was relatively small, it should be noted that 35% of women who had CS experienced severe desaturation *vs* 5% of women who had VD.

Independent of the delivery mode, sleeping in Fowler's position improved oxygenation during the study night, and similarly the median difference in duration of oxygen desaturation between the Fowler's and horizontal groups was small. However, 30% of patients who slept in the horizontal position experienced severe desaturation *vs* 10% in Fowler's position. Three mechanisms likely contribute to the beneficial effects of Fowler's position on improved upper airway patency and oxygenation in the early postpartum period: 1) gravity increases the cross-sectional area of the upper airway in postpartum women[1] and improves patency of the upper airway by reducing its closing pressure and increasing stability of the upper airway[3]; 2) Fowler's position improves respiratory function by increasing the end-expiratory lung volume and functional residual capacity by lowering the diaphragm. Caudal position of the diaphragm acts as an oxygen reservoir and has important effects on upper airway size and resistance[2]; 3) body fluid distribution is altered in ways that impact upper airway anatomy.[4]

There are several limitations to this study. First, the supine position predisposes patients with OSA to more obstructive events in the general population and thus the lateral position may benefit patients at risk of desaturation,[5] however, the duration of lateral *vs* supine in the non-elevated head position was not recorded. Second, although fluid administration is considered as an important variable that could impact the positional effect on nocturnal desaturation, this data was not accurately recorded and therefore not included in our analysis. Finally, the exact prevalence of pregnancy-associated OSA is unknown in this cohort because of the lack of polysomnography measurements.

In conclusion, CS compared with VD increases nocturnal desaturation on the 1st postpartum night, which was mitigated by Fowler's position. Further study with larger group sizes is warranted to elucidate the mechanism of the beneficial effects of Fowler's position in the early postpartum period.

Authors' contributions

Study concept and design: YN, ME.
Acquisition, analysis, and interpretation of data: SDG, CHS, PEH, NM, BTB, JLE, OT, YN, ME.
Statistical analysis: NF, SDG, CHS, YN, OT, TTH.
Drafting of the manuscript: NF, SDG, YN, ME.
Critical revision of the manuscript: NF, CHS, PEH, NM, BTB, JLE, OT, TTH,YN, ME.
Final approval of the manuscript: all authors.
Equally contributed to this study: YN, ME, NF, SDG, CHS.

Declarations of interest

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Reducing the risk of confirmation bias in unrecognised oesophageal intubation

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Editor—In 2012, the *British Journal of Anaesthesia* published a novel article examining how cognitive errors are a major cause of incorrect diagnosis and treatments in anaesthesia.[1] The authors highlighted that cognitive errors are based on inner feelings/biases, and are sentiments that that we do not readily admit to and perhaps do not recognise. Furthermore, they discussed that cognitive errors are thought-process errors, linked to failed biases or heuristics, and that 'while heuristics serve as the foundation for all mature medical decision making, they can lead to grave errors. The doctor must be aware of which heuristics he is using'.[2] A heuristic can be defined as a mental shortcut that eases the cognitive load of making a decision, and should only be viewed as a 'rule of thumb'. Heuristics and biases are frequently used in anaesthesia; they allow rapid decision making, but cognitive errors occur when these subconscious processes and mental shortcuts are relied on exclusively or under the wrong circumstances.[1]

In 2016, two elective surgical patients died after unrecognised/undetected oesophageal intubations. After the inquests, both coroners independently issued Regulation 28 Reports to the relevant authorities demanding local and national action to be implemented to prevent further deaths from unrecognised oesophageal intubation.[3,4] The response of NHS England was for NHS Improvement to add undetected oesophageal intubation onto the 2018 Never Events list.[5] Never Events are defined as 'Serious incidents that are wholly preventable because guidance or safety recommendations that provide strong systemic protective barriers are available at a national level and should have been implemented by all healthcare providers'. However, shortly after publication, undetected oesophageal intubation was suspended from the 2018 Never Events list.[5] The Royal College of Anaesthetists and the Difficult Airway Society launched the 'No Trace=Wrong Place' video resource which is essential viewing for all clinicians involved in airway management.[6]

The video emphasises the need and importance of observing a satisfactory capnograph trace in being able to confirm airway intubation, and if there is no satisfactory trace it must be assumed that the tracheal tube is in the oesophagus and that remedial actions must be immediately taken. The video also reminds the viewer of the results of the 4th National Audit Project of the Royal College of Anaesthetists.[7,8] The report was published in 2011, and identified nine episodes of prolonged oesophageal intubation, undetected oesophageal intubation, or both that caused death or severe harm and occurred during the 1 yr study period. All nine episodes were attributed to either the lack of use of capnography or misinterpretation of a flat capnography trace. The video reinforces the concept that even in cardiac arrest, carbon dioxide is detected during ventilation of the lungs. Thus, the ubiquity of the mantra 'No Trace=Wrong Place'.

Like many catastrophes, the two catastrophes that led to the coroner's inquests had multiple contributing factors, and we postulate that confirmation bias (a type of cognitive and human error) is another one. Confirmation bias is a well described innate psychological attribute; it has been defined as 'Seeking or acknowledging only information that confirms the desired or suspected diagnosis',[1] and is a tendency to search for evidence that confirms rather than refutes the initial hypotheses.[9] When applied to the cases, it would explain why, after having observed ancillary clinical signs normally associated with successful tracheal intubation, the possibility of oesophageal intubation was not excluded. It is recognised that subjective methods of confirmation of tracheal tube placement, such as observation of thoracic movement, auscultation of the chest, fogging of the tube lumen, and even perception of the tube passing through the vocal cords may all occur with oesophageal intubation.[10] Thus, reliance on and use of these signs will contribute to confirmation bias.

In an attempt to overcome human errors, the Japanese rail network (which is one of the safest railway systems on the planet), devised the 'pointing and calling' system.[11] Amongst other things, the 'pointing and calling' safety system dictates that on successful completion of a task, the worker verbally states the task has been completed. By verbalising correct completion of the task, the cognitive control processes responsible for the supervisory attentional system that are necessary for effective retrieval and activation of working memory are reinforced. The act of verbalisation also allows the co-workers to know that the task has been satisfactorily completed. 'Pointing and calling' has been demonstrated to significantly reduce the rate of work-related human errors in several industries and more recently in healthcare.[12]

In summary, we agree with Stiegler and colleagues,[1] who concluded that anaesthetists must have insight into their own decision-making processes and that further research in this area is needed to reduce decision-making errors and improve patient safety across the whole of anaesthesia. In the meantime, in order to reduce the risk of confirmation bias leading to unrecognised oesophageal intubation, all healthcare workers undertaking intubation must refrain from using non-specific signs such as tube misting and chest rising, and must rely on a satisfactory capnography waveform trace. Moreover, to facilitate the activation of cognitive control processing, successful airway intubation should only be accepted after observation of a satisfactory capnography waveform trace, when accompanied by verbalisation of a statement such as 'presence of a satisfactory capnography waveform trace'.

Declaration of interest

The authors declare that they have no conflicts of interest.

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The 'No Trace=Wrong Place' campaign

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Editor—Thank you for the opportunity to reply to the letter by Jafferji and colleagues[1] on confirmation bias in oesophageal intubation. This letter draws attention to the 'No Trace=Wrong Place' campaign launched recently by the Royal College of Anaesthetists (RCoA) and the Difficult Airway Society (DAS). This safety campaign, aimed at all who manage patient airways, focuses on the importance of capnography in confirming tracheal intubation in all clinical settings, including during cardiac arrest. It has not been previously described in the *British Journal of Anaesthesia*, but the journal's influence and international reach have the potential to enhance dissemination of this safety message.

Jafferji and colleagues[1] described two patients who died in the UK as a result of unrecognised oesophageal intubation in 2016. Both incidents were described in the non-medical press,[2,3] and both are the subject of open-access coronial reports.[4,5] Both occurred in hospitalised patients during elective anaesthesia. In both cases, intubation was performed urgently when airway problems occurred, and in both cases, capnography was used. In both cases, cardiac arrest supervened. The flat capnograph present after attempted intubation was *incorrectly* deemed to be caused by the low or absent cardiac output during cardiac arrest. Both patients had tracheal tubes correctly placed after a significant delay, and both patients died as a result of hypoxic–ischaemic brain injury.

As a consequence of these cases and in response to coronial processes aimed at preventing future deaths, the RCoA and the DAS combined to produce an educational video reminding all who manage airways that a sustained capnograph trace is only present after successful tracheal intubation.[6] If it is not present, the assumption should be that the intended tracheal tube is in the oesophagus, and immediate efforts should be made to identify and correct tube placement. This will nearly always involve removal of the tube and reintubation. There are several other technical possibilities for a flat capnograph but in the immediate aftermath of an attempted intubation, oesophageal intubation must first be excluded. Importantly, a capnograph trace, albeit attenuated, will be present even in the presence of cardiac arrest, with or without cardiopulmonary resuscitation.[7,8] Exhaled carbon dioxide remains detectable long after the onset of cardiac arrest, and its absence should never be attributed to the arrested state.

NHS Improvement had defined failed intubation that is not detected because of lack of capnography or its misinterpretation as a Never Event.[9] This has been suspended whilst the wording is modified, but it is expected to be relaunched in the near future. One of the reasons that the Never Event was suspended was to enable discussion about whether to apply a lower age or weight limit to the Never Event. The feasibility, utility, and value of capnography in small babies have been hotly debated recently,[10–13] and there is currently an opportunity to appraise the evidence and make changes to practice. The need for detection of correct tracheal tube placement or dislodgement is as vital in small babies as it is in adults, as another recent neonatal death sadly illustrates.[14]

To detect a capnograph trace after intubation, one must be using capnography. The 'No Trace=Wrong Place' campaign and the Never Event publication reinforce other directives from several organisations that capnography should be used

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