



**British Association of Perinatal Medicine
Response to Consultation feedback**

Document Title: **Managing the Difficult Airway in the Neonate**
Closing date: **27 April 2020**

Page number/ heading / general comments	Line number/ 'general' for comments	Comments Please insert each new comment in a new row.	BAPM Response
Name of person or group providing feedback – Colin Morley			
General	General	It is very informative but too long at 32 pages and 9000 words. It is also repetitive.	Thank you. We have significantly reduced length the length of the document and removed much repetition.
		It says, "In most centres an 'experienced' clinician would be expected to be either a senior doctor in training (such as a neonatal GRID trainee at ST7/8 level)". The evidence is that even this level of trainees might not be very competent in neonatal intubation. I don't think that managing a difficult airway is something I would expect most doctors in training would have the experience and confidence to manage. This should be a job for the most experienced neonatologists available.	Thank you. We have amended the wording to reflect that these are examples which local centres may choose to use to define their threshold for 'experienced' but they are by no means mandatory. The definition is for a threshold for activation of the process not one setting the bar for who should lead the process thereafter. The expectation is that after the 'experienced clinician' has failed the process is activated. If the GRID trainees are less experienced then it may lead to earlier activation of the process for getting help, which may be no bad thing, and if a centre then raises the bar of what is 'experienced' following too many 'early' activations, this is fine.
		I suggest in Plan A, instead of phrases like, "Is the mask an appropriate size", it should state the size of mask for different sized babies. Instead of, "Is the T-Piece set to appropriate pressures?" It should state	Thank you for this. It has been noted. However, it is an expectation from the widespread UK NLS training that any practitioner attending a delivery or anaesthetising a baby would be appropriately trained to size and site a mask appropriately, and this framework builds upon NLS, so

		the peak and PEEP pressures that should be used and also that if ventilation with them is not effective they should be increased.	repetition seems unhelpful. The 'consider' box prompts using a smaller mask (the most likely error being it is too big) and increased pressures. Both statements are there to ensure these simple things are reviewed as part of the process before progressing.
		PEEP/CPAP is very useful for distending airways and should be used from the beginning.	Agreed: we have made this clearer under plan A in the framework algorithm
		The phrase "get the VL" might not be recognised. It should say video laryngoscope.	Amended as suggested
		Expired CO2 should be part of the normal equipment for intubation and not considered an extra.	Thank you, we agree. We have listed CO2 detection in this framework as a required piece of equipment so that in the difficult airway situation to which this framework is directed, it is not overlooked by centres or settings who may not yet use CO2 detection.
		Heart rate changes are the best indicator of successful ventilation. All these babies should have a pulse oximeter or ECG attached immediately they are born.	Thank you for your comment. The Framework and algorithm build on the NLS principles for newborns, APLS for those in paediatric settings and paediatric anaesthetic practice in the theatre environment. In all of these monitoring and assessment of heart rate is mandatory and so will have been instituted by the time this algorithm is activated. We include reference to heart rate check in the algorithm assessing the efficacy of plan A and so no further alteration has been made.
		There is no place for a Ng tube early in resuscitation and its presence can increase the gas leak from a face mask.	Thank you for your comment. While we agree that an NG tube is not necessary in early resuscitation, this algorithm is not likely to be used early in resuscitation. For babies who have received a lot of PPV we believe that decompression of the stomach may be important in allowing the lungs to be ventilated once an airway has been established.
		Nowhere does it say what size endotracheal tube should be used.	Thank you for this comment. The framework outlines a process. The assumption is that an experienced clinician who cannot intubate will have already tried the 'suitable' size ETT and likely have already got ready a tube 'one size above and one size below' as typically taught as part of the preparation for intubation. The key process is to prompt them to try a smaller one. We do state in the algorithm that they may wish to use a smaller size as part of the process if they cannot intubate with their chosen size.

		High Flow nasal oxygen has been shown to be very effective for improving oxygenation in adult difficult airways. This should be used while preparing for intubation.	Thank you. Amended: we have included HHFNC oxygen as an option (as long as it does not incur delay in setting up etc) to consider, though the working group considered this option likely to be confined to the NICU only because of availability.
Name of person or group providing feedback – Edi Osagie Ngozi			
		Thanks for your framework. The framework doesn't seem to have considered the difficult airway where intubation has been possible but not able to ventilate. To the practitioner this is still a difficult airway as the intubation hasn't achieved what it should (establish an airway) – i.e. "Can intubate, Cant ventilate"	Thank you for your comment. Technically we feel this situation is out with the remit of the Framework but is covered by it. If intubation has been apparently possible (tube confirmed as passing through the cords) and ventilation is not possible, then suctioning the ETT should be attempted as listed in plan A before moving on. The blocked airway is not usually a difficult airway per se, as once the obstruction is removed, the airway itself is likely to be normal. The working group notes that it is unlikely that the chest will have moved before this point in the process (during care given as per the NLS algorithm) and in conjunction with no chest movement and a lack exhaled of CO2 being detected, the step of suctioning using the ETT should be followed.
		I have attached a guideline from Sanjeev, that was shared with us a couple of years ago, which would be a helpful addition and the North West neonatal ODN pathway for information	Thank you for sharing this guidance
Name of person or group providing feedback – Susan Kamupira			
Plan B	Plan B	<p>Framework does not account for the rare but serious situation when Intubation is apparently easy but baby cannot be ventilated 'Can intubate Can't ventilate Scenario'</p> <p>This can arise from particulate matter obstructing the airway below the vocal cords as such there will be no chest movement, no response in heart rate and no end tidal CO2 change.</p> <p>I have come across this scenario 2 times in my 13years experience in tertiary neonates In both cases there was no meconium One patient had pus suctioned below the vocal cords(confirmed case of Listeria) Another case could not be ventilated for over 30minute I feel that it's important to cover this scenario.</p>	Thank you for your comment. Technically we feel this situation is out with the remit of the Framework but is covered by it. If intubation has been apparently possible (tube confirmed as passing through the cords) and ventilation is not possible, then suctioning the ETT should be attempted as listed in plan A before moving on. The blocked airway is not usually a difficult airway per se, as once the obstruction is removed, the airway itself is likely to be normal. The working group notes that it is unlikely that the chest will have moved before this point in the process (during care given as per the NLS algorithm) and in conjunction with no chest movement and a lack exhaled of CO2 being detected, the step of suctioning using the ETT should be followed. In cases such as the second you mention, the other manoeuvres one can try to get the chest to move such as increased pressures are also part of the algorithm in plan A.

		I have attached the Greater Manchester Neonatal network Difficult airway guideline which gives advice on what to do in this scenario.	
Name of person or group providing feedback – Sheena Kinmond			
2 Introduction	Last sentence	practise	Thankyou
4 Background	Last sentence (above 4.1)	“Increasingly, non-invasive respiratory support with less invasive surfactant administration is being used to reduce volutrauma and other iatrogenic problems but, as this circumvents the need for intubation....clinicians have less opportunity to practise advanced airway management.”	The wording has changed with the review, but your last point has been addressed.
Barry McGuire		I have read through this excellent document. Well done to Rob and all the team. Absolutely first class and a really clever design.	Thankyou!
		There is general consensus in airway circles now that FONA stands for Front of Neck Airway, although i appreciate we all see and hear ‘Access’ still used.	Changed, thankyou
		Could you consider rewording the sentence on cricothyroidotomy? Perhaps: <i>In adults and older children, the anatomy of the neck makes scalpel or cannula cricothyroidotomy a potential rescue technique in a 'Can't intubate, can't oxygenate' scenario. However, in neonates, scalpel cricothyroidotomy is not possible owing to the inadequate size of the cricothyroid membrane and use of cannula is extremely unlikely to be successful.</i>	Thank you for your comment. The FONA section has been amended for clarity to reflect this.
		VL. Gets lots of mentions, acknowledging resource limitations. Personally, I would be recommending all NICUs <i>have access to VL</i> , either themselves or via Anaesthesia.	Wording for the whole list has changed to ‘should’, so addresses this issue. Thankyou

		Would you consider this as a soft recommendation in your initial list..."should be considered"	
		Section 7 states correctly in my view that paralysis should be ensured when all efforts to oxygenate have failed. Rather confusingly, Plan D in the algorithm asks "Does paralysis need reversed?" I would ask is there any evidence that suggests reversal of NMB at this stage can return adequate oxygenation. I would be surprised, but happy to be corrected!	Thank you for your comment. This acknowledges the situation where there might be circumstances where administration of a paralytic unwittingly unmasks an anatomically difficult airway (for example a neonatal peculiarity such as such as tracheal stenosis with ventilation maintained to a degree by spontaneous breathing via an oesophageal fistula). Reversing NMB at plan 'D' is unlikely to help most babies but there might be one or two where the option to breathe again may help. This has been more explicitly outlined in the text of the document.
Stephanie Bew			
		Thanks for sending the link to the guidelines. They are clearly the result of a huge amount of work, and provide a large amount of very useful information and strategies for difficult airway management. The recommendations are excellent and if implemented everywhere could ensure consistent delivery of high quality airway management.	Thank you
7		Current anaesthetic understanding of the anatomy challenges the cone shape of the larynx and suggests it is the same shape as adult. Saying the 'lack' of encircling tracheal cartilage suggests that this is different to adults, rather than normal anatomy	Thank you for your comment. We considered the evidence and while there are some studies which suggest that other portions of the airways may be narrower, these are mostly radiological studies which show variation in airway size during the phases of breathing. From the published literature we reviewed, when measured in-vitro the cricoid cartilage is still the anatomically narrowest portion, though this will be reviewed periodically. Awareness of dynamic variation in airway size is important. The text has been amended to try to remove ambiguity about the cartilage as you have stated.
8		Induction of anaesthesia does not necessarily remove respiratory effort, some techniques for difficult intubation maintain spontaneous ventilation under anaesthesia	Noted with thanks.
9		CICV is now CICO, can't intubate, can't oxygenate	Thank you: changed in one instance; left for accuracy where referring to reference from paper which used the older terminology in their survey

11		Categories of airway difficulty could more easily be described as 1) anatomical abnormalities usually of the mandible, 2) congenital or acquired narrowing. My personal experience is that structural/craniofacial problems mainly retrognathia are most common and things like external compression due to neck masses are rare	Noted, thank you. We have left this unchanged to reflect the breadth of other conditions which might present at delivery, as well as later to a theatre environment.
15		The terminology about laryngoscopes is confusing. Videolaryngoscopes are indirect laryngoscopes. They could be categorised as direct or indirect	Thank you for this comment. We agree. There are models of non-video indirect laryngoscopes which are available and cheaper than videolaryngoscopes, which in lower-resource settings may be quicker to hand than a videolaryngoscope (which may not be available at all). Some neonatal VL can be used both direct and indirect therefore we have not specified a type for this.
15		Our surgeons have done a number of tracheostomies in babies under 2kg	We have reviewed this and amended the phraseology, thank you.
19		I don't think it is useful to name specific devices. I would say that all anaesthetic departments now have an indirect laryngoscope system of some sort, most commonly a videolaryngoscope	Thank you for this comment. We have removed references to named devices from the framework but have left them in as examples in the supplemental material to help those setting up a difficult airway box to have some idea of what is available. None are promoted as superior and no influence from any device manufacturer has been part of this process as it was a clinician led working group.
algorithm		Using the term T-piece is confusing in a multidisciplinary document, as it is a different piece of equipment for anaesthetists and neonatologists	Thank you for spotting this. In the algorithm we have altered this so that it will be possible to list the device being used depending on the area in which the framework is being used (yellow highlight applied).
		Plan B could simply say try a SAD or nasopharyngeal airway 'Consider indirect laryngoscope' rather than mentioning specific devices	Thank you for this comment. The choice of device is editable by any individual centre or setting so that the team using the algorithm know what they're looking to use: it is not intended that all choices remain at this point, and amongst paediatric/neonatal teams, the terminology around supraglottic airway devices (SAD) may not be as well-known as in anaesthesia.
		Plan D, you can't railroad a tube over a rigid bronchoscope, a tube could be railroaded over a very small optical telescope. Fiberoptic intubation rather than bronchoscopy	Thank you for raising this. We have changed the terminology to 'rigid endoscope' and 'flexible' endoscopy to reflect this and removed bronchoscopy as a term, and thus using the former to place an ETT is now correct.

P 15 resources		<p>The section on indirect laryngoscopes could be more generic. The technology is changing rapidly and many systems now have a range of standard and hyperangulated blades in neonatal sizes and the monitors include split screens for combined approaches with flexible videolaryngoscopes which are integrated in the same system. The information and photographs will be rapidly out of date.</p>	<p>Thank you for raising this. We intend the resources information to be a start point for centres to use to explore what is available as outlined in the document. We will endeavour to revise this document periodically and where appropriate update it.</p>
P 15		<p>CO2 detection. I know there are strongly held opinions here. There are differing practices in anaesthesia and neonatology, but some of the statements about waveform capnography are inaccurate. For anaesthetists it is mandatory monitoring and would be used in conjunction with other standard monitoring for any intubation and therefore ready for immediate use. There are few ambiguities with waveform capnography, detection is immediate and continues as long as the tube is in the trachea, and there is cardiac output or effective chest compressions. The displayed end tidal value does not accurately reflect the arterial CO2 especially if there is a significant leak from the tube, but for immediate and continuing confirmation of tube position there is no alternative. If this document is intended as multidisciplinary, it should emphasise that anaesthetists would expect to use waveform capnography whenever intubating a neonate whether in theatre, the ED or in the NNU.</p>	<p>Thank you for your comments. We have amended the paragraph to make the point more strongly that in anaesthetic settings waveform capnography is mandated and used regularly. We agree that there is no suggestion that knowing a value for ETCO2 is of help in the circumstance of a difficult airway.</p>
P19		<p>The images show fiberoptic intubation through a LMA in an adult, but the text refers to nasal fiberoptic intubation</p>	<p>Image removed: thankyou.</p>

P21		You could provide a link to the NTSP website (http://www.tracheostomy.org.uk/storage/files/Paed%20Bedhead%20Algorithm%20Combo.pdf) and the emergency algorithms. Managing problems with a neonatal tracheostomy should be included in a difficult airway framework	Thank you for this very helpful comment. The framework document covers the unexpectedly difficult airway and so those who have tracheostomies fall outside the immediate framework remit. However, we agree that those with tracheostomy, they should have individualised plans of care should their tracheostomy become blocked or dislodged, compiled by their specialist team, based on the resources they have around them and the areas into which they are likely to come. Thank you for highlighting the NTSP website and resources. We have linked a short additional section under tracheostomy to these for readers to explore further if relevant to their practice.
	General	I also wondered whether guidelines should include something about standardised documentation of airway difficulties and alerts on notes and electronic records.	Included as a general statement. Variation nationally is too wide to mandate a specific action applicable to all types of record.
Shilpa Shah			
		Thank you for the excellent draft guidance for difficult neonatal intubation. We are setting up a 'difficult intubation lead team' and taken on board all suggestions. Very useful document highlighting HF challenges as well.	Thankyou
Rahul Chodhari			
		Discharge planning suggestions to consider:	
		<ul style="list-style-type: none"> • A structured handover & MDT meeting to local General paediatrician & anaesthetic teams on discharge from neonatal unit. • A documented plan for general paediatrician about management of difficult airway on presentation to emergency department. • A written plan for London Ambulance service for 999 responses. 	Thank you for these suggestions: a short note outlining this has been included. Detailed discharge planning is beyond the scope of this document but is mentioned in the final document in a more general sense, along with difficult airway alerts
		We have seen few ex NNU babies in ED where there is no plan in place. Sometime babies may have gone from specialist neonatal surgery centres such as	Thank you for sharing this experience. We do not disagree with your observation but such oversight should be dealt with by local discharge planning processes and is beyond the remit of this Framework.

		GOSH. This should be responsibility of lead neonatal consultant.	
Simon Courtman			
		Letter from APAGBI, RCOA and PICS	
General		<p>This is the first guidance of its kind to be developed for the neonatal age group and this is to be commended. It is noted that the guidance is aimed primarily at neonatal physicians and comments from the APA should be framed in the context that anaesthetists are usually not the first responders to a neonate requiring intubation (resuscitation), are equipped with a different skill-set to neonatologists and their practice may for the most part be in groups outside the neonatal age group. Many of the skills used in these older age groups do have transferability and adaption.</p> <p>Anaesthetists practice is supported by guidance from DAS and APAGBI for older age groups amongst others, and this may be in conflict with some areas of the draft BAPM guidelines. It would be helpful to include some overarching statement to reflect this that would allow some latitude in the application of these guidelines in practice. It is noted that the "team approach" is recommended and this is to be commended however the acknowledgement that anaesthetists specific skill-set is actually "governed" by other bodies guidance and practice would be helpful.</p>	Thank you for your comments. An overarching statement has been included in the text to address your concerns.
General		<p>The term CICV seems to have been used whereas I thought it was CICO (oxygenate) that we were supposed to be using now.</p> <p>Page 9, line 6. I agree, Can't Intubate, Can't Oxygenate (CICO) is more appropriate now</p>	Amended, with thanks. We have left one 'can't ventilate' where quoting published evidence from a survey which asked about CICV as was the terminology at the time.

General		<p>I can see the rationale for suggesting that only ENT surgeons attempt an emergency tracheostomy, but if the alternative is the infant is going to die regardless, why not allow anyone with appropriate knowledge to attempt it? In the resource material document page 19 appears to contradict the advice not to attempt front of neck access elsewhere in the framework. "If all other options for securing the airway have been exhausted a surgical airway should be considered." I would appreciate greater clarity around this.</p> <p>There is no mention of the use of ultrasound in the difficult paediatric airway. Would this be of help in this context? I have found the ultrasound really useful to confirm where the midline and trachea lies, and to exclude vessels in front prior to adult percutaneous tracheostomies in critical care.</p>	<p>Thank you for your comment. It is the considered opinion of the working group that tracheostomy in neonates remains the preserve of a trained surgeon. We have therefore strengthened our recommendation.</p> <p>FONA is not a skill held by neonatal intensive care consultants. The anatomy is sufficiently difficult that it is not possible to recommend that someone who has knowledge (and maybe adult experience) should attempt this. We have removed the sentence which created the ambiguity.</p> <p>Ultrasound: this is an interesting suggestion, thank you. Unfortunately, it is not available in all neonatal settings widely enough to be considered for routine inclusion, and interpretation of ultrasound neck imaging is highly specialised. It might be considered in specialised centres with trained personnel, but again this would have to be looked at locally. These centres are likely to have access to an ENT surgeon already. We did not find any evidence suggesting this technique in neonatal needle cricothyroidotomy in other settings and as it is not currently a viable option for the majority of centres looking after neonates it has not been recommended in the framework.</p>
P9		p9 and throughout: Use of american spelling: stabilize, recognize p10 etc.	Noted with thanks and amended.
P9		p9 2nd Para. and throughout: CICV is obsolete terminology. CICO, Can't intubate can't oxygenate is preferable.	Amended
P8	4.2 second para	The difficult airway: It is not just at induction of anaesthesia that difficulties in airway management might cause morbidity and/or mortality. Morbidity is more likely to occur away from the controlled environment of induction of anaesthesia, mortality due to airway difficulty at the time of induction in	Thank you: This paragraph has been re-worded

		children is tiny so this is perhaps not the best phraseology.	
P9	1st Para	The availability of video laryngoscopes for adults in a hospital is only helpful if there are paediatric blades to go with it and the skills to use the equipment.	Thank you for your comment. We agreed: part of the process is to consider whether smaller blades for devices already in a hospital might be an option for accessing videolaryngoscopy and this is reflected in the implementation section.
P6	1st Para	"arises more frequently" is probably a more accurate observation. What should be noted that often more challenging airways are met in the relatively uncontrolled environment of resuscitation, especially in syndromic children, when these children require critical care and ventilation. And an airway expert may not be there as a primary responder.	Noted, thankyou
P24	Plan C	typos. ...oxygen <u>100%:Supplemental...</u> change to add spaces between % and colon and between colon and Supplemental. The line below remove space between arrived and comma.	Thankyou: Amended as suggested
p15	bullet point 3 Bullet 4 Bullet 7	Should be: "for direct laryngoscopy" . and stylets? Drugs rather than medicines?	Thank you for your comment. The blade options are for the completing assembly of the laryngoscope as this is an equipment list. We did not use 'laryngoscopy' as this is the action that follows. Stylets are commonly used in NNUs for intubation and would not necessarily be additional to the equipment solely for difficult airway. They have been associated with tracheal perforation and are not recommended to be used as an alternative to a bougie.
P15		FONA: GOOD paragraph	Thankyou
p18		Utilisation of the obstetric anaesthetist, 8.2 2nd para: NB there is an important caveat here, in that the obstetric anaesthetists can ONLY be used when it is safe for them to leave their primary area of responsibility, the mother. It is not a given that they	Thank you for this observation. We are aware of this tension of responsibilities and would expect it to be raised as part of the discussions to be had locally at the time of establishing use of this framework. The original statement has been removed in re-write and a further comment added to the noting of differences of overarching professional governance.

		will always be available in a timely fashion. This should be emphasised.	
P24	PLAN A	First box T-piece: Terminology, this is presumably a neo-puff type ventilator, not an anaesthetic T-piece, a valveless breathing system with an open ended bag and defined in Mapleson's nomenclature as F, a Jackson Rees modification of the Ayres T piece. It would be helpful to have clarity with this description of "T-piece"	Thank you. Amended to allow customisability of Framework based on area of use (eg theatre vs delivery suite).
p24 and sequence		Use of colorimeter for CO2 detection. The gold standard is use of continuous waveform capnography, this would be the expectation for any anaesthetist involved in the management of a difficult airway.	Thank you. The use of waveform CO ₂ detection in anaesthetic settings has been explicitly acknowledged in the text and the framework/algorithm refers to 'CO ₂ detection' to allow for the fact that different devices will be used in different clinical areas: waveform capnography use is not widespread in neonatal practice.
p24	Plan B	Consider: An orogastric tube is often quicker and easier to insert in these circumstances than a NG tube.	Thank you. Amended to gastric tube to allow different routes to be utilised.
RESOURCE MATERIALS			
P16	4.	Surgical options. "Wherever possible, a surgical airway should be performed by a paediatric ENT surgeon in an operating theatre." Does this mean the ENT surgeon might do it elsewhere in the hospital or does it mean someone who is not an ENT surgeon is doing the tracheostomy?	Both are possible alternatives; the ideal remains an ENT surgeon in a designated operating theatre. An ENT surgeon would be expected to decide where they feel is most appropriate to perform the surgery.
P19		The image is of flexible fiberoptic intubation via LMA yet the text describes naso-tracheal intubation. Would it be helpful to mention the use of a radiology guidewire down the suction channel of the flexible bronchoscope if the tracheal tube is too small to rail-road directly over the bronchoscope?	Image has been removed. Your suggestion with the guidewire has been included, thank you.

General		<ul style="list-style-type: none"> • A useful document overall. But no page numbers so difficult for specific critiquing. • Good that Human factors and Situational awareness etc. are well covered. 	Thank you. Page numbers will be inserted.
General		Equipment - consider the addition of stylets (if they are used correctly and safely!) There is a short paragraph on this under bougie use noting safe use of stylet, but could be emphasised more	We have specifically steered away from suggesting stylet use in the fashion of a bougie as there are many reports of tracheal perforation with injudicious use of stylets. To be used outside of the ETT tube would have to be a local, risk assessed decision.
P7		Confirmation bias example is of colour change on capnograph: Precisely the major issue I have with this guidance in that this is the preferred method for CO2 detection rather than continuous waveform capnography.	There are examples of bias and task fixation with any type of device to be used, including adult death where waveform has been inappropriately used. The statement on CO2 detection reflects the current state of the published evidence in neonatal practice and will be reviewed as it evolves. The key is that detection of CO2 is required.
General		<ul style="list-style-type: none"> • Amercianisation off spelling noted throughout with "z" instead of "s" on numerous occasions. • Tracheal tube is the correct nomenclature not endotracheal • Comments on the flow charts are replicated from the Guideline. 	Thank you for this comment. Spelling amended to English (UK), thank you. Endotracheal tube is used widely both in the published literature and manufacturer descriptions of their tubes but for consistency we have ensured the text refers to tracheal tube.
General		<ul style="list-style-type: none"> • Fentanyl 3 mcg/kg is an apnoeic dose 	Thank you for this comment. The dose is only mentioned in the example for how to fill in the algorithm. IT is taken from the Neonatal Formulary: “ Premedication for induction: Fentanyl at a dose of 2–3 microgram/kg is used as premedication for intubation in a number of combinations with suxamethonium (q.v.) and atropine (q.v.) or similar.” Local centres are encouraged to use their own preferred drugs and doses.
General		<ul style="list-style-type: none"> • microg/kg? for drug doses. Should this more correctly be mcg/kg 	Thank you for this comment. Arguably the correct form is ‘micrograms’ (text amended) not microg, but as per BNF recommendations not ‘mcg’ as risk of mistakes increase where handwritten prescriptions are used.
		There are no page numbers!	Amended in editing

		Many of the things in the resource materials would be useful in the main framework- eg list of antenatal conditions.	These were removed to reduce the overall document length but are available in the resource material for interest.
		For some of the antenatal conditions, it is not binary that they cause /do not cause airway obstruction-need to assess all the antenatal information (ie the MDT suggestion is a god one). Eg if baby cannot swallow and has polyrdamnios then neck mass is likely to be very severe obstruction, most babies with hypotonia re unlikely to have a difficult airway. So some more guidance on which should/should not have an exit procedure would be useful as an exit procedure is very resource intensive.	The decision for an Exit procedure is a difficult one, agreed, but lies with specialist fetal medicine departments and if required referral to the regional specialist centres for consideration. Text amended to note "potential for difficult airway"
		Agree use of video laryngoscopes is useful- should also include the McGrath portable video laryngoscope.	The document shows some examples of different systems but clearly states it is not exhaustive. The manufacturer product literature suggests it does not have neonatal specific blades so may be less useful than other systems.
	6	Algorithms- I would favour, in addition to the ABCD approach- a question / decision tree about: <ol style="list-style-type: none"> 1. is the problem that the airway cannot be easily visualised vs 2. You can visualise the airway but cannot insert the tube (these require very different solutions and approaches) 	Thank you for your comment. This distinction may be picked up when considering why previous attempts at intubation have not been successful and the algorithm has been amended to reflect this.
		Generally a useful framework and should improve and unify the approach across different health care settings, It si Very long with lots of introduction. Could it be more succinct?	Editing has reduced length, so thank you for your comments.
Wendy Tyler			
Page 2	Point 5.2	? should this read anticipation of a difficult airway or anticipating a difficult airway rather than "Anticipation difficult airway at time of planned extubation or intubation"	Amended

Page 2	Point 8.5	Not sure why these two under 8.5 are one in bold and the other not and whether they need numbering? The difficult airway box Challenge and Response	Amended
Page 3	1a	that in any centre in which neonates are looked after ? could be “any centre in which neonates” (and lose the extra “in”)	Thank you. Altered in editing
Page 5	Section 3, 2 nd paragraph, last sentence	I wonder whether some of the general word count in the document can be reduced e.g. by removing “in older infants than this”. There are a few examples like this in the first sections of this brilliant document and as hospitals are much more likely to read this thoroughly and use if the word count could be reduced I suggest only essential words in the document might help.	Thankyou. Noted: the document has been significantly edited
“	“, 3 rd paragraph, 1 st sentence	there may be antenatal diagnosis ? should read “there may be an antenatal diagnosis”	Changed in editing
Section 4.1		Can you include here the entire trachea? Tracheal thick secretions (vernix, mucous, meconium) as a cause of airway obstruction are not rare and we could remind all to consider that the airway goes all the way down; too often deep tracheal secretions can be missed or addressed late on in a resuscitation, by which time the baby has been hypoxic for too long	Thank you. This has been added for completeness
Section 4.2	Last sentence	Could we change Bad outcome to poor outcome as Bad implies someone may have acted badly	Amended as suggested
	General	The document is quite repetitive in the 1 st half and statements written in previous sections are repeated. Could the document be streamlined perhaps and repeats avoided where possible, reducing the word count and making the document easier to read through?	The document has been significantly edited

Section 5	1st section	Would you include meconium delivery as an anticipated airway problem here?	The presence of meconium is covered by standard application of the NLS protocol and equipment, before reaching the threshold for anticipating a difficult airway per se. However, it can be argued that if there is meconium at delivery you may be considering intubation therefore it is also broadly addressed under point 2.
Section 5		Difficult airways may, in broad terms (in order of likelihood), be due to: Should this list not include deep tracheal secretions?	Please see responses elsewhere.
Section 5.1	2 nd paragraph	Most often a detailed scan to assess to fetal anatomy at around ? should this be Most often a detailed scan to assess to fetal anatomy at around	Amended as suggested
Section 5.2	1 st paragraph, near the end	Likewise, for neonates who need to be intubated for planned procedures should be assessed in the context of whether Should this be? Likewise, for neonates who need to be intubated for planned procedures should be assessed in the context of whether	Thank you. Wording changed in editing
Section 6,	Front of Neck Access	in a can't intubate/can't ventilate. ? should this be in a can't intubate/can't ventilate situation.	Changed with editing
Section 8	8.1	To quote "After that, the remaining layer of help comes from those with specific airway expertise such as anaesthetists, respiratory paediatricians or ENT surgeons who are practiced in utilising highly specialised equipment to instrument the airway. This layer of help is that which is needed for the true difficult airway situation " In many non-tertiary children's hospitals the most experienced member of the intubating team is the consultant neonatologist, not " anaesthetists, respiratory paediatricians or ENT surgeons" – in many hospitals the "anaesthetists, respiratory paediatricians or ENT surgeons" ask the consultant	Thank you for your comment Dr Tyler. We acknowledge this issue and have amended text to note that in most UK hospitals the most senior level of support/expertise likely to be available in the emergency situation will be a consultant neonatologist, or, in some situations, a consultant paediatrician.

		neonatologists to support them with a neonatal and infant airway and not the other way around. The document is great – it does however appear to be written from a NICU perspective and does not seem to acknowledge that in most UK hospitals the Tiers of support for a neonatal airway stop with the consultant neonatologist	
“	“	In most hospitals “senior doctor in training (such as a neonatal GRID trainee at ST7/8 level)” are not in post and the consultant neonatologist is off-site non-resident What definition can be used 24/7 for all hospitals please?	Thank you for your comment. We acknowledge this issue, and have amended text to note that, while all UK hospitals with medical cover will have on call support from a neonatal consultant or general paediatrician, it will not be practical for this senior cover to be immediately available 24/7
Section 8.2		“Likewise, there is good reason to consider in non specialist centres whether local or regional transport teams should be approached to see whether they are in a position to form part of the response, though the timescales involved make this unlikely in the situation of a difficult airway” This is extremely unlikely for many due to the transport teams often being centrally located often on a PICU or NICU site, so not available at short notice to LNUs and SCUs – the transport teams are often not available to us for many hours and can not provide a time-critical transfer for head injury, so will not be able to provide this service for an airway issue – I am not sure the transport group could agree with this statement?	Thank you. This has been amended.
Section 8.5	Things that can be changed	. Likewise, specific equipment maybe listed in these boxes reflecting local availability, should read... Likewise, specific equipment may be listed in these boxes reflecting local availability	Section has been edited
Framework flowchart	Plan A-D detail	Please provide advice early on to ensure that the entire trachea is patent including deep tracheal suction if chest movement is poor or unobtainable	Thank you for your comment. Technically we feel this situation is out with the remit of the Framework but is covered by it. If intubation has been apparently possible (tube confirmed as passing through the cords)

			and ventilation is not possible, then suctioning the ETT should be attempted as listed in plan A before moving on. The blocked airway is not usually a difficult airway per se, as once the obstruction is removed, the airway itself is likely to be normal. The working group notes that it is unlikely that the chest will have moved before this point in the process (during care given as per the NLS algorithm) and in conjunction with no chest movement and a lack exhaled of CO2 being detected, the step of suctioning using the ETT should be followed.
Section 10	5 th paragraph	(both good and bad) Is this terminology still considered supportive for learning – maybe good and requires modification/amendment?	This has changed in editing
Supportive documents		Please can we have these questions in the flowchart? <ul style="list-style-type: none"> • Is intubation or a rescue technique really needed immediately or can we achieve ventilation/oxygenation with the technique we are using now? • IF there is a decision to attempt again to intubate the baby (secondary intubation in particular), what was the likely reason for the first attempts failing? • What therefore needs to change to improve the chances of success (and how to correct this)? 	The algorithm covers this situation in as much as in the situation where mask ventilations/oxygenation is effective, it advises waiting for help to arrive and decisions about further intubation attempts to be planned. The latter two points are mentioned explicitly in resources material as part of the Q3 methodology. I would expect them to be considered as part of the planning with help arrived before further attempts are made electively. The algorithm has been annotated to suggest considering these questions at the appropriate time.
Supportive documents	General	Do we have consent to use the images in here and if so can we recognise the sources at the end (to protect from copy write law etc)	Images used were freely available in the public domain apart from those taken by Mr Steven Powell who shared them as part of the working group.
Chantelle Tomlinson			
General	Framework	The overall premise of this draft framework is extremely helpful and likely to be highly beneficial to a variety of neonatal settings – thanks to the author team for what has clearly been an exceptional amount of work. Ability to tailor and refine the content and suggestions for local context is very well received and easy to imagine. The repeated focus on human factors is a particular strength and we commend this. This approach emphasises	Thankyou. Your comment about images is noted.

		effectively that a written guideline and box of equipment are not protective in and of themselves. The theme of teamworking in the MDT with other local, hospital and network colleagues is vital to the success of implementing such suggestions and is well received by us. Could the document in general be supported by more visual stimuli/images? The text content is all highly relevant but more images for airway variations, example views of the difficult airway for instance may support the reader (such as those high quality images on page 7 of the framework and those in the resources manual).	
Framework p11	5 Trigger list	<p>“In patients in whom these conditions are diagnosed or suspected, extra care should be taken to plan for management of the difficult airway if any airway management is needed”</p> <p>We wonder if this passage could be supported a little more explicitly with a summary page / some suggested guidance on formulating a plan for such cases specifically. Where the algorithm is a powerful tool for working through the unanticipated difficult airway, could another such summary reflect key principles and options for planning a postnatal airway (e.g. on NICU) anticipated from the trigger list to be difficult?</p>	Thank you for noting this. Exact planning for an anticipated difficult airway falls outside this document though the Framework does acknowledge the importance of such good planning and communication, including advice for emergency delivery.
General	General	Would a subsection aimed where the difficult airway HAS been secured be a feasible addition? Factors and guidance to consider, equipment to prepare etc for such cases? Some guidance on ensuring a difficult airway therefore remains secure and preparation is optimised for future attempts perhaps.	Thank you for this thought. We have included a sentence noting the importance of properly securing the airway before attempting to move the patient.
20	Section 8.5	The detail and helpful practical pointers for compiling the local resources are well judged and helpful. These very specific practice points are the very features likely to make actual implementation	Thankyou

		and execution of a local framework more successful – thank you.	
22	Plans A to D	Might a section expanding upon the importance and key features of “Plan A” be beneficial? We wonder whether, since many challenges in airway management will be resolved at this stage, a highlighted section on “airway best practice principles” or similar e.g. optimising mask leak/consistency, position, airway manoeuvres etc may be a valuable addition and reminder. This would be well supported by the broad emphasis on human factors throughout this piece of work and may complement it nicely.	The presence of Plan A and checking ‘the basics’ is to provide a mini check at a time of high stress to reinforce that basics need to be done properly as more advanced resources are brought to bear on the case at hand. As you note, for a proportion of babies this will achieve stability. The best practice principles and techniques are already available at length in courses/info widely used such as the NLS course. The acquisition and reinforcement of these skills sit well under the remit of a neonatal airway lead.
27	10 Simulation	The emphasis on simulation and practical, regular education seems to be very valuable. Might a powerful and practical adjunct be some “off the shelf” scenarios for such simulations? Just a few such resources may support local teams to explore and deliver effective simulations more readily, reducing duplication of effort across the country. This could sit within the resources section as a helpful tool potentially.	Thank you, we hope to develop some educational material as an adjunct to the Framework
Resources p7	Followership	Where the documents change between terminology of “command – response” and “challenge – response” those new to human factors found this confusing. Might use of a single phrase be more accessible e.g. challenge-response?	Thankyou. Challenge and response is the preferred terminology and the document has amended.
Resources p9	Declaring Emergency	The terminology here for when it may be appropriate to declare a difficult airway emergency differs slightly from that in the framework. Though the wording is only slightly different, clarity and consistency (as in the resources document) that it is not necessary to have two failed attempts was felt to be important by our team. The framework document (section 8.1) is not quite so clear that senior/experienced judgement is sufficient to declare the emergency rather than awaiting failures.	Thank you. We have amended the text to include ‘clinical judgement’ as sufficient to declare the emergency, so that it will not be read as suggesting two attempts <i>must</i> be made before declaration of a difficult airway can occur.

Resources p10	Q3 approach	This 3 question approach is exceedingly powerful, thank you. Could it be emphasised, boxed or otherwise highlighted? In view of its high potential to support effective communication?	This approach with the specific questions is copyrighted by the MRPOVE academy who kindly provided access to their material. It is provided for reference but is not considered more effective than other approaches, therefore is considered alongside other techniques. The algorithm alludes to the latter 2 questions which can help guide plans for siting a definitive airway from a position of stability.
Resources p19	Surgical airway	Where the framework seems appropriately pessimistic as to the potential outcome of an unplanned surgical airway, the resources document has a different, more optimistic feel "...a surgical airway should be considered". This may be our local interpretation only, but wonder whether re-emphasising in the resources document the size/weight restrictions on possible success of a surgical airway, and the profoundly low likelihood of a positive outcome in the emergency/unanticipated difficult airway situation would be helpful?	This emphasis has been altered, thank you. We recognised that some centres may wish to include needle cricothyroidotomy so there is a section on this, though we have amended it to make clear that it is not a recommended technique.
Resources p23	Algorithm examples	The examples of completed algorithms are a useful practical and visual addition. These make conceptualising how one might adapt the framework much more straightforward and are very helpful.	Thank you