Review of Births between 22-23+6 weeks gestation in ABUHB (2018-2020)

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Introduction:
Advances in perinatal medicine have led to a dramatic improvement in overall survival rates for extremely preterm infants[1]. As technological capacity increases, the need to define the threshold of infant viability and agree on the ethical boundaries of neonatal intensive care becomes more urgent.

With the planned introduction of the Neonatal and Maternity Networks tool kit on PERIPREM Optimisation of care for babies born at the extremes of viability, we conducted a retrospective study to understand current numbers of pregnancies ending at this gestation, and the outcome of babies born between 22 and 23+6 weeks in our health board between the years 2018 and 2020.

This can be classified into :2
Anatomical threshold: According to the gestational age, which means that the baby have all the critical organs that they need to survive and sustain life.
Legal threshold: From October 2019, the level of resuscitation boundary changed to be recommended at 23 weeks and considered at 22.
Moral threshold: Whether the resuscitation is in the best interest of the baby .

Study Findings:
Retrospective study of all births between 22-23+6 weeks gestation during the period from 2018 to 2020 in our health board .The data was collected from CSC (maternity data set) and BADGERNET (neonatal data set).

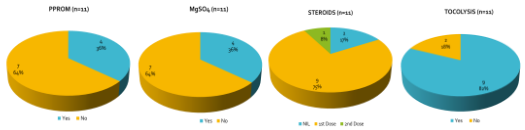
There were 16,868 deliveries in this period, of which 17 (0.10%) were delivered between 22+0-22+6 and 21 (0.12%) were delivered between 23+0 to 23+6 gestation.

Risk factors of previous late miscarriages in 2%, previous preterm delivery 4%, previous cervical surgery in 3%, maternal age >40 in 2%.

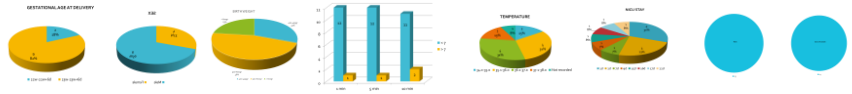
Of the 38 deliveries at this gestation, 11 were TOP, 5 were late miscarriages and 22 had fetal heart at the commencement of labour. 11 FH lost during process of labour and 11 pregnancies ended with live birth of which there were 2 sets of twins. All babies were born in a set up with level 3 NICU.

We further evaluated the peripartum care of the 11 pregnancies and outcome of 13 babies.

Antenatal Optimisation



Neonatal Outcome (n=13)



Discussion:
It is extremely difficult to predict with any certainty the clinical course of infants born in the peri-viable period of 23 weeks gestation and the clinicians remain in dilemma whether it is ethical to initiate or withhold resuscitation. BAPM recommend that discussion between health professionals and the infants' family must underpin any clinical decision to withhold or instigate resuscitation of the peri-viable infant. This discussion should be informed by clear short- and long-term morbidity and mortality data that is pertinent to the local tertiary institution 1. Peripartum Optimisation include:2-3.

1-Antenatal steroids: Safe medication with unknown maternal side effects, a single course within 7 days of delivery over 24 h will help to reduce the respiratory complications, the need for ventilation, and the mortality and morbidity rate. However, it does not improve the long term outcome.
2-MgSo4 : If a decision has been made for active intervention, then it would seem sensible to consider the use of peripartum magnesium infusion after discussion with the parents. It has rapid onset of action, with few maternal side effects, even the bolus dose that is given within minutes of delivery is still considered valuable. It helps to reduce cerebral palsy, but not mortality.
3-Delivery in tertiary centre will significantly improve the survival chance, hence the need for in utero transfer when there is consensus for active resuscitation (supported transition with lung inflation).
4- The risks and benefits of delayed cord clamping for one minute should be considered prior to delivery and discussed with the parents and with the neonatal team who will manage neonatal resuscitation to derive a clear plan of management at birth.
5-Thermal care and skin protection (plastic bag –hat-adjust room temperature prior to delivery).
6- The Golden hour care: Resuscitation should be undertaken in the room with the parents present with all members of the senior team following the resuscitation council UK guidelines.

Conclusion:
This is a baseline study to understand the current outcomes for babies born between the gestation of 22 to 23+6 weeks in our HB. With the new work Wales wide on perinatal optimisation of extreme preterm births, we would expect to see further improvement in the outcomes for babies born at this gestational age.

References: 1-Berry, M.J., Saito-Benz, M., Gray, C. *et al.* Outcomes of 23- and 24-weeks gestation infants in Wellington, New Zealand: A single centre experience. *Sci Rep* **7,** 12769 (2017). https://doi.org/10.1038/s41598-017-12911-5
2- Resuscitation and outcomes at the limits of viability .A presentation by Dr S Bird, Cons paediatrician, Neonatology lead, Warwick.
3-Perinatal Management of Extreme preterm Birth before 27 weeks of Gestation (2019) A BAPM framework for practice .