

Introducing a standard operating procedure for the use of remifentanyl PCAs on St George's Hospital Delivery Suite

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INTRODUCTION

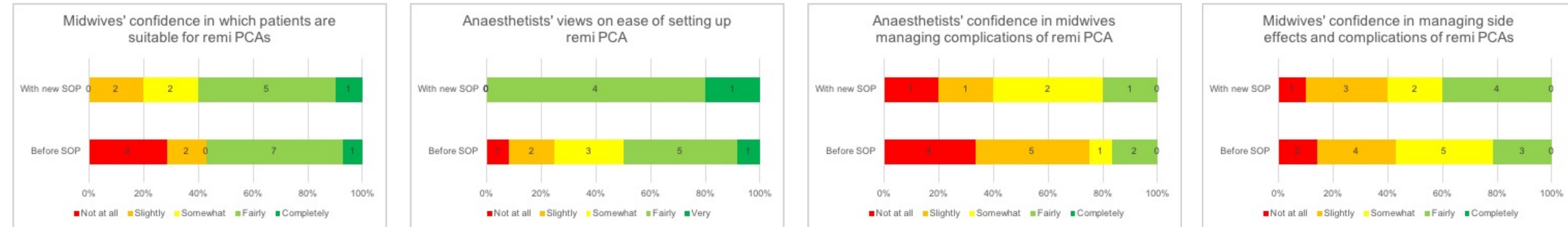
Remifentanyl Patient Controlled Analgesia is offered to labouring women on our delivery suite who are unsuitable for epidural analgesia. As such it is used relatively infrequently in our unit, and an anaesthetist unfamiliar with remifentanyl PCAs may be required to set up a remifentanyl PCA out-of-hours. A brief guide existed for anaesthetists delivering remifentanyl PCAs. No guideline existed for midwives. We wrote a standard operating procedure (SOP), reducing the concentration of remifentanyl and simplifying the suggested starting doses. We included a 'Quick Set up Guide' for anaesthetists and a 'Management of Complications' flow chart for midwives. We introduced a 'Grab Box' containing equipment for immediate management of complications in the room.

OBJECTIVES

- Ensure processes are in place for the safe use of remifentanyl PCAs on labour ward, as per GPAS standard [1] and NICE guidance [2]
- Introduce guidance for multi-disciplinary team on labour ward on their use
- Simplify the process of setting up a remifentanyl PCA for anaesthetists
- Improve safety for patients using remifentanyl PCAs

METHODS

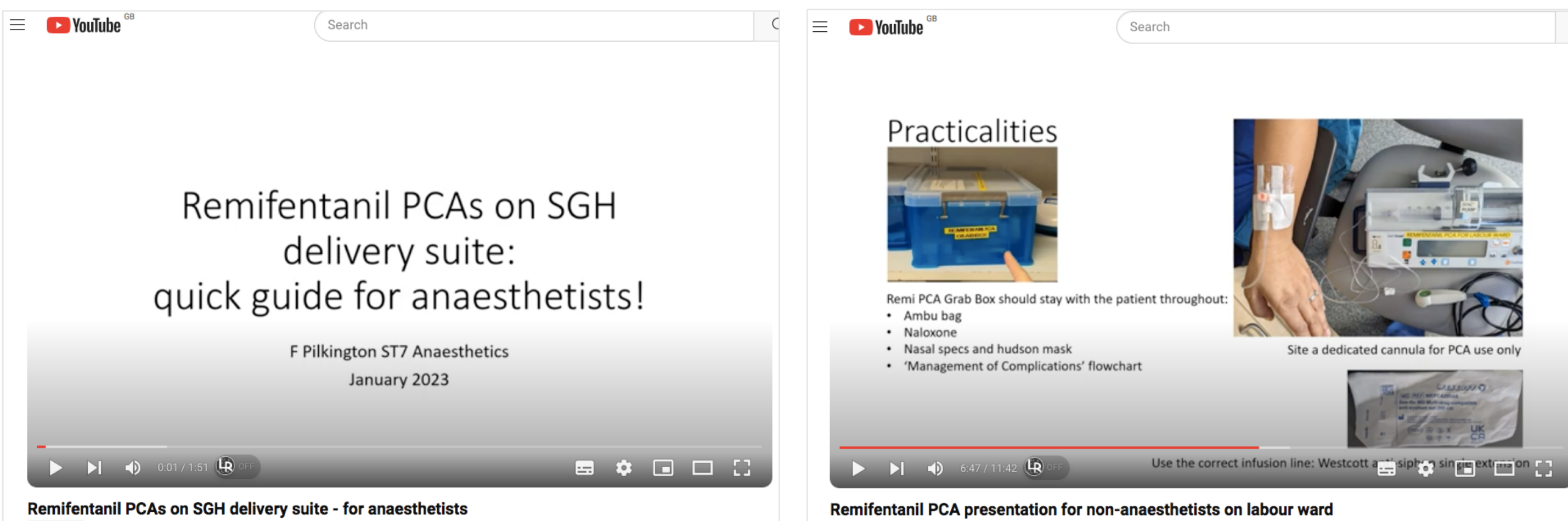
Midwives and anaesthetists were surveyed on their confidence with various aspects of remifentanyl PCAs. Midwives lacked confidence in management of complications, and which of their patients might be suitable for remifentanyl PCAs. Anaesthetists found existing guidance overcomplicated, and lacked confidence that complications would be managed well. Concerns were raised about the strength of remifentanyl preparation in use at 100mcg/ml, and a standard bolus dose rather than a dose per kg was preferred. Anaesthetists and midwives were surveyed again following the introduction of our new standard operating procedure, and comparison of some of the results can be seen in the graphs below.



We reviewed guidelines from two other trusts [3, 4] which have been part of the RemiPCA Safe network [4], and therefore had a track record of applying high standards of care, and adopted aspects of those protocols that were also applicable in our unit. We adapted from Southampton General Hospital's remifentanyl guideline a 'Management of Complications' flowchart to guide midwives in case of complications whilst using remifentanyl PCAs. We worked with senior midwives in our unit to create a flowchart that would be useable by our delivery suite midwives.

Shortly before before the introduction of the new guideline there was a maternal respiratory cardiac arrest on our delivery suite whilst a patient was using a remifentanyl PCA. An incident review concluded this was likely due to an inadvertent bolus following a line occlusion. Whilst we had already planned to reduce the concentration of remifentanyl in use to reduce the impact of any such inadvertent bolus, we also reviewed the lines in use and procured specific an-siphon single infusion line PCA giving sets.

As well as delivering teaching to midwives on delivery suite, we have created a video teaching presentation for non-anaesthetists, and a video introductory guide for anaesthetists. Both of these can be freely accessed on YouTube [5]. Remifentanyl PCA and respiratory arrest will form part of multidisciplinary team skills and drills training from next year.



CHANGES INTRODUCED

- Reduced the dilution of remifentanyl to 50mcg/ml, in keeping with that used throughout the rest of the hospital.
- Simplified starting dose from mcg/kg calculation to either 30mcg or 20mcg (depending on BMI and gestation), to reduce risk of calculation error and simply set-up procedure
- Produced single page flowchart on setting up a Remifentanyl PCA on delivery suite
- Procured dedicated single line anti-siphon giving sets for use with all PCAs on labour ward
- Simplified and adjusted frequency of recorded observations required during remifentanyl PCA use to every 30mins
- Produced 'Management of Complications' flowchart to guide midwives
- Introduced a 'Grab Box' to stay with the patient, containing self-inflating BVM, 'Management of Complications' Flowchart, naloxone, and oxygen delivery devices
- Specified that morphine PCA should be used instead of remifentanyl PCAs for women labouring following an intrauterine death

Remifentanyl PCA Quick Set-up Guide

Think remi PCA is appropriate?

Check for contraindications:

- IUD (use morphine PCA instead)
- Allergy to remifentanyl
- Opioid within last 4 hours
- No remi PCA trained midwife available for continuous 1-to-1 monitoring (discuss with midwife in charge)
- Patient can't consent or understand how to use

If gestation <36weeks, agree with anaesthetic consultant and obstetric team first

Give remifentanyl Patient Info Leaflet to patient and consent for use

Ensure dedicated IV cannula (away from BP cuff, anti-reflux valves on nearby cannulae)

Put 'Remi PCA grab box' (from store cupboard) + naloxone vial in room, to stay with pt

Prescribe remi PCA, O₂, naloxone, anti-emetic, obs chart on iClip. Sign for PCA.

Prepare PCA: draw up remifentanyl at 50mcg/ml into 50ml luer lock syringe (if using 5mg in 100ml, remainder of bag must be labelled with patient details & locked in CD cupboard)

Set up pump (key on 'blue keys' with midwife in charge):
See appendix 3 if unfamiliar with IVAC PCAM pump

Modify protocol to select appropriate initial PCA bolus dose:

- 30mcg for most patients
- 20mcg for patients with BMI <20, gestation <36 weeks

Attach PCA to dedicated cannula using PCA line or IV line with anti-reflux valve
No other infusions or drugs to be given via this line.

Take baseline obs (HR, sats, BP, RR, AVPU)

Instruct patient on how to use:

- Patient alone may press button
- Press as soon as contraction starting
- Locks for 2 mins
- Midwife must be present at all times whilst using

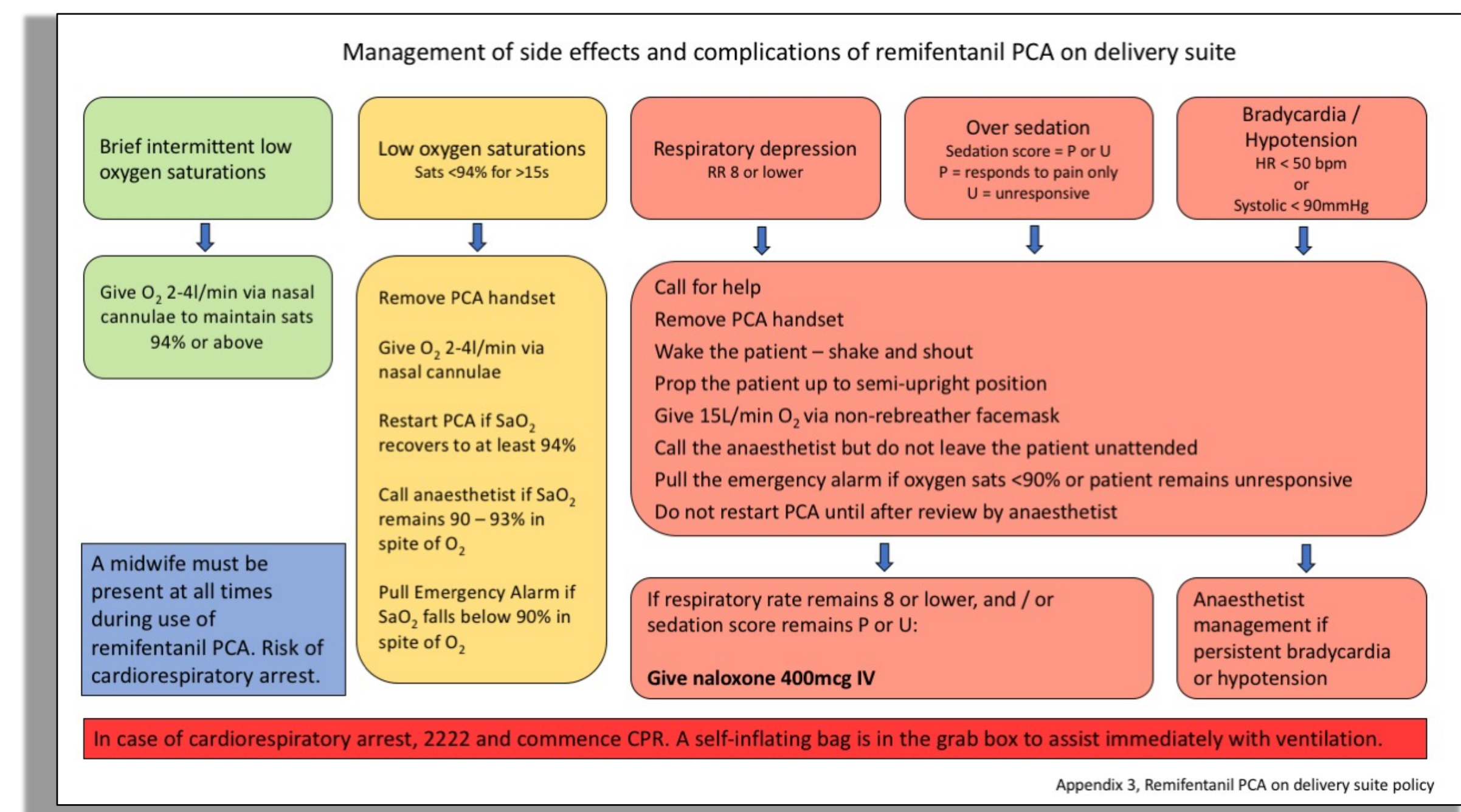
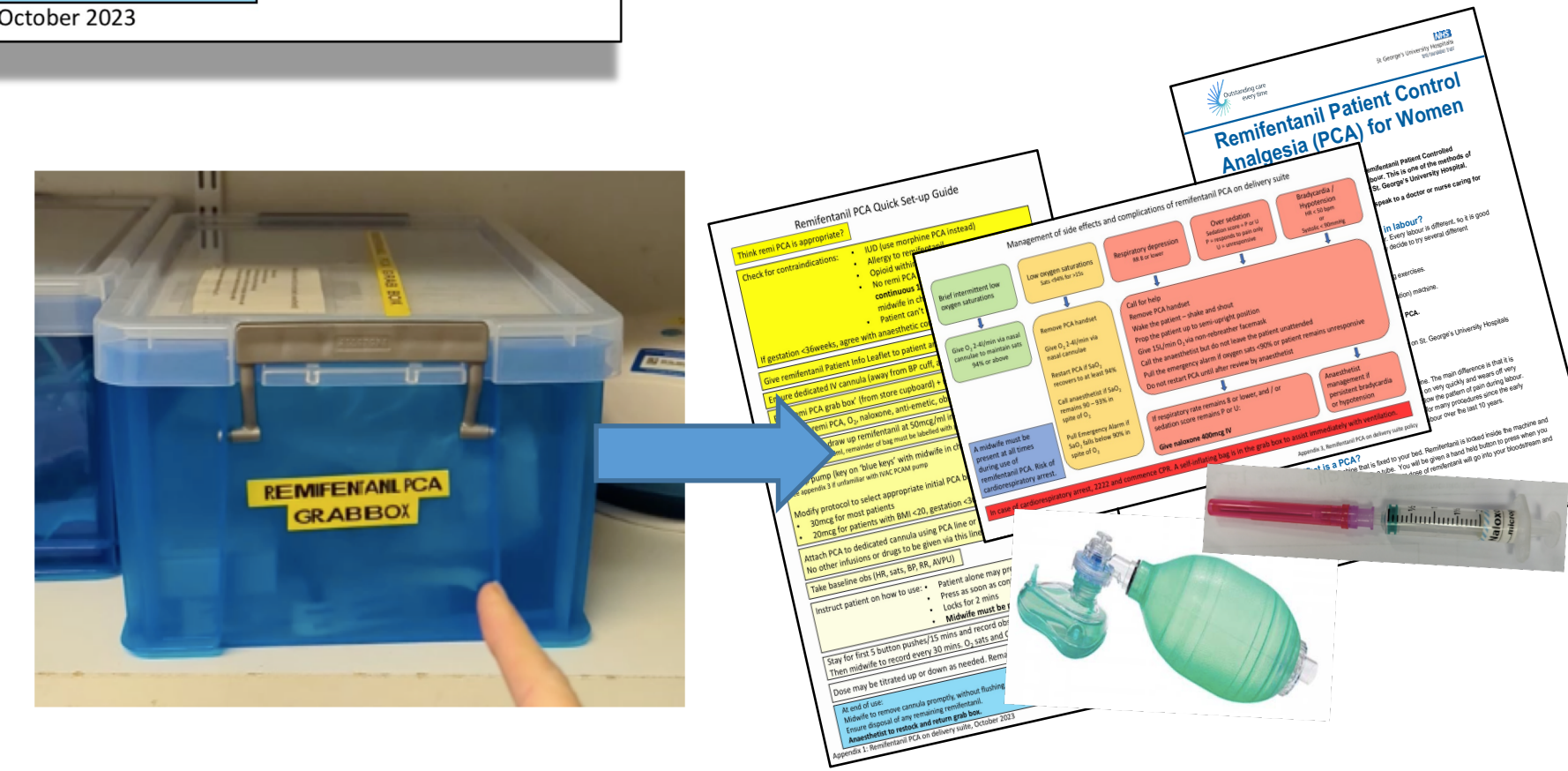
Stay for first 5 button pushes/15 mins and record obs on iClip every 5 mins. Then midwife to record every 30 mins. O₂ sats and CTG monitored continuously

Anaesthetist to restock and return grab box

Dose may be titrated up or down as needed. Remain for 5 presses after dose increase

At end of use:
Midwife to remove cannula promptly, without flushing.
Ensure disposal of any remaining remifentanyl.
Anaesthetist to restock and return grab box

Appendix 1: Remifentanyl PCA on delivery suite, October 2023



CONCLUSION

We have introduced a comprehensive guideline for the use of remifentanyl PCAs in labour on our delivery suite. We have brought in measures to reduce the chance of calculation error, and the risk of inadvertent large boluses of remifentanyl. We have clarified and simplified the set-up process for anaesthetists and given clear advice on immediate management of complications to midwives. By introducing a 'grab box' to stay with the patient throughout, we ensure that life saving resuscitation equipment as well as reversal agent is on hand. PCA training will soon form part of mandatory training for all of our midwives, in line with NICE guidelines [2]. We expect to see midwives' confidence in using remifentanyl PCAs and managing their complications increase with this training, and as they become more familiar with our new guidelines.

REFERENCES

1. Guidelines for the Provision of Safe Anaesthesia Services, Chapter 9, 5.18
2. www.nice.org.uk. (2023) Recommendation / Intrapartum care / Guidance / NICE, [online] Available at: <https://www.nice.org.uk/guidance/ng235/chapter/recommendation>.
3. Isaacs, R. Southampton General Hospital: Remifentanyl Patient Controlled Analgesia for labour Guideline, version 5.0 (June 2022)
4. Corfe, J. Norfolk and Norwich University Hospitals: Trust Guideline for the use of Intravenous Patient Controlled Analgesia (PCA) using Remifentanyl in Labour, version 5 (June 2022)
5. RemiPCA Safe Network, list of participating hospitals. www.rempca.org. [Accessed September 2023]
6. Felicity Pilkington YouTube channel, "Remifentanyl PCA presentation for non-anaesthetists" & "Remifentanyl PCAs on SGH Delivery Suite: quick guide for anaesthetists". Available at <https://www.youtube.com/watch?v=zKxmKBdOR4>

ACKNOWLEDGEMENTS

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