



Improving access to obstetric difficult airway equipment in a Rwandan public hospital



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Introduction

In Low Resource Settings (LRSs) the risk of death from anaesthesia is estimated at 1.2 per 1000 women undergoing obstetric procedures¹. Aspiration and difficult airway management are leading causes of maternal death related to anaesthesia in LRSs². Equipment and communication factors contribute to 25% of major airway management complications (NAP4)³.

The RCoA (Royal College of Anaesthetists) and ASA (American Society of Anaesthesiologists) publish standards for the minimum airway equipment which must be provided in obstetric theatres^{4,5}. The RCoA states that the Obstetric Anaesthetists Association (OOA)/Difficult Airway Society (DAS) algorithm should be displayed in theatre⁴.

The University Teaching Hospital, Kigali (CHUK) is the largest tertiary referral teaching hospital in Rwanda. Obstetrics and gynaecology procedures are conducted in three theatres within a designated maternity building. Cases are conducted by a mixture of physician and non-physician anaesthetists.

Aims

1. **Improve the provision of difficult airway equipment in obstetric theatres**
2. **Make the OOA/DAS algorithm available for reference in obstetric theatres**
3. **Improve staff awareness of the OOA/DAS algorithm**

Methods

Approvals were obtained from the CHUK Quality Improvement Committee. We audited airway equipment present in obstetric theatre over 14 days in a 1-month period using an airway equipment proforma. This was created using essential recommendations common to the RCoA and ASA guidelines. Data were recorded in a secure excel spreadsheet.

Following the baseline audit, gaps in practice were identified. This led to the implementation of **two intervention arms**

Interventions

Arm 1. Access to difficult airway equipment

Three changes to practice were implemented: a) an obstetric difficult airway box was created, b) a new videolaryngoscope was placed in obstetric theatre, c) the OOA/DAS difficult and failed tracheal intubation algorithm was displayed in theatre. Following an implantation week the audit was repeated.

Arm 2. Staff training on obstetric failed intubation

A structured, two-hour simulation workshop on the OOA/DAS algorithm was provided for 11 trainee anaesthetists. The participants filled out an anonymised post-workshop questionnaire on Google Forms™.

Results

Intervention arm 1. Figure 1 shows the number of days that recommended airway items were present in the obstetric theatre over a total of 14 days before and after implementation.

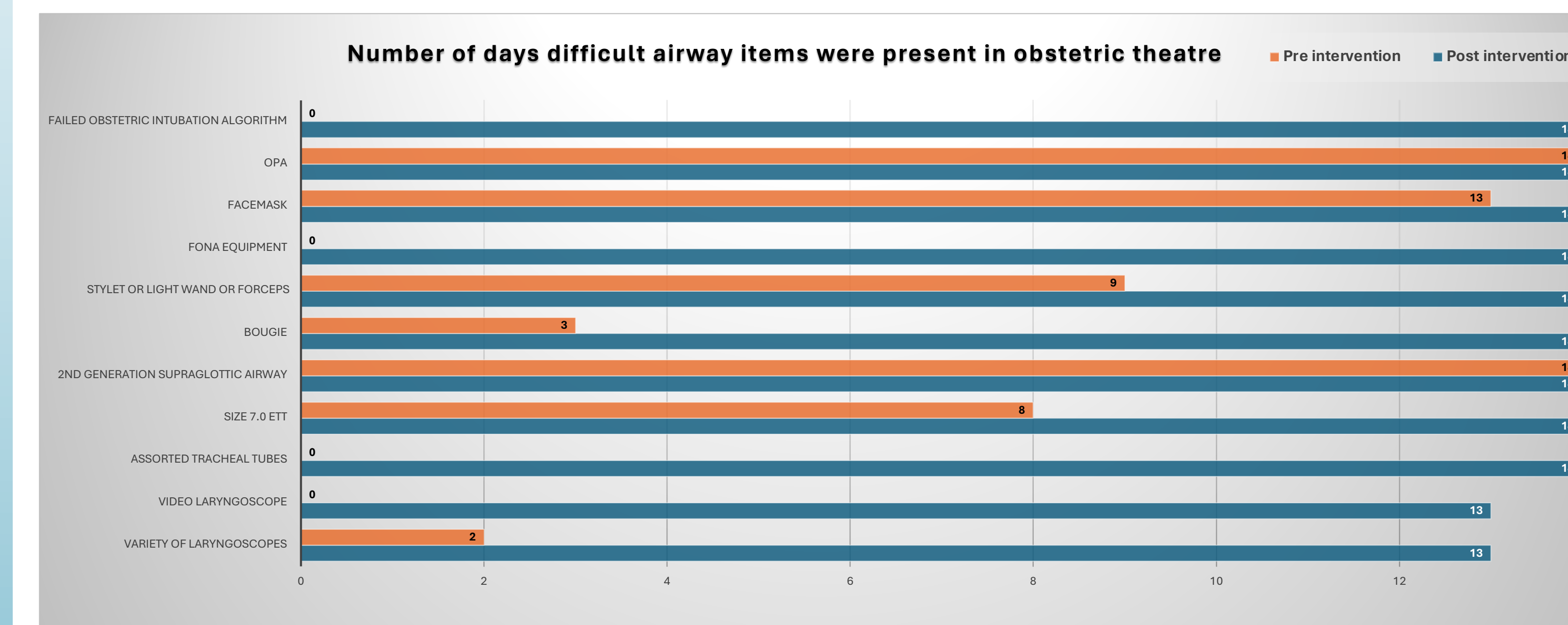


Figure 1. OPA = oropharyngeal airway. FONA = front of neck access. ETT = Endotracheal tube



Image 1: Obstetric difficult airway box Image 2: New videolaryngoscope

Intervention Arm 2

The post-workshop survey response rate was 81.8%. 100% of participants strongly agreed the workshop was appropriate for their level of training, useful for their practice and clearly/effectively delivered. 88.9% strongly agreed that they learned something new during the workshop.

Discussion

This audit led to a significant improvement in compliance with standards for the provision of difficult airway equipment in obstetric theatres. This was achieved by providing an obstetric difficult airway box, a videolaryngoscope and displaying the OOA/DAS algorithm in obstetric theatre. The simulation-based training was highly popular and promoted awareness of the OOA/DAS guidelines. However, training was not provided to non-physician anaesthetists (NPAs), who compromise a significant proportion of the obstetric anaesthetic workforce in Rwanda. We plan to deliver the simulation workshop to NPAs in 2024. Further review is required to assess whether this leads to sustained knowledge and skill retention.

References

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