

# MORTALITY RISK AMONGST VERY LOW BIRTH WEIGHT INFANTS IN THE REPUBLIC OF IRELAND, 2014-2016

## A LAY SUMMARY

### National Perinatal Epidemiology Centre

The National Perinatal Epidemiology Centre (NPEC) works with the maternity services in Ireland. The NPEC is directed by Professor Richard A Greene and are a team of midwives, researchers, epidemiologists, administrators and doctors. **Every time a mother gives birth in Ireland, the important interventions, the good outcomes and the complications are recorded and analysed at a national specialist centre.**<sup>1</sup>

The NPEC produces annual audit reports on perinatal mortality (death of a baby around the time of birth), maternal morbidity (ill health during or following birth), home births and very low birth weight babies in Ireland. At local hospital level, the NPEC provides customised feedback to individual hospitals on how they compare against the national average. The NPEC is funded by the Health Service Executive (HSE) and is based at Cork University Maternity Hospital in the UCC Department of Obstetrics and Gynaecology. The Centre continues to build on its existing portfolio of audit and quality review.

#### What is clinical audit?

Clinical audit is a process that seeks to improve patient care and outcomes through systematic review and evaluation of current practice against research based standards.

#### What is Epidemiology?

Epidemiology is the study (scientific, systematic, and data-driven) of the distribution (frequency, pattern) and determinants (causes, risk factors) of health-related states and events (not just diseases) in specified populations.<sup>2</sup>

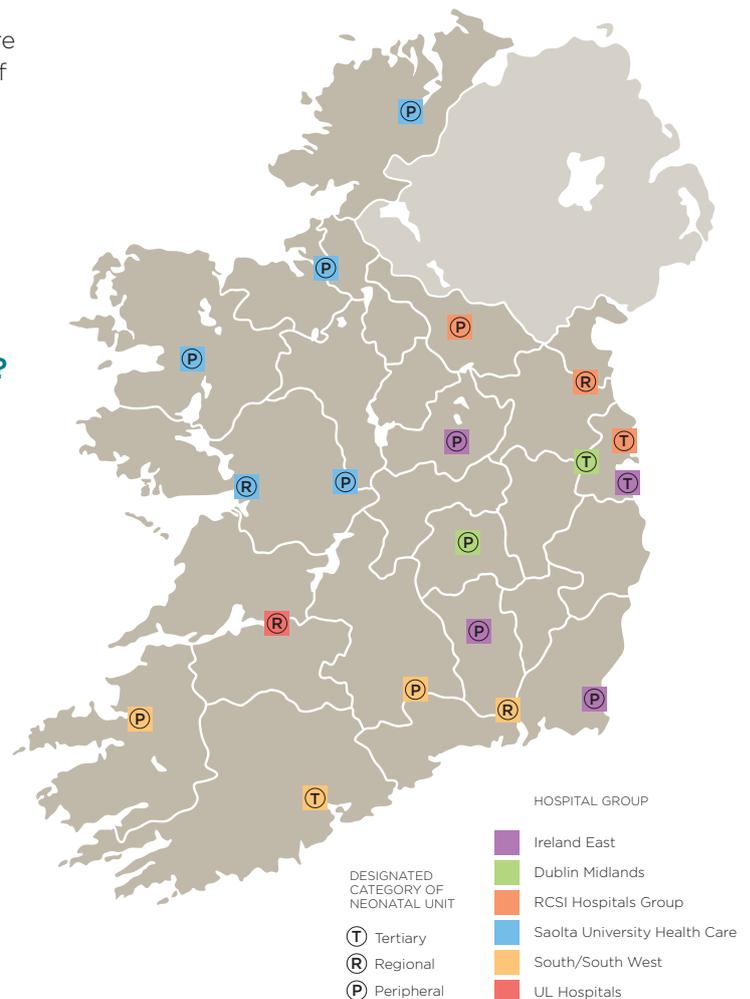
#### What is a very low birth weight (VLBW) infant?

A very low birth weight (VLBW) infant is an infant who is born alive, but is very small (401-1,500 grams) or very premature (after 22 but before 30 weeks of pregnancy).

By virtue of their small size and/or prematurity, these are a high risk group of infants, at greater risk of dying and experiencing ill health than infants born after 30 weeks gestation or with a birth weight greater than 1,500g. Some of the most common complications for VLBW babies include low oxygen levels at birth, infection and problems of the respiratory, digestive and nervous systems.

#### National Clinical Audit: Neonatal Care of VLBW Infants in Ireland

Since 2014, the National Perinatal Epidemiology Centre, working with NICORE, a national group of neonatologists and paediatricians, has been auditing the outcomes of VLBW babies in Ireland. The aim is to review the care provided to these babies and to recommend specific improvements in care.



Full report available at: [www.ucc.ie/en/npec/](http://www.ucc.ie/en/npec/)

<sup>1</sup> [health.gov.ie/blog/press-release/tanaiste-announces-new-national-perinatal-epidemiology-centre-in-cork-university-hospital/](http://health.gov.ie/blog/press-release/tanaiste-announces-new-national-perinatal-epidemiology-centre-in-cork-university-hospital/)

<sup>2</sup> [www.cdc.gov/careerpaths/k12teacherroadmap/epidemiology.html](http://www.cdc.gov/careerpaths/k12teacherroadmap/epidemiology.html)

## AIM

The current report focuses on death of VLBW babies. Specifically:

- Did VLBW infants born in Ireland in 2014-2016 have a higher than expected risk of death?
- Did VLBW infants born at specific gestational ages have a higher than expected risk of death?
- Was the increased risk of death related to an established clinical practice or model of care?

	Number of babies born	Number (%) who died	Mortality risk higher than expected?	
<b>1,812</b> <b>VLBW INFANTS BORN IN IRELAND IN 2014-2016</b>  Of 1,765 with complete data, 298 (one in six) died.	<b>All</b>	1,765	298 (17%)	Yes - 17% higher
	<b>22-23 weeks</b>	130	107 (82%)	Yes - 23% higher
	Resuscitation	52	29 (56%)	No
	No resuscitation	78	78 (100%)	Yes - 33% higher
	<b>24-27 weeks</b>	496	115 (23%)	No
	Tertiary	391	83 (21%)	No
	Non-Tertiary	105	32 (31%)	Yes - 70% higher
	<b>28-31 weeks</b>	883	54 (6%)	No

**Table 1: Mortality risk for 1,765 very low birth weight infants born in Ireland in 2014-2016 by gestational age (47 babies could not be included due to missing data)**

## Findings

Over the three-year period, 298 (one in six) VLBW infants born in Ireland died before they were discharged from hospital or before they reached their first birthday. This represented a 17% higher risk of death than expected.

### Further investigation revealed that:

- Babies born at 22-23 weeks had a 23% higher risk of death than expected.
- Babies born at 24-27 weeks in a tertiary unit did not experience higher than expected mortality. However, those who were born in a non-tertiary unit had a 70% higher mortality risk than expected.
- Babies with a gestational age of at least 28 weeks did not have a higher mortality risk than expected.

### What was the reason for the increased risk of death seen at specific gestational ages?

Not all babies born at 22-23 weeks gestational age can survive, even with specialist intensive care. Because of this, not all of these babies are provided with resuscitation. This happens more often in Ireland compared to an international network of VLBW infants.<sup>3</sup>

The excess mortality amongst babies born at 24-27 weeks was associated with those born in non-tertiary units. In cases where a baby is expected to deliver prematurely, the mother may be transferred to a tertiary unit for anticipated specialist neonatal care of the baby. However, VLBW babies are often born unexpectedly and without time to transfer the mother and baby prior to birth.

<sup>3</sup> Vermont Oxford Network, <https://public.vtoxford.org/>

**The following recommendations have been developed based on these findings:**

## Recommendations

- All women anticipated to deliver at a gestational age of 23 weeks should be administered antenatal steroids and magnesium sulphate and the neonatology team should be alerted prior to delivery.
- Resuscitation should be administered to all infants born at 23 weeks who present in favourable condition, i.e. without congenital anomaly, severely small for gestational age, severe hypoxia or severe infection.
- In line with the existing Model of Care for Neonatal Services in Ireland, infants born before reaching a gestational age of 28 weeks should ideally be delivered at one of the four tertiary neonatal units.

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