

Evaluation of Compliance with End-Tidal Oxygen (ETO₂) Monitoring During General Anesthesia

Saad Ur Rehman¹, Sameen Ejaz¹, Ayesha Mehmood¹, Zara Saleem¹
¹Anesthesia, Shaukat Khanum Memorial Cancer Hospital and Research Center, Lahore, Pakistan.

BACKGROUND

- Pre-oxygenation before induction de-nitrogenates the functional residual capacity (FRC) and creates an intrapulmonary oxygen reservoir.
- Adequacy of preoxygenation can be MEASURED and hence should not be assumed
- End-tidal oxygen (ETO₂) is a measure of efficacy of pre-oxygenation when using a face mask.

WHAT DO THE GUIDELINES SAY?

BJA

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Special Article

RESPIRATION AND THE AIRWAY

Difficult Airway Society 2025 guidelines for management of unanticipated difficult tracheal intubation in adults

- In addition to minimum monitoring (pulse oximetry, noninvasive blood pressure, electrocardiography, and temperature), **inspired and expired oxygen monitoring** and waveform capnography is also recommended.
- During pre-oxygenation, two objectives should be achieved:
 1. assessment of efficacy of pre oxygenation by targeting an end-tidal oxygen fraction
 - 2.confirmation that waveform capnography is working and correctly interpretable.

OBJECTIVE:

To evaluate compliance with recommended ETO₂ monitoring during pre-oxygenation before tracheal intubation in patients receiving general anesthesia.

STANDARD:

DAS 2025: ETO₂ should be monitored during pre-oxygenation and a value ≥0.9 achieved before intubation.

METHODS

Design: Prospective clinical audit, approved by the Clinical Audit Committee
Setting: 9 operating rooms, SKMCH & RC, Lahore
Population: Patients undergoing general anesthesia with tracheal intubation
Following parameters were audited:

- 1.Confirmation of the presence and functional readiness of the ETO₂ / gas-analyzer module on the anesthesia workstation in every operating room
- 2.Determination of the proportion of cases in which ETO₂ was actively monitored before proceeding to tracheal intubation.
- 3.Determination of the proportion of cases in which the target ETO₂ ≥0.9 was achieved.

"Every extra minute of safe apnea time provides crucial time for a second look, a change of blade, or a rescue plan!"

RESULTS

9 / 9

All Operating rooms had a present and fully functional ETO₂ module

1 / 27

3.7% compliance

Cases in which ETO₂ was monitored during pre-oxygenation

1 / 27

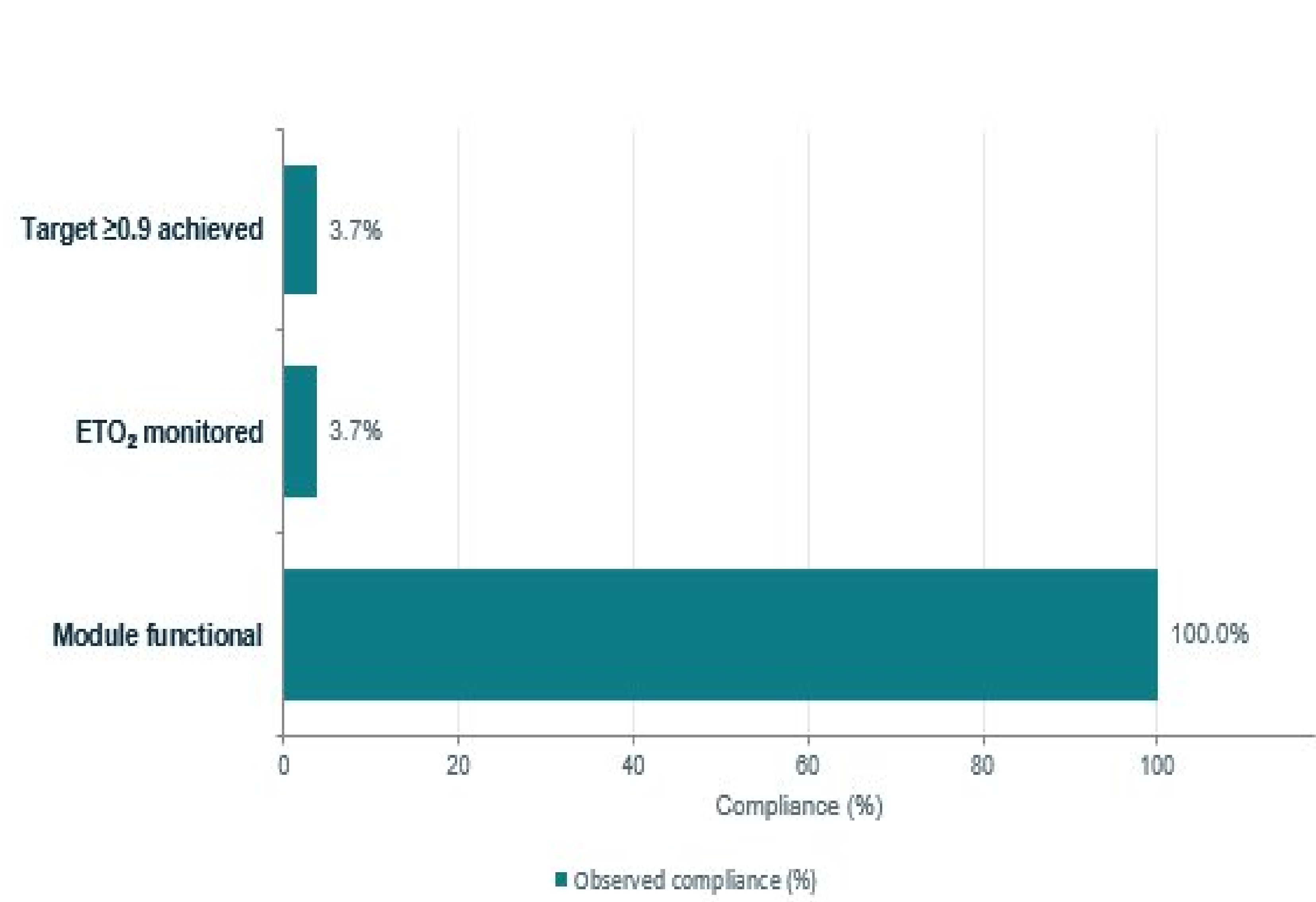
3.7% compliance

Cases in which the target ETO₂ ≥0.9 was achieved

96.3%

Non-compliance

96.3% of the tracheal intubations proceeded without monitoring of the ETO₂ despite the monitoring capability being available and working in every single operating room.



RECOMMENDATIONS

- 1.. **Education & training:**
Departmental teaching session on the importance of adequate pre-oxygenation and the ETO₂ ≥0.9 target according to the recent guidelines
2. **Documentation:**
An ETO₂-at-induction field should be added to the intraoperative monitoring sheet
3. **Re audit**