



Very Low Birth Weight Infant Audit in Ireland: 2016-2020

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Background

- The Vermont Oxford Network (VON) is a non-profit international voluntary collaboration of health care professionals dedicated to improving the quality and safety of medical care for newborn infants and their families.
- The VON Network is today comprised of over 1300 Neonatal Intensive Care Units around the world. The database provides unique, reliable and confidential data to participating units for use in quality management, process improvement, internal audit and peer review.
- The National Perinatal Epidemiology Centre (NPEC) facilitates membership of the VON on behalf of all 19 neonatal units in Ireland, making it possible to have composite national data on all very low birthweight (VLBW) infants born in Ireland.
- All 19 neonatal centres and one tertiary paediatric centre participate in the Very Low Birth Weight (VLBW) database in Ireland.

Methods

- Data are collected on all liveborn infants born between 401g and 1500g and/or between 22 and 29 weeks gestation.
- Infant is included in the audit if they are: inborn and admitted to the hospital/centre; inborn and dies in the delivery room or any other location in the same hospital/centre; outborn and admitted to the hospital/centre within 28 days of birth.

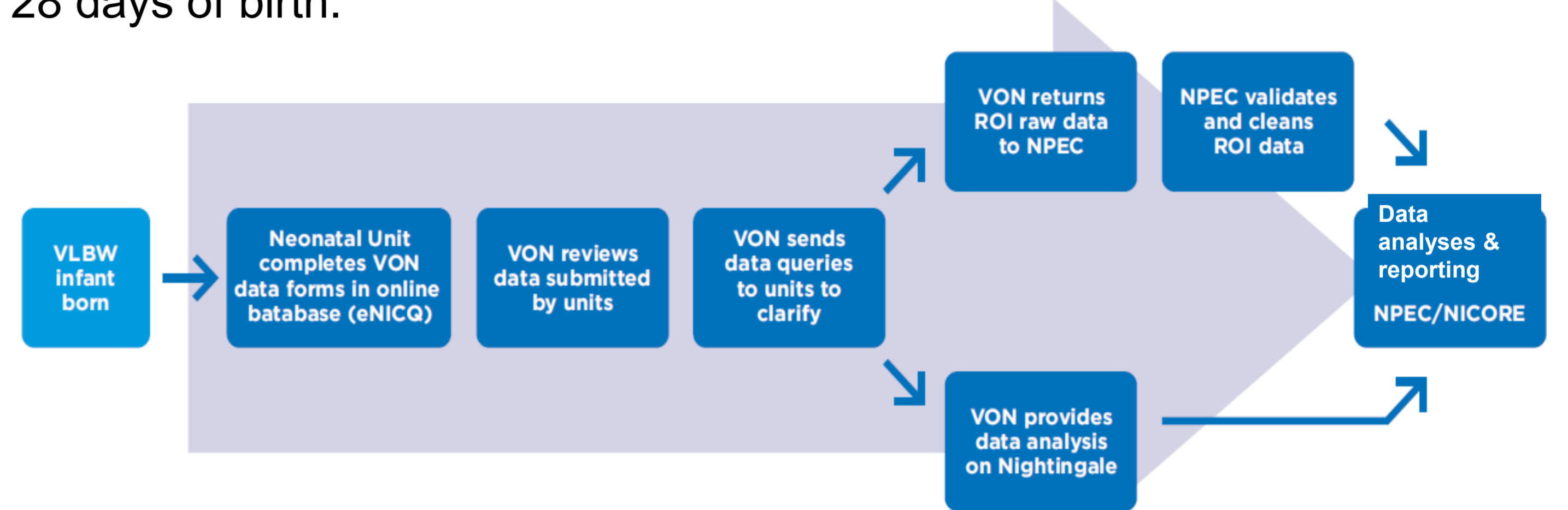


Figure 1: Data collection process for the Very Low Birth Weight infant national data

Main Findings

Since start of audit (2014): data collected on 3959 infants

- 2,466 born in Tertiary centres
 - 651 born in Regional centres
 - 314 born in Peripheral centres
- (location of birth not available for 31 infants)

- The model of care recommends that infants born <28 weeks of gestation should be delivered in a tertiary centre.
- Yearly, an average of 1 in 5 five infants (20%) born at <28 weeks are not delivered in a tertiary centre.

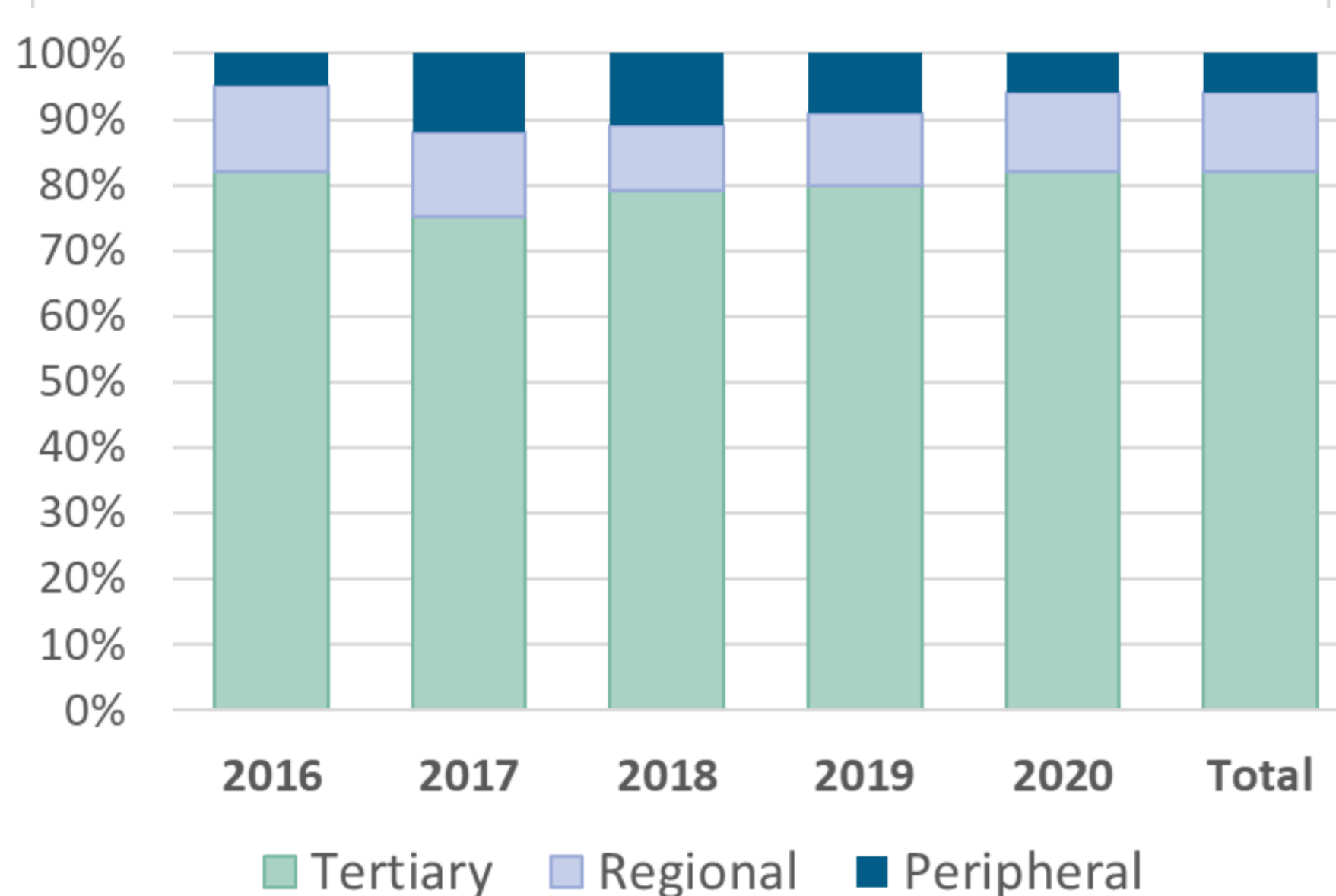


Figure 1: Type of birth centre for infants born at 23-27 gestation weeks, 2016-2020

Table 1: Number of cases reported to VON 2016 – 2020 in Ireland, according to gestational age

Gestation	2016	2017	2018	2019	2020
<24 weeks	48	38	44	44	32
24-26 weeks	134	125	138	104	109
27-29 weeks	217	240	198	102	192
30-32 weeks	152	172	126	118	133
>32 weeks	42	37	31	37	31
Total	593	612	537	505	497

Table 2: Number of cases reported to VON in 2016 – 2020 in Ireland, according to birth weight

Birth weight (g)	2016	2017	2018	2019	2020
<501	21	23	24	26	20
501 – 750	104	93	97	89	77
751 – 1000	125	122	118	97	101
1001 – 1250	152	157	132	122	121
>1250	191	217	166	158	163
Total	593	612	537	13	15

Table 3: Standardised Mortality/Morbidity Ratios for Key Performance Indicators (KPIs), 2015-2019.

KPIs	2016		2017		2018		2019		2020	
	SMR	(95% CI)	SMR	(95% CI)	SMR	(95% CI)	SMR	(95% CI)	SMR	(95% CI)
Mortality	1.1	(0.87, 1.34)	1.19	(0.96, 1.42)	1.11	(0.87, 1.36)	1.21	(0.94, 1.47)	1.10	(0.83, 1.37)
Death or Morb.	1.02	(0.89, 1.15)	1.01	(0.89, 1.14)	1.01	(0.88, 1.15)	1.04	(0.90, 1.19)	0.98	(0.84, 1.13)
CLD	0.95	(0.75, 1.15)	1.12	(0.93, 1.31)	0.97	(0.77, 1.17)	0.99	(0.77, 1.21)	1.18	(0.97, 1.40)
Pneumothorax	1.4	(0.98, 1.82)	1.69	(1.29, 2.1)	1.56	(1.13, 1.98)	1.97	(1.51, 2.44)	1.39	(0.92, 1.86)
Any Late Infect.	1.13	(0.88, 1.39)	1.03	(0.78, 1.27)	0.96	(0.70, 1.22)	1.02	(0.74, 1.31)	0.83	(0.55, 1.12)
SIH	1.32	(0.98, 1.67)	0.9	(0.59, 1.22)	0.9	(0.57, 1.23)	0.86	(0.50, 1.21)	0.98	(0.61, 1.35)
CPL	0.56	(0.0, 1.11)	0.66	(0.15, 1.16)	0.88	(0.32, 1.43)	0.45	(0.0, 1.04)	0.46	(0, 1.05)
NEC	1.39	(1.01, 1.78)	1.22	(0.86, 1.59)	1.22	(0.83, 1.61)	1.05	(0.63, 1.47)	1.02	(0.61, 1.44)

Morb. – Morbidities; CLD - Chronic Lung Disease; SIH - Severe Intraventricular Haemorrhage; CPL - Cystic Periventricular Leukomalacia; NEC - Necrotising Enterocolitis

Table 4: Survival of ROI and VON infants in infants born at 23 weeks gestation, 2014 - 2018

	2016 n (%)	2017 n (%)	2018 n (%)	2019 n (%)	2020 n (%)
Liveborn infants	27	15	27	29	20
Received resuscitation in delivery room	20 (74%)	13 (87%)	24 (89%)	24 (83%)	14 (70%)
Admitted to a NICU/SCBU	20 (74%)	13 (87%)	22 (81%)	23 (79%)	15 (75%)
Survived to discharge	10 (37%)	7 (47%)	9 (33%)	10 (35%)	5 (25%)

- There has been no reported survival of infants born at ≤22 weeks gestation since 2014, the first year of this annual report.
- In 2020, the overall survival rate of VLBW infants in Ireland was 85% (420 infants of a total of 497); this was similar to the 86% of all VON infants who survived. In the previous three years, the crude survival rate of 82% in the ROI was lower than the survival rate of 85-86% among the VON infants.
- As in previous years, a higher % of ROI infants died in the delivery room (4.6%, n=23) when compared to VON (2.7%).

Summary

- The highest proportion of VLBW babies in Ireland were born with a gestation between 27-29 weeks and birthweight between 751-1250g.
- ROI Infants continue to show a statistically higher rate of pneumothorax compared to VON (SMR=1.39; CI 0.92, 1.86), a consistent finding since 2014
- The mortality risk in 2020 was consistent with previous five years. It was 21%

- higher than expected after adjusting for the risk profile of the population (SMR=1.10; CI 0.83, 1.37).
- Since 2014, there has been a steady increase in the number of infants born at 23 weeks who are resuscitated in the delivery room. This had been associated with an increase in the number of these infants who survive to discharge.

