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Examples of High Scoring Conference Abstracts



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Differences between necrotising enterocolitis and focal intestinal perforation in a cohort of preterm infants

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Background

Surgical necrotising enterocolitis (NEC) and focal intestinal perforation (FIP) are recognised complications of preterm birth. Histologically they are very different but clinically they can be difficult to differentiate. We describe a cohort of preterm infants with confirmed surgical NEC or FIP, and explore differences between the groups.

Methods

Retrospective review of infants <32 weeks gestational age managed in a regional surgical NICU. Data extracted from the Badgernet database and medical records with local Caldicott approval. Statistical analyses were a comparison of means with associated two-tailed independent sample T-test, and cross tabulation with associated Fisher's-exact test.

Results

Over an 11 year period (2012-2022) 91 babies were identified; 60 with NEC and 31 FIP. Gestational age and birth weight were similar in the two groups (Table 1). Corrected gestational age at diagnosis and first surgery were significantly lower in the FIP group, although time from diagnosis to first surgery was similar in both groups (Table 1). Stoma creation was the commonest intervention, especially in the FIP group (93% versus 58%; $p=0.001$).

Overall 96% received human milk (mother's own or donor) as their first enteral feed, with no significant difference in age at first feed between the groups (Table 1). 88% of the NEC group and 93% of the FIP group received milk by day 7 of life.

Mortality was 40% with NEC compared to 19% with FIP ($p=0.061$). In the cohort as a whole those who died had a significantly lower birth weight (773 versus 936 grams; $p=0.005$), and a trend towards a lower gestational age (26+0 versus 26+6 weeks; $p=0.08$).

Conclusion

Our cohort confirm the difference in timing of onset between NEC and FIP, the differing operative approach and the significant mortality associated with both. No obvious feeding antecedents were identified although the vast majority received early human milk.

Outcome of Implementing an Intraventricular Haemorrhage (IVH) Care Bundle in a Tertiary Neonatal Unit – a Quality Improvement Project

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Background

In preterm infants born <32 weeks, and especially in those <28 weeks, IVH is a major cause of morbidity. The use of neuroprotection bundles, although lacking high quality evidence, have been shown to reduce rates of IVH in some cohort studies. The components of these bundles, however, are not standardised.

Improvement measure: An IVH care bundle for infants <32 weeks was introduced in 2020 (image 1) focusing on two main themes in first 72 hrs- minimal handling with neutral head positioning and avoiding interventions causing rapid fluid flux. IVH awareness cards were displayed on incubators. Awareness and education was disseminated through focused trainee teaching sessions and on nursing update days.

Aim

Assess whether implementing the care bundle was associated with a reduction in the rates of overall and severe IVH (O/s-IVH).

Methods

Electronic patient records were accessed to calculate O/SIVH rates before (epoch 1) and after implementation. Compliance to bundle elements was reviewed over two retrospective audit cycles: 01/09/20 to 31/08/21 (epoch 2, n=81); and 01/09/2021 to 30/04/2023 (epoch 3, n=50).

Results

Primary outcomes: There was statistically significant reduction in both overall (36% to 21%), and severe (15% to 7%) IVH rates after bundle implementation (Graph 1).

Compliance: The second audit cycle demonstrated improved compliance in most auditable domains (Table 1): namely midline head positioning (5% to 54%); delaying routine weights till 72 hrs (44% to 92%); avoiding >2 fluid boluses in 24 hours(90% to 98%).

Optimisation: It was identified that only 36% of infants in epoch 3 with SIVH received optimally timed antenatal steroids and 2 were born before arrival. Majority had optimal cord management and admission normothermia(pdf 1).

Conclusions

Our care bundle focused on neutral positioning, cluster cares and avoiding volume fluctuations resulted in reduction in IVH. Further research is required to identify the most effective components.

Graphs

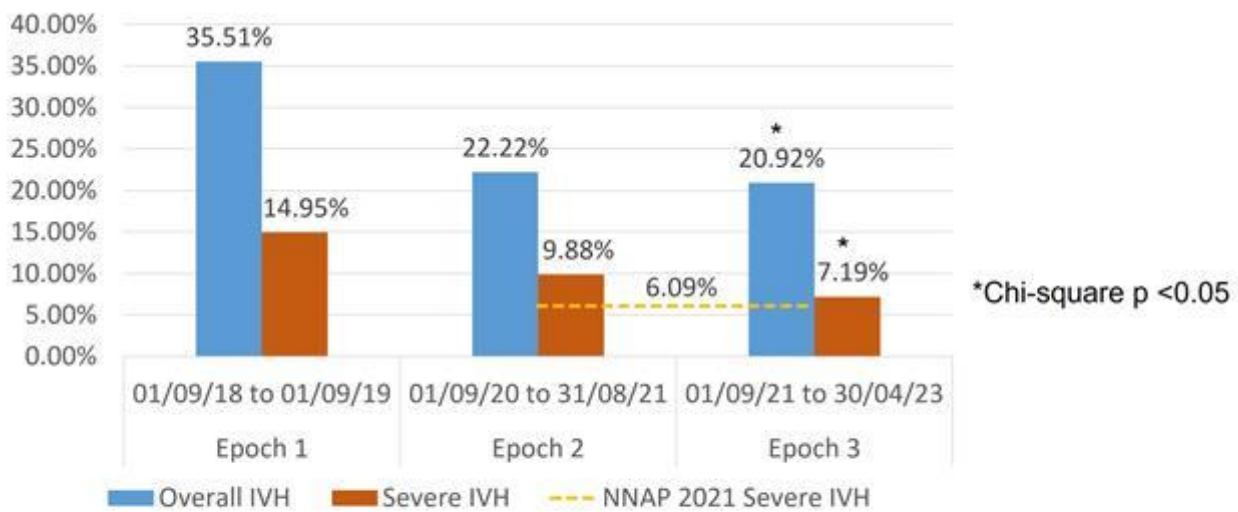


Figure 1. Rates of IVH in preterm infants born at <32 weeks over 3 epochs (N=107, 81, and 153, respectively).

Image

Medical care bundle	Nursing care bundle
<ol style="list-style-type: none"> 1. Minimal interventions – CrUSS, Echo to be combined with nursing cares. 2. Management of fluids – fluid boluses (INCLUDES FFP, PLATELETS) to be limited to <2/day in first 72 hours if possible. Increasing baseline fluid infusion is more physiological. Bolus if administered should be over 1 hour. 3. Sodium Bicarbonate- consider only if Ph <7.15. Avoid rapid infusions – half corrections should be over 2-4 hours, full correction over 12-24 hours. Ideally infusion @ 0.5-1 mmol/kg/day through UAC when needed 4. BP management – be proactive to titrate inotropes in case of low or high blood pressure. For <28 weeks, MAP >40 should be avoided. Dopamine to be avoided in first 24 hours in preterm <28 weeks 5. No routine intubations should be performed in extreme preterms without pre- medications 6. Fluid management in first 72 hours is based on electrolytes, urine output and acid base status. Defer checking of daily weights to after 72 hours unless specifically required. 	<ol style="list-style-type: none"> 1. Positioning – Midline position of head with tilt of incubator 15-30% for 72 hours. 2. Cares: Avoid rapid lifting of legs – side lying position during changing of nappies 3. Ambience – Avoid flashing lights, use eye protection with eye shields during procedures. 4. Noise – Alarm volume reduction is mandatory, volume should be reduced to 2 in all monitors. Incubator covers should be big enough to protect from light and sound exposure. Management of pain, stress- swaddling or sucrose prior to invasive procedures. 4. Medications & infusions Withdrawing blood from UAC – accepted rate 1ml/30 secs. Same for flushing. Not m2ml needs taking out for sampling 5. Routine weighing not required unless specifically asked for in first 72 hours.

Unusual Form of Atrial Flutter in a Neonate

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Background:

Atrial flutter (AFL) is a very rare but potentially lethal supraventricular tachyarrhythmia which is typically characterized by atrial rate of 400-600 beats/min in neonates. Most neonates and fetuses with AFL have essentially normal heart structures and affected infant may present with circulatory failure. ECG shows characteristic flutter waves (also called saw-tooth waves). The mechanism of AFL consists of re-entrant rhythm that originates in the right atrium. AV block does not terminate AFL as AV node is not involved in the re-entrant circuit. Thus, adenosine cannot terminate AFL but unmasks the flutter waves by causing AV block. The recommended treatment for a newborn, both stable and unstable, is either synchronized electrical cardioversion or transoesophageal atrial overdrive. Following successful cardioversion, prophylactic antiarrhythmics may be needed.

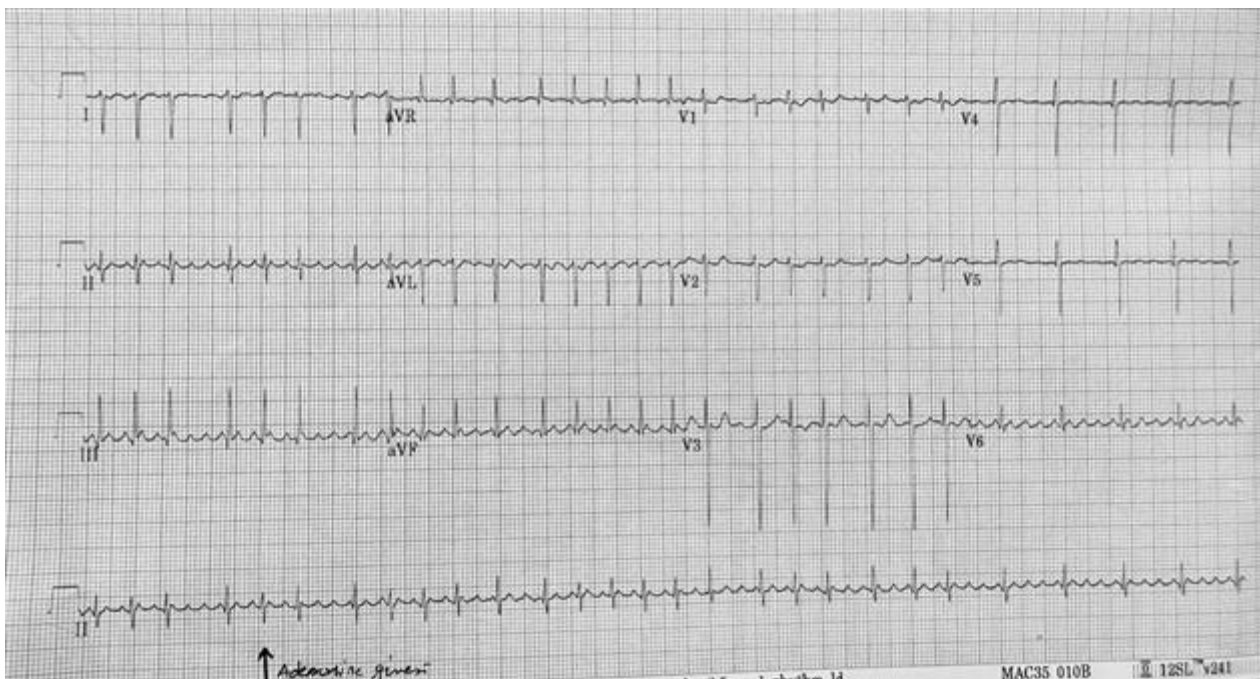
Case Report:

A term new-born infant, was admitted to the neonatal unit due to tachypnoea and increased work of breathing, was born by Emergency C-section for maternal hypertension on labetalol. On admission, baby was attached to the monitor which showed HR >220beats/min. 12-Lead ECG showed narrow complex tachycardia suggestive of SVT. One dose of adenosine was given which resulted characteristic sawtooth waves signifying atrial flutter. She was intubated and ventilated and received total of four DC synchronous shocks (2x 0.5J/kg and 2x 1J/Kg) following which the rhythm converted to sinus. She was later extubated and had an echocardiography done which just showed septal hypertrophy. A 24-hour Holter was normal. She was started on propranolol and was discharged with the plan to be followed up in cardiology clinic.

Conclusion:

The recommended treatment for AFL is synchronized electrical cardioversion to convert to sinus rhythm. However, our patient was resistant to the initial cardioversion. It was an unusual form of AFL which did not respond to the usual treatment.

Image



Elevating Neonatal Care: Is it safe to deliver and admit 32-33+6 weeks babies in level 1 unit - A Service Development Project

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Background

The Toolkit for High-Quality Neonatal Services states that a level 1 neonatal unit serves the local population and can provide high dependency unit care for babies delivered at >32 weeks. An audit was conducted in 2019 to assess the short term needs and outcomes of 32-33+6 week babies delivered at level 3 unit. Based on those results we amended network operational pathway in 2022 to allow delivery and admission of >32-week babies at our level 1 unit (See PDSA diagram)

Aims

- To ascertain if current pathway is safe and can be continued
- To assess if any further improvements can be made

Methods

- Retrospective analysis of badger net data over 1 year (May 22- May 23)
- Eligibility Criteria: All babies born between 32-33+6 weeks delivered and admitted to level 1 unit
- Excel Sheets: Short term needs and outcomes (respiratory support/resuscitation/need for transfer etc)

Results

- 19 babies delivered at level 1 unit (booking location), 78% successfully managed and discharged from the unit, while 22% transferred out for escalated care.
- Main reason for transfer: >48 hours on high flow oxygen (HHF).
- Only one baby required significant resuscitation and mechanical ventilation.
- 28% required no respiratory support, 63% required HHF, 5% required low flow oxygen.
- Respiratory support weaned off in <48 hours in babies who stayed and in <24 hours for babies transferred out.
- Surfactant administered to 28% of babies requiring respiratory support.
- Cord optimization achieved in 74%, temperature stabilization in 84%.
- Twins and babies with significant congenital anomalies delivered at level 3 unit.

Conclusion

It is safe to deliver and admit >32-week babies at level 1 unit. We recommend conducting an audit on surfactant administration, increasing duration of HHF to 72 hours before considering transfer, and continued re-evaluation of practices.