FAILED INTUBATION GUIDELINE FOR OBSTETRIC ANAESTHESIA

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Version	5.0
Grade of Change	Minor
Summary of Changes	Equipment now in use. Reference to related guidelines

Document Type	Clinical Guideline
Coverage	Anaesthetic

Designation of Guideline Sponsor	Consultant Anaesthesia
Responsible Committee	Anaesthetic Meeting

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Date issued	11/07/2024
Review date	Jul 2027

Contents

1. Failed Intubation Guideline for Obstetric Anaesthesia

Introduction

Failed intubation risk is 1: 390 in obstetrics.
Changes in pregnancy may contribute – increased breast size, weight gain in pregnancy, laryngeal oedema (especially with pre-eclampsia).
High risk of failed intubation is related to rapid drop in SpO_2 with low maternal FRC and increased maternal oxygen consumption, especially in labour. This prevents prolonged attempts at intubation and requires rapid application of the failed intubation drill.
Anxiety on the part of the anaesthetist may cause attempted intubation before full muscle relaxation has occurred – need to wait until fasciculations have subsided.

Equipment required

Thorough preparation of drugs and equipment required, with everything ready to hand and familiar to both anaesthetist and ODP/Anaesthetic Nurse. When applying cricoid pressure, the ODP/Anaesthetic Nurse is unable to go away to find other equipment.

Recommended equipment:

- Videolaryngoscope (McGrath)
- One short handled laryngoscope – as maternal breasts may prevent insertion of normal length handle.
- Standard handled laryngoscope plus polio blade available
- McCoy levering laryngoscope
- Airway introducer – bougie and stylet
- Precut oral endo-tracheal tubes. Size 7.0 recommended smaller sizes immediately available
- Oral airway
- Size 3/4 LMA
- i-Gel 3/4
- Ambu fibreoptic scope
- Standardised difficult airway trolley :
    - Oxford pillow
    - **Plan A** : alternate laryngoscopes, McGrath , McCoy ○
    - **Plan B** : supraglottic airway – LMA, i-Gel
    - **Plan C** : facemask, nasal airway, magill's forceps
    - **Plan D** : cricothyroidotomy- melker kit, tracheostomy kit (size 6 & 7)
      ○ Special tubes : RAE, reinforced tube, Berman intubating oral airway
      ○ Minijet ○ Tracheostomy trays *2 ○ 5% lignocaine spray

Airway assessment

- Inter-incisor gap <5 cm (3 fingers)
- Mallampati <3
- Jaw protrusion?
- Good neck movement?
- Weight >90 kg at booking?
- Low risk of airway oedema?

If difficult airway/intubation suspected, seek senior help before proceeding.

Induction of general anaesthesia

Positioning

Induce anaesthesia on the operating table
Consider optimise the position especially high BMI patient e.g. Head up / ramped position
Risk of aortocaval syndrome > left lateral tilt required

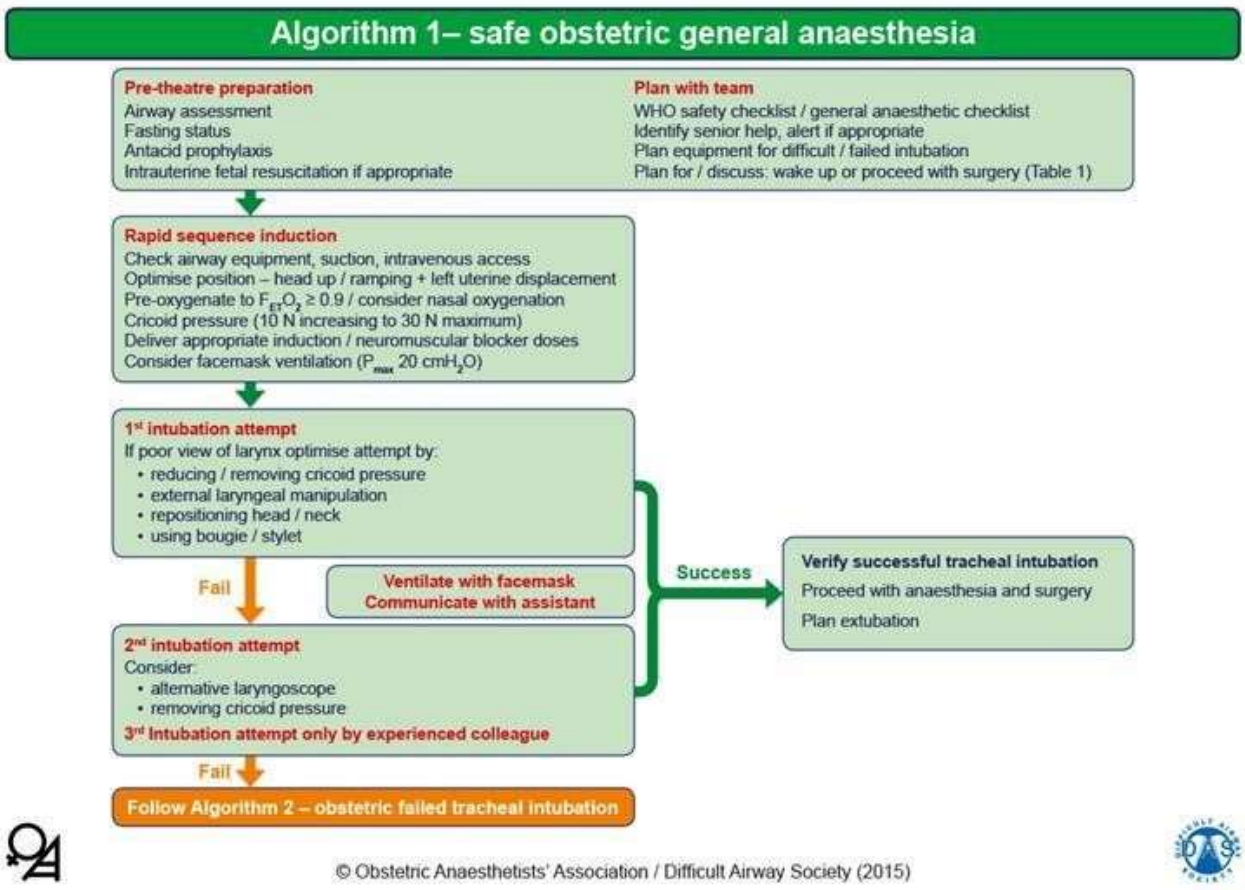
Preoxygenation

Purpose: to replace nitrogen in alveoli with oxygen and increase reserve during apnoea.
Method: high flow nasal oxygenation 8L/min until intubated high flow oxygen via tight fitting face mask to achieve FEO_2>90%
Use gas analysis to confirm adequate de-nitrogenation by ensuring EtO_2 > 90%.
Also, confirm that CO_2 monitor is working.

Rapid sequence induction

As obstetric anaesthesia guideline.
Badly applied cricoid pressure increases risk of failed intubation due to laryngeal distortion.

2. Algorithm 1 – Safe Obstetric General Anaesthesia



3. Table 1 – proceed with Surgery?

Table 1 – proceed with surgery?

	Factors to consider	WAKE ⟷			PROCEED
Before induction	**Maternal condition**	• No compromise	• Mild acute compromise	• Haemorrhage responsive to resuscitation	• Hypovolaemia requiring corrective surgery • Critical cardiac or respiratory compromise, cardiac arrest
	Fetal condition	• No compromise	• Compromise corrected with intrauterine resuscitation, pH < 7.2 but > 7.15	• Continuing fetal heart rate abnormality despite intrauterine resuscitation, pH < 7.15	• Sustained bradycardia • Fetal haemorrhage • Suspected uterine rupture
	Anaesthetist	• Novice	• Junior trainee	• Senior trainee	• Consultant / specialist
	Obesity	• Supermorbid	• Morbid	• Obese	• Normal
	Surgical factors	• Complex surgery or major haemorrhage anticipated	• Multiple uterine scars • Some surgical difficulties expected	• Single uterine scar	• No risk factors
	Aspiration risk	• Recent food	• No recent food • In labour • Opioids given • Antacids not given	• No recent food • In labour • Opioids not given • Antacids given	• Fasted • Not in labour • Antacids given
	Alternative anaesthesia • **regional** • **securing airway awake**	• No anticipated difficulty	• Predicted difficulty	• Relatively contraindicated	• Absolutely contraindicated or has failed • Surgery started
After failed intubation	**Airway device / ventilation**	• Difficult facemask ventilation • Front-of-neck	• Adequate facemask ventilation	• First generation supraglottic airway device	• Second generation supraglottic airway device
	Airway hazards	• Laryngeal oedema • Stridor	• Bleeding • Trauma	• Secretions	• None evident

Criteria to be used in the decision to wake or proceed following failed tracheal intubation. In any individual patient, some factors may suggest waking and others proceeding. The final decision will depend on the anaesthetist's clinical judgement.

4. Table 2 - Management of Failed Tracheal Intubation

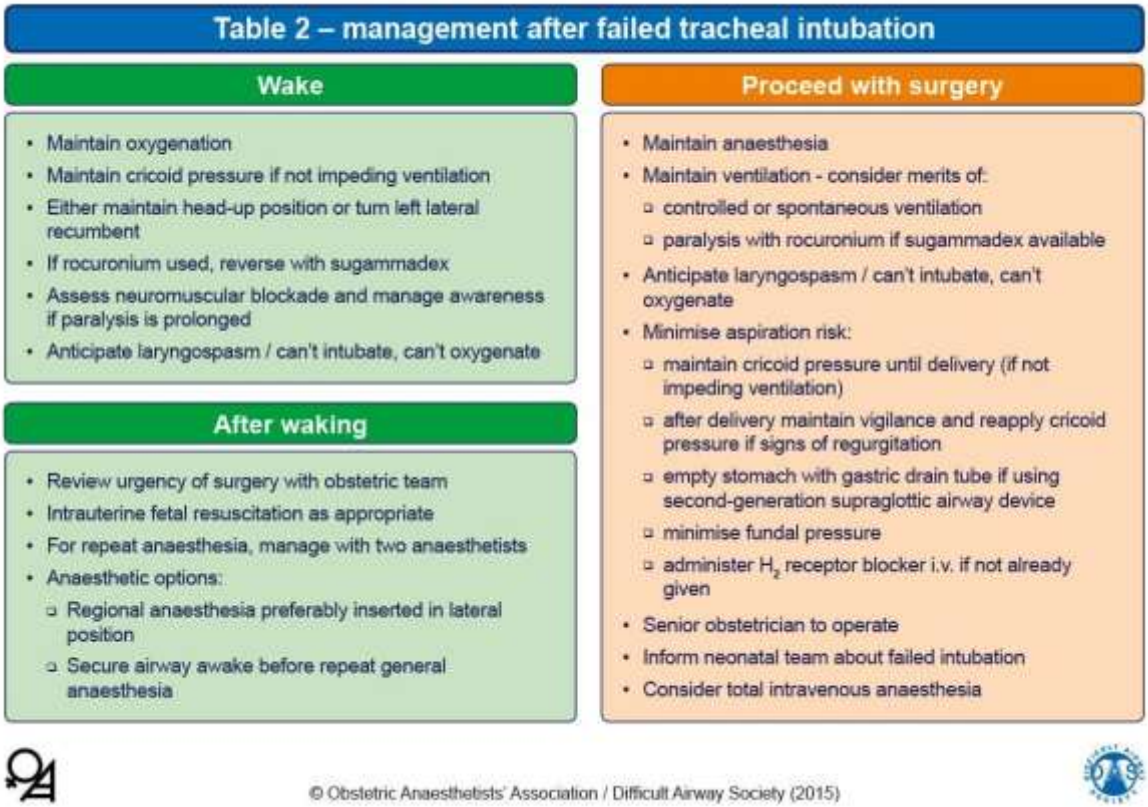


Table 2 – management after failed tracheal intubation

Wake

- Maintain oxygenation
- Maintain cricoid pressure if not impeding ventilation
- Either maintain head-up position or turn left lateral recumbent
- If rocuronium used, reverse with sugammadex
- Assess neuromuscular blockade and manage awareness if paralysis is prolonged
- Anticipate laryngospasm / can't intubate, can't oxygenate

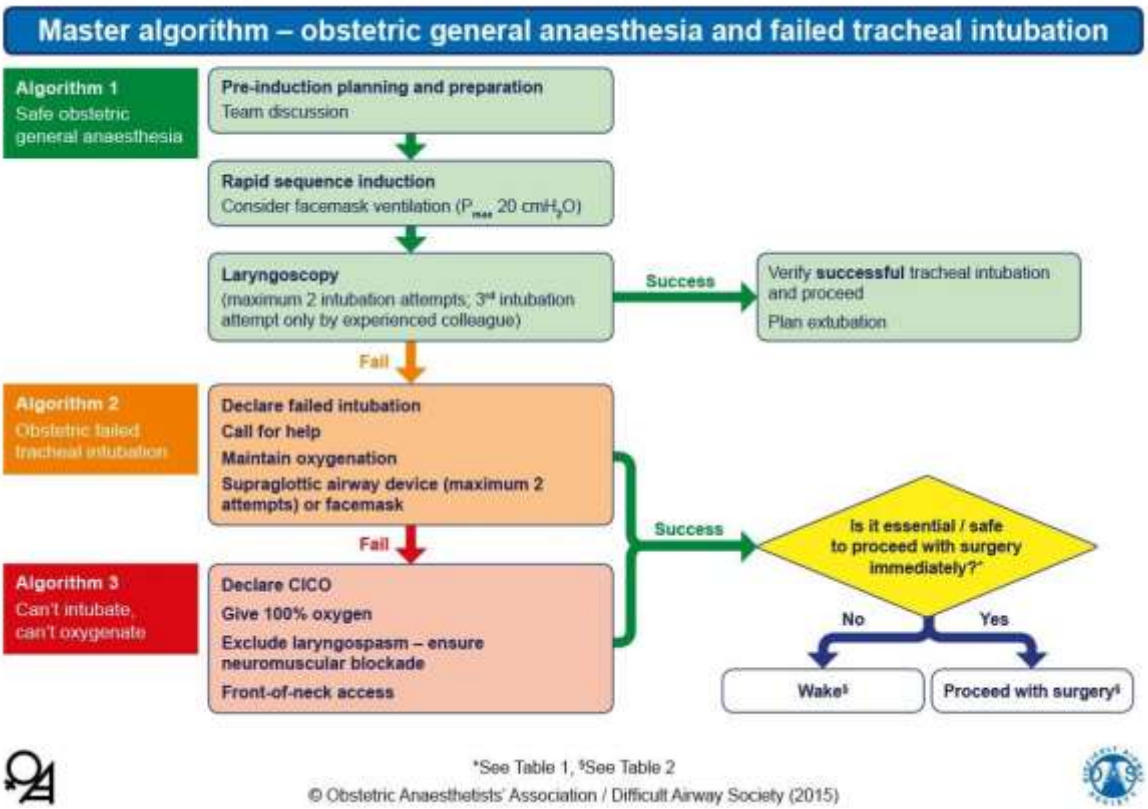
After waking

- Review urgency of surgery with obstetric team
- Intrauterine fetal resuscitation as appropriate
- For repeat anaesthesia, manage with two anaesthetists
- Anaesthetic options:
  - Regional anaesthesia preferably inserted in lateral position
  - Secure airway awake before repeat general anaesthesia

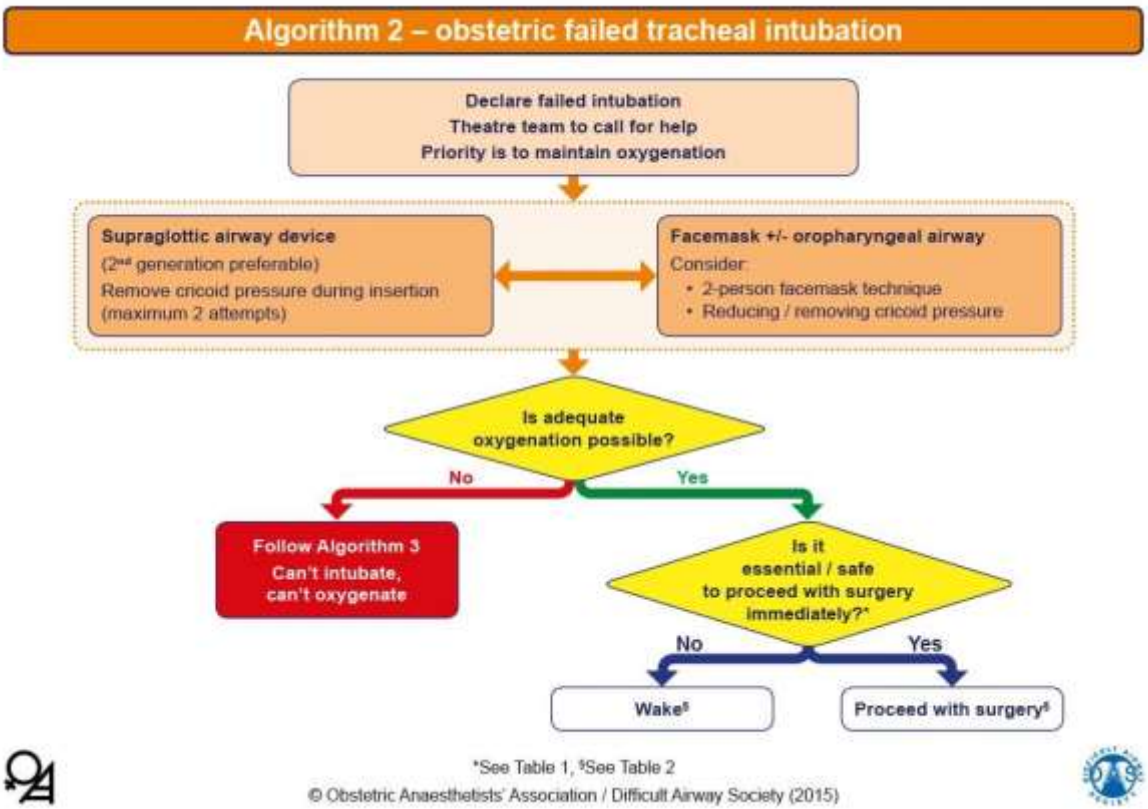
Proceed with surgery

- Maintain anaesthesia
- Maintain ventilation - consider merits of:
  - controlled or spontaneous ventilation
  - paralysis with rocuronium if sugammadex available
- Anticipate laryngospasm / can't intubate, can't oxygenate
- Minimise aspiration risk:
  - maintain cricoid pressure until delivery (if not impeding ventilation)
  - after delivery maintain vigilance and reapply cricoid pressure if signs of regurgitation
  - empty stomach with gastric drain tube if using second-generation supraglottic airway device
  - minimise fundal pressure
  - administer H_2 receptor blocker i.v. if not already given
- Senior obstetrician to operate
- Inform neonatal team about failed intubation
- Consider total intravenous anaesthesia

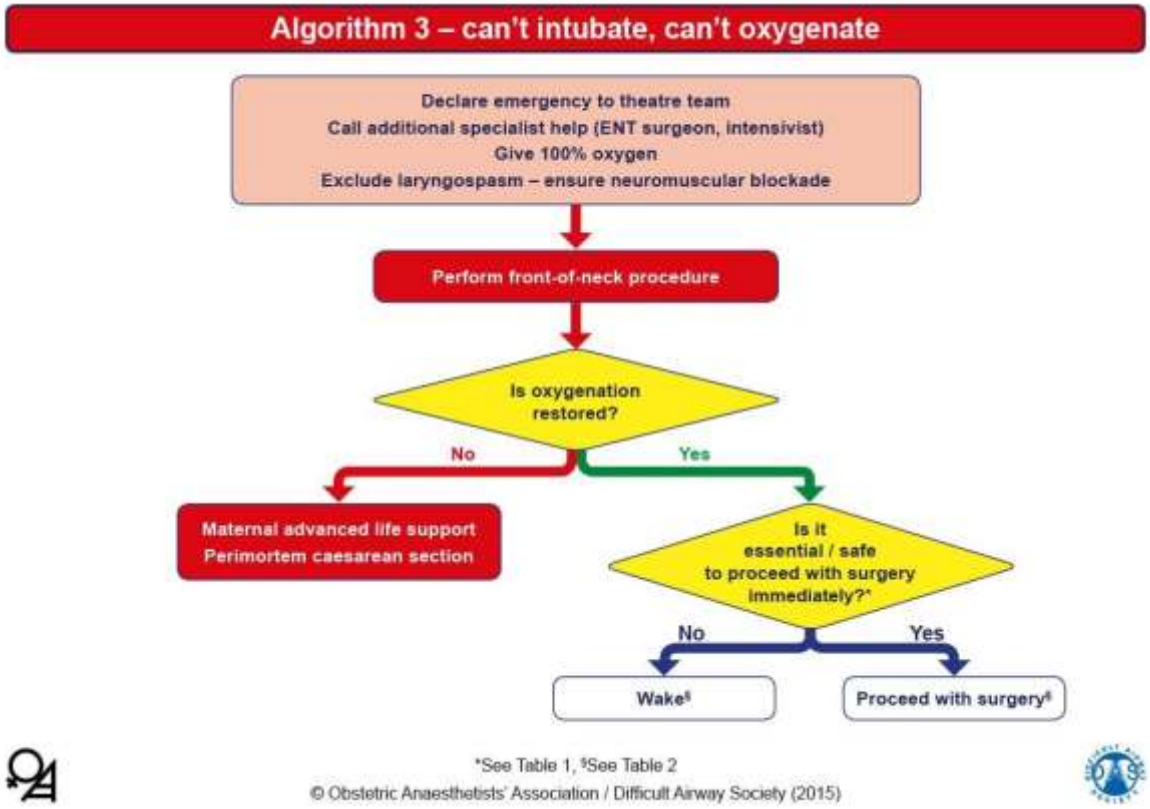
5. Master Algorithm – Obstetric Anaesthesia and Failed Tracheal



6. Algorithm 2 – Obstetric Failed Tracheal Intubation



7. Algorithm 3 – Can't Intubate, Can't Oxygenate



8. Guideline Statement

The anaesthetic department has updated this guideline as an accurate aid to anaesthetists involved in the anaesthetising and intubation of patients receiving general anaesthetic in Delivery Suite Theatres.
Those anaesthetists are competent to recognise the risks and complications of failed intubation and initiate the appropriate treatment.

9. Guideline Objectives

i. To ensure that all anaesthetists involved in the anaesthetising and intubation of patients receiving general anaesthetic in Delivery Suite Theatres, have received adequate training and are deemed competent in the care of these patient's.

ii. To ensure that this training encompasses known complications and sideeffects of general anaesthesia, signs, symptoms and clinical management of failed intubation.

iii. That following assessment, junior anaesthetists refer patients with a suspected difficult airway for senior anaesthetic review.

iv. To continue to monitor patients for improvement until complication has resolved.

10. Scope of the Guideline

This Guideline applies to all anaesthetists involved in the care of patients receiving general anaesthetic, in Delivery Suite theatres at Liverpool Women's Foundation Trust.

11. Monitoring

Continuous monitoring of difficult and failed intubations is in place by Meditech reporting.

12. Professional Responsibilities

It is the responsibility of all anaesthetists involved in the anaesthetising and intubation of patients receiving general anaesthetic in Delivery Suite Theatres to be aware of their obligations and responsibilities to affect safe clinical care and timely recognition and treatment of possible complications i.e. failed intubation with up to date documentation and a written follow up care plan recorded in the medical notes.

13. Consultation

This Guideline was originally written by P.Barclay Consultant Anaesthetist, reviewed at the Consultant Anaesthetic guidelines group. Reviewed and reformatted by D.Patrick and C.Chevannes. Reviewed and reformatted by T.Ramanathan and D. Patrick. Reviewed by all consultant anaesthetists.

8. Training

The management of failed intubation is included in junior anaesthetist training sessions.

14. Abbreviations

$Sp0_2$	Oxygen Saturation
FRC	Functional Residual Capacity
ODP	Operating Department Practitioner
LMA	Laryngeal Mask
ETO_2	End Tidal Oxygen
RSI	Rapid Sequence Induction
CICV	Can't intubate, Can't ventilate
SV	Spontaneous ventilation

15. Reference

1. OAA DAS obstetric airway guidelines 2015
2. Failed tracheal intubation during obstetric general anaesthesia: a literature review
3. S.M.Kinsella[a]A.L.Winton[a]M.C.Mushambi[b]K.Ramaswamy[c]H.Swales[d]A.C.Quinn [e]M.Popat[f]
4. International Journal of Obstetric Anesthesia Volume 24, Issue 4, November 2015, Pages 356-374

16. Intranet Classification

Tags (separated by ;)	Difficult intubation

17. Version Control Sheet

Version	Date	Author	Status	Comment
1.0	2004	Theatre Manager	Archived	Creation
2.2	2007	Consultant Anaesthetist	Archived	Reviewed and Updated
2.3	2010	Consultant Anaesthetist	Archived	Reviewed and Updated
2.4	2015	Consultant Anaesthetist	Archived	Reviewed and Updated
3.1	2018	Consultant Anaesthetist	Archived	Reviewed and Updated
4.0	2021	Consultant Anaesthetist	Archived	Reviewed and Updated
5.0	2024	Consultant Anaesthetist	Current	Reviewed and Updated

Monitoring Compliance with the Guideline

Audit outcomes	Target	How will the audit outcomes be Monitored?	Responsible committee for monitoring audit outcomes and action plans	Frequency of guideline monitoring	Frequency of action plan monitoring	Lead

NHS
Liverpool Women's
NHS Foundation Trust