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Name: Mahmoud Montasser	**If you are answering on behalf of an organisation please state:** As an individual
General comments: Great initiative to streamline logistics for those high risk group of patients. Excellent example of mutli-disciplinary team approach. I wonder if there is a scope of adding additional sections as follows: 1- Cardiopulmonary assessment and monitoring particularly post surgery: a) Ensure ETT position has not changed and might need to do post op CXR for that. b) Ensure adequate ventilation is maintained (not over or under ventilated) and request blood gases soon after coming back from theater. c) babies might need increase ventilatory settings depending of which type of surgery (e.g post CDH repair) d) Monitoring BP, UOP, Lactate and CRT. Consider complications like compartmental syndrome. e) Consider functional echocardiography if poor urine output or persistent high Lactate with low BP. 2- Adequate antibiotics cover depending on the procedure and escalation plan of this cover if babies become more sick postoperatively.	**Working Group Response:** Thanks for taking the time to read this document and for your comments. 1 a-d. Please see p12 Monitoring and handover where much of this is already incorporated. Added blood gas within 30 minutes of return to NICU 1e. Beyond the remit of this WG to suggest use of functional echo, other usual markers of fluid status incorporated in fluid management p15. 2. Please see p12 Monitoring and handover where this is already incorporated
Specific comments: 1- summary of recommendation 2 perhaps should include paed anaesthesia as well in the joint team effort and decision making. 2- Fluid management section: perhaps needs a bit more elaboration on the type of fluids used (e.g including enough Na & KcL rather than hypotonic solution), and to closely monitor UOP and cardiac function to make sure babies are not overloaded or underloaded with fluids.	Paeds anaestheist to recommendation 2. Beyond the remit of this WG to suggest which specific fluid type to use and leave units to continue maintenance fluid or PN as they use on their NICU

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Name: Chirali Patel	**If you are answering on behalf of an organisation please state:** As an individual
General comments: Fantastic overview of time at nicu. Well detailed and covered everything a parent would need to know. Obviously there may be parts in which parents may need help too such as possible counselling/ psychologist ie when babies heath deteriorates. But not sure if it should be in this document.	**Working Group Response:** Thanks for taking the time to read this document and for your comments
Specific comments: The written information to parents is fantastic, but I believe it should also have contact details/ faq area in this. Thank you	Agreed and for local implementation

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Name: Colin Morley	**If you are answering on behalf of an organisation please state:** As an individual
General comments: This is an important document. I appreciate it is only peri-operative management. However, I suggest it should also include intraoperative care. Particularly, about detailed monitoring, anaesthetic use and th does of respiratory support. If that is not possible it should refer to appropriate documents, or at least a statement about the paucity of evidence.	**Working Group Response:** Thanks for taking the time to read this document and for your comments. Framework is for overarching principals of care during perioperative period with the paucity of evidence. Please see statement under evidence p4. This enables units to deliver their care under supporting principals.
Specific comments:	

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Name: Julian Eason	**If you are answering on behalf of an organisation please state:** As an individual
General comments: Good document but preparation for surgery I think needs more than a few words than a flow diagram.	Working Group Response: Thanks for taking the time to read this document and for your comments.
Specific comments: Infants can be physiologically stable as per page 9 but current transfusion guidelines leave many infants relatively anaemic on the NICU. This seems to generate a fairly common surgical comment that despite us believing infants are in a good physiological condition, the relative anaemia is sub-optimal for surgery and can cause delay if not transfused over the levels that are routinely recommended.	Balance of providing detail vs overarching principals. Would suggest that units adhere to their transfusion guidelines in line with British Committee for Standards in Haematology, (ref added to document New et al 2020

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Name: Tom Sproat	**If you are answering on behalf of an organisation please state:** As an individual
General comments: As a new consultant on a surgical NICU I was excited by the prospect of reading this framework for practice. I was expecting a summary of evidence around peri-operative management and some recommendations where there is some strength of evidence. I have not found reading the document particularly useful for my practice. I found that there is no real summary of the research evidence around the peri-operative period. Examples of clinical questions being related to:	Working Group Response: Thanks for taking the time to read this document and for your comments. Framework is for overarching principals of care during perioperative period with the paucity of evidence. This enables units to deliver their care under supporting principals. A Framework does not aim to answer specific clinical questions, it is a set of over-arching principles
- when to replace losses (gastric/stoma etc) after surgery. Should this be >5ml/kg, >10ml/kg, >20ml/kg?	In light of above, beyond scope of framework to conclude when to replace losses.
- when to start parenteral nutrition after surgery? the framework doesn't give a review of literature and concerns about catabolic stress and bodies suggesting limited parenteral nutrition after surgery	As recommendation 6.1 -
- when to start fortification of milk post-surgery? (no references or evidence just suggests discussion)	See included summary of ESPGHAN recommendation
- TAT tubes - what the current evidence is for when to place/not to place? (eg oesophageal atresia or duodenal atresia). Whilst this is a surgical decision it may be made in conjunction with neonatologist.	Beyond scope of framework to conclude whether to use a TAT or NG tube. This is a surgical decision at time of operation that is diagnosis and procedure dependant
- sedation post-operatively? - there is increasing use of dexmedetomidine in neonatal populations, would appreciate guidance regarding evidence of sedation post-operatively.	
Whilst I appreciate the working group have not been too specific about requirements that may be difficult to meet, It would be really useful if there was more emphasis on a summary of the literature and feel this document requires revision. Likewise there may not be definitive answers to the questions listed above but would expect an understanding of current literature even if cannot make a clear statement either way on	Framework is for overarching principals of care during perioperative period. Not intended to be a literature review. All WG members have referred to literature where necessary.

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issues. Thankyou for the opportunity to offer comments.	

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Name: Andrew Elliot-Smith	**If you are answering on behalf of an organisation please state:** As an individual
General comments: Thanks for putting this document together. My main comment relates to the stated 'target users' being HCPs on NICUs that care for babies <28 weeks gestation; I feel this is too narrow a target. Although such a setting is where the majority of cases will arise, there will be a cohort of well grown 27-28 week gestation infants who deliver and are cared for on LNUs. These babies may also have an early surgical concern, i.e. a congenital problem (e.g. TOF-OA), or an acquired issue, such as a SIP. Furthermore, although outside the full scope of the document, much of the 'preparation for surgery/transfer' discussions will be equally relevant to older babies who again may be on LNUs (or even SCUs), ahead of surgery. Two other general comments: - I cannot see mention of ensuring recent lab bloods, e.g. FBC, biochemqistry +/- clotting, before and after surgery. - For me, an important component of assessment in the post-op period is urine output. The document mentions fluid balances and related measurements, but urine output as a marker of adequate hydration and BP is not explicitly mentioned.	Working Group Response: Thanks for taking the time to read this document and for your comments. The framework was developed to assist in the management of <28 week gestation babies that require an operation relatively soon after delivery (eg 1-2 weeks). Please see background p6 Expanded in Handover and monitoring p12 Expanded in fluid management p15
Specific comments: Table 1 – as part of the info to be discussed with parents, I would suggest including 'alternatives to surgery' is prudent. This is arguably incorporated under 'risks and benefits', but for me warrants specific mention. Page 15 – replacement of additional fluid losses – it states that platelets and FFP can be used as peri-operative volume replacement. I presume this means in the situation where there is thrombocytopaenia +/- coagulopathy? As it stands though, it reads as if platelets/FFP can be used as standard, which is against the NHS Blood and Transplant (NHSBT) recommendation that blood products should not solely be used	Framework intended for use once team have decided that an operation is warranted. Have clarified in background that decision around 'appropriateness of operative intervention' is outside the scope of this framework. Amended on p15

for fluid replacement, in the absence of need for that blood product. Appendix two – it is unclear why there are two columns in this table (aside from the one entry about comfort for the surgical team)? There are a few other typos and grammatical inconsistencies in the document, i.e. capital letter use, but it is difficult to highlight these via this medium. I'd be happy to send a PDF version with comments or review a Word version, if desired.	*Amended*

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Name: Gabrielle Simpson	**If you are answering on behalf of an organisation please state:** As an individual
General comments: page 23. Section 4. Unclear what MOM feeding is - no definition in glossary	**Working Group Response:** Thanks for taking the time to read this document and for your comments Abbreviation defined. Included in key Horizons. Probiotics recommended in Periprem bundle
Specific comments: MOM is the best choice of feeding in the perioperative period. However, there is a lack of data regarding what additional measures in these babies would give the greatest benefit when combined with MOM	

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Name: Patrick Davies	**If you are answering on behalf of an organisation please state:** As an individual
General comments:	**Working Group Response:**
Specific comments: I am a PICU consultant Advice point 6: Evidence from children is that PN should not be started at the "earliest opportunity", that the best outcomes are by delaying a few days. I am unaware of the evidence in neonates, and whether this is different	Thanks for taking the time to read this document and for your comments NICE recommendation in extreme preterm see reference
Figure 1: Should a cranial ultrasound be done, or not? Or merely considered? VM:	Considered. We cannot mandate it. The framework is applicable for all babies <28w, which means some will be in the frist week of life when IVH risk is highest, and some babies may be a few months old but still <28w corrected. There is not evidence to back up this, but it is a sensible suggestion as devsatating intracranial injury may alter decision making in the peri-operative period.
End tidal CO2 monitoring should be standard. This is best practice.	We have used 'considered' in line with the BAPM neonatal airway standard.

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Name: Timothy Watts	**If you are answering on behalf of an organisation please state:** As an individual
General comments: I suggest a section on haematology and blood products, including: - provision of safe packed cells, information about the use of neonatal large volume packs - safe cross match for babies being transferred between centres - judicious use of transfusion, including care on volume and rates of transfusion to avoid increased haemodynamic instability and IVH - use of additional blood products (eg FFP, platelets) should only be used to correct known coagulopathy, not for "volume replacement", as there is evidence that harm will outweigh benefit (PlaNeT2 study) - pre-op blood testing, including evidence-based advice on coagulation & platelet count - safe storage of blood for babies having surgery on NICU	**Working Group Response:** Thanks for taking the time to read this document and for your comments Please see revised haematology section in fluid management section p15
Specific comments: Observation and documentation, page 11. I do not think the text makes it clear at all about what is meant by "full and continuous physiological electronic monitoring of vital signs" and " full cardiorespiratory monitoring (ECG, saturations, respirations, apnoea, blood pressure, temperature)" and the difference between the two. This makes this section very confusing. Administration of maintenance fluids, page 15 Suggest that there should be a sentence such as "Maintenance crystalloid fluids should generally be restricted post-operatively, with a focus on replacement of deficits and losses, to avoid fluid overload and oedema". Replacement of additional fluid losses, page 15 Suggest that there should be a sentence such as "Although it is difficult to assess fluid losses intra-operatively and these can be high in extremely preterm babies, care should be taken to give excessive volumes of crystalloid and colloid." ".Sometimes babies will require platelets and FFP during the procedure and can also be used	Harmonised these statements In extreme premature babies monitor their fluids carefully. We are not aware that it is standard practice to restrict fluids in this group.

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as perioperative volume replacement" - PLEASE REMOVE "and can also be used as perioperative volume replacement" from this sentence. There is no evidence to support the use of these blood products simply as "fluid replacement", in the absence of coagulopathy or as part of a strategy of blood product support in significant haemorrhage. In fact unrestricted blood product use is conclusively harmful.	Please see revised haematology section in fluid management section p15

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Name: Dr Alan Fenton	**If you are answering on behalf of an organisation please state:** As an individual
General comments: This document provides a clear overview of the perioperative management of extremely preterm infants.	**Working Group Response:** Thanks for taking the time to read this document and for your comments
Specific comments: Page 11 Monitoring and handover I would suggest the document specifies that the condition of the baby during transfer to theatre should be clearly recorded either in specific transfer documentation or in the baby's case notes. Page 23 Governance Maintenance of normothermia is appropriately identified as a major factor in the care of these babies. I think we should also record temperature on arrival in theatre and prior to the return transfer as this will help identify where (if any) temperature control issues arise. Simply recording the temperature on return to the NICU will not identify these issues. A baby who is cold on return from theatre may have arrived in theatre cold or may have become cold during handover at the end of the operation. Page 26 References Hancock, S. STOPP Tool (Safe Transfer or Paediatric Patient). Embrace Yorkshire & Humber Infant & Childrens Transport Service. June 2019. Typo: Safe Transfer OF Paediatric Patients (I think!).	**Summary of clinical status of baby included** **Amended**

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Name: Maya Parkin	**If you are answering on behalf of an organisation please state:** On behalf of an organisation or group Bliss (charity)
General comments:	**Working Group Response:**
Specific comments: Page 18, paragraph 3, 'Assessment of pain': Bliss welcomes the inclusion of the second paragraph in this section stating that the engagement of parents in pain assessment and management has a positive impact on their experience. We suggest expanding the wording in this section to be clearer that there is a role for staff in explaining and supporting parents to be actively involved in the assessment and management of pain.	Thanks for taking the time to read this document and for your comments Suggested para amended
We recommend including some additional wording such as: "Staff should ensure that parents are shown how they can assist with the assessment and management of their baby's pain. To help make sure that parents understand the information given, it may be helpful to provide them with written information to support this. For example, Bliss has resources which cover being involved in a baby's care and procedures, this information was developed with parents and can be found here: www.bliss.org.uk/parents/in-hospital/being-involved-in-your-babys-care-and-procedures."	Suggested para amended
Page 19, paragraph 2, 'Non-pharmacological management': Bliss welcomes the inclusion of skin-to-skin contact and containment as ways to reduce the response to procedural pain as early as practical.	Suggested para amended
As with page 18, we recommend making it clearer that parents should be actively shown how they can assist with the management of their baby's pain not only in the post-operative period but during painful procedures. Parents should be given written/online information to support this. For example, Bliss has resources that were developed with parents here: www.bliss.org.uk/parents/in-hospital/being-involved-in-your-babys-care-and-procedures.	Suggested para amended

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Name: Nigel Gooding	**If you are answering on behalf of an organisation please state:** On behalf of an organisation or group Neonatal and Paediatric Pharmacist Group (NPPG)
General comments: A well written document with carefully laid out information and really good to see consideration of management of medicines perioperatively. Is the guideline just for newborn babies or any baby <28 weeks CGA needing an operation	**Working Group Response:** Thanks for taking the time to read this document and for your comments The framework was developed to assist in the management of <28 week gestation babies that require an operation relatively soon after delivery (eg 1-2 weeks). Please see background p6. But principals reasonably applicable to all neonatal patients that require an operation. Framework title amended for clarity.
Specific comments: Summary of comments emailed to Laura Fountain (as exceeded the word limit here).	

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Name: Liz McKechnie	**If you are answering on behalf of an organisation please state:** On behalf of an organisation or group Leeds Children's Hospital
General comments: Overall, we are generally disappointed with the document. We feel that it is not useful for tertiary surgical as it is too vague and basic.....sorry!	**Working Group Response:** Thanks for taking the time to read this document and for your comments
Specific comments: There is very little reference to anaesthetists and the essential role that they play in this care. PERIOPERATIVE PATHWAY Some elements of the perioperative pathway are not included. Might be useful to define the perioperative period at the start of the document. This document seems to focus on post operative period. A key baseline preoperative stability/ assessment is essential before surgery should commence. Importance of huddles emphasised which is great – would an illustrative case study be useful here? Preoperative information not detailed enough: baseline observations, treatment, infusions, ventilation, ETT size, position confirmed, bloods, recent gas, blood sugar, availability of blood products, ensure ordered, fluid balance preoperative, IV access X2, can lines by used for blood products, BP, lines and confirmed line positions and what they are being used for. Preoperative stabilisation strategies/care need to be included in handover information and assurance of return to normal parameters/stabilisation by the time they reach theatre. Mention preparation of baby to transfer to theatre on platform, transport inc etc. - movement, lines, stability of baby confirmed- bloods, sugars, ventilation, normothermic Need to refer in the document to the WHO safer surgery check list and pre and post operative check lists completion and handover. 'Transfer to unit' should include care managed by surgeon, neonatologist AND anaesthetist TEMPERATURE CONTROL	The framework was developed to assist in the management of <28 week gestation babies that require an operation relatively soon after delivery (eg 1-2 weeks). Please see background p6 **We recognise that these principles could be reasonably applied to any child that needs an operation on a neonatal unit.** ***We have made suggestions that local unit can modify when implementing***

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Temperature control is important and covered extensively. However, we think it is misleading to quote the Resus Council on theatre temperature. Their recommendations are very much about delivery room/theatre temperature. Modern equipment available for maintaining normothermia are very effective and the theatre temp. does not need to be this high - ensuring the surgeons/anaes are not distracted by their own temperature control is important too!	***Need to consider theatre temperature, micro environment and comfort of team. Theatre should be pre-warmed before patient enters.***
VENTILATION There is no discussion around ventilation - most babies in this extremely preterm group will have been ventilated pre-theatre and will remain so after theatre; a negligible number, if sick enough to require surgery at this size will require ventilation for at least a short time post-op. If, by any change, they are not ventilated pre-theatre - a discussion should be had between anaes. and neon. about intubation - should be done by the most confident operator and the expected size and length of ETT discussed. If it is a long operation that is anticipated, there must be confidence that the ETT is in the right place - a pre-op CXr should be done. For a lot of operations, intraoperative blood gases are very difficult/impossible to achieve (access to the baby due to the surgery is v limited)- to ET CO2 or transcutaneous CO2 monitoring is best that can be done. This will allow for monitoring during transfer as well - which is important esp. if it is along transfer. Would be good to include an anaesthetic reference for use and effectiveness of ETCO2 monitoring and best practice recommendation evidence, intraoperatively and during transfer. There is no discussion around the differences in ventilating these babies on anaesthetic machines versus neonatal ventilators - and this should be considered.	Beyond the remit of this WG ***See P12 handover and monitoring***
FLUID MANAGMENT More detailed discussion of fluid management should be had. The use of packed red cells is given little comment - only FFP and platelets. The use of a warmer to give blood products	

should be promoted, as it has a central role in management of normothermia. It is currently only mentioaned in the appendix. More detail about the evaporative loss of fluid from open body cavities is not discussed. This is important. Correcting electrolyte imbalance pre-operatively is not mentioned. TPN: TO CONTINUE ON NEXT SUBMISSION	***See amended section p15***

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Name: Liz McKechnie	**If you are answering on behalf of an organisation please state:** On behalf of an organisation or group Leeds Children's Hospital
General comments: as previously	**Working Group Response:**
Specific comments: CONTINUING FROM PREVIOUS RESPONSE... TPN: "NICE recommends the use of standardised parenteral nutrition as maintenance fluids for preterm babies, which could be used in the preoperative period. Many centres restrict the use of parenteral nutrition intraoperatively" – can the group advise on situations when it would be appropriate to stop PN intraoperatively and give clear fluids? Is there any evidence to support either approach? Should continuing PN if already started should be the logical default? There is no mention, as far as we can see, about adequate venous access – the need for access that blood products can be given through effectively, and allow for compatibility issues in these babies that are often very sick and complex. MONITORING: "If not on full and continuous physiological electronic monitoring, then continue full cardiorespiratory monitoring for 24 hours after the baby returns to NICU" – not sure why this is seen as an option - should this not be essential?? Page 11- Vital signs should be monitored continuously and documented at intervals (? What that usually in intraoperatively). OTHER SUPPORT The early use of inotropes in babies that are receiving a lot of additional fluid replacement should be considered to aid CV stability. Blood glucose being checked and normalised pre-operatively is not mentioned. Under Pain management: maybe include the use or support form specialist pain team Appendix 1: An equivalent list would be helpful for going to operating room. Would be similar and capture key components of care missed in general document. Appendix 2: I like the temperature appendix . A good check list resource and always helpful for clinical teams - but would add we would NOT	NICE recommendation is to start PN at earliest opportunity *Amended Continuous monitoring throughout their perioperative period.* *Appendix to facilitate units that wish to move towards in unit operations*

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transfer a baby < 28 weeks in an open cot or care for them in an open cot post operatively. Most surgical NICUs would utilise a transport incubator also	

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Name: Dr Wilf Kelsall	**If you are answering on behalf of an organisation please state:** On behalf of an organisation or group Cambridge University Hospital
General comments: The document is very comprehensive and well written	**Working Group Response:**
Specific comments: In figure 1 in the green arrow sections there is a statement "consider performing a cranial US scan. Wearing my hat as a neonatal consultant with expertise in cardiology I am often asked by anaesthetists to review preterm infants and perform an echocardiogram as part of the pre-operative assessment. I would suggest in the green arrow sections a statement consider performing an echocardiogram. I recognise that this may not be possible in all units and depends on the availability of local expertise. We are though aiming for best practice. My consultant colleagues in Cambridge have asked that I respond on their behalf.	Thanks for taking the time to read this document and for your comments Beyond the remit of this WG to suggest use of functional echo, other usual markers of fluid status incorporated in fluid management p15

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Name: Julie-Clare Becher	**If you are answering on behalf of an organisation please state:**
General comments:	**Working Group Response:**
Specific comments: 1. Infection prevention: it would be good to have a recommendation that infection control/prevention procedures undertaken by all teams in the operating theatre environment should be at least that which are followed on the neonatal unit. 2. Governance: it would be good to have a recommendation about joint mortality and morbidity reviews and shared learning events between surgeons, anaesthetists and neonatologists. 3. Airway and ventilation: it would be good to see some guidance about the most appropriate person to intubate tiny babies; the support of anaesthetists in intubation; handover about any airway/intubation difficulties; the use of uncuffed tubes ideally; avoidance of supranormal pressures and saturations.	Thanks for taking the time to read this document and for your comments **1.** happy to include statement that recommend a maintenance of NICU IC measures throughout perioperative journey **2.** BAPM Mortality Governance coming soon **3.** Most appropriately experienced and consider this in preparation for operation and discussion with NICU, Paeds anaesthesia.

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Name:	**If you are answering on behalf of an organisation please state:** NPPG
General comments:	**Working Group Response:**
Specific comments:	Thanks for taking the time to read this document and for your comments
Page 9 - use of 'PN' in yellow arrow and key underneath but abbreviation not explained previously	**list of abbreviation**
Page 9 - in key underneath table states 'Table X' and 'Table Y'. What are X and Y?	**P8 X=1, y=2**
Page 9 - Operative environment- safe to perform surgery on NICU. Need to include 'as long as all equipment and appropriate staff available, especially if there is a change to the planned operation', i.e. if something goes wrong or surgical plan change and different equipment is required. Is this covered or needs to be covered in appendix 1?	**principal for local implementation**
Page 12 Handover should include all intraoperative drugs not just pain relief, e.g. antibiotics and continuous infusions such as inotropes etc	**agree and amend**
Page 13 -temperatures need degree symbol (and page 23)	**amend**
Page 15 -replacement of fluid deficits- what does 'medical charges' and 'measurement records' mean?	
page 15 -Not sure that NICE recommends PN as maintenance fluid (may be wrong) but rather to ensure administration of nutrition is optimised during the perioperative period and not automatically discontinued. For comments about normoglycaemia: hyperglycaemia is also a very real risk and should be commented on here.	**NICE recommendation PN at earliest opportunity**
Page 16 - PN- 'consider concentrating of drugs'- suggest rewording this to 'review the concentration of drug infusions and discuss with the neonatal pharmacist'	**agree and amend**
Page 18 - morphine admin- suggest not recommending oral administration in the perioperative period until enteral feeds have been established	

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Page 19 - paracetamol Intravenous Practice in the UK varies significantly and we would suggest not recommending a dose in this guideline when BNFC has not included one. We would suggest it should include the specific statement that there is no national recommendation in BNFC for IV paracetamol in preterm infants gestation less than 32 weeks.	**Dosing schedule with reference** **ADD No national recommendation in BNFC for IV paracetamol in preterm infants gestation less than 32 weeks**
The reference to the article by Gupta et al is confusing as it does not conclude what the safe dose in the extreme preterm population is. This article summarises that 40-50 mg/kg//day may be equally efficacious as 60-70mg/kg/day (for PDA treatment) The dose in the table for IV is 15mg/kg/day - far lower than the doses used in most centres for the same population for the treatment of PDA	Point is that dose used for pain relief is lower than that used for PDS in the same group of patients
Rectal Suggest including a caveat that rectal route may be contraindicated after some surgical procedures Oral States well absorbed, there is no reference. In a fully fed neonate/child absorption is good but in perioperative period we would suggest enteral medication is usually contraindicated - **but until when?**	**agree and amend**
Page 19 - non pharmacological management Suggest this should have a more family integrated care approach and include specifics regarding techniques and practices that may impact on neurodevelopmental care for these extreme preterm. We noted that there is no OT/Psychology/ PT author which may have been useful. Could a patient / family story woven in to the narrative, early interaction with PT/OT and psychology will have a profound impact on how the family is able to manage the long journey ahead.	
Page 19-local analgesia Is this common practice in <28 week infant? And what topical local anaesthetic agents are being considered in this section (Amethocaine gel has only been studied from >27 weeks)? Page 20 Medication related considerations Suggest that endocrinologist should be consulted for infants on systemic corticosteroids and with adrenal	**Units have the option to consider use**

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hypoplasia Unlikely scenario in 'fresh' extreme pre **Fasting** prior to operation It is stated that "Medicines which can be safely withheld include those with long half lives (such as caffeine citrate or levothyroxine) but then in table 4 state switch thyroid supplements to IV when NBM. The only (licensed) IV preparation of thyroxine in UK is liothyronine and NHS England class as PBR excluded for adults in myxoedema coma otherwise in tariff and significant expense. We feel this should be removed or a caveat added that IV should be considered for babies who are likely to be NMB for more than a few days. Octreotide Is included in the switch to IV whilst NBM column. Would not usually be on oral octreotide to need to switch to IV PDA treatment Paracetamol IV and PO are for PDA are not generally considered as equivalent, please can a caveat be added?	
Page 21 -Table 4 headings don't really explain what this table is about and could be made clearer	Tables reworked
Page 21 - paragraph about medication documentation on page 19 repeated on page 21	Amended
Page 21 – Suggest rewording the paragraph ' care should be taken to ensure that the way infusions are made up…..'. Suggested change to 'Care should be taken regarding the concentration of a drug infusion and the diluent used, as routine practice may differ between departments and hospitals.' Also suggest that note should be added to ensure surgical teams consider the concentration of a drug infusion that they may commence during surgery, and the volume load that it will deliver to the patient. (There have been incidents in some Trusts where drug infusions designed for older children have been administered to neonatal patients leading to severe fluid overload).	**Change the wording and standardise NICU infusions across the periop period??**
Page 21 – For steroid doses there is nothing about doubling doses perioperatively in adrenal insufficiency or discussion with endocrinologist.	
Page 22 - restarting enteral when tolerating half enteral feed volume – what volume is this. Some	

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centres use 60ml/kg/day – is this the same everywhere?	
Page 22 - Some units might replace non compatible medications with intravenous fluid to maintain line patency. We did not understand what this meant.	**Unlikely scenario in 'fresh' extreme prem**
Page 22 - suggest rewording at end of this section as follows 'TATs may also be transpyloric, and patients with a stoma may have regions of bowel bypassed or removed. Consideration should be given to the site of absorption of medications administered through TATs and/or given enterally to patients with a stoma, to ensure that they are still absorbed through this route of administration'.	Variable WG suggests **usual full enteral feeds is 120ml/kg/day?** Amended
Page 22 - For paragraph about high osmolarity medicines: - - there is no end to the brackets - does it mean reduce absorption of feeds or the drug? - Should it say something like 'could increase gut motility and therefore limit the potential to absorb feeds' - Should it say stoma patients or instead say patients with a stoma	Amend
Page 23 - MOM not used before in document. Needs definition	
audit standard 8- suggest all intraoperative drug administration (not just pain relief) - research 2- first 48 hours-is that of life?	Added
Page 24-Appendix 1- - what happens to other parents of babies on the unit. Where will they be sitting? Can they still be in room? can they come and go? is room access limited for duration of op?	Local implementation and expansion as needed Unicef Baby Friendly Initiative stage 3 with **local derived exceptions**
Risk to others of raised room temp during op - In equipment availability, also include availability of medicines that will be needed	

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Name: Donovan Duffy	**If you are answering on behalf of an organisation please state:** St George's Neonatal Unit
General comments: Thank you very much to the team who has drafted this much needed Framework. We enjoyed reading it and as a surgical tertiary neonatal unit have provided feedback below.	**Working Group Response:** Thanks for taking the time to read this document and for your comments See bold text
Specific comments: It would be very helpful early in the document to clearly describe: What gestation at birth and corrected gestation the guideline is aimed at. The title "extremely preterm" implies birth before 27 weeks of gestation, sounds very similar to the BAPM Management of Extreme Preterm birth Framework. Many senior neonatal trainees thought the focus was an ethical framework when and when not to perform surgery in babies < 27 weeks. Almost all the principles relate to preterm babies undergoing surgery and we suggest the title and guidance is not just aimed at "extremely preterm." A description of typical procedures when the framework is applicable eg. SIP earlier on, NEC a month of age, airway and neurosurgical procedures, ROP laser later. (Cardiac is not mentioned and suggest cardiac is not a focus for the document but the pretransfer and intratransfer principles apply) There needs to be a much more detailed section on communication between local unit- receiving tertiary consultant- transport team- surgeons- parents based on local ODN, unit and transport team policies. This needs to include pretransfer and intratransfer discussions regarding pre-surgery optimisation including central venous and arterial access, cardiovascular and fluid optimisation, boluses, blood products, imaging and transfer of imaging, what clinical	See definitons on P4 Amended title of framework Centralisation aims that the majority of <28 week gestation should all be delivered in NICU and not local Neonatal Unit

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interventions have to take place, can be left for transfer, receiving unit, expectations from all sides especially when it is an emergency surgical transfer who is deteriorating, may continue to do so en route and may not be fit for surgery at the receiving unit. The section on interhospital transfer needs to clearly acknowledge that a baby undergoing emergency transfer may not get an imminent operation at the receiving surgical unit or surgery may not be performed at all. Otherwise, we know this can lead to unmet expectations from the parents and local unit. There is no mention of death or severe morbidity, it may not be appropriate to transfer until baby optimised / stabilised. There may be some children where operation for an abdominal catastrophe may not be in their best interests. The principles of effective handover between NICU and anaesthetics (standardised, using checklists, etc) before surgery and anaesthetics, surgery and NICU after theatre need to emphasised. There does not seem to be any mention of neonatal to anaesthetic communication pre and post op other than through a transport team, and no mention of the benefits of surgical/anaesthetic and neonatal communication during surgery in theatre for difficult cases- ie. Neonatologists, neonatal nurses in theatre to support anaesthetics and surgical teams. Handover of medications at each transfer point is a risk that needs highlighting: including specifically saying something like 'including the dosing and timing of paracetamol' in view of the number of adverse incidents related nationally to that medication when transfer of babies occurs between hospitals and from theatre – could be in the handover bit, or the analgesia part. We have also had several risk incidents with aminoglycosides in surgical babies in theatre,	**Principal of an effective handover is key - its up to local unit to determine how to do that**

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between local and receiving unit, timing of medications, what administered, what not, times, drug/epma chart visible and handed over key. Consent – ideally face to face but this may not always be possible with transfers – reflection on best practice in that scenario. "consider" ETCO2 when ventilated- not something to be "considered" this must be done, is a standard of care in our neonatal unit for years, all anaesthetic guidelines. "monitor baby's vital signs regularly"- stating the obvious, suggest remove or state what is being recommended. We monitor continuously ETCO2, HR, BP intra-arterial- unless cannot be obtained- again contextual description, saturation, temperature. Feeding – "For post GI surgery for conditions that may require a trans anastomotic tube (TAT), continuous feeds might be the preferred method of feeding." -this depends on where the tube is placed: intestine vs stomach. Guidance around TAT tubes appears to refer to OA, and not to other TAT tubes, this is not explicit in the guidance. "Where a gastrostomy is formed, feeds should be started as 1-2 hourly bolus feeds as these babies may have a very small stomach." - this depends on why the gastrostomy was placed and the stomach may not be small at all. Are you thinking of a long gap OA? The philosophy of optimising nutrition should focus on having policies locally – avoid '1-2 hourly' advice for gastrostomy for example. Stated preference for early enteral feeding but no descriptions on how that is defined or in what surgical conditions/ procedure. Preterm	Wording in line with BAPM airway standard add **May be required if post pyloric** add **in conditions such as long gap OA** Bolus feeds as per local policy **We recommend early enteral feeding in post-surgical babies where possible**

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NEC bowel surgery, gastroschisis may have to delayed for many days. Paracetamol- The section on paracetamol dosing requires review, caution, contextual description. This is a high-risk drug liable to dosing errors. We do not use paracetamol less than 28 weeks. We would not recommend an extrapolation of dosing based on PDA dosing for several reasons:	
The context of using paracetamol for PDA closure is very different to using it to achieve analgesia in unstable post operative extremely preterm infants with altered fluid status, multi-organ dysfunction including compromised kidney and renal function. The evidence described is a local unit pda guideline rather than trials and systemic review data for analgesia There is no known dosing based on birth or cor GA < 28 weeks - Paracetamol use needs to be highlighted in the research and future horizons section.	Variation in practice and many NICU's do use paracetamol
Please can the abbreviations be consistent and standardised eg. MOM, MBM in different places	
Section: 'Key horizons and research"	
- We suggest investigating the practice & evidence behind peri- operative antibiotic use & duration, often driven by surgeons - We suggest investigating the practice & evidence around coagulation studies in preterm babies, as adult practice is often extrapolated to guide variable practice around FFP, vit K.	Done
use of MOM (?) for post operative feeding + additional measures would give greatest benefit when combined with MOM- we are not clear on what is meant here, what additional measures are being referred to. Our own experience is that MEBM/ DEBM is the only first line option based on evidence and experience. There is very	**outside scope of WG, but general use of all drugs in NICU requires more research**

rarely a place for specialised elemental/ semi-elemental feeds as a second line. We suggest specific research on paracetamol use in preterms perioperatively for analgesia (not PDA) "In addition, there is a move towards operating on NICU"- needs a contextual description, how and when this may be considered eg. emergency too unstable to take to theatre, theatre remote from NICU (vs Scandinavian units with sufficient adaptable theatre space on unit at cotside)	