

Ethiopian Association of Anesthetists

National Preservice Anesthesia Education Student Assessment Policy

National Alliance for Quality Anesthesia Education

Anesthesia Schools Consortium in Ethiopia



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Acrimony

A-CEX - Anesthesia Clinical Evaluation Exercise

ALMAT – Anesthesia List Management Tool

CBD – Case Based Discussion

CBL – Case Based Learning

DOP – Directly Observed Procedure

MSF –Multisource Feedback

OSCE – Objective Structured Clinical Examination

PAESAP – Preservice Anesthesia Education Student Assessment Policy

WPBA - Workplace-Based Assessments

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Introduction

Anesthesia is a critical component of modern healthcare, and the quality of anesthesia care provided to patients depends on the competence and qualifications of anesthesiologists. In Ethiopia, the expansion of healthcare services and the growing burden of surgical diseases have resulted in a surge in the demand for anesthesia services. As the demand for surgical and anesthesia services continues to rise in various healthcare settings, it is becoming increasingly important to ensure that anesthesia workforces are well-trained and competent to deliver safe and effective anesthesia care to patients. To meet this increasing demand and ensure the provision of high-quality anesthesia care, it is crucial to standardize the training and assessment of anesthesia students.

Establishing a standardized system for evaluating student performance would help to ensure that all students are meeting the same benchmarks and standards. The assessment methods could include both formative and summative evaluations, such as written and practical exams, clinical evaluations, and objective structured clinical examinations (OSCEs).

Standardizing the training and assessment of anesthesia students would not only improve the quality of anesthesia education but also help to build a strong and sustainable anesthesia workforce in Ethiopia. This would require a collaborative effort between educators, policymakers, and healthcare providers to implement and sustain these changes over time. By doing so, we can ensure that patients receive the highest

quality of anesthesia care, which is essential for achieving optimal surgical outcomes and improving overall healthcare quality.

To address this issue, it is essential to strengthen the assessment and evaluation of anesthesia education programs in Ethiopia. The national licensure examination is a critical tool for assessing the quality of anesthesia education programs and ensuring that students are competent and qualified to provide safe and effective anesthesia care. Higher Education Institutions (HEIs) in Ethiopia have demonstrated good performance in the national licensure examination, indicating that they are producing competent and qualified anesthesiologists.

Moreover, to ensure the continuity of quality anesthesia professional production and deployment in Ethiopia, it is crucial to implement a national preservice anesthesia education student assessment policy that can promote consistency and standardization across different HEIs. This policy would establish a set of criteria, procedures, and standards for the assessment of anesthesia education students, ensuring that all students receive fair and accurate assessments of their learning and progress.

Scope of the policy

The National Preservice Anesthesia Education Student Assessment policy in Ethiopia will be a comprehensive guide for the preparation and conduct of assessments for preservice anesthesia students. The policy will provide guidance for the exam committee and quality assurance team in utilizing this guide during assessment preparation and conduct, which will include workplace-based assessments such as

Directly Observed Procedures (DOP), Practical Clinical Examination (PCE/CEX), and Case-Based Discussion (CBD). The implementation of these assessments, as well as their monitoring and evaluation, will also be guided by the policy.

In addition to workplace-based assessments, the policy will guide the preparation and conduct of written assessments to assess high-level cognitive domains. In line with this policy, a national anesthesia bachelor CBC assessment blueprint will be provided for faculty and the exam committee for guidance. The policy will cover a range of assessment criteria, including learning objectives, assessment methods, grading rubrics, and feedback mechanisms. It will also establish procedures for the frequency and timing of assessments, assessment administration, assessment data management, and assessment results communication.

The policy will set standards for assessment validity and reliability, fairness and equity, transparency and accountability, as well as improvement and innovation. These standards will ensure that all anesthesia preservice education programs in Ethiopia adhere to a common set of guidelines, promoting consistency and standardization across different programs. The policy will apply to all anesthesia preservice education programs in Ethiopia.

The policy will be an essential tool for improving the quality of anesthesia education and training in the country. By establishing comprehensive and standardized assessment criteria, procedures, and standards, the policy will ensure that all anesthesia education students receive high-quality education and training that prepares them to provide safe and effective anesthesia care

Objective of the document

The objective of the Preservice Anesthesia Education Student Assessment Policy (PAESAP) is to provide clear and standardized guidelines for assessing the knowledge, skills, and competencies of anesthesia students during their pre-service education. The policy aims to ensure that anesthesia students receive a comprehensive and consistent education that prepares them for safe and effective anesthesia practice.

The specific objectives of PAESAP include:

- ❖ Provide faculty with guidelines for developing and implementing effective assessments
- ❖ Establish clear and measurable learning outcomes for anesthesia students in line with CBC
- ❖ Ensure that assessments are valid, reliable, and aligned with the learning outcomes
- ❖ Provide students with timely and constructive feedback on their performance
- ❖ Support continuous quality improvement of the student assessment

Assessment methods

Types of Assessment:

1. Formative assessment provides ongoing constructive feedback to monitor progress and improve performance.

2. Summative assessment evaluates learning and results in a mark or grade, pass or fail.

Formative assessment is an assessment for learning. Its goal is to offer ongoing constructive feedback to monitor progress and improve performance, with a focus on practice improvement. Formative assessment evaluates trainees' performance in terms of competence, teamwork, and professionalism. It is a relatively low-stakes assessment and cannot be standardized, but it has validity. The main formative assessments in anesthesia education are workplace-based assessments (WBA), which involve multiple assessment tools, assessors, and data points.

The goals of WBA in anesthesia education are to assess competencies listed in the learning outcomes of each section of the curriculum, offer ongoing constructive feedback to improve performance, provide a framework to support teaching and learning in the clinical environment, engage trainers and trainees in professional educational conversations, enable trainees to reflect on their own practice, monitor their progress of training and development, and create a record to document holistically a trainee's clinical performance.

Summative assessment evaluates learning and results in a mark or grade, pass or fail. It is used to test knowledge or performance under standardized conditions, and the decision to progress to the next stage of training is based on the results. Summative assessments in anesthesia education include intermediate and final examinations, exit assessments, and in-training assessments.

Formative Assessment

Workplace Based Assessment Methods

Goals:

- ❖ To assess competencies, as listed in the learning outcomes of each section of the curriculum.
- ❖ To offer ongoing constructive feedback with the aim of improving performance.
- ❖ To provide a framework to support teaching and learning in the clinical environment.
- ❖ To engage trainers and trainees in professional educational conversations.
- ❖ To enable trainees to reflect on their own practice, know their strengths and weaknesses, and use feedback from the trainers to inform and develop their own practice.
- ❖ To monitor the progress of training and development.
- ❖ To create a record to document holistically a trainee's clinical performance.

Workplace-Based Assessment Tools:

Recent changes to pre-service anesthesia training have resulted in the expansion of methods of ensuring and evidencing competence progression. At the forefront of this movement are workplace-based assessments (WBAs). These tools were designed to provide a means of assessing clinical skills objectively, within the workplace, permitting assessment of the top tiers of Millers Pyramid. The term 'workplace-based

assessment' describes a number of tools, each of which is designed to assess different components of clinical practice. Regularly undertaking these assessments can then, in theory, provide a holistic picture of the trainee's competences and progression through training.

The WBA tools adopted in the anesthesia curriculum include:

1. Direct Observation of Procedural Skills (DOPS)
2. Clinical Evaluation Exercise (CEX)
3. Case-Based Discussion (CBD)
4. Anesthesia List Management Tool (ALMAT) (only during clinical and internship period)
5. Multisource Feedback (MSF) (at least one during one for each year III, IV and Internship)

Table 1: Summary of Work Place Based Assessments

No	Year/Semester	Module Name	No of DOP	No of PCE	No of CBD
1.	Year II – Semester I	Introduction to Anesthesia II	4	4	4
2.	Year II- Semester II	Basics of Anesthesia	6	3	3
3.	Year III- Semester I	Preoperative and postoperative assessment and care	4	4	4
		Airway management	4	4	4

		Pharmacology for Anesthetists	2	5	5
4.	Year III- Semester II	General Surgery & Thoracic Emergency Anesthesia	5	6	5
		Regional Anesthesia and Pain Management	5	5	4
		Obstetrics and Gynecologic Anesthesia	4	4	4
5.	Year IV- Semester I	Neonatal and Pediatric Anesthesia	3	5	4
		Trauma, burn and Orthopedic Anesthesia	4	4	4
		Day Care and Remote Anesthesia	5	3	4
		Anesthesia for patients with coexisting Diseases	2	4	6
		EENT and Maxillofacial Anesthesia	4	4	4
6.	Year IV- Semester II	Geriatrics Anesthesia	2	5	5
		Neurosurgery Anesthesia	4	4	4
		Emergency and Critical Care	3	4	5

Table 2: Summary of Internship Work Place Based Assessments

S.No	Modules /Internship	Anesthesia List Management	Case-Based Discussions (CBD)	Multi-Source Feedback	Continuing Assessment
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		Tools (ALMAT)		(MSF)	
1.	Obstetrics and Gynecology Anesthesia Internship	2	5	1	1
2.	General surgery and urology anesthesia internship	2	5	1	1
3.	Trauma and orthopedic anesthesia internship	2	5	1	1
4.	Pediatrics anesthesia internship	2	5	1	1
5.	Emergency and critical care internship	-	5	1	1

Directly Observed Procedural Skill (DOPS)

The Direct Observation of Procedural Skills (DOPS) assessment is a workplace-based assessment used to evaluate the clinical skills of anesthesia education students. This assessment method is typically used in different settings, such as the Operating Room, Intensive Care Unit, or Emergency Department.

During the DOPS assessment, the student is observed performing a specific procedural skill by an trainer/instructor trained in the assessment process. The assessor follows the student with a checklist and provides immediate feedback at the

end. The feedback provided can be both positive and constructive, helping the student to improve their performance and build upon their strengths.

DOPS is particularly useful for assessing trainees who have learned a new skill or are in the process of acquiring new knowledge. By observing the trainee in a real-life setting, the assessor can evaluate their ability to apply theoretical knowledge and practical skills to patient care. Furthermore, DOPS can help identify areas where the trainee needs further development and provide targeted feedback to improve their performance.

DOPS can be assessed in real patients or simulated environments, such as the use of a defibrillator. Assessing in real patients provides a more realistic assessment of the trainee's ability to perform under pressure. However, simulated environments offer a safer and more controlled setting for trainees to practice and demonstrate their skills. The choice of assessment method will depend on the availability of patients, the complexity of the skill, and the level of training of the trainee.

The number of Direct Observation of Procedural Skills (DOPS) assessments that need to be conducted per module will depend on various factors, including the complexity of the procedure, the level of training of the trainee, and the objectives of the assessment. The bachelor of anesthesia curriculum 2022 clearly stated the number and variety of procedure mixes for DOP for each module.

Students are required to complete a specific number of DOPS assessments in each module, and the assessments are incorporated into both formative and summative assessment processes.

Table 3: Recommended number and case varieties for DOP

S.No	Modules	Number of DOP	Recommended DOPs
1.	Introduction to Anesthesia II (AnstM-2173)	4	<ul style="list-style-type: none"> ❖ IV cannulation ❖ NGT insertion ❖ Catheterization ❖ Machine checking
2.	Basics of Anesthesia (AnstM-2333)	6	<ul style="list-style-type: none"> ❖ Securing Intravenous line and administering fluid ❖ Fluid Calculation ❖ Drug infusion calculation ❖ Blood Transfusion ❖ Identifying fluid disturbance ❖ Detecting of electrolyte disturbances ❖ Anesthesia machine functionality check ❖ Apply standards of patient monitoring devices ❖ Interpreting of anesthesia Monitoring readings ❖ Estimation of cylinder oxygen pressure for clinical application
3.	Preoperative and postoperative assessment and care	4	<ul style="list-style-type: none"> ❖ Airway assessment ❖ Preoperative assessment documentation ❖ Patient handover to PACU History taking.
4.	Airway management	4	<ul style="list-style-type: none"> ❖ Perform and interoperate airway

			<p>assessment parameters.</p> <ul style="list-style-type: none"> ❖ Bag-Mask ventilation ❖ Direct Laryngoscope guided ETT insertion ❖ LMA insertion ❖ ETT extubation ❖ LMA extubation ❖ Airway maneuvers
5.	Pharmacology for Anesthetists	2	<ul style="list-style-type: none"> ❖ Prepare the right drug with the appropriate concentration. ❖ Adjust drug dose depending on the patient's status ❖ Choose appropriate drugs for a specific patient
6.	General surgery & thoracic emergency anesthesia module (Anstm-3393)	5	<ul style="list-style-type: none"> ❖ RSI intubation for emergency abdominal surgeries ❖ Tracheal intubation with direct laryngoscope for elective surgical patients ❖ LMA insertion for surgical procedures ❖ NG tube insertion for gastric decompression of emergency surgical patient ❖ Lung isolation (DLT/single lumen tube with/without bronchial blocker), ❖ Abdominal field blocks for analgesia for abdominal surgeries (TAP, Rectus sheath, Inguinal block)

			<ul style="list-style-type: none"> ❖ Caudal block for anesthesia/analgesia ❖ Intercostal block for analgesia of emergency thoracic procedures ❖ Paravertebral block for analgesia of emergency thoracic procedures
7.	Regional Anesthesia and Pain Management Module (AnstM-3403)	5	<ul style="list-style-type: none"> ❖ Spinal Block using different positions (sitting vs lateral) and techniques (midline, Para median) TAP ❖ Rectus sheath block ❖ Facia-Illiaca Compartment Block (FICB) ❖ Ankle block ❖ Caudal block ❖ Wrist block
8.	Anesthesia for Obstetric and Gynecologic Surgeries (AnstM3413)	4	<ul style="list-style-type: none"> ❖ Spinal anesthesia for obstetrics and gynecologic clients ❖ Intubation for obstetrics and gynecologic patients ❖ Neonatal resuscitation ❖ Different regional pain management options for obstetrics and gynecology patients ❖ RSI (rapid sequence induction) ❖ Assemble necessary neonatal resuscitation equipment
9.	Anesthesia for Neonatal and Pediatric surgeries	3	<ul style="list-style-type: none"> ❖ Endotracheal intubation for a pediatric patient ❖ Extubation ❖ Intravenous cannulation for pediatric

			<ul style="list-style-type: none"> ❖ Manage intraoperative complications of pediatric patients. ❖ Perform pediatrics basic and advanced cardiac life support.
10.	Anesthesia for trauma, burn, and orthopedic surgeries	4	<ul style="list-style-type: none"> ❖ Perform Primary Survey for traumatized patient. ❖ Provide Basic Life Support (BLS) ❖ Provide Advanced Cardiac Life Support (ACLS) for trauma patients. ❖ Apply manual inline stabilization. ❖ Perform Peripheral nerve blocks for trauma patients (Axillary, wrist, ankle blocks)
11.	Day-care and Remote anesthesia	5	<ul style="list-style-type: none"> ❖ Bag mask ventilation ❖ Different regional anesthesia techniques for day-case surgery
12.	Anesthesia for patients with Coexisting diseases	2	<ul style="list-style-type: none"> ❖ Determine blood glucose level using a glucometer. ❖ Intraoperative blood glucose control ❖ Interpretation of coagulation profile findings
13.	ENT, Maxillofacial, and Ophthalmic Anesthesia	4	<ul style="list-style-type: none"> ❖ Prepare different airway equipment and drugs for ENT and maxillofacial surgery and anesthesia. ❖ Perform facial nerve block for ophthalmic surgery ❖ Perform blind nasal intubation /awake intubation techniques.

			<ul style="list-style-type: none"> ❖ Provide anesthesia for various types of pediatric airway emergency (foreign body aspiration, epiglottitis, bronchoscopy, and vocal cord disorder) surgical patients ❖ Perform regional anesthesia (retrobulbar, peribulbar) block for various types of eye procedure ❖ Manage anesthesia for open-eye injury
14.	Neurosurgery Anesthesia	4	<ul style="list-style-type: none"> ❖ Intracranial hypertension management. ❖ Anesthesia management for emergency neuro-surgery
15.	Geriatrics Anesthesia	2	<ul style="list-style-type: none"> ❖ Geriatric patient positioning ❖ Spinal anesthesia for geriatric ❖ Intubating geriatric patients
16.	Emergency and Critical care	3	<ul style="list-style-type: none"> ❖ NGT insertion for ICU feeding ❖ mechanical ventilator setting ❖ Neurologic examination ❖ Provide appropriate oxygen therapy using non-invasive techniques ❖ Endotracheal intubation for critical patients with respiratory failure in the critical care/Emergency department ❖ Apply advanced airway management modalities during life-threatening airway obstructions

			<ul style="list-style-type: none"> ❖ Apply synchronized chest compression and ventilation for patients with cardiac arrest
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The timing of the DOPS assessment varies depending on the module and the procedure being assessed. Typically, the assessment takes 15-20 minutes, and the student is given a specific time slot to perform the procedure. The DOPS assessment is conducted by a trained assessor who evaluates the student's performance based on a predefined set of criteria.

In addition to the number of assessments, the timing of the assessments is also important. The assessments should be spaced over time to provide a more comprehensive evaluation of the trainee's performance. It is recommended that DOPS assessments should be conducted at regular intervals throughout the module, with at least one assessment per week for the first four weeks of the module.

Feedback is a crucial aspect of the DOPS assessment process. The feedback should focus on the whole event, not just the success or failure of the procedure. It should cover various aspects of the procedure, including understanding of clinical procedures and alternatives, risks and benefits discussion in different clinical scenarios, issues on informed consent, relevant anatomy, safety concerns, documentation, and interaction with patients. Feedback should be constructive and provide specific examples of areas where the trainee excelled and areas where they need improvement. By providing targeted feedback, trainees can improve their technical skills and enhance their clinical practice, ultimately improving patient care.

The DOPS assessment is an essential component of the BSc in Anesthesia curriculum, providing students with immediate and ongoing feedback on their clinical skills. By incorporating the DOPS assessment into the curriculum, students are motivated to improve their performance, creating learning opportunities that enhance their knowledge and skills. The DOPS assessment also ensures quality assurance by providing a standardized assessment method that is consistent across different programs. Table 2: Directly Observed (DOP) Checklist (Annex 1)

Anesthesia Clinical Evaluation Exercise (A-CEX)

The Clinical Evaluation Exercise (CEX) is a tool used in anesthesia education to assess the trainee's performance in a clinical case. Unlike other assessment methods that focus on a specific procedure, the CEX evaluates the trainee's ability to manage the major part of the clinical work in a given case. The CEX is designed to provide a holistic evaluation of the trainee's clinical skills, knowledge, and decision-making abilities.

During the CEX, the trainer will act primarily as an observer, allowing the trainee to take the lead in managing the case. The trainer will assess the trainee's performance and provide feedback based on their observations. The trainer's role is to provide guidance and support to the trainee, while also evaluating their clinical competence.

After the case, the trainer will discuss the case management with the trainee to assess their understanding of the topic and stimulate self-reflection. The feedback provided should be specific, constructive and focused on areas where the trainee needs

improvement. The trainer should also highlight areas where the trainee performed well, providing positive feedback to reinforce good practice.

The CEX tool allows for a comprehensive evaluation of the trainee's performance, with possible areas of feedback including their anaesthetic plan, techniques and procedures, management of any problems that arose, safety concerns and teamwork. The feedback should focus on the trainee's ability to manage the case effectively, demonstrating sound clinical judgment and decision-making skills.

Students are required to complete a specific number of CEX assessments in each module, and the assessments are incorporated into both formative and summative assessment processes.

Table 4: Recommended number and case varieties for CEX

S. No	Modules	Number of PCE	Recommended PCE
1.	Introduction to Anesthesia II (AnstM-2173)	4	<ul style="list-style-type: none"> ❖ Patient preparation ❖ Preoperative assessment, ❖ Sterile technique, machine and ❖ Equipment preparation
2.	Basics of anesthesia module (anstm-2333)	3	<ul style="list-style-type: none"> ❖ Prepare and administer appropriate fluid type ❖ Fluid management of patients in post anesthesia care unit (PACU) and operation room (OR)

			<ul style="list-style-type: none"> ❖ Identification and management of perioperative electrolyte disturbances ❖ Identification and Management of perioperative fluid disturbances ❖ Identification and Management of patients with acid base disturbance ❖ Assessment and management of blood transfusion complication for surgical patients
3.	Preoperative and postoperative assessment and care	4	<ul style="list-style-type: none"> ❖ Preoperative optimization ❖ Post op pain management ❖ Informed Consent taking
4.	Airway management	4	<ul style="list-style-type: none"> ❖ Prepare patients with anticipated difficult airway ❖ Provide perioperative care for patients with anticipated difficult airway according to acceptable guidelines ❖ Manage patients with unanticipated difficult airway according to acceptable guidelines (difficult mask ventilation, difficult laryngoscopy, difficult intubation, can't intubate, can ventilate and can't intubate, can't ventilate conditions) ❖ Provide appropriate post-extubation care in PACU or ICU ❖ Airway equipment and material preparation

5.	Pharmacology for Anesthetists	5	<ul style="list-style-type: none"> ❖ Prepare the right drug with the appropriate concentration and adjust drug dose depending on the patient's status. ❖ Recognize and Manage local anesthetic toxicity
6.	General surgery & thoracic emergency anesthesia module (anstm-3393)	6	<ul style="list-style-type: none"> ❖ Perioperative anesthetic management for emergency abdominal surgery ❖ Perioperative anesthetic management for patient undergo urologic surgery. ❖ Perioperative anesthetic management for hepatic surgery ❖ Perioperative anesthetic management for thoracic emergency surgery
7.	Regional anesthesia and pain management module (anstm-3403)	5	<ul style="list-style-type: none"> ❖ Spinal anesthesia for C/S ❖ Regional anesthesia for gynecological surgery ❖ Spinal anesthesia for a geriatric patient ❖ Regional anesthesia for orthopedic surgery
8.	Anesthesia For Obstetric and Gynecologic Surgeries (Anstm3413)	4	<ul style="list-style-type: none"> ❖ Obstetrics patient assessment and optimization ❖ Perioperative anesthesia management obstetric hemorrhage ❖ Perioperative anesthesia management of preeclampsia and eclampsia

			<ul style="list-style-type: none"> ❖ Perioperative anesthesia management of parturient with different co-existing disease ❖ Perioperative anesthesia management of patients undergoing gynecologic surgery. ❖ Perioperative anesthesia management of pregnant women undergoing non-obstetric surgery. ❖ Assemble all necessary equipment and perform general anesthesia for C/S ❖ Assemble all necessary equipment and perform spinal anesthesia for C/S Obstetrics patient handover to PACU
9.	Anesthesia for Neonatal and Pediatric surgeries	5	<ul style="list-style-type: none"> ❖ Preoperative evaluation for pediatric patients ❖ Perioperative management for pediatric patients ❖ Fluid and electrolyte management of pediatric patients ❖ Managing extubation for pediatric patients ❖ Anesthesia management for neonatal congenital heart diseases ❖ Anesthesia management for neonatal neurosurgeries

			<ul style="list-style-type: none"> ❖ Perioperative anesthetic care of Neonatal Hypertrophic Pyloric Stenosis Perioperative care of neonatal tracheoesophageal fistula and esophageal atresia ❖ Perioperative care for neonatal anal atresia/ imperforated anus ❖ Perioperative care of neonatal congenital diaphragmatic hernia ❖ Management of common intraoperative complications (laryngospasm, bronchospasm, desaturation, etc.) in pediatric patients
10.	Anesthesia for trauma, burn, and orthopedic surgeries	4	<ul style="list-style-type: none"> ❖ Perioperative anesthetic management of orthopedic surgery ❖ Perioperative anesthetic management of trauma patient ❖ Perioperative anesthetic management of burn patient
11.	Day-care and Remote anesthesia	3	<ul style="list-style-type: none"> ❖ Perioperative care of day case and remote surgical patients
12.	Anesthesia for patients with Coexisting diseases	4	<ul style="list-style-type: none"> ❖ Anesthesia management of patients with hypertension ❖ Anesthesia management for patients with DM

			❖ Anesthesia management for patients with RVI Anesthesia management for patients with seizures disorders
13.	ENT, Maxillofacial, and Ophthalmic Anesthesia	4	<ul style="list-style-type: none"> ❖ Anesthesia Management for tonsillectomy (OSA) patients ❖ Anesthesia for ear canal and tympanic membrane disorder ❖ Manage anesthesia for Ophthalmic surgical patients (with an emphasis on intraocular pressure (glaucoma), oculocardiac reflex, and anesthetic implications of ophthalmic drugs) ❖ Provide post-anesthetic care for Ophthalmic surgical patients
14.	Neurosurgery Anesthesia	4	❖ Perioperative anesthetic management of neurosurgical patient anesthetic management for an emergency craniotomy
15.	Geriatrics Anesthesia	5	❖ Perioperative care of geriatric patients with different co-existing disease
16.	Emergency and Critical care	4	<ul style="list-style-type: none"> ❖ Apply comprehensive patient evaluation & consultation for ICU patients ❖ Assess pain using different modalities in ICU ❖ Manage pain in ICU ❖ Apply different non-invasive monitors and interpret invasive monitoring data

			<p>for critically ill patient</p> <ul style="list-style-type: none"> ❖ Manage patients with respiratory failure including artificial ventilation ❖ Utilize different ventilator setting for patients different with comorbidities Provide daily respiratory care for ICU patients ❖ Evaluate and manage patients for ventilator associated complications ❖ Assess and manage critically patients with ABCDE approach ❖ Apply advanced airway management modalities during life threatening airway obstructions ❖ Identify and treat peri-arrest arrhythmias ❖ Treat reversible causes of cardiac arrest ❖ Manage patients with shock (cardiogenic, neurogenic, and anaphylactic)
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CEX tool is a valuable assessment method for evaluating the trainee's clinical skills, knowledge, and decision-making abilities. The CEX looks at the trainee's performance

in a case rather than focusing on a specific procedure, allowing for a more holistic evaluation of their clinical competence. During the CEX, the trainer acts primarily as an observer, providing guidance and support, and evaluating the trainee's performance. The feedback provided should be specific, constructive and focused on areas where the trainee needs improvement, including their anaesthetic plan, techniques and procedures, management of any problems that arose, safety concerns and teamwork. **Anesthesia Clinical Evaluation Exercise (A-CEX) Checklist (Annex 2)**

Case Based Discussion (CBD)

Case-Based Discussions (CBDs) are a valuable assessment method in anesthesia education that offer an opportunity to discuss a case in depth and explore thinking, clinical judgment, and knowledge. CBDs provide a useful forum for reflection on practice, especially in cases of critical incidents or complications. By discussing cases in detail, trainees can develop their critical thinking skills, enhance their clinical decision-making abilities, and improve patient care.

When undertaking a CBD, the trainee should bring the case notes and/or anesthetic record of a case they wish to discuss in retrospect. The discussion should be led by a senior clinician, who will facilitate the discussion and provide feedback to the trainee. The discussion should be structured and cover various aspects of the case, including the conduct and peri-operative management of the case, the appropriateness of anesthesia plans, problems arising (e.g., clinical or equipment), crisis management, differential diagnosis, and thought processes involved. The duration for CBD should

be conducted within 1 -2 hours to address relevant teaching –learning aspects of the case.

A "virtual" CBD can also be undertaken, where the trainee presents a real-time or hypothetical case, such as the management of a patient with uterine rupture or rare clinical scenarios. A virtual CBD can provide a safe and controlled environment for trainees to demonstrate their knowledge and clinical decision-making skills.

Students are required to complete a specific number of CBD assessments in each module, and the assessments are incorporated into both formative and summative assessment processes.

Table 5: Recommended number and case varieties for CBD

S.No	Modules	Number of CBD	Recommended CBD
17.	Introduction to Anesthesia II	4	<ul style="list-style-type: none"> ❖ Infection prevention practice in the OR, ❖ Preoperative assessment ❖ Patient positioning ❖ Airway management
18.	Basics of Anesthesia Module	3	<ul style="list-style-type: none"> ❖ Perioperative anesthetic implications of patients with different spectrums of ECG findings ❖ Utilizations of standards of patient monitoring in perioperative setting

			<ul style="list-style-type: none"> ❖ Measures to reduce Operation Room pollution ❖ Perioperative fluid management for high risk surgical patients (E.g. Septic pts, Dehydration, AFI, pediatrics, PIH, Neuro surgical pts, trauma...) ❖ Perioperative anesthesia management and implications of Electrolyte disturbances ❖ Basic management of perioperative acid base disturbance ❖ Perioperative blood transfusion and its complications
19.	Preoperative and postoperative assessment and care	4	<ul style="list-style-type: none"> ❖ ASA physical status classification ❖ Chart review for relevant surgical with selected comorbidity ❖ PONV ❖ PACU causes of hypoxia
20.	Airway management	4	<ul style="list-style-type: none"> ❖ Discussion on Different modalities for managing difficult airway (unanticipated and anticipated, difficult mask ventilation, difficult intubation, can't intubate, can ventilate and can't intubate, can't ventilate

			<p>conditions)</p> <ul style="list-style-type: none"> ❖ Normal anatomy and physiology of the airway and Predictive features of the difficult airway using different airway assessment methods ❖ Difficult airway (difficult intubation, extubation) ❖ Alternative techniques (invasive and advanced) of airway management modalities (Video-assisted intubation, retrograde wire intubation, sub-mental intubation, fiberoptic intubation, tracheostomy, Cricothyrotomy...) ❖ Management of potential airway threats such as external compressions, blood clots, foreign bodies ❖ Complications of different airway management modalities and extubation with its complication
21.	Pharmacology for Anesthetists	5	<ul style="list-style-type: none"> ❖ Managing Side effects of anesthetic drugs ❖ Appropriate selection of drugs for patient ❖ Allergic reaction management

			❖ Drug interaction
22.	General Surgery & Thoracic Emergency Anesthesia Module (AnstM-3393)	5	<ul style="list-style-type: none"> ❖ Anatomy, physiology and Pathophysiology of GIT, GUS, hepato-biliary and endocrine disorders ❖ Perioperative management and anesthetic concerns for emergency abdominal surgery ❖ Perioperative management and anesthetic concerns for endocrine surgeries ❖ Perioperative management and anesthetic concerns for hepato-biliary surgery ❖ Perioperative management and anesthetic concerns traumatic emergency chest surgery ❖ Pathophysiology and Perioperative anesthetic implication of oncologic procedures surgeries ❖ Postoperative pain management modalities for GIT, GUS, hepato-biliary and endocrine disorder and oncologic procedures
23.	Regional Anesthesia and Pain Management Module (AnstM-3403)	4	<ul style="list-style-type: none"> ❖ Regional anesthesia for patients with bleeding disorders ❖ Regional analgesia for

			<ul style="list-style-type: none"> abdominal surgery, Perioperative pain management for patients with a history of chronic pain, ❖ Management of complications after Regional Anesthesia (e.g., Post spinal hypotension, High/total spinal, PDPH...) ❖ Regional analgesia for anterior neck surgery....
24.	Anesthesia for Obstetric and Gynecologic Surgeries (AnstM3413)	4	<ul style="list-style-type: none"> ❖ Preeclampsia and eclampsia ❖ Labor physiology and labor pain management ❖ Maternal anatomic, physiologic, and pharmacological changes with its anesthesia implication during pregnancy ❖ Anesthesia for pregnant women undergoing non-obstetric surgery ❖ Pregnancy and co-existing disease ❖ Utero-placental and fetal circulation and neonatal physiologic transition period ❖ Obstetric hemorrhage (APH, PPH...) ❖ Approach and management

			<p>principles of difficult airway in obstetrics</p> <ul style="list-style-type: none"> ❖ Anesthesia for gynecologic surgeries (including gynecologic malignancies) ❖ Anesthesia for gynecological laparoscopic procedures
25.	Anesthesia for Neonatal and Pediatric surgeries	4	<ul style="list-style-type: none"> ❖ Pharmacological consideration of pediatric patient ❖ Adverse effects of hypoglycemia in neonates and children ❖ Risk of aspiration in pediatrics and its management ❖ Induction and management options for pediatric patients ❖ Management of problems occurring during perioperative anesthesia for pediatrics ❖ Anesthesia management for neonatal congenital heart diseases ❖ Anesthesia management for neonatal neurosurgeries (hydrocephalus and meningomyelocele ❖ Perioperative anesthetic consideration for Neonatal Hypertrophic Pyloric Stenosis.

			<ul style="list-style-type: none"> ❖ Perioperative anesthetic consideration for neonatal anal atresia (imperforated anus) ❖ Perioperative anesthetic consideration for congenital diaphragmatic hernia.
26.	Anesthesia for trauma, burn, and orthopedic surgeries	4	<ul style="list-style-type: none"> ❖ Perioperative management of orthopedic surgery ❖ Perioperative management of shocked patients ❖ Perioperative management of trauma complications
27.	Day-care and Remote anesthesia	4	<ul style="list-style-type: none"> ❖ Anesthesia management of day case and remote surgeries
28.	Anesthesia for patients with Coexisting diseases	6	<ul style="list-style-type: none"> ❖ Anesthesia management of patients with hypertension ❖ Anesthesia management of patients with IHD for non-cardiac surgery ❖ Anesthesia management of patients with VHD for non-cardiac surgery ❖ Anesthesia management for patients with DM ❖ Anesthesia management for patients with PTB ❖ Anesthesia management for

			<p>patients with RVI</p> <ul style="list-style-type: none"> ❖ Anesthesia management of patients with thyroid gland disorders ❖ Anesthesia management of patients with pulmonary disease ❖ Coagulations disorders ❖ Anesthesia management for patients with mood disorders o Anesthesia management for patients with seizures disorders ❖ Anesthesia management for Electroconvulsive therapy
29.	ENT, Maxillofacial, and Ophthalmic Anesthesia	4	<ul style="list-style-type: none"> ❖ Postoperative complication of ENT and maxillofacial surgery and anesthesia ❖ Failed airway using alternative technique ❖ Anesthesia Management for tonsillectomy (OSA) patients ❖ Anesthesia for ear canal and tympanic membrane disorder ❖ Postoperative complication of ENT and maxillofacial surgeries ❖ Post tonsillectomy bleeding ❖ Factors influencing intraocular pressure ❖ Anesthetic considerations for

			<p>Strabismus surgery</p> <ul style="list-style-type: none"> ❖ Anesthetic considerations for retinal detachment
30.	Neurosurgery Anesthesia	4	<ul style="list-style-type: none"> ❖ Intraoperative management of raised ICP ❖ Anesthetic management of patients on antipsychotic medications ❖ Anesthetic management for craniotomy patient ❖ Perioperative management of patients undergoing spinal cord surgery ❖ Deliberate hypotension consideration in neurosurgical patients ❖ Anesthetic Management of pituitary gland surgery.
31.	Geriatrics Anesthesia	5	<ul style="list-style-type: none"> ❖ Anesthesia management of geriatric patients with different co-existing diseases
32.	Emergency and Critical care	5	<ul style="list-style-type: none"> ❖ Emergency patients approach and management of life-threatening cases ❖ Principles of FAST-HUG in daily patient care for (septic shock patients, neurosurgery...) <ul style="list-style-type: none"> o Assess metabolic and renal

			<p>function including acid – base physiology, serum, urine, electrolytes and other investigation modalities</p> <ul style="list-style-type: none"> ❖ Utilize different ventilator setting for patients with different pathologies ❖ Respiratory care for ICU patients (COPD, Asthmatic patients etc.) ❖ Use results of invasive monitoring modalities to optimize patients in circulatory crisis ❖ post-resuscitation care of ICU patients ❖ Management of patients with status asthmatics ❖ management of patients with Status epileptics ❖ management of patients with Gullian Barrie syndrome ❖ Management patients with tetanus ❖ Management of critically ill patients with fluid & electrolyte imbalance ❖ Management of patients with aspiration pneumonitis ❖ pain management principles in
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			<p>emergency and critical care setting.</p> <ul style="list-style-type: none"> ❖ triage and prioritization of multiple emergency patients
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Possible areas of feedback in a CBD include non-technical skills, such as clinical decision making, leadership, communication, mobilization of resources, and the standards of documentation. The feedback should focus on areas where the trainee needs improvement, providing specific and constructive feedback to enhance their performance. Safety and quality issues, such as critical incident reporting, should also be discussed, and follow-up actions should be identified if necessary. **Annex 3: Case Based Discussion (CBD) Checklist**

Anesthesia List Management Tool (ALMAT)

The Anaesthesia List Management Tool (ALMAT) is an assessment method used in anesthesia education that gives trainees responsibility for running an operating room list according to case priorities. This method is particularly used to assess interns and allows for the assessment of both technical and non-technical skills. During an ALMAT, the trainee is given the responsibility to run the list by themselves, providing a realistic assessment of their ability to manage anesthesia cases independently.

ALMAT is typically done only during the Provisional Fellowship Year, allowing trainees to gain experience in managing anesthesia lists before becoming fully qualified. It provides an opportunity for trainees to develop clinical and non-clinical skills, such as

leadership, communication, and teamwork, which are essential for providing safe and efficient patient care.

When undertaking an ALMAT, the trainee should ask for this assessment before the start of the list to ensure that they are adequately prepared. The assessment should be led by a senior clinician who will observe the trainee's performance and provide feedback based on their observations.

Possible areas of feedback in an ALMAT include case order on the list, communication with surgeons regarding case complexities and positioning, preparation of equipment, people management (i.e., teamwork with nurses, anaesthetic assistants, relieving anaesthetist, etc.), and measures to reduce turnover time and increase efficiency, and management of potential overruns. The feedback should be specific, constructive, and focused on areas where the trainee needs improvement.

Multi Source Feedback (MSF)

Multi Source Feedback (MSF) is a valuable assessment tool in anesthesia education that broadens the source of feedback on everyday clinical care, allowing trainees to receive feedback from members of the multidisciplinary team. The MSF provides an opportunity for trainees to receive feedback on their professional attitudes and behavior, allowing them to improve their practice and enhance patient care.

Trainees are expected to complete a minimum of one MSF each during year III, IV, and their internship year. The trainee invites at least 10 people from a mixture of disciplines who have worked with them during their clinical training and internship. The

MSF assessors should include a minimum of four seniors (supervisors from anesthesia or ICU), two peers (anesthetic trainees), two surgeons, and two nurses. The list of assessors is approved by the trainee's supervisor/advisor/academic coordinator of training to ensure balance.

The MSF can be conducted through emails or in-person using a checklist sent to the assessors through the portfolio system. A minimum of eight assessors is required to support validity. If the minimum number of assessors is not achieved, then the process should be repeated.

After the MSF is completed, the academic coordinator or module instructor will receive the summary of the feedback and review the results before meeting the trainee for discussion. The MSF is a valuable tool for assessing the trainee's professional attitudes and behavior, and the feedback received can help trainees to improve their practice and enhance patient care.

Further MSFs may need to be undertaken if concerns have been raised, either in the MSF or in the workplace. The MSF provides a comprehensive evaluation of the trainee's performance, allowing for feedback from different disciplines of the team, including faculties, senior anesthetists, clinical instructors, preceptors, peers, nurses, surgeons, and other clinicians. The MSF is a valuable tool in anesthesia education, allowing trainees to receive comprehensive feedback, improving their clinical skills, and enhancing patient care. **(Annex 5: MSF)**

Summative Assessment

Objectively Structured Clinical Examination (OSCE)

The Objective Structured Examination (OSCE) is a widely used evaluation method in anesthesia education that assesses students' clinical skills, knowledge, and communication abilities. The OSCE is a performance-based exam that involves students progressing through at least eight stations, each designed to assess a specific aspect of clinical practice. The OSCE is a crucial component of the anesthesia training program's summative assessment and will be used throughout the training years to evaluate students' progress.

To ensure that students' clinical skills and knowledge are assessed comprehensively, the OSCE will be held once per semester during years III, IV, and Internship. Cases presented in the OSCE will be drawn from the modules offered that semester, with each module contributing to the development of the skills evaluated in the OSCE. Student scores on their skills in the OSCE will be used to calculate their total module scores, showing active engagement in the learning activities of the modules.

To ensure consistency and standardization in assessing students' clinical skills and knowledge, the student assessment policy recommends specific OSCE stations to be selected from the following possible OSCE stations. The chosen OSCE stations for Year III, IV, and Internship are carefully tailored to each year level's training objectives.

Table 6: OSCE Summary

year of study	Sessions per semester	
1 st	semester I	Semester II
		❖ Communication/professionalism
2 nd	<ul style="list-style-type: none"> ❖ Preoperative patient evaluation ❖ Machine checking ❖ preoperative airway evaluation ❖ Patient positioning ❖ Nasogastric tube insertion ❖ IV cannulation ❖ urinary catheterization 	<ul style="list-style-type: none"> ❖ IV cannulation ❖ Fluid calculation ❖ Blood transfusion ❖ electrolyte calculation ❖ Machine check ❖ ECG interpretation ❖ Capnography interpretation ❖ SPo2 interpretation ❖ Tracheal intubation ❖ Gloving ❖ Gowning ❖ Informed consent ❖ Anesthetic record sheet
3 rd	<ul style="list-style-type: none"> ❖ Physical examination ❖ pre-anesthetic history taking ❖ Informed consent ❖ Patient handover 	<ul style="list-style-type: none"> ❖ preoperative anesthetic evaluation ❖ Spinal anesthesia ❖ DLT insertion ❖ Pain assessment

	<ul style="list-style-type: none"> ❖ Airway assessment ❖ Bag mask ventilation ❖ LMA ❖ Endotracheal intubation ❖ Cricothyrotomy ❖ Drug preparation ❖ IV cannulation 	<ul style="list-style-type: none"> ❖ Spinal block ❖ Caudal block ❖ Wrist block ❖ Axillary block ❖ Abdominal field block ❖ Ankle and digital blocks ❖ Spinal anesthesia ❖ Airway assessment ❖ Endotracheal intubation ❖ CPR ❖ Neonatal resuscitation
4 th	<ul style="list-style-type: none"> ❖ Drug preparation ❖ Endotracheal intubation ❖ Fluid calculation ❖ IV cannulation ❖ Pediatrics basic cardiac life support ❖ Pediatrics advanced cardiac life support ❖ Preanesthetic evaluation ❖ regional anesthesia (spinal and others) 	<ul style="list-style-type: none"> ❖ Preoperative Evaluation ❖ Patient handover ❖ BMV, ❖ LMAI, ❖ RSI ❖ physical examination (CVS, Respiratory system) ❖ Needle Cricothyrotomy ❖ BLS ❖ ACLS ❖ CXER interpretation

	<ul style="list-style-type: none"> ❖ LMAI ❖ BTLS ❖ ATLS ❖ BMV ❖ Patient handover ❖ Nasal intubation ❖ Regional anesthesia (retro bulbar, per bulbar/ Fisher nerve blocks) 	<ul style="list-style-type: none"> ❖ ECG interpretation ❖ Mechanical ventilator checking
5 th		

Structured Oral Examination

To ensure that anesthesia students are competent in their knowledge and skills, oral examination procedures should be followed. First, scheduling the examination in advance is important to allow students enough time to prepare. The date, time, and location of the examination should be communicated to the students beforehand. A panel of at least two experienced and qualified anesthesia professionals, including a faculty member from the anesthesia program, should be appointed to conduct the oral examination.

The examination should be structured to assess the students' knowledge, skills, and competencies. The format should include a combination of open-ended and closed-

ended questions, scenarios, and case studies. The content should focus on the learning objectives of the anesthesia program for each year and semester. The questions should cover topics such as anesthesia management, anesthesia pharmacology, physiology, anatomy, equipment, and patient safety.

The duration of the examination should be determined in advance and communicated to the students. The examiners should create a professional and respectful environment that is conducive to learning and allow the students to express themselves freely. To evaluate the students' performance, the examiners should use a standardized scoring rubric that includes criteria such as knowledge of anesthesia principles, ability to apply knowledge to clinical scenarios, and communication skills.

Feedback should be provided to the students immediately after the examination. The feedback should be constructive and focused on areas where the students need to improve. The students should also be given an opportunity to ask questions and seek clarification. The examination results should be communicated to the students in a timely and confidential manner. The students should be informed of their strengths and weaknesses and advised on how to improve, and the results should also be recorded in the students' academic records.

The dress code for anesthesia students during a structured oral exam should be professional and appropriate for a healthcare setting. Students should dress in a manner that reflects their professionalism and respect for the importance of the examination.

For male students, a collared shirt, dress pants, and dress shoes are appropriate. A suit and tie may also be worn if desired. For female students, a conservative dress, blouse and skirt or dress pants, or a professional suit are all suitable options. Closed-toe shoes are recommended for both male and female students.

It is important that students avoid wearing clothing that may be considered distracting or inappropriate. This includes clothing that is tight-fitting, revealing, or casual in nature. Additionally, students should avoid wearing excessive jewelry, makeup, or perfume/cologne, as these can also be distracting.

Written Exam

To conduct a written exam for anesthesia students, it is important to have a thorough plan in place. The exam committee should monitor the exams to ensure that they are prepared according to the formative and summative assessment plan using an exam blueprint for each module. The exam questions should be high order to address the knowledge, skill, and attitude domains. During the exam conduct, it is recommended to use computer-based testing with real-time feedback for student responses. Clear instructions should be provided to students, and the exam conduct should be monitored to ensure fairness and prevent cheating. After the exam, it is important to provide comprehensive feedback to students on their results, including an overall score and specific areas for improvement. The feedback can be used to inform the learning experience and identify areas where improvements can be made to the course curriculum or teaching methods. Finally, the exam results should be analyzed

to identify trends in student performance and evaluate the effectiveness of the anesthesia program.

Feedback mechanisms

The feedback mechanism described here is designed to ensure that assessments are conducted thoroughly and that learners receive effective feedback on their performance. Here is a more detailed explanation of the different components of the feedback mechanism:

Assessment checklists and forms: Assessment checklists and forms are critical tools that help assessors to evaluate the performance of learners. These tools should be designed to capture all relevant information about the assessment, including the assessment criteria, the learner's performance, and the feedback provided. To ensure that the feedback is comprehensive, the tool needs to declare that it is not valid unless the feedback section is filled thoroughly.

Real-time/oral feedback: is feedback that is provided during the conduct of the skill or discussion. This type of feedback is particularly useful for skill-based assessments, where learners can benefit from immediate guidance and support. Real-time feedback can be provided by assessors and should be recorded on the assessment form/checklist.

Written feedback: is feedback that is provided in written form, either on the assessment form/checklist or in a separate document. Written feedback should be detailed, constructive, and focused on both strengths and areas for improvement.

Learners should be encouraged to reflect on their written feedback and develop action plans to address any identified gaps.

Self-assessment feedback: is part of feedback in which a trainee appraise their own performance and provide written feedback to their assessor about part of the skill or discussion which were well performed and which require improvement.

Recording feedback: All feedback provided, whether it is oral, written, or real-time guidance, or self-assessment should be recorded on the assessment form/checklist. This ensures that the feedback is captured and can be used to inform future assessments and development plans. The assessment form/checklist should also include a section for learners to provide their own feedback on the assessment process.

Workplace Based Assessment (WBA) feedback is an essential tool for improving the performance of learners in their workplace. Here are some strategies for implementing an effective WBA feedback mechanism:

Feedback quality and timeliness: feedback should be completed as soon as the assessment has been completed, while there is still time for the trainee to act on it. Feedback should be compiled and delivered to the trainee monthly per their portfolio and workplace based assessments. The monthly feedback will provide students with the regular assessment of their progress and performance in the course, while midterm feedback will offer a more comprehensive of their work to date. It might be important to withhold delivering the grade until the feedback process is finished. This will allow

students to identify areas in which they are excelling, as well as areas where they may be additional support or improvement.

Tips for giving effective feedback to learners

- ❖ Explain to the learners that you are focusing on helping them to understand the assessment of their learning
- ❖ Encourage learners to ask questions about their feedback
- ❖ Make a regular time to discuss feedback with learners on an individual or small group basis
- ❖ Advise learners that they will have an opportunity to ask questions about their assessment
- ❖ Encourage them to note down their questions
- ❖ Try to give feedback as close to the learning and assessment task as possible
- ❖ Be specific and explicit about feedback, providing examples where possible
- ❖ Establish that the student understands what is being discussed
- ❖ Ask the student what they think they need to improve on
- ❖ Offer your advice about future steps for improvement
- ❖ Invite conversations by asking learners to discuss the work with you and/or with their peers

Assessment Procedures

Frequency and timing of assessments

The frequency and timing of workplace-based assessments are critical components of ensuring that anesthesia students are progressing towards their learning objectives and developing the necessary competencies to provide safe and effective patient care. Effective workplace-based assessments should be conducted regularly and consistently throughout the program to provide ongoing feedback and identify areas for improvement.

One recommended frequency for workplace-based assessments of anesthesia students is once per week for Directly Observed Procedures (DOPs), Clinical Evaluation Exercises (CEXs), and Case-Based Discussions (CBDs). This regular assessment schedule provides students with ongoing feedback and ensures that they are consistently working towards their learning objectives. DOPs allow assessors to directly observe the student performing a specific procedure, while CEXs evaluate the student's clinical skills and knowledge, and CBDs focus on the student's ability to apply clinical decision-making skills to patient care.

In addition to regular assessments, it is also important to pre-plan the schedule of CBDs to avoid any overload during midterm or final weeks of semesters. This can help ensure that assessments are spread out evenly throughout the program and that students are not overwhelmed with assessments during high-stress periods. By pre-planning the schedule of CBDs, educators can ensure that students receive consistent

and meaningful feedback throughout the program and have sufficient time to prepare for and reflect on their assessment results.

Assessment administration

Clear instructions and guidance are essential for ensuring that students understand the assessment activities and can perform them effectively. Assessors should provide students with clear instructions on how to complete the assessment tasks and should be available to answer any questions or concerns that students may have. They should also provide constructive feedback to help students improve their performance and achieve their learning objectives.

Assessment tools should be developed based on the program's learning objectives and evaluation criteria. These tools should be aligned with the curriculum and should be designed to assess specific competencies and skills that students are expected to acquire. By aligning assessment tools with the program's learning objectives, educators can ensure that assessments are relevant, meaningful, and useful for evaluating student performance.

Assessors should be familiar with the specific competencies and skills that students are expected to acquire and should have a clear understanding of the evaluation criteria. This knowledge is essential for ensuring that assessments are conducted in a consistent and fair manner and that students are evaluated based on their ability to meet specific learning objectives. Assessors should be trained on the use of assessment tools and criteria to ensure that assessments are conducted in a uniform manner.

Assessment data management

Effective assessment data management is critical to ensuring that workplace-based assessments in anesthesia formative and summative assessments are valid, reliable, and useful for evaluating student performance. The following are some techniques for assessment data management in anesthesia formative and summative assessments:

1. Use a secure database: Assessment data should be managed in a secure and confidential manner to ensure the privacy of the students and their patients. Data should be collected using standardized forms and tools and entered into a secure database. The database should be accessible only to authorized individuals and should be protected by appropriate security measures.
2. Use standardized forms and tools: Standardized forms and tools should be used for collecting assessment data to ensure consistency and comparability across different assessors and assessment activities. These forms and tools should be aligned with the learning objectives and evaluation criteria of the program and should be designed to assess specific competencies and skills that students are expected to acquire.
3. Ensure accuracy and completeness of data: Assessment data should be regularly reviewed to ensure that it is accurate and up-to-date. Assessors should be trained on the proper use of assessment tools and criteria to ensure that data is collected in a consistent and uniform manner. The database should be regularly reviewed to ensure that all data is complete and that there are no missing or incomplete records.

4. Use data to guide student learning and development: Assessment data should be used to evaluate performance, identify areas for improvement, and guide student learning and development. Data should be analyzed regularly to identify trends, patterns, and areas of concern, and appropriate interventions should be implemented to address any issues or concerns.
5. Use data for program evaluation: Assessment data should be used to evaluate the effectiveness of the program and to ensure that students are meeting the learning objectives and acquiring the necessary competencies and skills. Data should be analyzed to identify areas for program improvement, and appropriate changes should be made to ensure that the program is meeting the needs of the students and the patients they serve.

Assessment results communication

- ❖ Provide clear and specific feedback: Feedback should be clear, specific, and tailored to the individual student's performance. Feedback should be based on the learning objectives and evaluation criteria of the program and should identify areas of strength and weakness. Feedback should be delivered in a timely manner to ensure that it is relevant and useful for the student.
- ❖ Use a supportive and non-threatening approach: Feedback should be delivered in a supportive and non-threatening manner to ensure that students feel comfortable and safe receiving feedback. Feedback should be constructive and delivered with the intention of helping the student improve their performance.
- ❖ Provide opportunities for self-reflection: Students should be given the opportunity to reflect on their performance and to identify areas for improvement. This can

involve providing students with access to their assessment data and encouraging them to reflect on their performance and identify areas for improvement.

- ❖ Use a collaborative approach: Feedback should be delivered in a collaborative manner, with both the student and the assessor working together to identify areas for improvement and develop a plan for addressing them. This can involve setting goals, developing action plans, and identifying resources and support to help the student improve their performance.
- ❖ Provide ongoing feedback: Feedback should be provided on an ongoing basis to support the student's learning and development. This can involve regular check-ins, progress reports, and other forms of feedback to ensure that the student is making meaningful progress towards their learning objectives.

Assessment Standards

Item Difficulty Index (IDI) and distractor analysis are important techniques used in test development and evaluation to improve the quality of test items. These techniques can be employed to identify problematic items that may need to be revised or removed from the test.

The Item Difficulty Index is a measure of how difficult an item is for test-takers. It is calculated by dividing the number of test-takers who answered the item correctly by the total number of test-takers who attempted the item. The IDI can range from 0 to 1, with a higher value indicating that the item is relatively more difficult.

Distractor analysis involves evaluating the effectiveness of the distractors, which are the incorrect options in a multiple-choice question. The purpose of distractors is to

provide plausible alternatives to the correct answer and to differentiate between students who have a good understanding of the material and those who do not.

Effective distractors should be plausible and attractive to students who lack a good understanding of the material, but they should not be so attractive that they lead students who have a good understanding of the material to select them. Distractor analysis involves evaluating the performance of each distractor and identifying those that are not effective or that may be leading students astray.

The Item Difficulty Index (IDI) is a measure of the difficulty level of a test item. The IDI can be calculated by dividing the number of test-takers who answered the item correctly by the total number of test-takers who attempted the item. The following are some techniques for conducting Item Difficulty Index:

- ❖ Define the learning objectives: Before calculating the IDI, it is important to define the learning objectives that the test item is designed to assess. The IDI should be calculated based on the performance of students who have the necessary knowledge and skills to meet the learning objectives.
- ❖ Administer the test to a representative sample: The test should be administered to a representative sample of students who have the necessary knowledge and skills to meet the learning objectives. The sample should be large enough to ensure that the IDI is reliable and valid.
- ❖ Analyze the data: Once the test has been administered, the data should be analyzed to determine the number of test-takers who answered the item correctly and the total number of test-takers who attempted the item. The

IDI can then be calculated by dividing the number of students who answered the item correctly by the total number of students who attempted the item.

- ❖ Interpret the results: The IDI can range from 0 to 1, with a higher value indicating that the item is relatively more difficult. A value of 0.5 indicates that the item is of moderate difficulty. The interpretation of the IDI should be based on the learning objectives and the intended level of difficulty for the item.

Once an IDI and distractor analysis have been conducted, the results can be used to improve the items on the test. For example, items with a low IDI may need to be revised to make them clearer or to better align them with the learning objectives of the program. Distractors that are not effective can be revised or removed from the test to improve its validity and reliability.

By employing IDI and distractor analysis in test development and evaluation, educators can improve the quality of their assessments and ensure that they are valid, reliable, and useful measures of student performance.

Quality assurance

Standards for assessment validity and reliability

Validity refers to the extent to which a WPBA accurately measures the intended learning objectives and desired competencies. Validity can be assessed by examining

the content of the assessment, its construct, and its criterion-related validity. Content validity is determined by assessing whether the assessment is aligned with the learning objectives and competencies that it is intended to measure. Construct validity is determined by examining whether the assessment measures the intended constructs, such as clinical reasoning and decision-making. Criterion-related validity is determined by examining whether the assessment is correlated with other measures of performance, such as academic grades or other assessments.

Reliability refers to the consistency and reproducibility of the assessment results. WPBAs should be reliable, meaning that they consistently measure the same construct over time and across different assessors. Reliability can be assessed by examining the internal consistency of the assessment items, the inter-rater reliability of the assessors, and the test-retest reliability of the assessment.

To ensure validity and reliability in WPBAs, several strategies can be employed.

These include:

- ❖ Developing clear assessment criteria and rubrics that are aligned with the learning objectives and competencies of the program.
- ❖ Using standardized assessment tools and procedures to ensure consistency and comparability across different assessors and assessment activities.
- ❖ Providing assessors with training on the proper use of assessment tools and criteria to ensure that data is collected in a consistent and uniform manner.
- ❖ Using multiple assessors to reduce the impact of individual bias and increase the reliability of the assessment.

- ❖ Conducting regular reviews of assessment data to ensure that it is accurate, reliable, and valid.

Here are the steps to ensure a valid and reliable exam

Step 1: Define the Learning Outcomes

- ❖ Done by reviewing the curriculum and identifying the key knowledge, skills, and attitudes

Step 2: Develop the Assessment

- ❖ Should be designed to measure the identified learning outcomes. The assessment can be in the form of written tests, practical exams, or objective structured clinical examinations (OSCEs).

Step 3: Establish Content Validity

- ❖ Refers when the assessment is reviewed by experts in the field to determine if it adequately measures the intended learning outcomes.

Step 4: Establish Construct Validity

- ❖ Construct validity refers to the extent to which the assessment measures the underlying constructs or skills. This can be established by comparing the scores on the assessment to other measures of the same construct or skill.

Step 5: Establish Criterion Validity

- ❖ Criterion validity refers to the extent to which the assessment predicts performance on a reference standard. This can be established by comparing the scores on the assessment to performance on a reference standard.

Step 6: Establish Reliability

- ❖ Reliability refers to the consistency of the assessment. This can be established by measuring the consistency of the scores on the assessment over time, across different raters, or using different forms of the assessment.

Step 7: Pilot Test the Assessment

- ❖ The pilot test should involve a representative sample of anesthesia students and should be conducted under conditions similar to the actual assessment.

Step 8: Evaluate and Improve the Assessment

- ❖ The results should be analyzed to determine if the assessment is valid and reliable, and if not, changes should be made to improve the assessment.

Step 9: Administer the Assessment

- ❖ Administer under standardized conditions to ensure that the results are valid and reliable.

Step 10: Analyze the Results

- ❖ The results should be used to evaluate the anesthesia students' knowledge and skills and to identify areas for improvement in the anesthesia program.

Item banking

During item banking process test items undergo a rigorous review and editorial process. The items that pass this review process are then put into an item bank where they can be used to create future assessments. These exams are believed to accurately measure the knowledge, skill, and attitude of the candidate.

Selection of items can be made through an automated item bank by randomly selecting items to meet pre-specified parameters. Software programs manage filing, sorting, storing, retrieval, statistical analysis, and updating of items. These programs provide a centralized location where items can be easily accessed and reviewed by content experts and psychometric staff.

As new items are added to the item bank, others will have completed their service and will be ready to retire. The shelf-life of each item should be set at five years with slight modifications if necessary, after which it will be removed from the item bank. This process ensures that the items in the item bank remain current and relevant to the learning objectives and evaluation criteria of the program.

Assessment Evaluation and Improvement

Continuous improvement of assessment practices

Continuous improvement of assessment practices refers to the ongoing process of evaluating and enhancing the methods used to assess the knowledge, skills, and competencies of anesthesia students and trainees. To achieve successful improvement of assessment practices, it is crucial to follow a systematic process. The first step is to conduct a thorough review of the current assessment practices. This review should include an examination of the methods used to assess students' knowledge and skills, an identification of the strengths and weaknesses of these methods, and a determination of areas for improvement.

Based on the findings of the review process, educators should develop new assessment methods that better evaluate students' competencies in specific areas.

Once these new assessment methods have been developed, they should be implemented systematically to ensure consistency and fairness. This includes providing clear instructions to students on how to complete the assessments, training teachers on how to administer and evaluate the assessments, and establishing procedures for monitoring the quality of the assessments.

To ensure that the changes made to assessment practices are effective, the effectiveness of the new methods should be regularly evaluated. This evaluation process should include an examination of student learning outcomes, as well as feedback from teachers and students on the effectiveness of the new assessment methods. Based on the results of the evaluation process, further improvements to assessment practices should be made. This includes revising and refining existing assessment methods, as well as developing new methods as needed. By engaging in an ongoing cycle of continuous improvement, educators can ensure that their assessment practices remain effective and relevant, and that their students are well-prepared for successful careers in anesthesia.

Assessment quality assurance and quality control

Assessment quality assurance involves ensuring that the assessments align with the learning objectives of the program, are based on evidence-based practices, and are administered consistently and fairly across all students while quality control, on the other hand, refers to the ongoing monitoring and evaluation of the assessments to ensure that they continue to meet the required standards of quality.

To achieve assessment quality assurance and quality control, a systematic approach must be taken. The first step is to develop clear and measurable learning objectives. Clear and measurable learning objectives provide a framework for developing assessments that accurately evaluate the knowledge and skills of anesthesia students and trainees. They help ensure that the assessments align with the goals and objectives of the anesthesia education program. Once this is established, the next step is to develop standard operating procedures (SOP), which provide clear guidelines for the administration of assessments, ensuring that they are administered consistently and fairly across all students. This includes instructions on how to administer the assessments, how to score them, and how to report the results.

After developing the SOP, educators and assessors should receive training on the administration and evaluation of assessments. This training is essential to ensure that they understand the standards of quality and are capable of administering assessments that accurately evaluate student competencies. Training should cover topics such as assessment design, scoring, and reporting. Regular monitoring of the quality of assessments is also essential. This includes monitoring the reliability and validity of results to ensure that the assessments are meeting the required standards of quality. Monitoring can help identify areas for improvement and ensure that the assessments are providing accurate and reliable evaluations of student competencies.

Assessment Roles and Responsibilities

Roles and responsibilities of faculty members

Instructors play a critical role in the administration of anesthesia student assessments.

Here is a list of the roles and responsibilities

- ❖ Develop and implement objective assessment tools and rubrics
- ❖ Evaluate students' knowledge and skills related to anesthesia practice
- ❖ Provide constructive feedback to students on strengths and areas for improvement
- ❖ Monitor student progress and identify any areas of concern
- ❖ Work with students to develop individualized learning plans and goals
- ❖ Maintain accurate records of student assessment data
- ❖ Participate in regular reviews of the assessment policy to ensure it remains effective and relevant
- ❖ Collaborate with other faculty members to support the overall success of the program

Roles and responsibilities of students

- ❖ Attend all scheduled courses, practical session and labs
- ❖ Actively engage in classroom and clinical activities
- ❖ Demonstrate good judgment and technical skills related to anesthesia practice
- ❖ Accept constructive feedback and work to improve skills and knowledge
- ❖ Meet all academic requirements and deadlines

- ❖ Maintain professionalism and adhere to ethical standards in all aspects of studies and practice
- ❖ Participate in ongoing self-assessment and reflection on learning goals
- ❖ Adhere to all policies and procedures related to the anesthesia program

Roles and responsibilities of Examination Committee

- ❖ Developing and implementing appropriate assessment tools and exam protocols
- ❖ Ensuring objectivity and consistency in the assessment process
- ❖ Ensuring that assessments are aligned with the anesthesia program's learning objectives and competencies
- ❖ Developing and administering exams and other assessments in a fair and secure manner
- ❖ Reviewing exam results and ensuring that grades are accurately recorded and reported
- ❖ Ensuring that assessments are appropriately weighted and that grading criteria are clearly defined
- ❖ Periodically reviewing and updating assessment policies and procedures in collaboration with program faculty and administration

Conclusion

The assessment policy provides a comprehensive framework for the evaluation of anesthesia students and trainees in anesthesia practice. The policy highlights the need for a standardized approach to assessment, given the critical nature of the field and

the need for competent practitioners. The policy's scope is broad, covering the various assessment methods used in the program, including workplace-based assessment methods such as Directly Observed Procedural Skill (DOPS), Anesthesia Clinical Evaluation Exercise (A-CEX), Case-Based Discussion (CBD), Anesthesia List Management Tool (ALMAT), and Multi-Source Feedback (MSF). These methods are designed to evaluate a range of skills, from procedural competencies to communication and professionalism.

The objective of this assessment policy is to ensure that all anesthesia students and trainees are evaluated fairly and accurately based on clear and objective criteria. Summative assessments, including the Objectively Structured Clinical Examination (OSCE) and Structured Oral Examination, are also included in the policy. These assessments are designed to evaluate a student's ability to integrate knowledge and skills across a range of scenarios and contexts.

The policy also outlines the various feedback mechanisms used to ensure students receive constructive feedback on their strengths and areas for improvement. The assessment procedures provides clear guidelines for the administration of assessments, including the frequency and timing of assessments, assessment administration, and data management. Additionally, the policy outlines the procedures for communication of assessment results to students and faculty.

The assessment policy places a strong emphasis on assessment standards, including the use of item banking and adherence to assessment validity and reliability standards. Roles and responsibilities of faculty members involved in the assessment process are

outlined including development and implementation of assessment tools and rubrics, evaluation of student knowledge and skills, provision of constructive feedback, monitoring of student progress, and participation in regular reviews of the assessment policy.

In conclusion, this assessment policy provides a comprehensive framework for the evaluation of anesthesia students and trainees in anesthesia practice. The policy is designed to ensure that all students are evaluated fairly and accurately based on clear and objective criteria, and that assessment practices are regularly evaluated and improved to maintain high standards of quality.

Annex

Annex 1: Directly Observed (DOP) Checklist

Student's Name ----- Date of assessment: -----

S.No.	List of activities performed DOP (directly observed procedure) form	poor			needs to improve			Satisfactory		excellent	Not applicable
		0.5	1	1.5	2	2.5	3	3.5	4		
		1.	Understanding of indications & Contraindications of procedure								
2.	Proper Explanation of procedure to patient										
3.	Understanding of relevant anatomy										
4.	Proper preparation of procedure										
5.	Appropriate Communication with patient or staff										
6.	Appropriate aseptic technique										
7.	Correctly performs technical aspects of procedure										
8.	Adapts to unexpected problems with procedure										
9.	Demonstrates adequate skill and practical fluency										
10.	Properly completes procedure										
11.	Properly completes relevant documentation										
12.	Issues Clear post-procedure instructions to Patient or staff										
13.	Maintains professionalism throughout										

ID number: -----

Clinical Course: ----- Name of procedure: -----

COMMENTS:

Assessor's name: _____ signature: _____

Annex 2: Anesthesia Clinical Evaluation Exercise (A-CEX) Checklist

Student's Name ----- Date of assessment: -----

ID number: -----

Clinical Course: -----

Clinical ability being assessed: -----

S.No.	List of activities performed	poor		needs to improve			Satisfactory		Excellent	Not applicable
		0.5	1	1.5	2	2.5	3	3.5		
1.	Planning and preparation									
2.	Clinical decision- making skills									
3.	Focus on safe practice									
4.	Standards of professional behavior									
5.	Team- working									
6.	Practical work									

Annex 3: Case Based Discussion (CBD) Checklist

Student's Name: _____ Date of assessment: _____

ID number: _____

CBD (case based discussion) form

Module Name: _____ Case Discussed: _____

The student should bring a Photocopy of the anesthetic chart and relevant documents from chart to be discussed.

Areas of strength:

S.No.		poor		needs to improve			Satisfactory		Excellent	Not applicable
		0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	
1.	Appreciation of relevant per-operative findings									
2.	Identification of interesting/difficult aspects of the case									
3.	Discussion of rationale for the technique used									
4.	Discussion of alternative techniques which were not used									
5.	Discussion of aspects of the case which went well									
6.	Discussion of aspects which could have been improved									
7.	Discussion of the role of other team members (either anesthetic, nursing or surgical)									
8.	Appreciation of learning points									
	Average Score									

Areas which need improvement:

Assessor's name: _____ signature: _____

Annex 4: ALMAT Checklist

Anaesthetic List Management Assessment Tool [ALMAT]

Trainee's Name: _____ ID No: _____ Date: _____

Discussion of Assessed Clinical Episode	
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S.No	Performance	* Score (Out of 4)	NA
1.	What went well?		
	❖ Time management		
	❖ Prioritization		
	❖ Style of management		
	❖ Clinical assessment		
	❖ Investigations and referrals		
2.	What could have gone better?*		
	❖ Time management		
	❖ Prioritization		
	❖ Style of management		
	❖ Clinical assessment		
	❖ Investigations and referrals		
3.	Plan for learning and development		
	❖ E-Learning		
	❖ Simulation		
	❖ Courses		
	❖ Targeted clinical experience		
	❖ Journals		

* (0-1): Not

done/discussed at all; [1-2): have very little knowledge/skill; [2-3): partially performed/ discussed; [3-4): have excellent knowledge/skill/practice.

Feed back

What went well?	
What could have gone better?	
Plan for learning and development	

Observed by: _____ Signature of Supervising Anesthetist: _____

Annex 5: MSF Assessment tool/checklist

S.No	Domains	Standard Statement	Feedback / Narration	1	2	3	4
1.	Communication:	Communicates effectively with patients, families, and healthcare professionals.					
2.		Listens actively and responds appropriately to feedback.					
3.		Presents information in a clear and concise manner.					
4.		Uses appropriate communication channels to convey information.					
5.		Builds and maintains positive relationships with others.					
6.	Leadership:	Provides clear direction and guidance to others.					
7.		Sets high standards for performance and behavior.					
8.		Motivates and inspires others to achieve their goals.					
9.		Leads by example and models expected behaviors.					
10.		Develops and coaches others to achieve their full potential.					
11.	Teamwork:	Works collaboratively with others to achieve common goals.					
12.		Builds and maintains positive relationships with team members.					
13.		Resolves conflicts and manages disagreements in a constructive manner.					
14.		Encourages and supports others to share ideas and opinions.					
15.		Contributes to a positive team culture and climate.					
16.	Problem-Solving:	Identifies problems and generates creative solutions.					
17.		Analyzes data and information to make informed decisions.					
18.		Anticipates and plans for potential obstacles and challenges.					
19.		Implements solutions effectively and efficiently.					
20.		Evaluates outcomes and makes adjustments as needed.					

21.	Anesthesia Knowledge:	Demonstrates a solid understanding of anesthesia principles, techniques, and equipment.					
22.		Uses critical thinking and problem-solving skills to make clinical decisions.					
23.		Stays up-to-date with the latest research and best practices in anesthesia.					
24.		Applies knowledge to provide safe and effective patient care.					
25.		Seeks feedback and guidance to improve knowledge and skills					
26.	Technical Skill	Demonstrates proficiency in administering anesthesia.					
27.		Maintains a high level of accuracy and attention to detail.					
28.		Responds appropriately to changes in patient status.					
29.		Uses equipment and technology safely and effectively.					
30.		Seeks feedback and guidance to improve technical skills.					
31.	Professionalism	Demonstrates ethical and professional behavior at all times.					
32.		Maintains patient confidentiality and privacy.					
33.		Respects and values diversity and cultural differences.					
34.		Adheres to policies and procedures related to anesthesia practice.					
35.		Seeks feedback and guidance to improve professionalism					

Annex 6: Summative Assessment for preservice anesthesia education

Refer a separate annexed document for the summative assessment