Guidelines relating to the Birth of Extremely Premature Infant (22+0 -26+6 weeks Gestation)

Care of the baby, woman and family around the time of an extremely preterm birth is one of the most challenging aspects of perinatal medicine, both for clinicians and families.
The management of couples likely to deliver an extremely premature infant can be fraught with problems. Crucial to any decision in relating to intervention is a review of the best available data for gestational age assessment and should include menstrual history and in particular ultrasound estimation of gestational age. Where there is doubt about gestational age assessment particularly in late bookers it is safer to err on the side of viability.
Recent published survival and morbidity data based on gestational age should be referred to when counselling such couples.

Communication

- Good communication between parents and health professionals is of paramount importance. Both a consultant obstetrician and neonatologist should agree a provisional management plan based on clinical information and outcome data for all women likely to deliver between 22+0 and 26+6 weeks.

- Parents should be given time to consider this information and allowed to express their own thoughts in relation to their management.

- Management plans should be clearly recorded in the case notes including parental response.

Birthweight and Management

Survival for babies born weighing less than 500g remains poor despite significant advances in neonatal care. The best available survival data correlating birthweight < 500g and gestational age remains that of Draper ES published in 2003 (1).

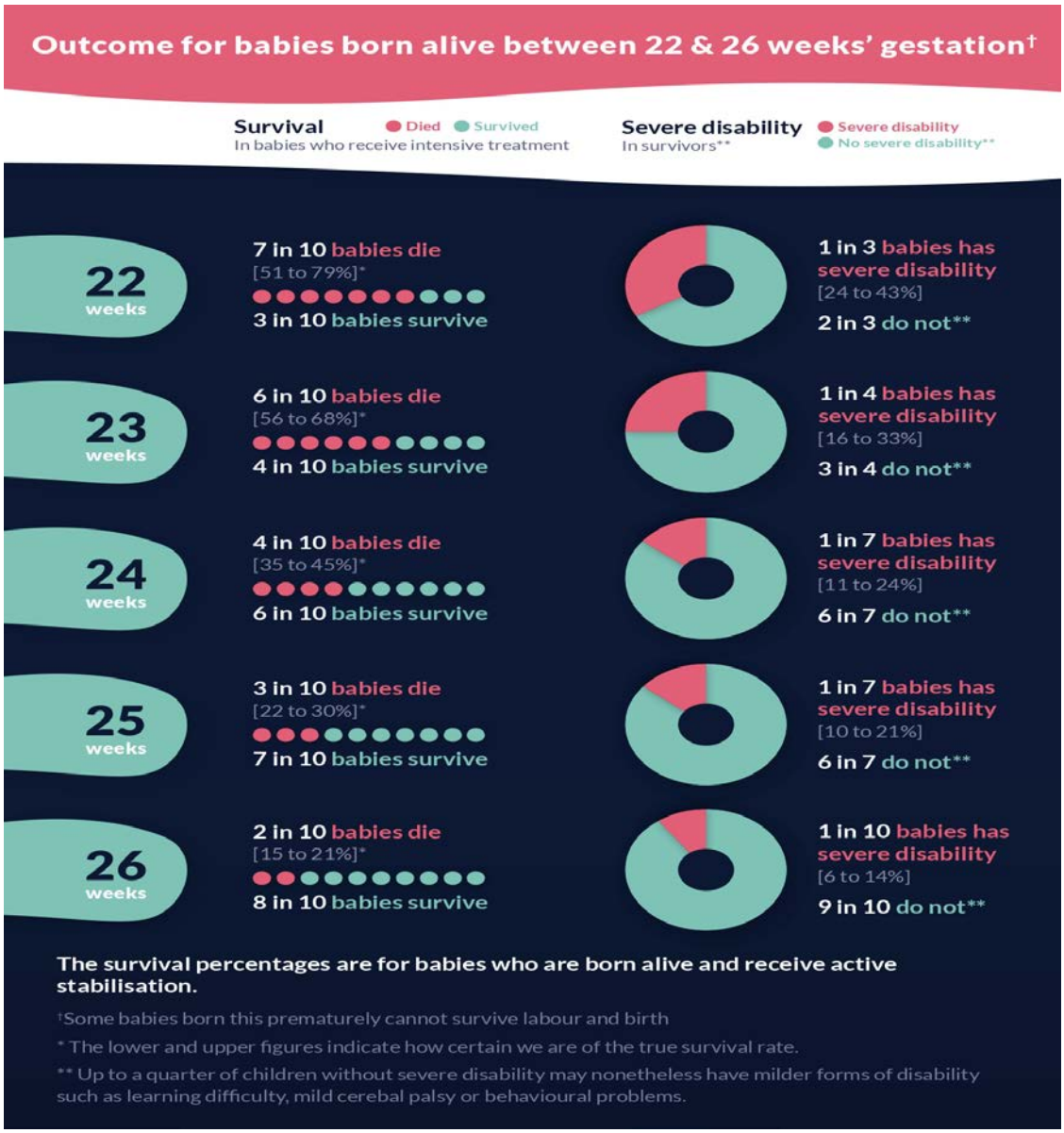
Parents should be counselled that obstetric and neonatal interventions are not generally recommended however depends on the gestational age and other risk factors that are discussed below as per new BAPM guideline.

Fetal monitoring including cardiotocography and Doppler assessments should not be routinely employed until predicted birthweight is > 500g.

Recent change in evidence

Recent guidance from BAPM (British Association of Perinatal Medicine) guidelines, "**Perinatal Management of Extreme Preterm Birth before 27 weeks of gestation''** A Framework for Practice- October 2019''(2), We are now considering active resuscitation of babies born from 22 weeks.
This will change the approach to manage preterm labour in that we should now consider giving steroids, tocolysis and Magnesium for potential deliveries from 22 weeks onwards, and also referring for neonatal advice/counselling.

Having said that, the perinatal care at extremely preterm gestations will always need to be individualized. It is essential that such decisions reflect all relevant prognostic information and not simply gestational age.



Risk-Based Approach to Decision-Making

A key ethical consideration for decisions about instituting life-sustaining treatment for an extremely preterm baby is the baby's prognosis – the risk of an acceptable (or unacceptable) outcome if active (survival focused) management is undertaken.

Assessment of the risk for the baby

1. Gestation-based risk assessment, including mortality and survival with severe impairment

Neonatal stabilization may be considered for babies born from 22+0 weeks of gestation following assessment of risk and multi professional discussion with parents.

Risk assessment should be performed with the aim of stratifying the risk of a poor outcome into three groups:
Extremely high risk - Palliative (comfort focused) care would be the usual management
High risk - Provide either active (survival focused) management or palliative care should be based primarily on the wishes of the parent
Moderate risk - Active management should be planned.

The severe impairment category includes any of:

Severe cognitive impairment with an IQ lower than 55 (< -3 standard deviation); this will usually result in the need for special educational support and require supervision in daily activities

Severe cerebral palsy – classified as Gross Motor Function Classification System (GMFCS) grade 3 or greater (Appendix 1)

Blindness or profound hearing impairment.

The risk of severe impairment increases with increasingly preterm birth and is currently approximately one in seven at 24 weeks of gestation, and 25% at 23 weeks of gestation for those babies born who receive active care and survive. The number of surviving babies with long term outcome information at 22 weeks of gestation is relatively small, and therefore has wide confidence intervals, but the risk of severe impairment is estimated to be one in three. Generally, as the risk of mortality decreases, the risk of disability among survivors also decreases

2. Modified risk assessment

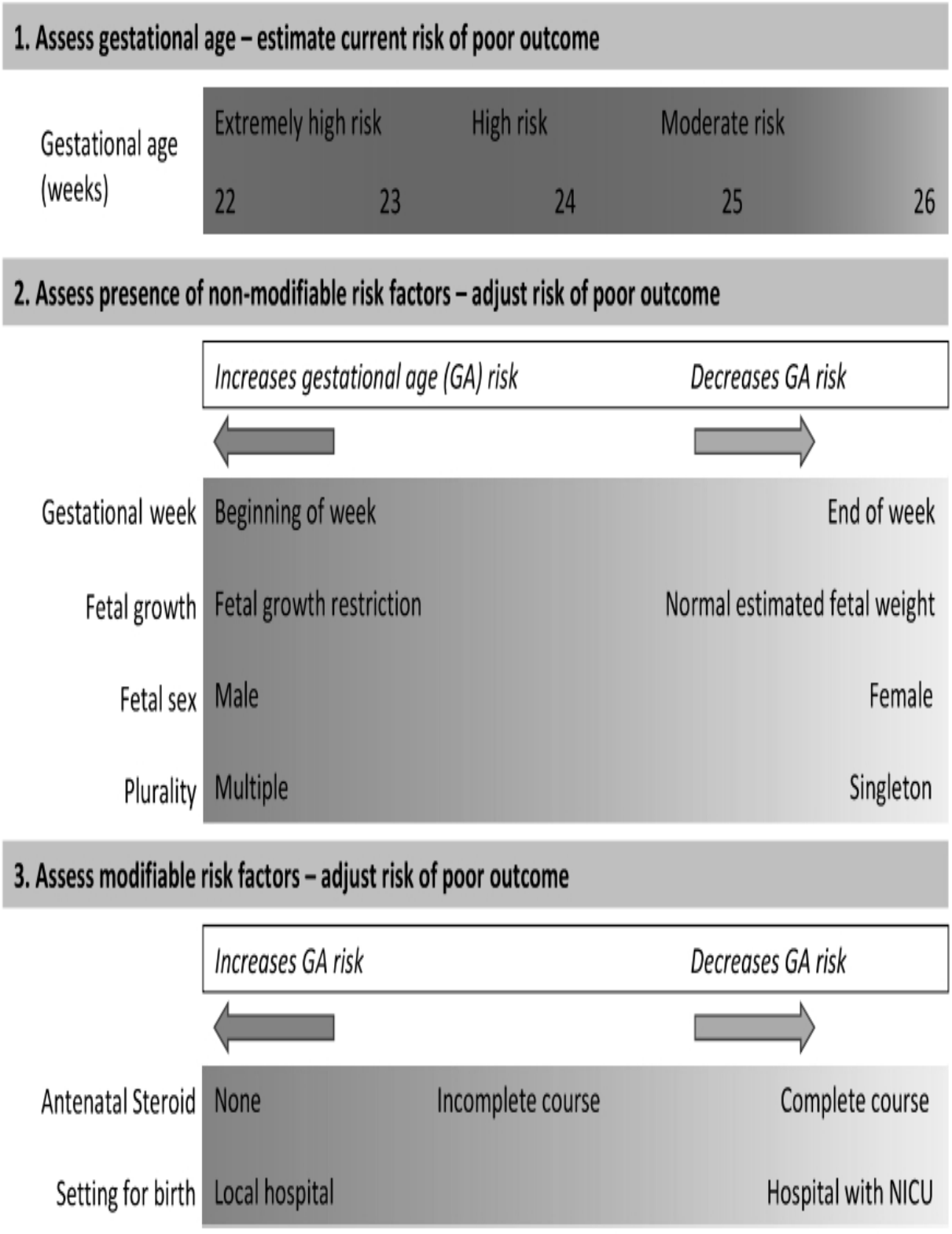
Accurate information about the current pregnancy, including assessment of both fetal and maternal health should be used to refine gestation-based risk of absolute survival and survival without severe impairment.
A range of factors are associated with increased or decreased risk:

- **Fetal factors -** which may increase risk, include male sex, multiple

pregnancy, congenital anomaly and poor fetal growth.

- **Clinical conditions -** which pose additional risk and have been associated with increased mortality and morbidity include PPROM before 24 weeks of gestation and clinical evidence of chorioamnionitis
- **Therapeutic strategies -** administration of antenatal steroid and magnesium sulphate are associated with improved survival and neonatal outcomes as well as reduced risk of childhood impairment, even before 24 weeks of gestation
- **Clinical Setting -** survival is highest at these extreme preterm gestations in centres with experienced staff and higher patient numbers.

A proposed visual tool for refinement of risk is illustrated as follows



Following represents the consensus of the Working Group in regard to risk categories for the purposes of this framework

There is no objective way of defining a risk as 'extremely high' *versus* 'high' and families differ in the outcome that they regard as unacceptably poor. Thus risk assessment may need to be modified in the light of the parents' knowledge, views and values.

Extremely high risk

The Working Group considered that babies with a > 90% chance of either dying or surviving with severe impairment if active care is instigated would fit into this category. For example, this would include:
babies at 22+0 - 22+6 weeks of gestation with unfavourable risk factors
Some babies at 23+0 - 23+6 weeks of gestation with unfavourable risk factors, including severe fetal growth restriction
(rarely) babies ≥ 24+0 weeks of gestation with significant unfavourable risk factors, including severe fetal growth restriction

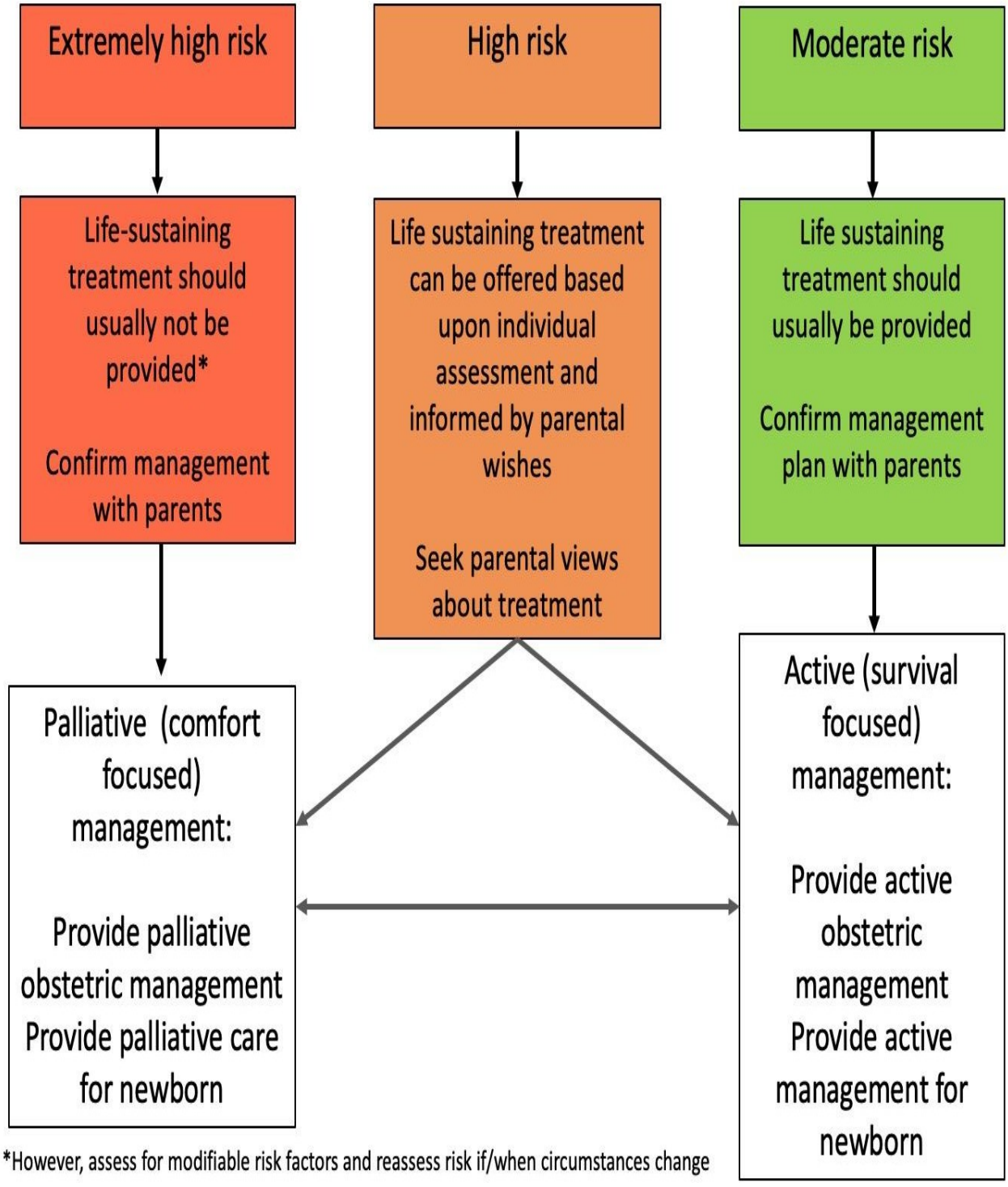
High risk

The Working Group considered that babies with a 50-90% chance of either dying or surviving with severe impairment if active care is instituted would fit into this category. For example, this would include:
babies at 22+0 - 23+6 weeks of gestation with favourable risk factors
Some babies ≥ 24+0 weeks of gestation with unfavourable risk factors and/or co-morbidities

Moderate risk

The Working Group considered that babies with a < 50% chance of either dying or surviving with severe impairment if active care is instituted would fit into this category. For example, this would include:
most babies ≥ 24+0 weeks of gestation
Some babies at 23+0 – 23+6 weeks of gestation with favourable risk factors.

Decision-making around management of delivery, following risk assessment and after consultation with parents



*However, assess for modifiable risk factors and reassess risk if/when circumstances change

Obstetric management
Active (survival focused) obstetric management

The package of obstetric care to be offered to parents *may* (but not necessarily) include any or all of the following:

1. Antenatal steroids
2. Tocolysis
3. Antenatal transfer to a tertiary obstetric centre co-located with a NICU
4. Magnesium sulphate for neuroprotection
5. Deferred cord clamping, ideally for 60 seconds or more
6. Intrapartum fetal heart rate monitoring
7. Caesarean section (if potential benefits are considered to outweigh risks)

Antenatal steroids, tocolytic use, magnesium sulphate and deferred cord clamping have been shown to be of benefit in improving outcome in preterm infants. However, parents should be made aware that there is a paucity of data in relation to the magnitude of benefit and risks of these interventions, particularly below 24 weeks of gestation.

In utero **transfer** to a tertiary centre optimises outcomes for the baby, is better than *ex utero* transfer and is now a prioritised Scottish Maternity and Neonatal Services Review

From 26+0 weeks of gestation, when active management is planned, women in established preterm labour should be recommended CEFM

Below 26 weeks of gestation, a senior obstetrician should be involved in decisions around intra-partum fetal heart rate monitoring as there is a lack of evidence to inform practice. The family should be made aware of the rationale for either recommending or withholding fetal heart rate monitoring; for example, it may be appropriate not to monitor the fetal heart if delivery by caesarean section is not part of the agreed package of care, either because it is considered that the risks of caesarean section outweigh any potential benefits or because parents have declined caesarean section should there be a fetal heart rate abnormality. Autonomic immaturity at gestations below 26 weeks makes interpretation of continuous electronic fetal heart rate monitoring (CEFM) difficult and there is no evidence that CEFM improves outcomes compared to intermittent auscultation

In the majority of extremely preterm births the mother presents in spontaneous labour and an uncomplicated vaginal delivery may be anticipated. The risk of head entrapment following breech presentation is approximately 10% but the evidence for delivery by caesarean section for extremely preterm babies is limited and of poor quality and prognosis is more likely to be dictated by factors other than mode of delivery. NICE guidance is that delivery by caesarean section may be considered in cases of breech presentation after 26 weeks of gestation. For all these reasons it is essential that obstetric care is individualised after full discussion between the family and a senior obstetrician along with the neonatal team.

Palliative (comfort focused) obstetric management

When a decision is made for palliative (comfort focused) management of the baby at birth, only interventions for maternal benefit are appropriate. Intrapartum fetal heart rate monitoring is not advised, although assessing or listening for the presence of a fetal heart to check viability may be helpful in clarifying expectations around the baby's condition at birth and be preferable for parents.

Gestational Age and Management

Figure 3 below (page 12) may be summarized as follows estimates the prevalence rates of severe impairment,

22^{+0} - 22^{+6} weeks: 1-in-3 survivors has severe impairment

23^{+0} - 23^{+6} weeks: 1-in-4 survivors has severe impairment

24^{+0} - 25^{+6} weeks: 1-in-7 survivors has severe impairment

26^{+0}- 26^{+6} weeks: 1-in-10 survivors has severe impairment

Table 1 below summarizes the recent evidence for the survival data as per gestation

<22 weeks

Obstetric and neonatal interventions are **not recommended**. Parents should be informed that tocolysis, steroid therapy fetal monitoring and in utero transfer are not indicated. Neonatologists should **not** routinely be called to provide antenatal counselling or be called to the delivery. Parents should be warned that their baby may shows signs of life at delivery such as terminal gasping which can be distressing. These babies are not candidates for in utero transfer.

22^{+0} – 23^{+6} weeks

Unfavorable risk factors : > 90% chance of either dying or surviving with severe impairment if active care is instigated – Thus obstetric and neonatal interventions are **not recommended**

Favorable risk factors: 50-90% chance of either dying or surviving with severe impairment if active care is instituted – Decision of **either Active or palliative care** should be after joint counseling by obstetric and neonatal teams involving the family.

There should be appropriate documentation of discussions within the case notes

24+0 -24 weeks + 6 days

In majority of this group, active care is **recommended**. However in minority where there are unfavourable risk factors and/or co-morbidities (Moderate risk group), either active or palliative care discussed.

25weeks and above_– Active care is recommended

Table 1: Number and percentage of births, including births where the fetus was alive at onset of labour, live births, births receiving active care, admissions for neonatal care and survival to 1 year of age for births in 2016 in the UK. Recording of active care on the MBRRACE-UK database commenced During 2016 and thus rates are inferred from recording of a total of only 292 deaths (8).

Gestational Week	22 weeks	23 weeks	24 weeks	25 weeks	26 weeks
All births	486	510	656	664	832
Births alive at onset of labour	290	362	497	508	674
Live births	183	301	456	486	662
% live births (of those alive at onset of labour)	**63%** **57 to 69**	**83%** **79 to 87**	**92%** **90 to 94**	**96%** **94 to 98**	**98%** **97 to 99**
Delivery room deaths	155	78	26	19	16
% deaths before admission	**85%** **80 to 90**	**26%** **21 to 31**	**6%** **4 to 8**	**4%** **2 to 6**	**2%** **1 to 3**
Live births receiving active care	43	264	449	486	662
% receiving active care (of all live births)	**23%**	**88%**	**98%**	**100%**	**100%**
Admitted for neonatal care	28	223	430	467	646
% admitted for neonatal care (of births receiving active care)	**65%** **51 to 79**	**85%** **81 to 89**	**96%** **94 to 98**	**96%** **94 to 98**	**98%** **97 to 99**
Deaths < 1 year	13	122	160	108	106
Survivors to 1 year	15	101	270	359	540
Survival					
Of those alive in labour	**5%** **2 to 8**	**28%** **23 to 33**	**54%** **50 to 58**	**71%** **67 to 75**	**80%** **77 to 83**
Of live births receiving active care	**35%** **21 to 49**	**38%** **32 to 44**	**60%** **55 to 65**	**74%** **70 to 78**	**82%** **79 to 85**
Of those admitted to intensive care	**54%** **36 to 72**	**45%** **38 to 52**	**63%** **58 to 68**	**77%** **73 to 81**	**84%** **81 to 87**

References:

1. **Draper ES et al**, Tables for predicting survival for preterm birth are updated. *BMJ* 2003: **327**:872

2. BAPM - "**Perinatal Management of Extreme Preterm Birth before 27 weeks of gestation"** A Framework for Practice- October 2019"

3. Marlow et al, Neurological and developmental outcome in extremely preterm children born in England in 1995 and 2006: the EPICURE studies.*BMJ* 2012;**345**:e7961 doi: 1136/bmj.e7961

4. National Perinatal Epidemiological Unit (1994) *Disability and perinatal care: measurement of health status at two years. A report of two working groups convened by the National Perinatal Epidemiology Unit and the former Oxford Regional Health Authority.* (National Perinatal Epidemiology Unit, Oxford).

5. Perinatal management of pregnant Women at the Threshold of Infant Viability (The Obstetric Perspective). Scientific Impact paper No 41, RCOG Press, Feb 2014.

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