Stillbirth and neonatal death

Definitions

- **Stillbirth**: the death of a baby before or during birth after 24 weeks of gestation in the UK. (The World Health Organization (WHO) definition is after 28 weeks.)
- **Neonatal death**: the death of a baby within the first 28 days of life.
- **Perinatal mortality**: stillbirths plus early neonatal deaths (under 7 days). (This is a universal definition.)
- **Stillbirth rate**: the number of stillbirths per thousand total births. In general, stillbirth data refer to stillborn babies born at 24 weeks and over.
- **Low birth weight**: weight at birth under 2500 g. (The universally accepted definition.)

Are stillbirth and neonatal death common?

In 2021, the rate was 1.4 deaths per 1,000 live births. In 2021, there were 4.1 stillbirths per 1,000 births.[1]

Worldwide figures are higher. A WHO survey gives the stillbirth rate (although the variable definition affects numbers) as 17.7 across 29 countries, and the early neonatal death rate as 8.4.[2]

Risk factors[1]

- Intrauterine growth restriction:
    - The biggest risk factor for stillbirth.
    - A 2012 study of stillbirths in England showed the risk to be significantly higher where the growth restriction was not detected antenatally, suggesting this as an important avenue for reducing stillbirth rates in the future.[3] It concluded strategy should focus on improving antenatal detection of growth restriction, and subsequent management of pregnancy and delivery.
- Preterm birth:[4]
    - This is the biggest risk factor for neonatal death.
    - Obstetric and neonatal care can have a major impact on death rates of preterm babies. (For example, antenatal steroids for women in preterm labour, and advanced neonatal intensive care which may not be available in some parts of the world.)
- Age of mother:
    - In 2021, babies born to mothers aged 30 to 34 years had the lowest risk of infant mortality, at 3.1 deaths per 1,000 live births. Babies born to mothers aged under 20 years had the highest risk, at 5.7 deaths per 1,000 live births. In comparison with 2010, the infant mortality rate of babies has reduced for every maternal age group, except babies of mothers aged under 20.
    - The risk of stillbirth, caesarean delivery, and maternal mortality increases with advancing maternal age. One review found risk ratios for maternal mortality were 3.18, 11.60, and 42.76 in women older than 40, older than 45, and older than 50 years, respectively.[5]

- Postmaturity:[6]
    - The risks of stillbirth or neonatal death increase as gestation continues beyond term (around 40 weeks of gestation).
    - Cochrane reviews have demonstrated that there is a clear reduction in perinatal death with a policy of induction of labour at or beyond 37 weeks compared with expectant management, though absolute rates are small (0.4 versus 3 deaths per 1,000).
    - There were also lower caesarean rates without increasing rates of operative vaginal births and fewer neonatal intensive care unit admissions with a policy of induction.
- Maternal health:
    - Obesity: a mother's BMI ≥30 increases risk of stillbirth and neonatal death, and possibly as much as doubles it.[3]
    - Smoking: smoking causes increased risk of stillbirth where it leads to growth restriction but not as an independent factor.[3] It increases the risk of neonatal death in a number of ways, including adding to the risk of preterm birth.
    - Chronic diseases - eg, diabetes, renal failure, hypertension, haemoglobinopathy, rhesus disease, thrombophilias, antiphospholipid syndrome. Pre-existing diabetes increases risk of stillbirth significantly, whereas gestational diabetes does not appear to increase risk.[3]
    - Infection - eg, erythema infectiosum, varicella, measles.
    - Substance abuse, especially cocaine.
    - A history of mental health problems increases risk.
- Obstetric complications:
    - Pre-eclampsia and antenatal haemorrhage increase the risk of stillbirth.
    - Intrapartum complications, such as malpresentation or obstructed labour, confer high risk of perinatal mortality.

- Multiplicity of pregnancy:[7]
    - The risk of perinatal death is higher for multiple pregnancies compared to singleton pregnancies.
    - Stillbirth and neonatal death rates are significantly higher in monochorionic twins than in dichorionic twins.
- Parity:
    - Nulliparous women have a higher risk of stillbirth than multiparous women across all ages.[8]
    - Third and subsequent pregnancies have a higher risk than second pregnancies.[3]
- Congenital abnormality:
    - Increases risk of stillbirth and neonatal death. In the main not a potentially avoidable risk factor so it is often left out of analyses.
    - Fewer than 10% of stillbirths are caused by congenital abnormalities.[9]
- Small for gestational age:
    - Strongly linked with neonatal death and infant mortality.
    - Inter-related with other factors, such as prematurity, multiple pregnancy, smoking.
- Region of maternal residence:
    - In 2021, the 10% most deprived areas in England had higher infant mortality rates compared with the 10% least deprived areas.

- Social factors:[3]
    - Lack of employment and high deprivation index increase risk of stillbirth.
    - Later antenatal booking appointments past 13 weeks was associated with increased risk of stillbirth.
- Ethnicity:
    - African and African-Caribbean women have significantly higher risk of stillbirth. Risk is also increased in Indian mothers and first-generation migrants from Pakistan.[3]
- Sex:
    - Trends show that stillbirth rates are slightly higher among males compared to females.

Common causes[1]

Causes of neonatal death

- Prematurity (causing particularly respiratory and neurological conditions).
- Congenital abnormality.
- Obstetric complications.
- Congenital, perinatal and neonatal infections.

Causes of stillbirth

- Congenital abnormality.
- Haemorrhage, during pregnancy or labour.
- Placental insufficiency.
- Placental abruption.
- Pre-eclampsia.

- Obstetric complications:
    - Spontaneous premature labour.
    - Premature rupture of membranes.
    - Polyhydramnios.
    - Oligohydramnios.
    - Intrapartum asphyxia.
    - Birth trauma.
- Cord prolapse.
- Intra-uterine growth restriction.
- Liver disease - obstetric cholestasis, intrahepatic cholestasis of pregnancy.
- Diabetes.
- Infections during pregnancy.

Diagnosis

- The mother may be aware of a decrease in fetal movements in many cases of stillbirth.
- Other stillbirths may be discovered at the routine antenatal check.
- An ultrasound examination is used to confirm that the fetus has died; this is seen as lack of a visible heartbeat.

Management

Important information
The quality of care that bereaved families receive when their baby dies has long-lasting effects. Good care cannot remove parents' pain and grief, but poor care can and does make things much worse.[10]

Where the death of the baby is diagnosed antenatally, labour is induced using prostaglandins administered vaginally. This does not need to be immediate, but should happen within 2-3 days.

The mother will need to have:

- Blood pressure checked.
- Urine tested for protein.
- Temperature taken.
- Cervical and vaginal swabs for MC&S.
- Blood taken for FBC, clotting screen (including antiphospholipid antibody and thrombophilias), Kleihauer test, HbA1c, cultures (*Listeria* spp.) and serology (parvovirus B19, toxoplasmosis and cytomegalovirus) and cytogenetics.

Bereavement care:

- Stillbirth is a devastating event for the parents and their family.
- The mother and father should be given time and space for reflection in a suitable environment away from the normal postnatal ward.
- They should be allowed to dress and spend time with their child. They may wish to take photos and make some memories to take with them:
    - Most hospitals have protocols in place for dealing with stillbirths - eg, wrap the baby, offer to the mother to hold, and take photographs, hair and palm prints.
- They will need to collect their belongings and may want to make funeral arrangements. Most hospitals can offer funeral services, if required.
- Hospital counsellors and chaplains may provide comfort to families of stillborn infants.
- All maternity units should have specially trained bereavement midwives.

- Discuss the need, and arrange consent, for post-mortem examination.
- Inform GP practice, so that GP and practice staff are aware of the death, and so GP can provide support where appropriate.

Registering a stillbirth[11]

- Stillbirth registration began on 1 July 1927, to help protect infant life.
- As well as being an important source of historical and statistical information, it also gives parents the opportunity to have their child officially acknowledged and to give him or her names if they wish to, which can help with grief.
- Stillbirths in England and Wales must normally be registered at the hospital or local register office within 42 days of the stillbirth, but cannot be registered more than three months after its occurrence.
- To register the stillbirth, the medical certificate of stillbirth issued by the doctor or midwife present at the time is required.
- The registrar will issue a certificate for burial or cremation of the stillborn infant. This certificate is usually passed to the funeral director who will make the arrangements.
- Following a stillbirth or neonatal death, parents are entitled to maternity leave, paternity leave, statutory maternity pay/allowance or statutory paternity pay as relevant.

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