Workshop 1: Airway Management in the ICU- Navigating the Physiological Frontier

Introduction

Airway management in the intensive care unit remains one of the most hazardous procedures, with complication rates higher than those seen in the controlled environment of the operating theatre. The 2026 workshop on Airway Management is built upon the foundational updates of the 2025 Difficult Airway Society DAS guidelines, which represent a paradigm shift from "managing failure" to "maximizing first-pass success".

Clinical Context

The primary focus of the workshop is the "physiologically difficult airway". Unlike the anatomically difficult airway, which is predicted by physical features like the Mallampati score or thyromental distance, the physiologically difficult airway is defined by systemic instability. Patients in the ICU often suffer from "the H's": hypoxemia, hypotension and high metabolic acidosis, all of which narrow the "safe apnea time".

Aims & Objectives

The workshop aims to standardize a proactive, safety-first approach to ICU intubation across Kenyan hospitals, utilizing the latest pharmacological and mechanical tools.

- Implementation of the Plan A to Plan D linear algorithm, with a focus on rapid progression in the event of failure to prevent prolonged hypoxia.
- Mastery of video laryngoscopy as the primary intubation modality, utilizing both standard and hyper-angulated blades to ensure first-pass success.
- Application of pre-oxygenation strategies, including High-Flow Nasal Oxygen (HFNO) and Non-invasive ventilation (NIV), to extend safe apnea periods in physiologically fragile patients.
- Techniques for ultrasound-guided identification of the cricothyroid membrane, ensuring that Plan D (Emergency Front-of-Neck Airway) is a viable and rapid rescue option.
- Integration of Human Factors and Crisis Resource Management (CRM), emphasizing the role of team briefing, role allocation, and the use of cognitive aids.

Program Schedule: Airway Management (09:00 AM – 01:20 PM)

The program is structured to provide an immersive experience, combining short didactic updates with intensive rotating skill stations.

Time	Session Title	Focus and Key Components
09:00 - 09:30	The New Standard: DAS 2025 Update	Review of the 65 new recommendations; The shift toward universal video laryngoscopy.
09:30 - 10:20	Skill Station 1: Plan A - The Perfect Attempt	Use of VL (e.g., Mindray A-Series), bougies, and stylets; Optimizing the view.
10:20 - 11:10	Skill Station 2: Physiological Optimization	HFNO and NIV setups for the "RAMP" position in obese and hypoxemic patients.
11:10 - 11:30	Networking & Industry Showcase	Direct engagement with sponsors of airway devices and pre-oxygenation tools.
11:30 - 12:20	Skill Station 3: Plan B & C - Rescue Ventilation	Second-generation supraglottic airways (SADs) and optimized facemask ventilation.
12:20 - 12:50	Skill Station 4: Plan D - Scalpel-Bougie-Tube	Ultrasound landmarking and the surgical airway technique for ICU rescue.
12:50 - 13:20	Synthesis: CRM and Post-Intubation Care	Documentation of the "Airway Course" and strategy for the next clinician.

Workshop 2: Point of Care Ultrasound (POCUS) – The AI-Driven Diagnostic Standard

Introduction

In the ICU of 2026, ultrasound is no longer a tool of the radiology department; it is an essential bedside extension of the clinician's diagnostic and therapeutic toolkit. The POCUS workshop is designed to transition participants from basic image acquisition to the integration of advanced Artificial Intelligence (AI) and Machine Learning (ML) workflows that are currently reshaping the global ultrasound market.

Clinical Context

Innovations in 2026 have enabled handheld, wireless probes to match the diagnostic precision of traditional, cart-based systems and even Cardiac MRI in specific cardiac function assessments.

AI algorithms now automate complex tasks such as measuring the Ejection Fraction (EF), assessing the Inferior Vena Cava (IVC) for fluid responsiveness, and identifying lung sliding in pneumothorax. For hospitals in Kenya, these "compact systems" offer a cost-effective way to provide high-level care without the footprint or expense of traditional imaging.

Aims & Objectives

This workshop focuses on the practical application of these technologies to solve real-world ICU problems: undifferentiated shock, acute respiratory failure, and procedural safety.

- Standardization of shock assessment using the RUSH (Rapid Ultrasound for Shock and Hypotension) protocol, incorporating AI for rapid EF and volume status analysis.
- Application of the BLUE (Bedside Lung Ultrasound in Emergency) protocol for the rapid diagnosis of pulmonary edema, pneumonia, and pneumothorax.
- Mastery of ultrasound-guided vascular access, now considered the "standard of care" for central venous and arterial catheterization.
- Utilization of POCUS for multi-system monitoring, including gastric volume assessment to prevent aspiration and optic nerve sheath diameter (ONSD) for intracranial pressure trends.
- Introduction to the "VExUS" (Venous Excess Ultrasound) score to quantify systemic congestion and guide fluid removal in septic or heart failure patients.

Program Schedule: Point of Care Ultrasound (09:00 AM – 01:00 PM)

The POCUS workshop is designed as a high-density "hands-on" training session, utilizing the latest handheld devices provided by industry partners.

Time	Session Title	Focus and Key Components
09:00 - 09:30	AI and the Future of POCUS	Trends in miniaturization, cloud connectivity, and automated interpretation.
09:30 - 10:30	Skill Station 1: Heart and Hemodynamics	Focused Cardiac Ultrasound (FoCUS); AI-EF calculation; IVC and VExUS scores.
10:30 - 11:15	Skill Station 2: Lung and Pleura	Identifying "B-lines," consolidations, and effusions; Guiding thoracentesis.
11:15 - 11:30	Industry Break & Handheld Demo	Exploring wireless probes.

Time	Session Title	Focus and Key Components
11:30 - 12:15	Skill Station 3: Vascular and Procedural	CVC and PICC placement.
12:15 - 12:45	Skill Station 4: Airway, Gastric, and Neuro	ETT confirmation; Gastric volume assessment; ONSD for neuro-monitoring.
12:45 - 13:00	Integration Case Study	The "Undifferentiated Shock" patient: A multi-organ ultrasound approach to triage.

Workshop 3: Advanced Mechanical Ventilation — Precision and Personalized Support

Mechanical ventilation is the most common life-support intervention in the ICU, yet it is also a major driver of iatrogenic lung and diaphragm injury. The 2026 workshop on Advanced Mechanical Ventilation moves beyond basic "Assist Control" settings to embrace a physiology-guided, personalized approach to respiratory failure.

The Physiological Shift: Lung and Diaphragm Protection

By 2026, the paradigm of "Lung-Protective Ventilation" has expanded into "Lung- and Diaphragm-Protective Ventilation". This recognition stems from the "WEAN-SAFE" and "WIND" studies, which highlighted that both excessive and insufficient respiratory effort during ventilation lead to poor outcomes, including Ventilator-Induced Diaphragmatic Dysfunction (VIDD).

Furthermore, the quantification of risk has evolved. Clinicians are now taught to monitor "Mechanical Power" (MP), a comprehensive measure of the energy transferred to the lung per minute. The formula for MP integrates tidal volume, driving pressure, and respiratory rate, providing a more accurate predictor of mortality than any single parameter.

Aims and Clinical Objectives

The goal of this workshop is to provide clinicians with the tools to tailor ventilation to the individual patient’s lung mechanics and physiological state.

- Identification of regional lung heterogeneity using Electrical Impedance Tomography (EIT) and lung ultrasound (LUS) to optimize PEEP and prevent "atelectatrauma".
- Mastery of "Driving Pressure" (Delta P) monitoring, the most critical predictor of outcome in ARDS, and its use in titrating tidal volumes.
- Implementation of advanced monitoring techniques, such as esophageal manometry, to measure transpulmonary pressure and avoid excessive lung stress.

- Diagnosis and management of Patient-Ventilator Asynchrony (PVA) through waveform analysis.
- Utilization of "heart-lung-diaphragm" ultrasound to guide the liberation from mechanical ventilation and predict weaning success.

Program Schedule: Advanced Mechanical Ventilation (09:00 AM – 01:00 PM)

The program focuses on high-level physiological maneuvers and the use of modern monitoring equipment.

Time	Session Title	Focus and Key Components
09:00 - 09:40	The Precision Frontier: MP and VILI	Why "6ml/kg" is not enough; Understanding Mechanical Power and regional strain.
09:40 - 10:30	Skill Station 1: Driving Pressure and Compliance	Bedside maneuvers; Calculating Delta P and C_{rs}; Adjusting for the "Baby Lung".
10:30 - 11:15	Skill Station 2: EIT and Regional Aeration	Real-time imaging of lung recruitment using EIT systems.
11:15 - 11:30	Networking & Closed-Loop Tech Demo	Exploring "Intelligent-ASV" and adaptive control algorithms with sponsors.
11:30 - 12:15	Skill Station 3: Esophageal Manometry	Measuring transpulmonary pressure; Setting PEEP in the "Stiff Chest Wall" patient.
12:15 - 12:45	Skill Station 4: Diaphragm Ultrasound and Weaning	Measuring thickening fraction (DTF) and excursion to prevent VIDD.
12:45 - 13:00	Discussion: AI and Machine Learning	How automated systems will handle oxygenation and weaning in the near future.