Common Medical and Medication Errors in Anaesthesia

1. Definition

Medical error is a preventable failure in the process of healthcare that may cause or has the potential to cause harm to a patient. It may involve an incorrect plan, failure to carry out a correct plan, or failure to recognize and respond appropriately to a clinical problem.

Medication error is a preventable event that may lead to inappropriate medication use or patient harm while a medicine is prescribed, dispensed, prepared, administered, or monitored.

In anaesthesia, errors are particularly important because patients may be unconscious, unable to report symptoms, and dependent on the anaesthesiologist for airway management, breathing, circulation, and drug administration.

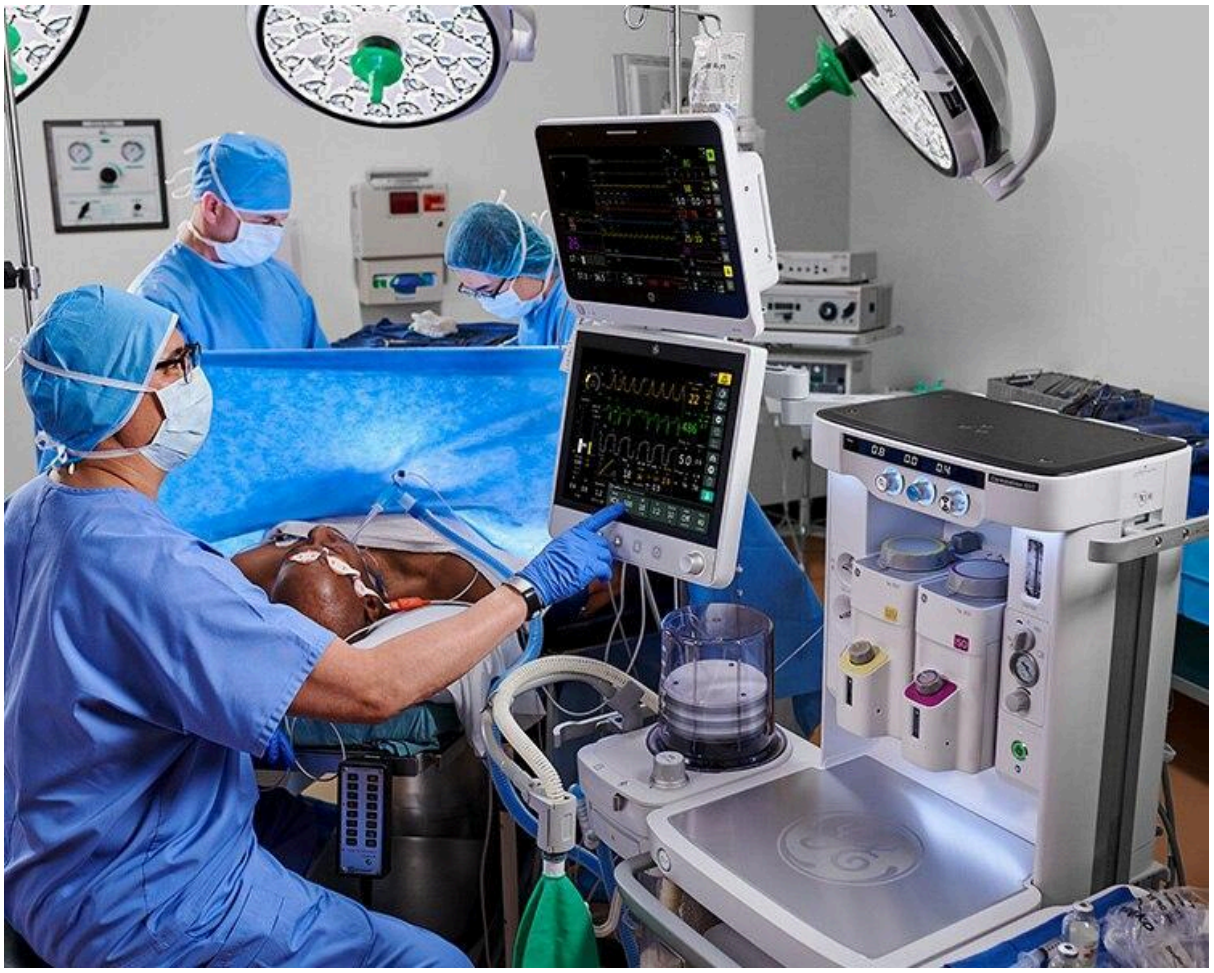
2. Common medical errors in anaesthesia



Add to Favorites

1. Preoperative assessment errors

- Inadequate history, examination, or review of investigations.
- Failure to identify allergies, difficult airway, aspiration risk, or significant comorbidities.
- Inadequate assessment of fasting status or current medications.
- Failure to obtain informed consent or plan appropriate postoperative care.



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2. Equipment and preparation errors

- Failure to check the anaesthesia machine, breathing circuit, oxygen supply, suction, or monitors.
- Empty oxygen cylinder, disconnected circuit, or faulty equipment.
- Inadequate preparation of emergency drugs and airway equipment.



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3. Airway and ventilation errors

- Failure to recognize or manage a difficult airway.
- Oesophageal intubation that is not promptly detected.
- Failure to secure the endotracheal tube or confirm its position using waveform capnography.
- Inadequate ventilation, oxygenation, or aspiration precautions.



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4. Monitoring and recognition errors

- Failure to monitor oxygen saturation, ECG, blood pressure, ventilation, or temperature as appropriate.
- Ignoring alarms or abnormal trends.
- Delayed recognition of hypoxia, hypotension, haemorrhage, anaphylaxis, or malignant hyperthermia.



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5. Intraoperative and postoperative errors

- Inadequate anaesthetic depth or inappropriate fluid and haemodynamic management.
- Failure to reverse neuromuscular blockade adequately.
- Premature extubation or inadequate recovery assessment.
- Inadequate handover, pain control, or postoperative respiratory monitoring.

3. Common medication errors in anaesthesia

Medication errors may occur at any stage, from prescribing to administration and monitoring.

Type of error	Anaesthesia-related example	Potential consequence
Wrong drug	Giving a vasopressor instead of another intended drug because of similar ampoules	Severe haemodynamic instability
Wrong dose	Administering ten times the intended dose of an opioid	Respiratory depression, coma

Wrong route	Injecting a drug intended for IV use by the wrong route	Tissue injury or systemic toxicity
Wrong patient	Administering a prepared drug to the wrong patient	Unintended sedation or other harm
Wrong time	Giving a drug too early or too late	Inadequate effect or adverse effects
Drug substitution	Confusing a local anaesthetic with another injectable drug	Local anaesthetic systemic toxicity or other serious injury
Drug concentration error	Preparing a more concentrated solution than intended	Overdose
Syringe-labeling error	Using an unlabeled or incorrectly labeled syringe	Wrong-drug administration
Drug interaction	Failing to account for interactions with opioids, sedatives, or other medicines	Excessive sedation, hypotension, or respiratory depression
Allergy-related error	Administering a drug despite a documented serious allergy	Anaphylaxis
Omission error	Failing to administer a clinically indicated medication	Inadequate analgesia or other preventable complications
Monitoring error	Failure to detect or treat opioid-induced respiratory depression	Hypoxia or cardiac arrest

Important examples for MBBS examinations

- Drug swaps: Confusion between drugs with similar packaging or names.
- Dose errors: Miscalculation of weight-based doses, especially in children.
- Concentration errors: Confusing milligrams with micrograms, or milligrams with millilitres.
- Wrong-route errors: Accidental administration of a neuraxial drug by the wrong route, or vice versa.
- Local anaesthetic toxicity: Excessive dose or inadvertent intravascular injection, potentially causing seizures and cardiovascular collapse.
- Neuromuscular blocker errors: Accidental administration causing paralysis and apnoea in a patient without adequate airway and ventilation support.
- Opioid and sedative errors: Excessive dosing or inadequate monitoring resulting in respiratory depression.

4. Factors contributing to anaesthesia errors

Human factors Fatigue, stress, inexperience, distraction, poor situational awareness, and communication failures.

Medication-related factors Look-alike or sound-alike drug names, similar ampoules, confusing labels, complex calculations, and multiple drug preparations.

System-related factors Inadequate protocols, poor storage, equipment faults, understaffing, interruptions, and insufficient supervision.

5. Prevention of errors in anaesthesia

1. Preoperative assessment: Confirm patient identity, procedure, consent, allergies, comorbidities, fasting status, and airway risks.
2. Anaesthesia workstation check: Check oxygen supply, breathing circuit, suction, airway equipment, monitors, and emergency equipment.
3. Medication safety: Read the drug label before preparation and administration; label every syringe immediately after preparation.
4. Dose calculation: Confirm the drug, concentration, units, dose, route, and patient weight where relevant. Use an independent double-check for high-risk medicines according to local policy.
5. Standardization: Use standardized concentrations, clear labels, organized storage, and separation of look-alike medications.
6. Monitoring: Continuously assess the patient and respond promptly to abnormal vital signs, capnography, and alarms.
7. Communication: Use closed-loop communication, structured handovers, and surgical safety checklists.
8. Emergency preparedness: Keep resuscitation drugs, airway rescue equipment, and relevant emergency protocols accessible.
9. Recovery and handover: Confirm adequate ventilation, oxygenation, consciousness, pain control, and neuromuscular recovery before transfer or discharge.
10. Incident reporting: Report errors and near misses, investigate contributing factors, and improve systems without relying solely on individual blame.

6. Recognition and response when an error occurs

- Recognize the error and assess its immediate effects on the patient.
- Stop the error or prevent further exposure when safe to do so.
- Stabilize airway, breathing, and circulation; provide appropriate monitoring and treatment.
- Call for assistance and involve senior anaesthesia staff promptly.
- Document the event accurately, communicate with the appropriate clinical team, and disclose the event to the patient or family in accordance with institutional policy and applicable requirements.
- Report the incident or near miss and participate in a systems-based review.

7. Quick revision: OSCE checklist

Safety checklist

0 of 8

Confirm patient identity, procedure, consent, and allergies

Check anaesthesia machine, oxygen, suction, and monitors

Verify drug name, dose, concentration, route, and expiry

Label every prepared syringe and infusion

Use appropriate monitoring and respond to alarms

Confirm airway security and ventilation with capnography when indicated

Check recovery, neuromuscular function, and handover

Report errors and near misses

Reset checklist

Key message: Anaesthesia safety depends on systematic preparation, correct drug selection and administration, vigilant monitoring, effective teamwork, and prompt recognition and management of complications. An error may occur without causing harm; a near miss is an error intercepted before it reaches the patient or causes harm.