org/10.1007/s10447-017-9313-z

Kumar V, Sarkhel S. Clinical Practice Guidelines on Breaking Bad News. Indian Journal of Psychiatry. 2023; 65: 238–244. https://doi.org/10.4103/indianjpsychiatry.indianjpsychiatry_498_22

Taran Z, Namadian M, Faghihzadeh S, Naghibi T. The Effect of Sedation Protocol Using Richmond Agitation-Sedation Scale (RASS) on Some Clinical Outcomes of Mechanically Ventilated Patients in Intensive Care Units: a Randomized Clinical Trial. Journal of Caring Sciences. 2019; 8: 199–206. https://doi.org/10.15171/jcs.2019.028

The Joint Commission. Sentinel Event Alert 58: Inadequate hand-off communication. 2017. Available at: https://www.jointcommission.org/resources/sentinel-event/sentinel-event-alert-newsletters/sentinel-event-alert-58-inadequate-hand-off-communication/ (Accessed: 25 March 2024).

Vincent JL. Give your patient a fast hug (at least) once a day. Critical Care Medicine. 2005; 33: 1225–1229. https://doi.org/10.1097/01.ccm.0000165962.16682.46

Zucco L, Webb C. Improving the documentation of the daily review of patients in general intensive care. BMJ Quality Improvement Reports. 2014; 3: u539.w496. https://doi.org/10.1136/bmjquality.u539.w496