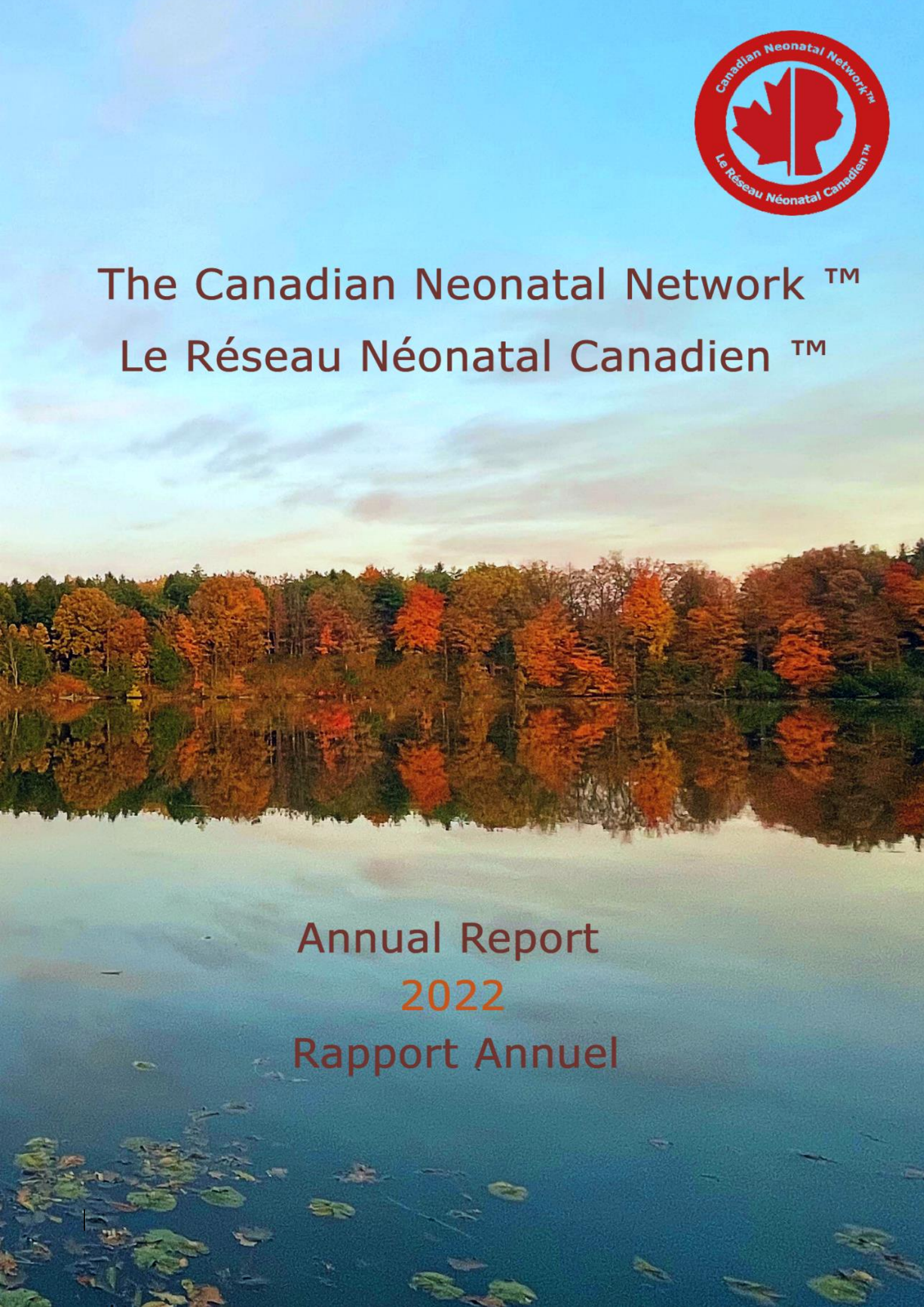

The Canadian Neonatal Network ™

Le Réseau Néonatal Canadien ™

Annual Report

2022

Rapport Annuel

Acknowledgements

This report is based upon data collected from 33 Health Care Organizations that were members of the Canadian Neonatal Network™ during the year 2022. In addition to all the investigators and the funding agency, we would like to recognize the invaluable support of the Neonatal Intensive Care Units (NICUs) that collected this information, the support of all of the participating sites and most importantly, the dedication and hard work of the Site Investigators, NICU Medical Directors and Data Abstractors.

Structure of the CNN

The Canadian Neonatal Network™ (CNN) is a group of researchers who collaborate on research issues relating to neonatal care. The CNN was founded in 1995 by Dr. Shoo Lee. The CNN maintains a standardized neonatal database and provides unique opportunities for researchers to participate in collaborative projects on a national and international scale. Health care professionals, health services researchers, and health care administrators participate actively in clinical, epidemiologic, outcomes, health services, health policy and informatics research aimed at improving quality, effectiveness and efficiency of neonatal care. Research results are published in Network reports and in peer-reviewed journals.

Funding

The CNN infrastructure is funded by the Canadian Institutes of Health Research. Individual participating sites provided additional funding, support for data collection and other related resources. The coordinating center, Maternal-Infant Care Research Centre, is supported by Mount Sinai Hospital, Toronto, Ontario.

Coordinating Centre of the CNN, Year 2022

Maternal-Infant Care Research Centre, Mount Sinai Hospital, Toronto, Ontario

Chairman: Dr. Shoo K. Lee, University of Toronto

Governing Board:
Dr. Shoo K. Lee, University of Toronto (Chair)
Dr. Bruno Piedboeuf, Université Laval (Vice-Chair)
Dr. Khalid Aziz, University of Alberta
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Dr. Anne Synnes, University of British Columbia

Director: Dr. Prakesh Shah, University of Toronto

CNN Associate Director Dr. Marc Beltempo, McGill University
EPIQ Associate Director Dr. Joseph Ting, University of Alberta
Executive Committee: Dr. Prakesh Shah, University of Toronto (Chair)
Dr. Marc Beltempo, McGill University

Dr. Joseph Ting, University of Alberta
Dr. Amit Mukerji, McMaster University
Dr. Kyong-Soon Lee, University of Toronto
Dr. Sandesh Shivananda, University of British Columbia
Dr. Amuchou Soraisham, University of Calgary
Dr. Faiza Khurshid, Queen's University

CNN Coordinator: Ms. Neha Goswami, Mount Sinai Hospital
Report Analyst: Mr. Eugene W. Yoon, Mount Sinai Hospital

Report Review Committee: Dr. Prakesh Shah, University of Toronto (Co-Chair)
Dr. Marc Beltempo, McGill University (Co-Chair)
Dr. Amit Mukerji, McMaster University
Ms. Wendy Seidlitz, Hamilton Health Sciences
Dr. Joseph Ting, University of Alberta
Dr. Ayman Abou Mehrem, University of Calgary
Dr. Christy Pylypjuk, University of Manitoba

Participating CNN Sites and Site Investigators, Year 2022:

Victoria General Hospital, Victoria, British Columbia	Dr. Jaideep Kanungo
BC Women's Hospital, Vancouver, British Columbia	Dr. Jonathan Wong
Royal Columbian Hospital, New Westminster, British Columbia	Dr. Miroslav Stavel
Surrey Memorial Hospital, Surrey, British Columbia	Dr. Rebecca Sherlock
Foothills Medical Centre, Calgary, Alberta	Dr. Ayman Abou Mehrem
Alberta Children's Hospital, Calgary, Alberta	Dr. Carlos Fajardo
Royal Alexandra Hospital, Edmonton, Alberta & University of Alberta Hospital – Stollery Children's, Edmonton, Alberta	Dr. Jennifer Toye & Dr. Joseph Ting
Jim Pattison Children's Hospital, Saskatoon, Saskatchewan (Formerly Royal University Hospital)	Dr. Lannae Strueby
Regina General Hospital, Regina, Saskatchewan	Dr. Jaya Bodani
Winnipeg Health Sciences Centre, Winnipeg, Manitoba	Dr. Mary Seshia & Dr. Deepak Louis
St. Boniface General Hospital, Winnipeg, Manitoba	Dr. Ruben Alvaro & Dr. Ann Yi
Windsor Regional Hospital, Windsor, Ontario	Dr. Sajit Augustine
London Health Sciences Centre, London, Ontario	Dr. Orlando DaSilva
Hamilton Health Sciences, Hamilton, Ontario	Dr. Amit Mukerji
Mount Sinai Hospital, Toronto, Ontario	Dr. Prakesh Shah
Hospital for Sick Children, Toronto, Ontario	Dr. Kyong-Soon Lee
Sunnybrook Health Sciences Centre, Toronto, Ontario	Dr. Eugene Ng
Kingston Health Sciences Centre, Kingston, Ontario	Dr. Faiza Khurshid
Children's Hospital of Eastern Ontario, Ottawa, Ontario	Dr. Brigitte Lemyre
The Ottawa Hospital, Ottawa, Ontario	Dr. Brigitte Lemyre
Jewish General Hospital, Montréal, Québec	Dr. Victoria Bizgu
Hôpital Sainte-Justine, Montréal, Québec	Dr. Keith Barrington,

	Dr. Anie Lapointe & Mr. Guillaume Ethier
Montreal Children's Hospital – McGill University Health Centre, Montréal, Québec	Dr. Marc Beltempo & Ms. Martine Claveau
Centre Hospitalier Universitaire de Québec, Sainte Foy, Québec	Dr. Bruno Piedboeuf & Dr. Christine Drolet
Centre Hospitalier Universitaire de Sherbrooke, Sherbrooke, Québec	Dr. Valérie Bertelle & Dr. Edith Massé
Hôpital Maisonneuve-Rosemont, Montréal, Québec	Dr. Marie St-Hilaire
Dr. Everett Chalmers Hospital, Fredericton, New Brunswick	Dr. Hala Makary
Saint John Regional Hospital, Saint John, New Brunswick	Dr. Cecil Ojah & Dr. Alana Newman
Moncton Hospital, Moncton, New Brunswick	Dr. Dr. Caio Barbosa de Oliveira
IWK Health Centre, Halifax, Nova Scotia	Dr. Jehier Afifi
Cape Breton Regional Hospital, Sydney, Nova Scotia	Dr. Andrzej Kajetanowicz
Janeway Children's Health and Rehabilitation Centre, St. John's, Newfoundland	Dr. Jo-Anna Hudson
University of Utah Hospital, Salt Lake City, Utah	Dr. Bradley A. Yoder

Written & Prepared By:

Marc Beltempo, Prakesh Shah, Eugene W. Yoon, Neha Goswami, and Members of the Annual Report Review Committee

Cover page photo by Prakesh Shah, CNN Director

Table of Contents

A. Executive Summary

Inclusion summary:

This report from the Canadian Neonatal Network™ (CNN) is based on data from 33 tertiary NICU sites that contributed data in the year 2022. Admissions between January 1, 2022 and December 31, 2022 who were discharged by March 31, 2023. Eight (8) infants who were admitted in 2021 but discharged after March 31, 2022 were also included in the 2022 report. Delivery room deaths, moribund neonates, and readmissions from 2021 were excluded.

Total number of eligible admissions to participating sites (See section D.1 for analyses)	15 709
Total number of eligible individual neonates (See section D.2. for analyses)	14 494
Total number of eligible very preterm (GA <33 weeks) neonates	4 321
Total number of eligible extremely preterm (GA <29 weeks) neonates (See section D.3. for analyses)	1 649
Total number of eligible very low birth weight (BW <1500 g) neonates (See section D.3. for analyses)	2 921

Important information for data interpretations:

a. Neonates who were transferred to a "normal newborn care area" (level I nursery) or discharged home within 24 hours of their admission to the site were excluded.
b. In 2022, eight (8) sites were only able to contribute data from a subset of eligible neonates admitted to their NICUs due to resource limitations. See pages 3-4 for data collection criteria of all participating sites.
c. Characteristics of participating sites were highlighted at the outset of the presentations.
d. 'Missing' data on outcome variables varied for each presentation. Caution should be used when interpreting the information. When possible, both the total number of neonates and the number of neonates with available data were provided.
e. The denominators for all percentages in this report included neonates whose data for that particular item were available.
f. This report included data from neonates who were admitted to the NICUs, except for Presentations #4, #6a and #6b.
g. Presentations #4, #6a and #6b included delivery room deaths.

Noteworthy findings:

a. The proportion of infants receiving active care in the delivery room among hospitals with a Level 3 NICU is increasing over time among neonates at lowers GAs:
   i. At 22 weeks' GA, 44% of all neonates received active care in the delivery room (vs 24% in 2014)
   ii. At 23 weeks' GA, 75% of all neonates received active care in the delivery room (vs 70% in 2014)

b. The survival rate among neonates that received active care is increasing at lower GAs:
   i. At 22 weeks' GA, 34% of neonates who received intensive care survived (vs 8% in 2014)
   ii. At 23 weeks' GA, 60% of neonates who received intensive care survived (vs 35% in 2014)

c. Among inborn neonates <29 weeks' GA at birth:
   i. 41% received a complete course of antenatal steroids within the last week prior to birth
   ii. 86% received MgSO4 for neuroprotection
   iii. 55% received deferred cord clamping ≥30 sec
   iv. 35% were hypothermic (temperature <36.5^{0}C) on admission
   v. 83% received feeds within the first 2 days of admission
   vi. 27% were never intubated during their stay
   vii. 44% were exclusively receiving mother's own milk at discharge

d. Among neonates born 26-28 weeks and received surfactant, use of LISA/MIST increased to 22% in 2022 (vs 14% in 2021)

d. In 2022, among neonates born <29 weeks' GA:
   i. Rate of BPD remained stable at 58% (vs 58% in 2021)
   ii. Use of systemic steroids for BPD treatment increase to 23% (vs 20% in 2021)

e. Among neonates <33 weeks with early onset sepsis, E. Coli was the most common etiology (55% of cases) and Group B Streptococcus accounted for only 10% of cases.

f. In 2022, among neonates <33 weeks
   i. Rate of late-onset increased to 10% (vs 9% in 2021)
   ii. Rate of severe neurological injury decreased to 7% (vs 8% in 2022)

g. Among neonates born >30 weeks' GA and >1250g, none were diagnosed with severe ROP.

h. A total of 688 neonates were diagnosed with HIE and of whom 489 received hypothermia (vs 520 in 2021). Among neonates that receive therapeutic hypothermia, 40% either died or had brain injury on MRI.

B. CNN Site Characteristics

SITE	CNN data collection criteria	Level II / Step-down nursery	Level II / Step-down data included in CNN	Delivery room deaths included in CNN	ROP treatment service?	PDA surgical service?	Therapeutic hypothermia treatment?	General pediatric surgical Services?
Victoria General Hospital, Victoria, BC	All eligible admissions	y	y	y	y	y	y	y
BC Women's Hospital, Vancouver, BC	All eligible admissions	y	n	y	y	y	y	y
Royal Columbian Hospital, New Westminster, BC	All eligible admissions	y	y	y	y	n	y	y
Surrey Memorial Hospital, Surrey, BC	All eligible admissions	y	y	y	y	n	y	n
Foothills Medical Centre, Calgary, AB	All eligible admissions	n	n/a	y	y	y	y	n
Alberta Children's Hospital, Calgary, AB	All eligible admissions	n	n/a	n/a	y	y	y	y
Royal Alexandra Hospital, Edmonton, AB*	< 33 weeks GA, HIE babies who were cooled & DRD	y	y	y	y	n	y	n
University of Alberta Hospital - Stollery, Edmonton, AB*	< 33 weeks GA, HIE babies who were cooled, CAPSNet, CDH & gastroschisis	n	n/a	n/a	n	y	y	y
Regina General Hospital, Regina, SK	All eligible admissions	y	y	y	y	n	y	y
Jim Pattison Children's Hospital, Saskatoon, SK (Formerly Royal University Hospital)	All eligible admissions	n	n/a	n	y	y	y	y
Health Sciences Centre Winnipeg, MB	≤33 weeks GA, HIE babies who were cooled, CAPSNet, CDH & gastroschisis, and other selected admissions	y	y	y	y	y	y	y
St. Boniface General Hospital, Winnipeg, MB	All eligible admissions	n	n/a	Incomplete	y	y	y	y
Hamilton Health Sciences Centre, Hamilton, ON	All eligible admissions	y	n	y	y	y	y	y
London Health Sciences Centre, London, ON	All eligible admissions	y	y	y	y	y	y	y
Windsor Regional Hospital, Windsor, ON	All eligible admissions	n	n/a	y	y	n	n	n
Hospital for Sick Children, Toronto, ON	All eligible admissions	n	n/a	n/a	y	y	y	y

Mount Sinai Hospital, Toronto, ON	All eligible admissions	y	y	y	n	n	y	n
Sunnybrook Health Sciences Centre, Toronto, ON	All eligible admissions	n	n/a	y	y	n	y	n
Children's Hospital of Eastern Ontario, Ottawa, ON	< 36 weeks GA and HIE babies who were cooled	n	n	n	y	y	y	y
The Ottawa Hospital, Ottawa, ON	< 33 weeks GA	y	partial	y	y	n	n	n
Kingston General Hospital, Kingston, ON	All eligible admissions	y	y	y	y	n	y	y
Jewish General Hospital, Montreal, QC	All eligible admissions	y	y	y	y	n	n	n
Hôpital Sainte-Justine, Montreal, QC	All eligible admissions	y	n	y	y	y	y	y
Centre Hospitalier Universitaire de Quebec, Quebec City, QC	< 33 weeks GA, CDH & gastroschisis, and other selected admissions	y	n	y	y	y	y	y
Montreal Children's Hospital – MUHC, Montreal, QC	All eligible admissions	n	n/a	y	y	y	y	y
Centre Hospitalier Universitaire de Sherbrooke, Sherbrooke, QC	< 33 weeks GA and HIE babies who were cooled at any GA	y	n	y	n	n	y	y
Hôpital Maisonneuve-Rosemont, Montréal, QC	< 33 weeks GA	n	n/a	y	n	n	n	n
The Moncton Hospital, Moncton, NB	All eligible admissions	n	n/a	y	y	n	y	n
Dr. Everett Chalmers Hospital, Fredericton, NB	All eligible admissions	n	n/a	y	n	n	y	y
Saint John Regional Hospital, Saint John, NB	All eligible admissions	n	n	y	n	n	y	y
Janeway Children's Health & Rehab Centre, Saint John , NL	All eligible admissions	y	y	y	y	y	y	y
IWK Health Centre, Halifax, NS	< 33 weeks GA, all HIE, all CAPSNet (CDH & gastroschisis), and transfers to/from other CNN centres	y	y	y	y	y	y	y
Cape Breton Regional Hospital, Sydney, NS	All eligible admissions	n	n/a	y	n	n	n	n
University of Utah Hospital, Utah, US	All eligible admissions	y	n	y	y	n	y	n
* Royal Alexandra Hospital & University of Alberta Hospital transmit data as one site								

C. Information Systems

Neonates included in this report are those who were admitted to a CNN participating site between January 1, 2022 and December 31, 2022, and were discharged by March 31, 2023. The neonates must have had a length of stay at one of the CNN participating sites for greater than or equal to 24 hours, or died or were transferred to another level 2 or 3 facility within 24 hours. Eight (8) infants who were admitted in 2021 but discharged after March 31, 2022 were also included in the 2022 report. Delivery room deaths, moribund neonates, and readmissions from 2021 were excluded. A total of 14 494 patients accounted for 15 709 admissions as some neonates were admitted on more than one occasions.

Patient information was retrospectively abstracted from patient charts by trained personnel using standard definitions and protocols contained in a standard manual of operations. Data were entered into a computer using a customized data entry program with built-in error checking and subsequently sent electronically to the Canadian Neonatal Network™ Coordinating Centre located at the Maternal-Infant Care Research Centre (MiCare) in Toronto, Ontario. Patient data at each participating site are available to the respective site investigator and data abstractor only. Patient identifiers were stripped prior to data transfer to the Coordinating Centre. Patient confidentiality was strictly observed. A unique identifier was generated for each entry of neonate into the system and that identifier was followed throughout one or more hospital stays. Individual-level data are used for analyses, but only aggregate data are reported. The results presented in this report will not identify participating sites by name; each site is anonymous using a randomly assigned number. Whenever a small cell size (1 to 4 individuals) was observed in the data output, the data were grouped to maintain anonymity.

At each participating site, data are stored in a secured database in the site or in an alternate secured site used by the site to store patient information (e.g. health records department, computer services department). At the Coordinating Centre, the central database is stored in a secured computer database located on a server and an off-site back up that is maintained and secured by the Mount Sinai Hospital Information Technology Department. At the Coordinating Centre, information was verified for completeness and was reviewed for accuracy by looking for "unusual" and missing values on individual data items and by comparison with other information that might be related (e.g. gestational age [GA] and birth weight [BW]). However, the principal accuracy rests upon the diligence and capabilities of the individual sites. Each site had one or occasionally two dedicated person(s) responsible for data acquisition and transmission.

At the Coordinating Centre, analyses were conducted using univariate, bivariate, and multivariate analyses for the total cohort, and for individual sites. Multivariable regression analysis was used to identify risk factors associated with mortality and major morbidities. Grouped data enabled development of outcome graphs by GA and BW for mortality and selected major morbidities. Similar systems have been used to assist in quality assurance and predict resource utilization.

D. Descriptive Analyses

This section is divided into three sub-sections.

Section D.1. Analyses based on number of eligible admissions to participating sites

These include data from 15 709 eligible admissions (including readmissions) to 33 sites. 25 of these sites submitted complete data (n=14 157) on all admissions and 8 sites submitted data on a selected admission cohort (n=1 552).

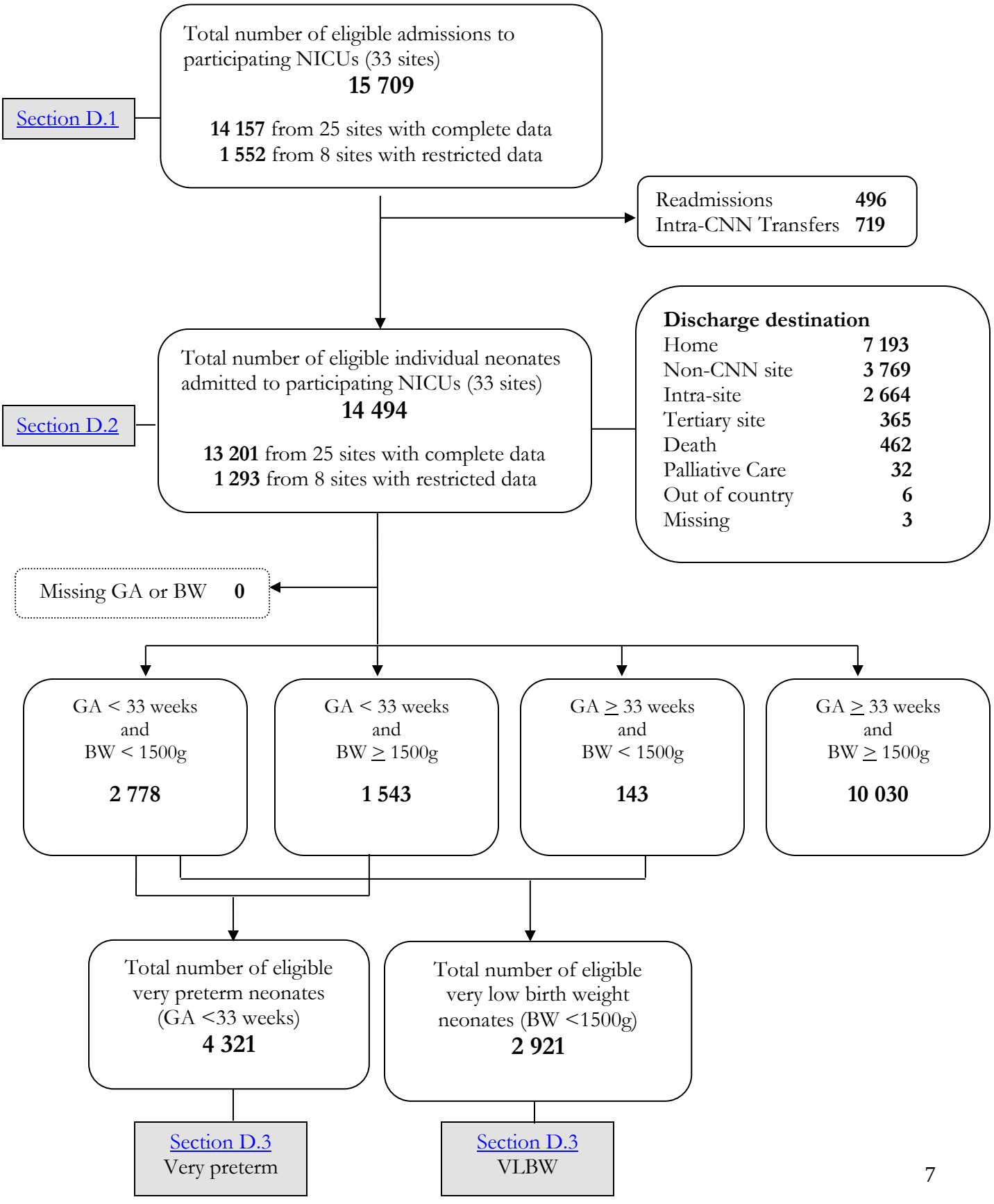
Section D.2. Analyses based on number of eligible neonates admitted to participating sites

These include data from 14 494 eligible neonates admitted to 33 sites. 25 of these sites submitted complete data (n=13 201) on all eligible admitted neonates and 8 sites submitted data on selected eligible admitted neonates (n=1 293).

Section D.3. Analyses based on number of eligible very preterm (GA <33 weeks) or very low birth weight (BW <1500g) neonates

These include data from 4 321 eligible very preterm neonates and 2 921 eligible very low birth weight (VLBW) neonates.

Canadian Neonatal Network™ Database: Admissions between January 1, 2022 and December 31, 2022 who were discharged by March 31, 2023. Eight (8) infants who were admitted in 2021 but discharged after March 31, 2022 were also included in the 2022 report. Delivery room deaths, moribund neonates, and readmissions from 2021 were excluded.

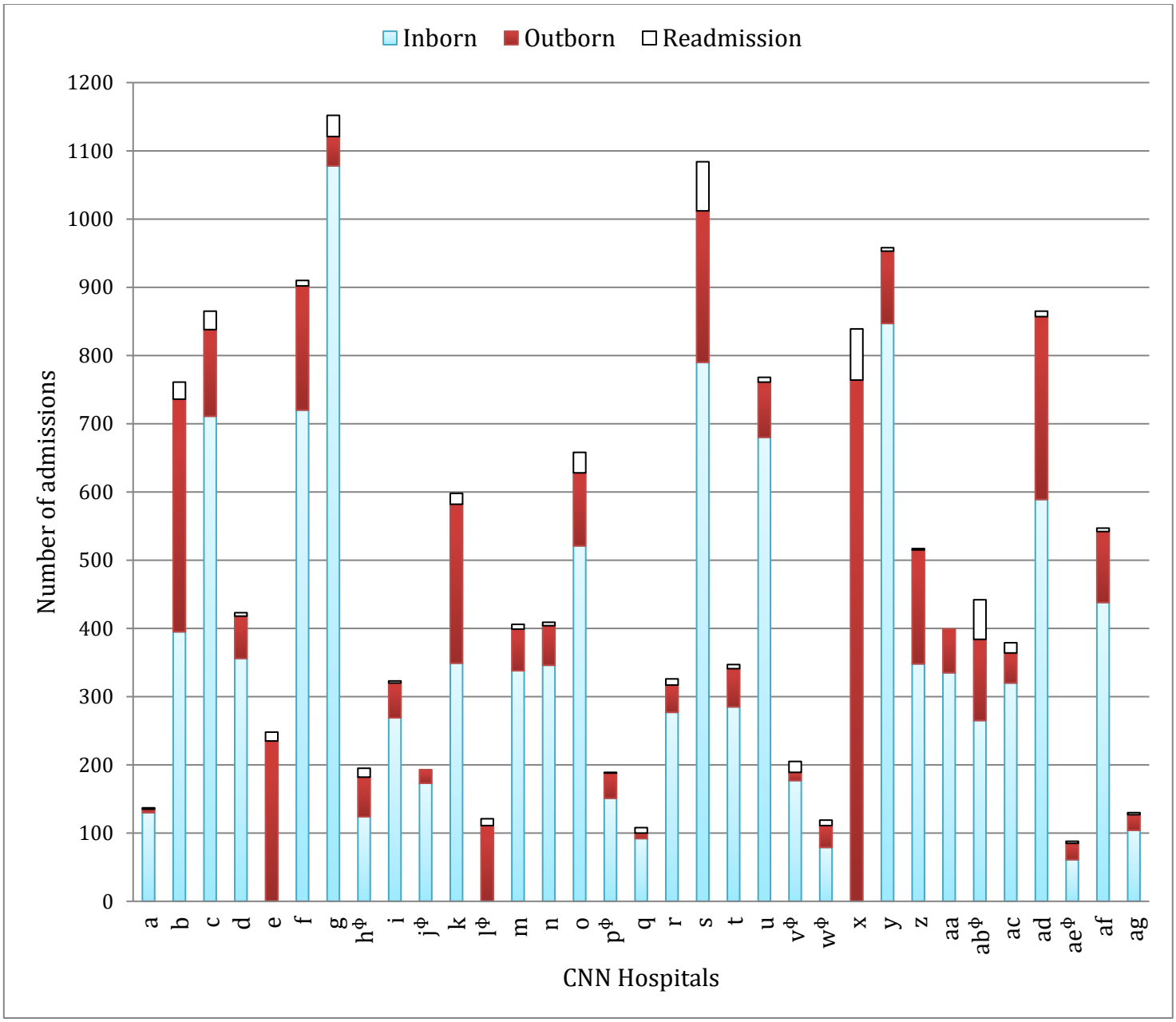


Section D.1

Analyses based on number of eligible admissions to participating sites

These include data from 15 709 eligible admissions (including readmissions) to 33 sites. 25 of these sites submitted complete data (n=14 157) on all admissions and 8 sites submitted data on a selected admission cohort (n=1 552).

Presentation #1
All admissions: Type of admissions: All Sites



Φ Data collected on selected cohort of eligible admissions only.

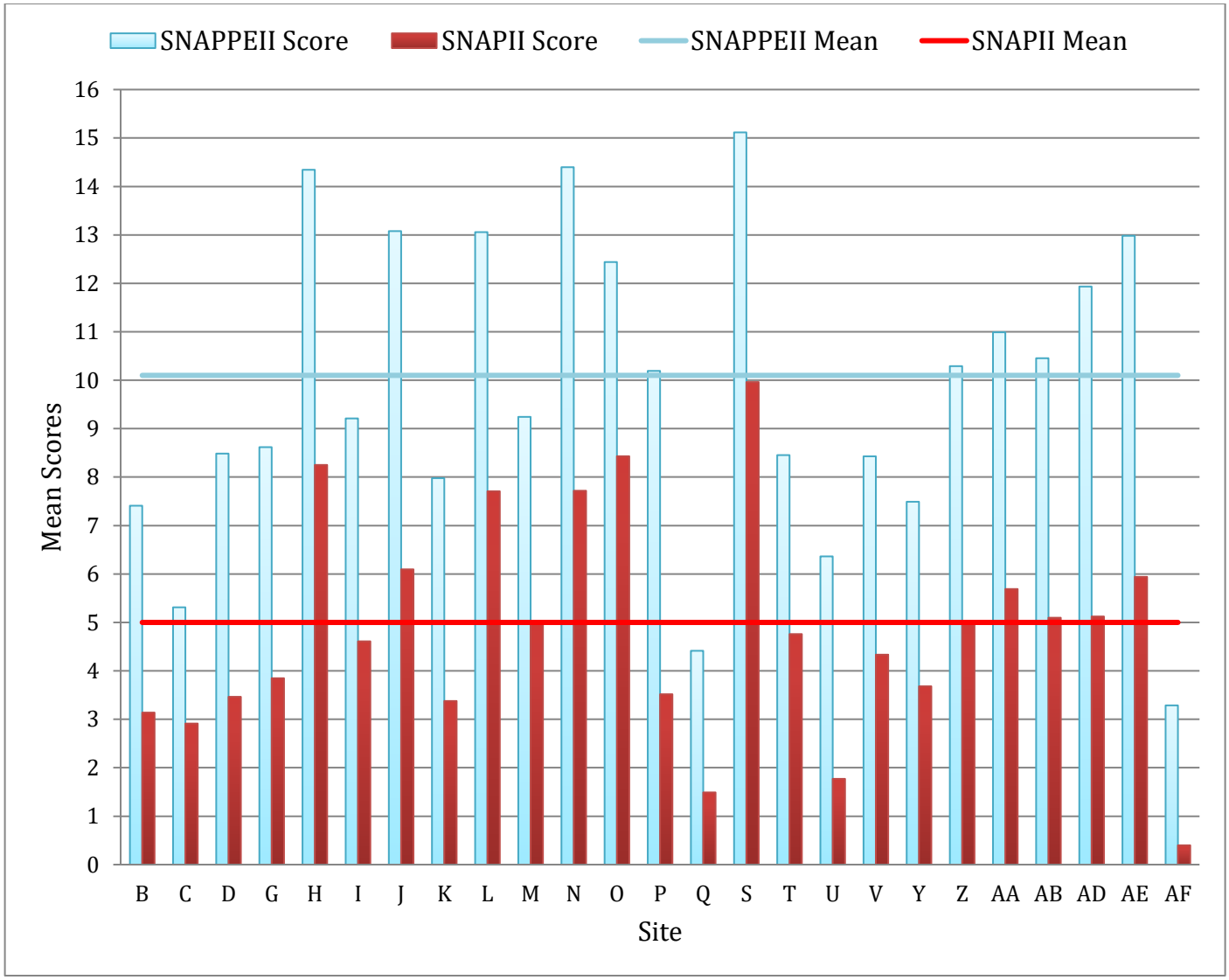
Presentation #1 (continued)
All admissions: Type of admissions: All Sites

Sites		Admission Status			Total
		Inborn	Outborn	Readmission	
a	Count	130	5	2	137
	%	94.9	3.7	1.5	(100.0)
b	Count	395	341	25	761
	%	51.9	44.8	3.3	(100.0)
c	Count	711	127	27	865
	%	82.2	14.7	3.1	(100.0)
d	Count	356	62	5	423
	%	84.2	14.7	1.2	(100.0)
e	Count	0	235	13	248
	%	0.0	94.8	5.2	(100.0)
f	Count	720	182	8	910
	%	79.1	20.0	0.9	(100.0)
g	Count	1078	43	31	1152
	%	93.6	3.7	2.7	(100.0)
h$^{\phi}$	Count	124	58	13	195
	%	63.6	29.7	6.7	(100.0)
i	Count	269	51	3	323
	%	83.3	15.8	0.9	(100.0)
j$^{\phi}$	Count	173	20	0	193
	%	89.6	10.4	0.0	(100.0)
k	Count	349	233	16	598
	%	58.4	39.0	2.7	(100.0)
l$^{\phi}$	Count	0	111	10	121
	%	0.0	91.7	8.3	(100.0)
m	Count	338	61	7	406
	%	83.3	15.0	1.7	(100.0)
n	Count	346	58	5	409
	%	84.6	14.2	1.2	(100.0)
o	Count	521	107	30	658
	%	79.2	16.3	4.6	(100.0)
p$^{\phi}$	Count	151	37	1	189
	%	79.9	19.6	0.5	(100.0)
q	Count	92	8	8	108
	%	85.2	7.4	7.4	(100.0)

Sites		Admission status			Total
		Inborn	Outborn	Readmission	
r	Count	277	40	9	326
	%	85.0	12.3	2.8	(100.0)
s	Count	790	222	72	1084
	%	72.9	20.5	6.6	(100.0)
t	Count	285	56	6	347
	%	82.1	16.1	1.7	(100.0)
u	Count	680	81	7	768
	%	88.5	10.6	0.9	(100.0)
v$^{\phi}$	Count	177	12	16	205
	%	86.3	5.9	7.8	(100.0)
w$^{\phi}$	Count	79	32	8	119
	%	66.4	26.9	6.7	(100.0)
x	Count	0	764	75	839
	%	0.0	91.1	8.9	(100.0)
y	Count	847	106	5	958
	%	88.4	11.1	0.5	(100.0)
z	Count	348	167	2	517
	%	67.3	32.3	0.4	(100.0)
aa	Count	335	64	0	399
	%	84.0	16.0	0.0	(100.0)
ab$^{\phi}$	Count	265	119	58	442
	%	60.0	26.9	13.1	(100.0)
ac	Count	320	44	15	379
	%	84.4	11.6	4.0	(100.0)
ad	Count	589	268	8	865
	%	68.1	31.0	0.9	(100.0)
ae$^{\phi}$	Count	61	24	3	88
	%	69.3	27.3	3.4	(100.0)
af	Count	438	104	5	547
	%	80.1	19.0	0.9	(100.0)
ag	Count	104	23	3	130
	%	80.0	17.7	2.3	(100.0)
Total	Count	11348	3865	496	15709
	%	72.2	24.6	3.2	(100.0)

COMMENTS: These analyses include 15 709 admissions to participating sites across the CNN during the period of January 1, 2022 to December 31, 2022. After adjusting for readmission, 14 494 neonates are represented. **Twenty-five sites collected data on all eligible admissions whereas eight sites (marked by $^{\phi}$) collected data on selected cohort of eligible admissions only.** See pages 3-4 for data collection criteria of all participating sites.

Presentation #2
All admissions: Admission illness severity scores (SNAP-II and SNAP-IIPE): Sites with complete data
(n=25 sites, 14 157 admissions, 7 with missing data on SNAP-II scores and 540 not applicable due to death or transfer within 12 hours)



Data collection status	Number of sites	Score	Mean	Std Dev	Q1	Median	Q3
Complete	25	SNAPIIPE	10.1	0.1	0	0	18
		SNAPII	5.0	0.1	0	0	7
Restricted	8	SNAPIIPE	19.3	0.5	0	17	31
		SNAPII	8.8	0.3	0	0	14

Presentation #2 (continued)

All admissions: Admission illness severity scores (SNAP-II & SNAP-IIPE): All sites

Site		SNAP-IIPE	SNAP-II	Site		SNAP-IIPE	SNAP-II
Aϕ	Mean	16.2	7.5	**Q**	Mean	4.4	1.5
	SEM	1.4	0.9		SEM	0.4	0.2
B	Mean	7.4	3.1	**R**ϕ	Mean	18.1	7.1
	SEM	0.7	0.4		SEM	1.3	0.7
C	Mean	5.3	2.9	**S**	Mean	15.1	10.0
	SEM	0.6	0.4		SEM	1.4	1.1
D	Mean	8.5	3.5	**T**	Mean	8.5	4.8
	SEM	0.6	0.4		SEM	0.4	0.3
Eϕ	Mean	18.0	5.9	**U**	Mean	6.4	1.8
	SEM	1.6	1.1		SEM	0.9	0.4
Fϕ	Mean	21.4	11.6	**V**	Mean	8.4	4.3
	SEM	2.3	1.6		SEM	0.5	0.3
G	Mean	8.6	3.8	**W**ϕ	Mean	15.3	6.4
	SEM	0.5	0.3		SEM	1.5	1.0
H	Mean	14.3	8.3	**X**ϕ	Mean	10.5	4.5
	SEM	1.2	0.9		SEM	1.3	0.7
I	Mean	9.2	4.6	**Y**	Mean	7.5	3.7
	SEM	0.7	0.4		SEM	0.6	0.4
J	Mean	13.1	6.1	**Z**	Mean	10.3	5.0
	SEM	0.6	0.4		SEM	0.7	0.4
K	Mean	8.0	3.4	**AA**	Mean	11.0	5.7
	SEM	0.7	0.4		SEM	0.7	0.4
L	Mean	13.1	7.7	**AB**	Mean	10.5	5.1
	SEM	0.5	0.3		SEM	0.8	0.5
M	Mean	9.2	5.0	**AC**ϕ	Mean	19.1	8.7
	SEM	0.5	0.3		SEM	1.4	0.8
N	Mean	14.4	7.7	**AD**	Mean	11.9	5.1
	SEM	0.8	0.5		SEM	0.6	0.3
O	Mean	12.4	8.4	**AE**	Mean	13.0	5.9
	SEM	0.8	0.5		SEM	0.7	0.4
P	Mean	10.2	3.5	**AF**	Mean	3.3	0.4
	SEM	0.5	0.3		SEM	0.7	0.2
				AGϕ	Mean	24.6	12.0
					SEM	1.1	0.8

COMMENTS: These analyses include 15 709 admissions (7 missing data on SNAP scores and 551 not applicable due to death or transfer within 15 hours) to participating all sites during the year 2022. Adjusting for readmission, these analyses represent 14 494 Neonates. **Twenty-five sites collected data on all eligible admissions whereas eight sites (marked by ϕ) collected data on a selected cohort of eligible admissions only.** These eight sites were not included in the Presentation #2 bar graph but were included in the Presentation #2 Table.

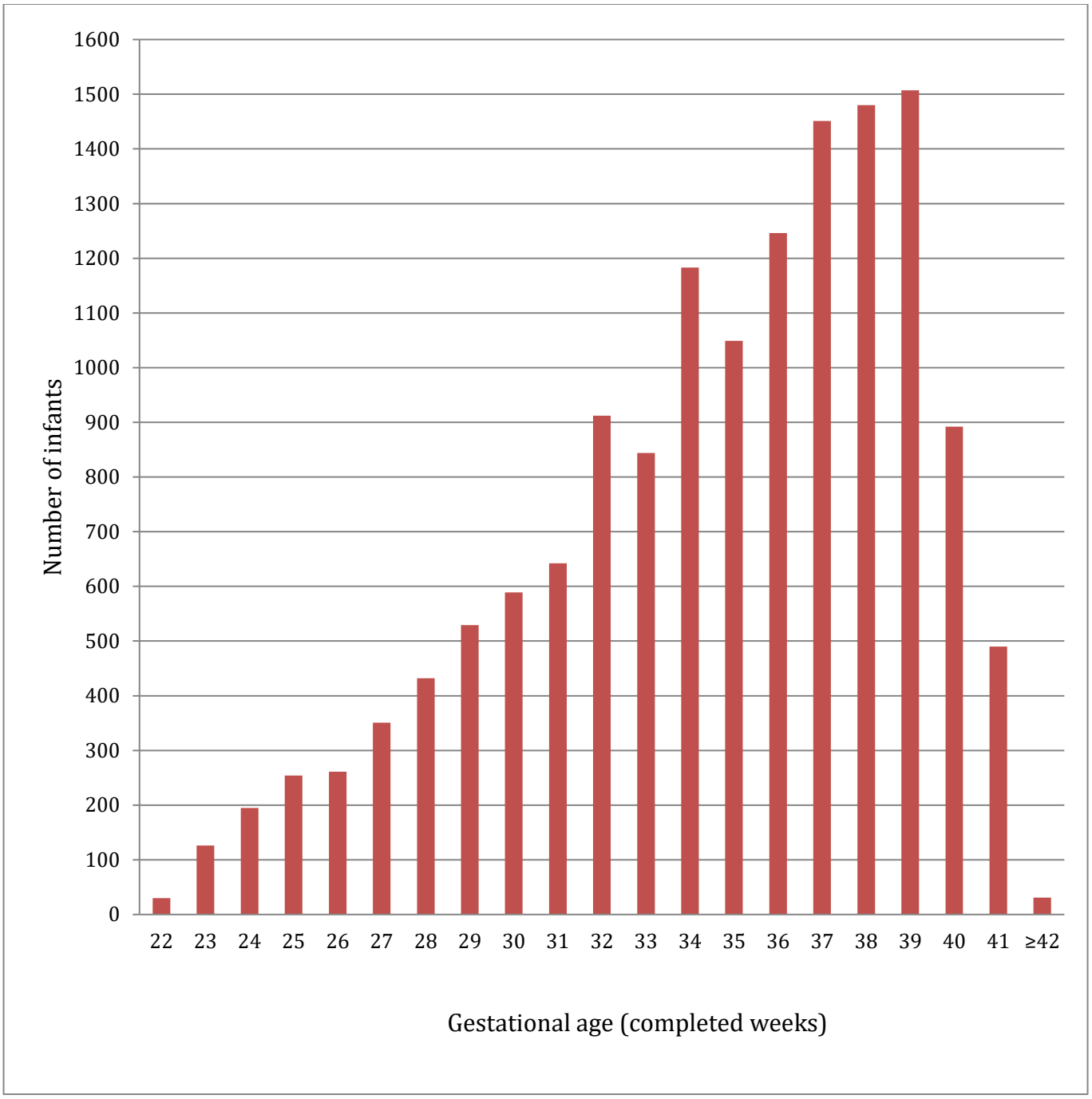
ϕ Please note that the criteria for entering neonates in the CNN dataset are not the same for these eight sites and thus, the scores are not comparable with each other or with centers contributing complete data. These eight sites may have included neonates at lower GAs and/or lower BWs; thus, their severity of illness scores may be different.

Section D.2

Analyses based on number of eligible neonates admitted to participating sites

These include data from 14 494 eligible neonates admitted to 33 sites. 25 of these sites submitted complete data (n=13 201) on all eligible admitted neonates and 8 sites submitted data on a selected cohort of eligible admitted neonates (n=1 293).

Presentation #3
Gestational age distribution: All sites and all admitted neonates

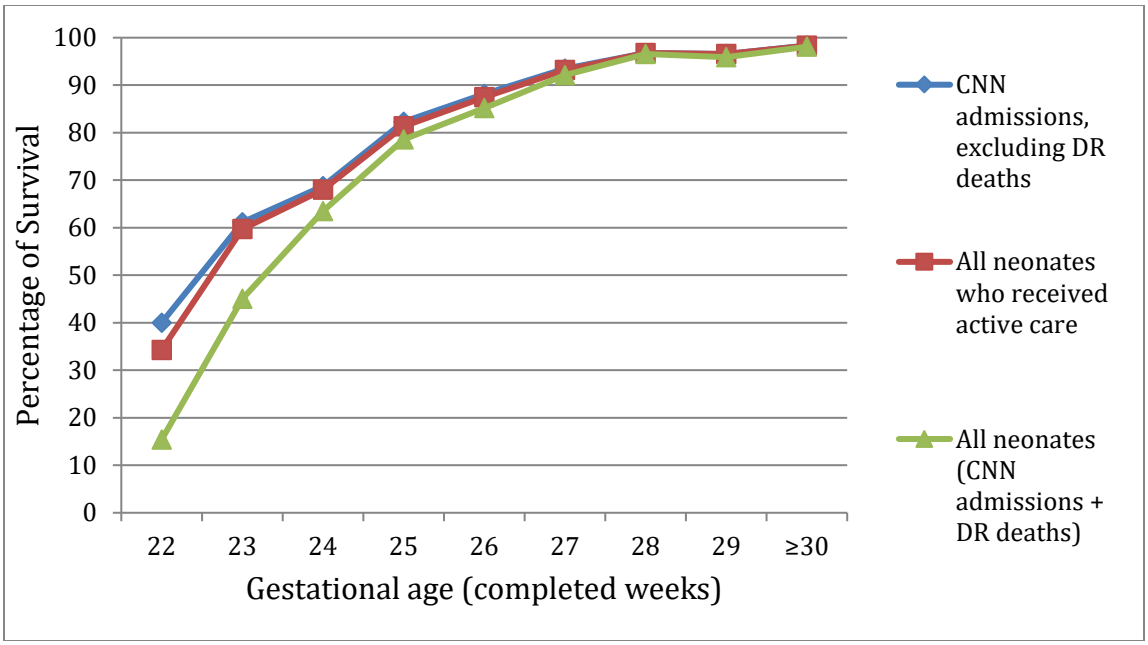


Presentation #3 (continued)
Gestational age distribution: All sites and all admitted neonates

GA in completed weeks at birth	Frequency	Percent	Cumulative percent
22	30	0.2	0.2
23	126	0.9	1.1
24	195	1.4	2.4
25	254	1.8	4.2
26	261	1.8	6.0
27	351	2.4	8.4
28	432	3.0	11.4
29	529	3.7	15.0
30	589	4.1	19.1
31	642	4.4	23.5
32	912	6.3	29.8
33	844	5.8	35.6
34	1183	8.2	43.8
35	1049	7.2	51.0
36	1246	8.6	59.6
37	1451	10.0	69.6
38	1480	10.2	79.9
39	1507	10.4	90.3
40	892	6.2	96.4
41	490	3.4	99.8
≥42	31	0.2	100.0
Total included	14 494	100.0	
Total # of missing GA	0		
Total # of neonates	14 494		

COMMENTS: The GA distribution of neonates is shown here. Term babies (≥37 weeks) represent 40.4% of the total number of neonates. Twenty-five sites collected data on all eligible admissions whereas eight sites collected data on a selected cohort of eligible admissions.

Presentation #4
Survival to discharge by GA: All admissions, including delivery room (DR) deaths

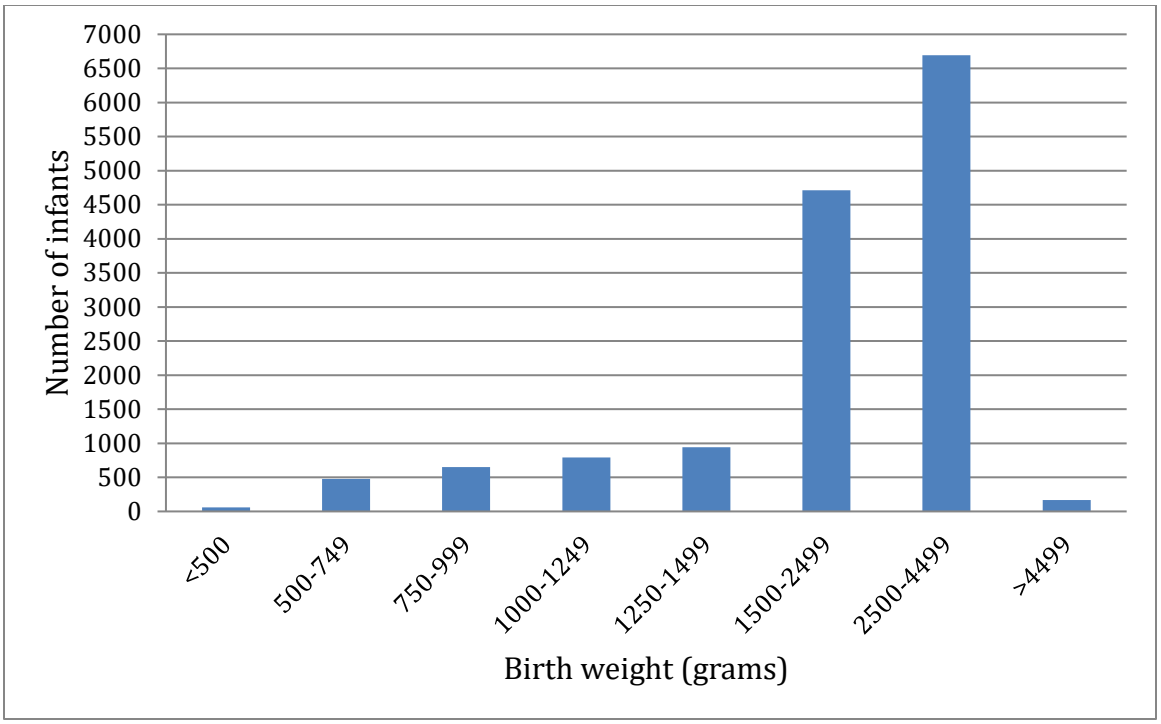


CNN admissions, excluding delivery room deaths					Delivery room deaths*		Total CNN admissions including delivery room deaths*				
GA (completed weeks)	**#of neonates**	**#of survivors**	**Percent survival among CNN admissions, excluding DR deaths**	**#of neonates who received comfort care**	**Palliative care**	**Active care ****	**Total**	**#of neonates who received comfort care**	**# of neonates who received active care****	**Percent survival among those who received active care**	**Percent survival among all neonates (CNN admissions + DR deaths)**
	a	*b*	*b/a*	*c*	*d*	*e*	*a+d+e*	*c+d*	*(a-c) +e*	*b/ (a-c)+e*	*b/(a+d+e)*
22	30	12	40	0	43	5	78	43	35	34	15
23	126	77	61	0	42	3	171	42	129	60	45
24	195	134	69	0	14	2	211	14	197	68	64
25	254	209	82	0	9	3	266	9	257	81	79
26	261	230	88	0	7	2	270	7	263	87	85
27	351	328	93	0	4	1	356	4	352	93	92
28	432	418	97	0	1	0	433	1	432	97	97
29	529	511	97	0	4	0	533	4	529	97	96
≥30	12 316	12 113	98	7	19	14	12 349	26	12 323	98	98
Total included	14 494	14 032	97	7	143	30	14 667	150	14 517	97	96
Missing GA	0				3	1	4	3	1		
Total	**14 494**			**7**	**146**	**31**	**14 671**	**153**	**14 518**		

***Please note that delivery room deaths are *only included in Presentations #4, #6a, and #6b* in this report. **Active care refers to infants who received cardiopulmonary resuscitation at birth.**

Note: The results should be used cautiously for antenatal counseling. The survival rates are based upon the final discharge from the participating neonatal site. Note that these rates include only neonates admitted to the sites or dying in the delivery rooms of participating sites and thus are not reflective of the entire Canadian population. Only one CNN site did not contribute delivery room death data.

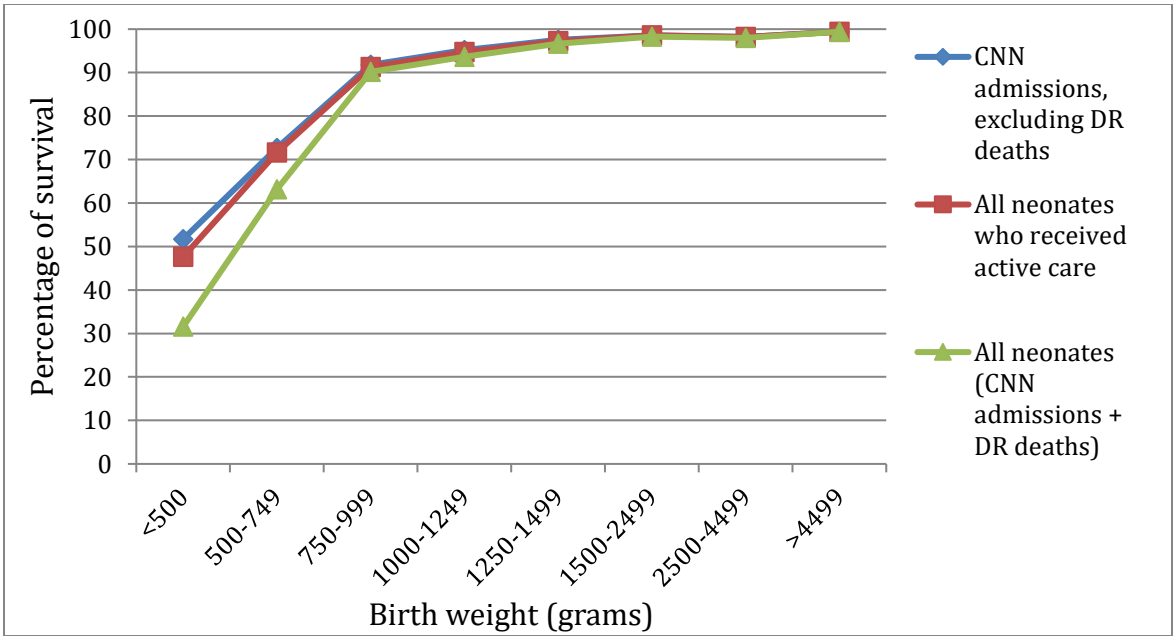
Presentation #5
Birth weight distribution: All sites and all admitted neonates



BW (grams)	Frequency	Percent from total number of neonates	Cumulative percent
<500	58	0.4	0.4
500-749	479	3.3	3.7
750-999	649	4.5	8.2
1000-1249	793	5.5	13.7
1250-1499	942	6.5	20.2
1500-2499	4713	32.5	52.7
2500-4499	6691	46.2	98.8
>4499	169	1.2	100.0
Total included	14 494	100.0	
Missing BW	0		
Total # of neonates	14 494		

COMMENTS: The BW distribution of neonates admitted to the CNN sites. Eighty percent weighed more than 1 500g at birth and 47.3% weighed more than 2 500g. Twenty-five sites collected data on all admissions whereas eight sites collected data on a selected cohort of eligible admissions only.

Presentation #6a
Survival to discharge by BW: All admissions, including delivery room (DR) deaths

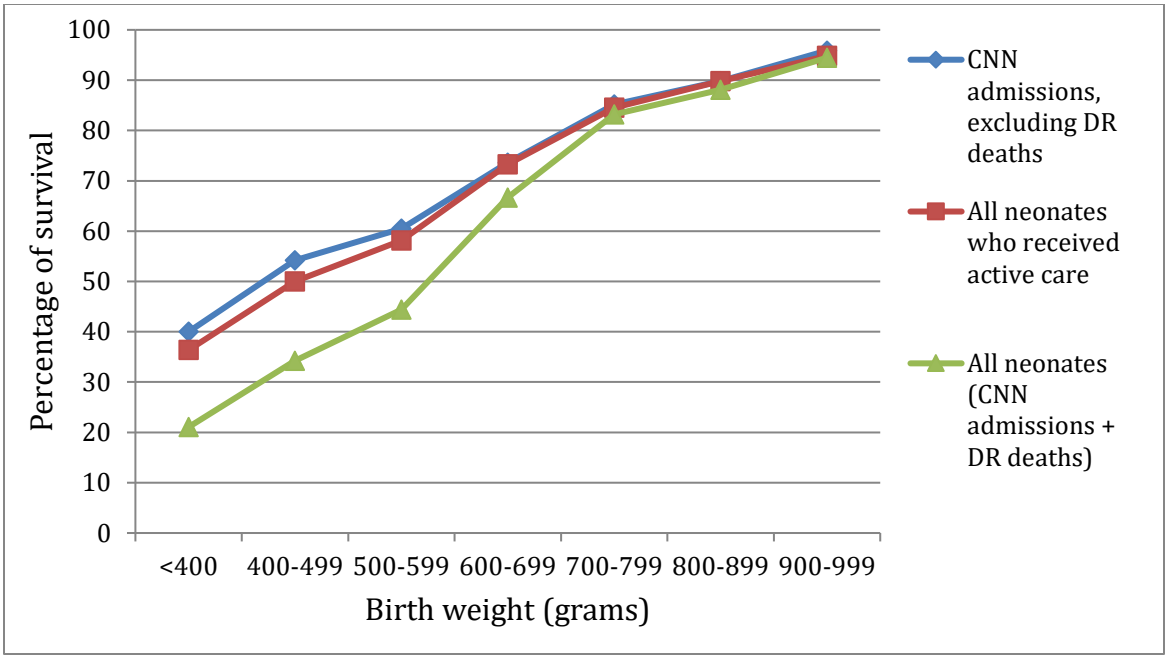


CNN Admissions, excluding delivery room deaths					Delivery room deaths*		Total CNN admissions + Delivery room deaths*				
BW (grams)	**#of neonates**	**# of survivors**	**Percent survival of CNN admissions, excluding DR deaths**	**# of neonates who received palliative care**	**Palliative care**	**Active care ****	**Total**	**# of neonates who received palliative care**	**# of neonates who received active care****	**Percent survival of neonates who received active care**	**Percent survival of all neonates (CNN admissions + DR deaths)**
	a	*b*	*b/a*	*c*	*d*	*e*	*a+d+e*	*c+d*	*(a-c) +e*	*b/ (a-c)+e*	*b/ (a+d+e)*
<500	58	30	52	0	32	5	95	32	63	48	32
500-749	479	348	73	0	65	7	551	65	486	72	63
750-999	649	596	92	0	8	4	661	8	653	91	90
1000-1249	793	755	95	0	9	4	806	9	797	95	94
1250-1499	942	919	98	0	6	3	951	6	945	97	97
1500-2499	4 713	4 646	99	2	11	4	4 728	13	4 715	99	98
2500-4499	6 691	6 570	98	5	6	6	6 703	11	6 692	98	98
>4499	169	168	99	0	0	0	169	0	169	99	99
Total neonates included	14 494	14 032	97	7	137	33	14 664	144	14 520	97	96
Missing BW	0				6	4	10	6	4		
Total # of neonates	**14 494**				**143**	**37**	**14 674**	**150**	**14 524**		

***Please note that delivery room deaths are *only included in Presentations #4, #6a and #6b* in this report. **Active care refers to infants who received cardiopulmonary resuscitation at birth.**

Note: The results should be used cautiously for antenatal counseling. The survival rates are based upon the final discharge from the participating neonatal site. Note that these rates include only neonates admitted to the sites or dying in the delivery rooms of participating sites and thus are not reflective of the entire Canadian population. Only one CNN site did not contribute delivery room death data.

Presentation #6b
Survival to discharge by BW: BW <1000g including delivery room (DR) deaths



CNN Admissions, excluding delivery room deaths					Delivery room deaths*		Total CNN admissions + Delivery room deaths*				
BW (grams)	**Number of neonates**	**Number of survivors**	**Percent survival of CNN admissions,** excluding DR deaths	**Number of neonates who received palliative care**	**Palliative care**	**Active care ****	**Total**	**Number of neonates who received palliative care**	**Number of neonates who received active care****	**Percent survival of neonates who received active care**	**Percent survival of all neonates (CNN admissions + DR deaths)**
	a	*b*	*b/a*	*c*	*d*	*e*	*a+d+e*	*c+d*	*(a-c) +e*	*b/ (a-c)+e*	*b/(a+d+e)*
<400	10	4	40	0	8	1	19	8	11	36	21
400-499	48	26	54	0	24	4	76	24	52	50	34
500-599	124	75	60	0	40	5	169	40	129	58	44
600-699	231	170	74	0	23	1	255	23	232	73	67
700-799	250	213	85	0	4	2	256	4	252	85	83
800-899	256	230	90	0	5	0	261	5	256	90	88
900-999	267	256	96	0	1	3	271	1	270	95	94
Total included	**1 186**	**974**	**82**	**0**	**105**	**16**	**1 307**	**105**	**1 202**	**81**	**75**

***Please note that delivery room deaths are *only included in Presentations #4, #6a and #6b* in this report. **Active care refers to infants who received cardiopulmonary resuscitation at birth.**

Note: The results should be used cautiously for antenatal counseling. The survival rates are based upon the final discharge from the participating neonatal site. Note that these rates include only neonates admitted to the sites or died in delivery room of participating sites and thus are not reflective of the entire Canadian population. Only one CNN site did not contribute delivery room death data.

Presentation #7a
Maternal and peripartum characteristics: All neonates

Characteristics				**GA at birth (completed weeks)**					
		Missing/ Unknown		**<26**	**26-28**	**29-32**	**33 - 36**	**≥37**	**Total**
Total				**605**	**1044**	**2672**	**4322**	**5851**	**14494**
No prenatal care		221	N	13	16	54	91	71	245
			%	2.2	1.6	2.1	2.1	1.2	1.7
Marijuana/cannabis		143	N	41	85	193	281	338	938
			%	6.8	8.2	7.3	6.6	5.8	6.5
Smoking		71	N	66	113	323	470	521	1493
			%	10.9	10.9	12.1	10.9	9.0	10.4
Maternal hypertension		783	N	58	227	657	1024	760	2726
			%	9.8	22.5	25.5	24.7	14.1	19.9
Maternal diabetes		891	N	54	183	544	995	1034	2810
			%	9.4	18.6	21.3	24.2	19.2	20.7
Assisted pregnancy (ART)		0	N	85	110	249	425	290	1159
			%	14.1	10.5	9.3	9.8	5.0	8.0
Multiples		0	N	128	232	823	1196	149	2528
			%	21.2	22.2	30.8	27.7	2.6	17.4
$MgSO_4$ for neuroprotection		903	N	489	846	1898	731	61	4025
			%	82.2	83.9	75.4	17.8	1.1	29.6
Antenatal steroids	None	356	N	68	89	261	2450	5653	8521
			%	11.3	8.7	10.1	58.5	98.5	60.3
	Partial		N	182	286	637	459	9	1573
			%	30.3	27.9	24.6	11.0	0.2	11.1
	Complete		N	351	651	1689	1276	77	4044
			%	58.4	63.5	65.3	30.5	1.3	28.6
Mode of birth	Vaginal	44	N	254	347	861	1658	3179	6299
			%	42.1	33.3	32.3	38.5	54.5	43.6
	C/S		N	350	694	1805	2648	2654	8151
			%	58.0	66.7	67.7	61.5	45.5	56.4
Presentation	Vertex	1318	N	294	574	1678	3102	4681	10329
			%	50.7	57.8	67.1	77.6	91.7	78.4
	Breech		N	254	369	734	792	344	2493
			%	43.8	37.1	29.4	19.8	6.7	18.9
	Other		N	32	51	88	104	79	354
			%	5.5	5.1	3.5	2.6	1.6	2.7
Rupture of membranes	<24 h	1404	N	369	680	1840	3323	4739	10951
			%	65.5	70.9	75.3	84.1	91.6	83.7
	24h to 1wk		N	114	126	302	368	350	1260
			%	20.3	13.1	12.4	9.3	6.8	9.6
	>1 wk		N	80	153	301	259	86	879
			%	14.2	16.0	12.3	6.6	1.7	6.7

Presentation #7a (continued)
Maternal and peripartum characteristics: All neonates

Characteristics				**GA at birth (completed weeks)**					
		Missing/ Unknown		**<26**	**26-28**	**29-32**	**33 - 36**	**≥37**	**Total**
Total				**605**	**1044**	**2672**	**4322**	**5851**	**14494**
Chorioamnionitis*		1334	N	275	297	399	302	563	1836
			%	47.0	29.9	15.9	7.5	11.2	14.0
Deferred cord clamping	≤ 29 sec	1974	N	48	59	121	130	162	520
			%	8.2	5.9	4.9	3.4	3.5	4.2
	30-59 sec		N	101	196	389	557	663	1906
			%	17.3	19.7	15.7	14.4	14.4	15.2
	≥60 sec		N	143	370	1283	2260	2205	6261
			%	24.5	37.2	51.6	58.6	48.0	50.0
	Yes, but timing unknown		N	5	16	28	74	181	304
			%	0.9	1.6	1.1	1.9	3.9	2.4
	No		N	287	354	664	839	1385	3529
			%	49.1	35.6	26.7	21.7	30.1	28.2

*Chorioamnionitis is defined as documented histological chorioamnionitis on placenta pathology **or** "suspected or confirmed clinical chorioamnionitis" in chart **or** presence of maternal fever and *either* leukocytosis *or* purulent discharge *or* fetal tachycardia.

Presentation #7b
Maternal and peripartum characteristics:
Timing of single course of Antenatal Corticosteroids (ANCS): GA <33 weeks

	Weeks		No ANCS	Complete course within last week prior to birth *	Complete course more than 1 week before birth **	Complete course but timing unknown ***	Partial course within last 24 hours ****
Inborn	**22-28**	N	73	584	402	8	350
		%	5.1	40.6	27.9	0.6	24.3
	29-32	N	121	811	767	47	492
		%	5.3	35.5	33.6	2.1	21.6
Outborn	**22-28**	N	84	2	4	2	86
		%	40.2	1.0	1.9	1.0	41.2
	29-32	N	140	22	31	11	105
		%	35.9	5.6	8.0	2.8	26.9

*****Complete course within last week prior to birth – defined as receipt of at least two doses of corticosteroids 24 hours or more but within one week of birth.

******Complete course before 1 week of birth – defined as receipt of at least two doses of corticosteroids initiated more than one week prior to birth.

*******Complete course but timing unknown – defined as receipt of at least two doses of corticosteroids or if "complete course" was documented, but the dates of administration were not available.

********Partial course within last 24 hours – defined as any dose given less than 24 hours prior to birth.

Note: Data on "Partial course >24 hours ago" and "Partial course but timing unknown" are collected in the database but they are not reported in this table. If multiple course of steroids received, only the last prior to delivery was used for this table.

Presentation #7c
Maternal and peripartum characteristics:
Timing of deferred cord clamping: GA <33 weeks

Singleton

			Deferred Cord clamping timing						Any Deferred Cord clamping	Immediate Cord clamping	Unknown timing
	Weeks		0-15 seconds	16-30 seconds	31-60 seconds	61-75 seconds	>75 seconds	Duration unknown			
Inborn	22-28	N	33	169	432	15	13	17	679	428	12
		%	3.0	15.1	38.6	1.3	1.2	1.5	60.7	38.3	1.1
	29-32	N	27	174	886	42	33	11	1173	341	18
		%	1.8	11.4	57.8	2.7	2.2	0.7	76.6	22.3	1.2
Outborn	22-28	N	3	16	25	2	3	0	49	73	48
		%	1.8	9.4	14.7	1.2	1.8	0.0	28.9	42.9	28.2
	29-32	N	4	23	52	1	10	6	96	87	134
		%	1.3	7.3	16.4	0.3	3.2	1.9	30.4	27.4	42.3

First twin

			Deferred Cord clamping timing						Any Deferred Cord clamping	Immediate Cord clamping	Unknown timing
	Weeks		0-15 seconds	16-30 seconds	31-60 seconds	61-75 seconds	>75 seconds	Duration unknown			
Inborn	22-28	N	2	24	56	4	2	2	90	52	0
		%	1.4	16.9	39.4	2.8	1.4	1.4	63.3	36.6	0.0
	29-32	N	6	40	163	8	1	3	221	106	7
		%	1.8	12.0	48.8	2.4	0.3	0.9	66.2	31.7	2.1
Outborn	22-28	N	0	4	2	0	0	0	6	12	4
		%	0.0	18.2	9.1	0.0	0.0	0.0	27.3	54.6	18.2
	29-32	N	0	2	10	1	0	2	15	8	11
		%	0.0	5.9	29.4	2.9	0.0	5.9	44.1	23.5	32.4

Second twin

			Deferred Cord clamping timing						Any Deferred Cord clamping	Immediate Cord clamping	Unknown timing
	Weeks		0-15 seconds	16-30 seconds	31-60 seconds	61-75 seconds	>75 seconds	Duration unknown			
Inborn	22-28	N	5	20	64	5	1	2	97	57	1
		%	3.2	12.9	41.3	3.2	0.7	1.3	62.6	36.8	0.7
	29-32	N	8	37	198	7	2	3	255	76	4
		%	2.4	11.0	59.1	2.1	0.6	0.9	76.1	22.7	1.2
Outborn	22-28	N	0	1	1	0	0	0	2	10	5
		%	0.0	5.9	5.9	0.0	0.0	0.0	11.8	58.8	29.4
	29-32	N	1	1	11	0	0	0	13	17	9
		%	2.6	2.6	28.2	0.0	0.0	0.0	33.4	43.6	23.1

Presentation #8a
Resuscitation details: GA < 31 weeks

Action taken			**GA at birth (completed weeks)**								
			≤23	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**Total**
Total			**156**	**195**	**254**	**261**	**351**	**432**	**529**	**589**	**2767**
No resuscitation needed/provided		N	0	0	0	0	4	0	4	10	18
		%	0.0	0.0	0.0	0.0	1.2	0.0	0.8	1.7	0.7
CPAP		N	27	67	144	172	256	372	448	499	1985
		%	17.3	34.4	56.7	65.9	73.4	86.3	84.7	84.7	71.8
PPV via mask		N	142	180	218	207	270	297	330	319	1963
		%	91.0	92.3	85.8	79.3	77.4	68.9	62.4	54.2	71.0
PPV via ETT		N	131	143	139	81	104	88	94	64	844
		%	84.0	73.3	54.7	31.0	29.8	20.4	17.8	10.9	30.5
Chest compression		N	8	10	9	11	8	7	11	10	74
		%	5.1	5.1	3.5	4.2	2.3	1.6	2.1	1.7	2.7
Epinephrine		N	4	7	5	7	5	3	5	4	40
		%	2.6	3.6	2.0	2.7	1.4	0.7	1.0	0.7	1.4
Unknown		N	0	1	1	2	0	2	3	5	14
		%	0.0	0.5	0.4	0.8	0.0	0.5	0.6	0.9	0.5
Any resuscitation provided*		N	156	192	252	258	345	429	517	559	2708
		%	100.0	98.5	99.2	98.9	98.9	99.5	97.7	94.9	98.0
Initial gas	Air	N	19	34	45	39	75	112	159	186	669
		%	12.2	17.4	17.7	14.9	21.4	25.9	30.1	31.6	24.2
	22-40% O_2	N	71	93	116	144	176	214	252	265	1331
		%	45.5	47.7	45.7	55.2	50.1	49.5	47.6	45.0	48.2
	41-70% O_2	N	12	28	42	32	45	51	28	37	275
		%	7.7	14.4	16.5	12.3	12.8	11.8	5.3	6.3	9.9
	71-99% O_2	N	1	2	2	3	3	3	4	2	20
		%	0.6	1.0	0.8	1.2	0.9	0.7	0.8	0.3	0.7
	100% O_2	N	41	20	25	19	15	23	22	23	188
		%	26.3	10.3	9.8	7.3	4.3	5.3	4.2	3.9	6.8
	Unknown/ Missing	N	12	18	24	24	37	29	64	76	284
		%	7.7	9.2	9.5	9.2	10.5	6.7	12.1	12.9	10.3
Maximum O_2 conc. during resus.	21%	N	0	0	0	2	1	4	14	18	39
		%	0.0	0.0	0.0	0.8	0.3	0.9	2.7	3.1	1.4
	22-40%	N	5	6	29	36	61	116	174	202	629
		%	3.2	3.1	11.4	13.8	17.4	26.9	32.9	34.3	22.7
	41-70%	N	5	23	47	61	76	108	107	127	554
		%	3.2	11.8	18.5	23.4	21.7	25.0	20.2	21.6	20.0
	>70%	N	143	158	167	149	193	189	202	182	1383
		%	91.7	81.0	65.8	57.1	55.0	43.8	38.2	30.9	50.0
	Missing	N	3	8	11	13	20	15	32	60	162
		%	1.9	4.1	4.3	5.0	5.7	3.5	6.1	10.2	5.9

* Number of neonates who received any resuscitation includes those who received CPAP, PPV, chest compression or epinephrine

NOTE: Please use caution when interpreting these data. Resuscitation time was defined as the first 30 minutes after birth. Note that delivery room deaths are not included in the denominator.

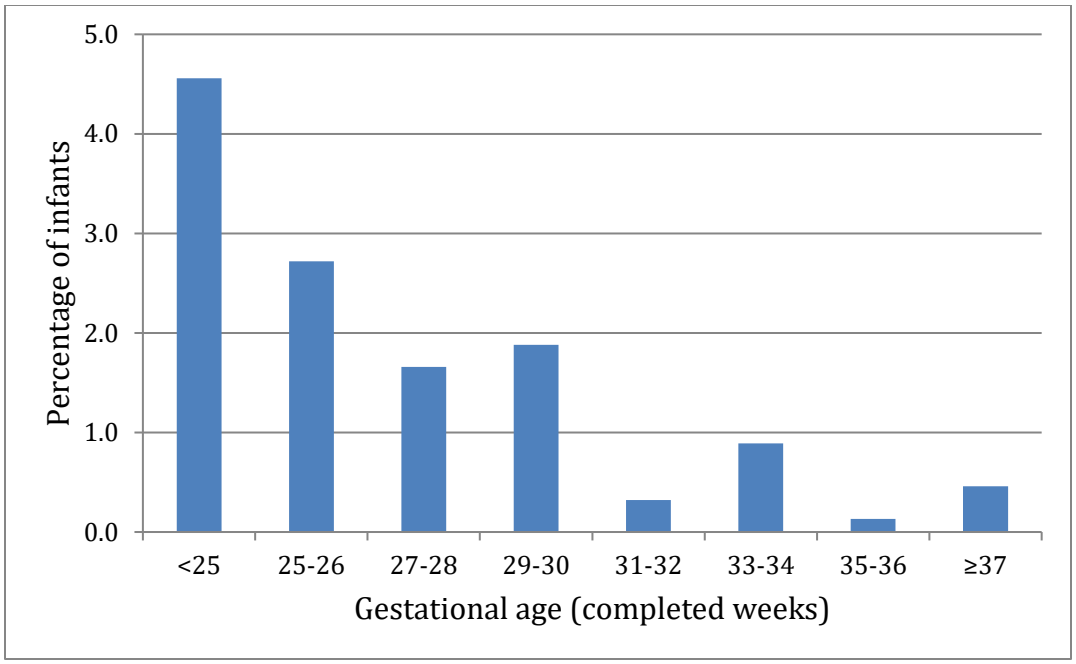
Presentation #8b
Resuscitation details: GA ≥ 31 weeks

Action taken			**GA at birth (completed weeks)**							
			31	**32**	**33**	**34**	**35**	**36**	**≥37**	**Total**
Total			**642**	**912**	**844**	**1183**	**1049**	**1246**	**5851**	**11727**
No resuscitation needed / provided		N	19	85	152	316	345	382	1717	3016
		%	3.0	9.3	18.0	26.7	32.9	30.7	29.4	25.7
CPAP		N	540	662	504	553	479	535	2443	5716
		%	84.1	72.6	59.7	46.8	45.7	42.9	41.8	48.7
PPV via mask		N	347	373	290	304	277	299	1728	3618
		%	54.1	40.9	34.4	25.7	26.4	24.0	29.5	30.9
PPV via ETT		N	52	63	54	47	40	57	419	732
		%	8.1	6.9	6.4	4.0	3.8	4.6	7.2	6.2
Chest compression		N	14	10	12	12	12	19	154	233
		%	2.2	1.1	1.4	1.0	1.1	1.5	2.6	2.0
Epinephrine		N	4	6	4	4	5	11	59	93
		%	0.6	0.7	0.5	0.3	0.5	0.9	1.0	0.8
Unknown		N	4	4	4	6	9	9	53	89
		%	0.6	0.4	0.5	0.5	0.9	0.7	0.9	0.8
Any resuscitation provided*		N	594	722	564	620	530	623	2987	6640
		%	92.5	79.2	66.8	52.4	50.5	50.0	51.1	56.6
Initial gas	Air	N	232	312	230	240	269	310	1445	3038
		%	36.1	34.2	27.3	20.3	25.6	24.9	24.7	25.9
	22-40% O_2	N	254	284	227	247	148	170	617	1947
		%	39.6	31.1	26.9	20.9	14.1	13.6	10.6	16.6
	41-70% O_2	N	25	31	24	29	36	35	142	322
		%	3.9	3.4	2.8	2.5	3.4	2.8	2.4	2.7
	71-99% O_2	N	4	0	2	0	5	1	22	34
		%	0.6	0.0	0.2	0.0	0.5	0.1	0.4	0.3
	100% O_2	N	22	36	33	61	34	46	334	566
		%	3.4	4.0	3.9	5.2	3.2	3.7	5.7	4.8
	Unknown/ Missing	N	105	249	328	606	557	684	3291	5820
		%	16.4	27.3	38.9	51.2	53.1	54.9	56.3	49.6
Maximum O_2 conc. during resus	21%	N	23	43	38	38	42	49	279	512
		%	3.6	4.7	4.5	3.2	4.0	3.9	4.8	4.4
	22-40%	N	211	276	238	248	181	234	808	2196
		%	32.9	30.3	28.2	21.0	17.3	18.8	13.8	18.7
	41-70%	N	163	161	107	128	106	111	444	1220
		%	25.4	17.7	12.7	10.8	10.1	8.9	7.6	10.4
	>70%	N	164	207	147	168	154	175	1121	2136
		%	25.6	22.7	17.4	14.2	14.7	14.0	19.2	18.2
	Missing	N	81	225	314	601	566	677	3199	5663
		%	12.6	24.7	37.2	50.8	54.0	54.3	54.7	48.3

* Number of neonates who received any resuscitation includes those who received CPAP, PPV, Chest compression or epinephrine

NOTE: Please use caution while interpreting these data. Resuscitation time was defined as the first 30 minutes after birth. Note that delivery room deaths are not included in the denominator.

Presentation #9
Early onset sepsis rates: All GA

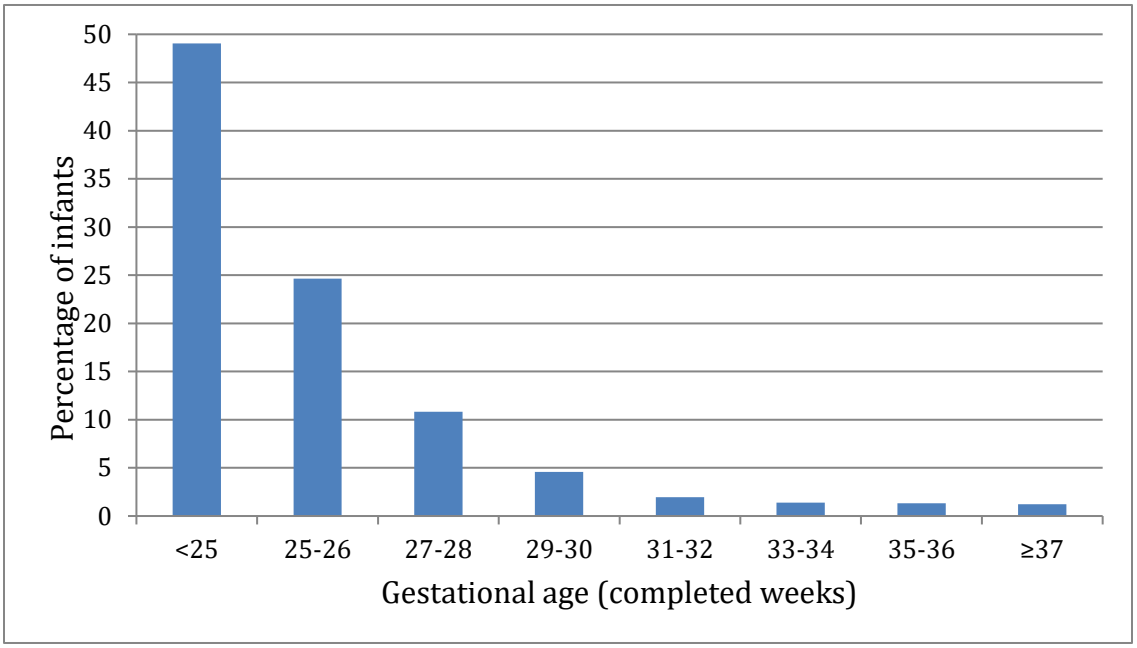


GA at birth (completed weeks)	Total number of neonates	No. of neonates with infection	% of neonates with infection	Total number of organisms	Organism		
					E. Coli	GBS	Others
<25	351	16	4.6	16	5	5	6
25-26	515	14	2.7	14	6	0	8
27-28	783	13	1.7	13	10	1	2
29-30	1118	21	1.9	22	15	1	6
31-32	1554	5	0.3	5	3	0	2
33-34	2027	18	0.9	18	10	1	7
35-36	2295	3	0.1	3	0	2	1
≥37	5851	27	0.5	28	6	5	17
Total neonates included	**14 494**	**117**	**0.8**	**119**	**55**	**15**	**49**
Missing	0						
Total # of neonates	**14 494**						

COMMENTS: Early onset sepsis is defined as positive bacterial, viral or fungal culture in blood and/or cerebrospinal fluid, in the first two days after birth. In other category, top five organisms were: Bacillus (n=9), Haemophilus (n=7), Non GBS or viridans Streptococci (n=7), Klebsiella (n=5), Viridans streptococci (n=5). In contrast to previous CNN reports, CONS was *not* included as an organism causing early onset sepsis in this report based on consultation with microbiologists.

Syphilis was not counted as an early onset sepsis in this presentation. No incident of Syphilis was observed in 2022.

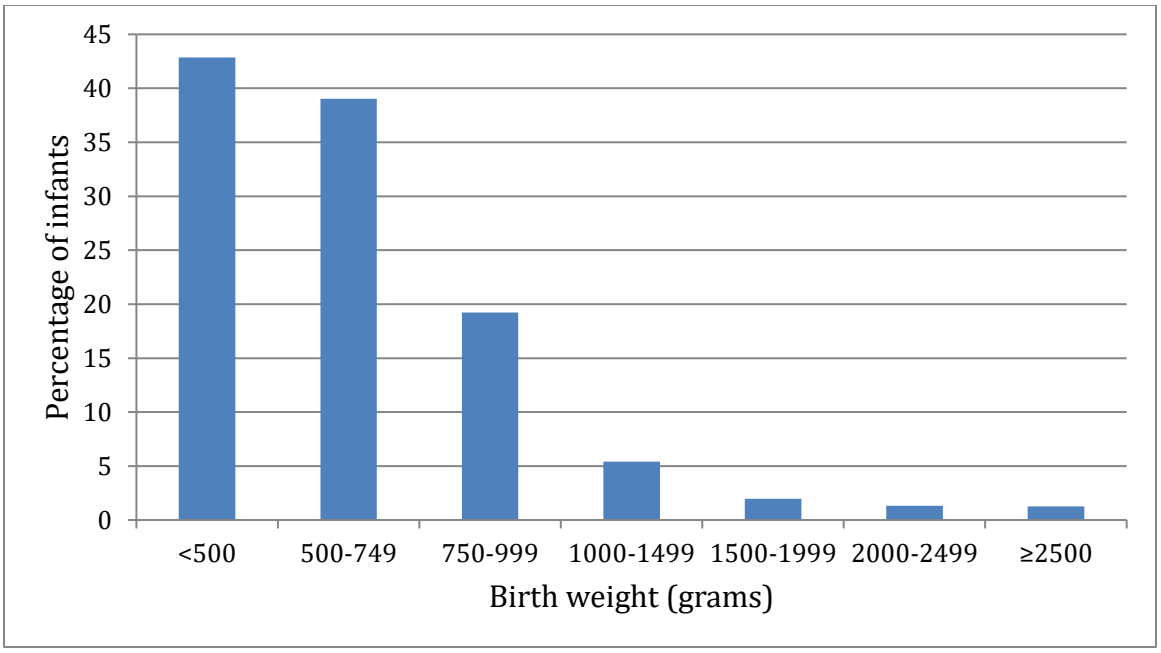
Presentation #10
Late onset sepsis rates: All GA



GA at birth (completed weeks)	Total number	Number of deaths in the first 2 days after birth	Number of neonates survived beyond day 2 after birth	Number of neonates with at least one infection	Number of neonates with more than one infection	Among neonates who survived day 2, percentage with at least one infection	Total number of organisms	Organisms					
								CONS	E. Coli	Staph aureus	Fungal	Virus	Other
<25	351	29	322	158	46	49	230	88	34	35	17	8	48
25-26	515	8	507	125	22	25	150	67	23	23	1	2	34
27-28	783	7	776	84	16	11	107	44	15	15	3	4	26
29-30	1 118	3	1 115	51	7	5	63	30	9	8	1	2	13
31-32	1 554	13	1 541	30	3	2	39	17	10	2	0	0	10
33-34	2 027	6	2 021	28	2	1	31	13	8	3	1	1	5
35-36	2 295	6	2 289	30	2	1	33	18	0	3	0	4	8
≥37	5 851	33	5 818	71	6	1	79	40	7	2	1	9	20
Total included	**14 494**	**105**	**14 389**	**577**	**104**	**4**	**732**	**317**	**106**	**91**	**24**	**30**	**164**
Missing	0												
Total # of neonates	**14 494**												

COMMENTS: Late onset sepsis is defined as any positive blood and/or cerebrospinal fluid culture for bacteria, viral or fungi after 2 days of age (analysis is neonate-based). The numbers are adjusted for readmission. Among other category, top 5 organisms were: Klebsiella (n=36), Enterococci (n=27), GBS (n=24), Bacillus (n=18) Enterobacter (n=6). Virus category includes Cytomegalovirus (n=14), Herpes simplex virus (n=8), Parechovirus (n=4), Enterovirus (n=3), Human herpesvirus 6 (n=1).
Note: In 2020, the coding for CONS and Staph Aureus were revised which has led to a change in proportion of each.

Presentation #11
Late onset sepsis rates: All BW



BW (grams)	Total number	Number of deaths in the first 2 days after birth	Number of neonates survived beyond day 2 after birth	Number of neonates with at least one infection	Number of neonates with more than one infection	Among neonates who survived day 2, percentage with at least one infection	Total number of organisms	Organisms					
								CONS	E. Coli	Staph aureus	Fungal	Virus	Other
<500	58	9	49	21	11	43	42	21	3	5	2	3	8
500-749	479	23	456	178	41	39	238	95	32	38	14	7	52
750-999	649	4	645	124	27	19	158	68	26	26	1	3	34
1000-1499	1 735	15	1 720	93	14	5	112	45	18	11	5	3	30
1500-1999	2 254	9	2 245	44	4	2	54	27	11	6	1	0	9
2000-2499	2 459	11	2 448	32	1	1	34	18	7	0	0	2	7
≥2500	6 860	34	6 826	85	6	1	94	43	9	5	1	12	24
Total included	**14 494**	**105**	**14 389**	**577**	**104**	**4**	**732**	**317**	**106**	**91**	**24**	**30**	**164**
Missing (BW)	0												
Total # of neonates	**14 494**												

COMMENTS: Late onset sepsis is defined as any positive blood and/or cerebrospinal fluid culture for bacteria, viral or fungi after 2 days of age (analysis is neonate-based). The numbers are adjusted for readmission. Among other category, top 5 organisms were: Klebsiella (n=36), Enterococci (n=27), GBS (n=24), Bacillus (n=18) Enterobacter (n=6). Virus category includes Cytomegalovirus (n=14), Herpes simplex virus (n=8), Parechovirus (n=4), Enterovirus (n=3), Human herpesvirus 6 (n=1).
Note: In 2020, the coding for CONS and Staph Aureus were revised which has led to a change in proportion of each.

Presentation #12
Other diagnoses / interventions / procedures: All GA

Characteristics		Missing		GA at birth (completed weeks)						
				≤25	**26 - 28**	**29 - 30**	**31 - 32**	**33 - 36**	**≥37**	**Total**
Total				605	1044	1118	1554	4322	5851	14494
Prophylactic	Indomethacin	4	N	92	49	1	1	0	0	143
			%	15.2	4.7	0.1	0.1	0.0	0.0	1.0
	Probiotics	4	N	419	778	798	895	556	139	3585
			%	69.4	74.6	71.4	57.6	12.9	2.4	24.7
RDS	Unknown	14	N	0	4	5	7	22	10	48
			%	0.0	0.4	0.5	0.5	0.5	0.2	0.3
	Uncertain		N	3	12	22	40	75	64	216
			%	0.5	1.2	2.0	2.6	1.7	1.1	1.5
	None		N	14	111	237	708	3481	5518	10069
			%	2.3	10.7	21.2	45.6	80.6	94.4	69.5
	Definite		N	586	913	853	797	743	255	4147
			%	97.2	87.8	76.4	51.4	17.2	4.4	28.6
Surfactant in first 30 min			N	130	73	26	16	12	4	261
			%	21.5	7.0	2.3	1.0	0.3	0.1	1.8
Surfactant in first 60 min			N	276	194	79	43	32	6	630
			%	45.6	18.6	7.1	2.8	0.7	0.1	4.3
Surfactant in first 120 min			N	411	327	180	92	64	21	1095
			%	67.9	31.3	16.1	5.9	1.5	0.4	7.6
Surfactant after 120 minutes			N	144	380	288	240	299	190	1541
			%	23.8	36.4	25.8	15.4	6.9	3.3	10.6
Surfactant at any time			N	555	707	468	332	363	211	2636
			%	91.7	67.7	41.9	21.4	8.4	3.6	18.2
Surfactant dose > 1	% out of surfactant at any time		N	304	230	86	50	53	26	749
			%	54.8	32.5	18.4	15.1	14.6	12.3	28.4
Method of surfactant (first dose only among the neonates who received surfactant)*	Endotracheal		N	479	522	315	234	296	181	2027
			%	86.3	73.8	67.3	70.5	81.5	85.8	76.9
	LISA/MIST		N	36	157	135	89	52	17	486
			%	6.5	22.2	28.9	26.8	14.3	8.1	18.4
	Other*		N	40	28	18	9	15	13	123
			%	7.2	4.0	3.9	2.7	4.1	6.2	4.7
Pneumothorax diagnosis		4	N	53	45	33	56	120	374	681
			%	8.8	4.3	3.0	3.6	2.8	6.4	4.7
Pneumothorax treatment**	No intervention		N	9	7	5	13	63	256	353
			%	17.0	15.6	15.2	23.2	52.5	68.5	51.8
	Needle drainage		N	29	25	15	24	35	77	205
			%	54.7	55.6	45.5	42.9	29.2	20.6	30.1
	Chest tube		N	31	29	25	30	43	71	229
			%	58.5	64.4	75.8	53.6	35.8	19.0	33.6
Seizures	Definite /suspected	13	N	30	23	16	17	106	404	596
			%	5.0	2.2	1.4	1.1	2.5	6.9	4.1

* "Other" includes other method of surfactant, surfactant method unknown (i.e. "unknown" checked) and method missing (i.e. "method" left blank).

** One neonate can have multiple treatments. Denominators for treatment were based on the number of neonates who had pneumothorax.

Presentation #12 (continued)
Other diagnoses / interventions / procedures: All GA

Characteristics		Missing		GA at birth (completed weeks)						
				≤25	26 - 28	29 - 30	31 - 32	33 - 36	≥37	Total
Total				605	1044	1118	1554	4322	5851	14494
Operations	Thoracotomy	4	N	4	10	1	10	16	29	70
			%	0.7	1.0	0.1	0.6	0.4	0.5	0.5
	Laparotomy	4	N	63	53	31	21	58	97	323
			%	10.4	5.1	2.8	1.4	1.3	1.7	2.2
	Ostomy		N	2	6	4	5	7	14	38
			%	0.3	0.6	0.4	0.3	0.2	0.2	0.3
	Reservoir/Drain	4	N	17	16	9	1	19	38	100
			%	2.8	1.5	0.8	0.1	0.4	0.7	0.7
	VP shunt	4	N	10	11	8	2	6	17	54
			%	1.7	1.1	0.7	0.1	0.1	0.3	0.4
Gastro-intestinal perforation	Spontaneous	17	N	31	23	8	4	10	7	83
			%	5.2	2.2	0.7	0.3	0.2	0.1	0.6
	NEC related		N	20	15	4	2	3	3	47
			%	3.3	1.4	0.4	0.1	0.1	0.1	0.3
Acquired stricture		4	N	6	5	5	1	2	3	22
			%	1.0	0.5	0.5	0.1	0.1	0.1	0.2
Exchange transfusion		4	N	1	1	2	2	7	12	25
			%	0.2	0.1	0.2	0.1	0.2	0.2	0.2
Congenital anomaly*	None		N	388	739	907	1322	3577	4330	11263
			%	64.1	70.8	81.1	85.1	82.8	74.0	77.7
	Minor		N	200	265	174	178	480	868	2165
			%	33.1	25.4	15.6	11.5	11.1	14.8	14.9
	Major		N	17	40	37	54	265	653	1066
			%	2.8	3.8	3.3	3.5	6.1	11.2	7.4

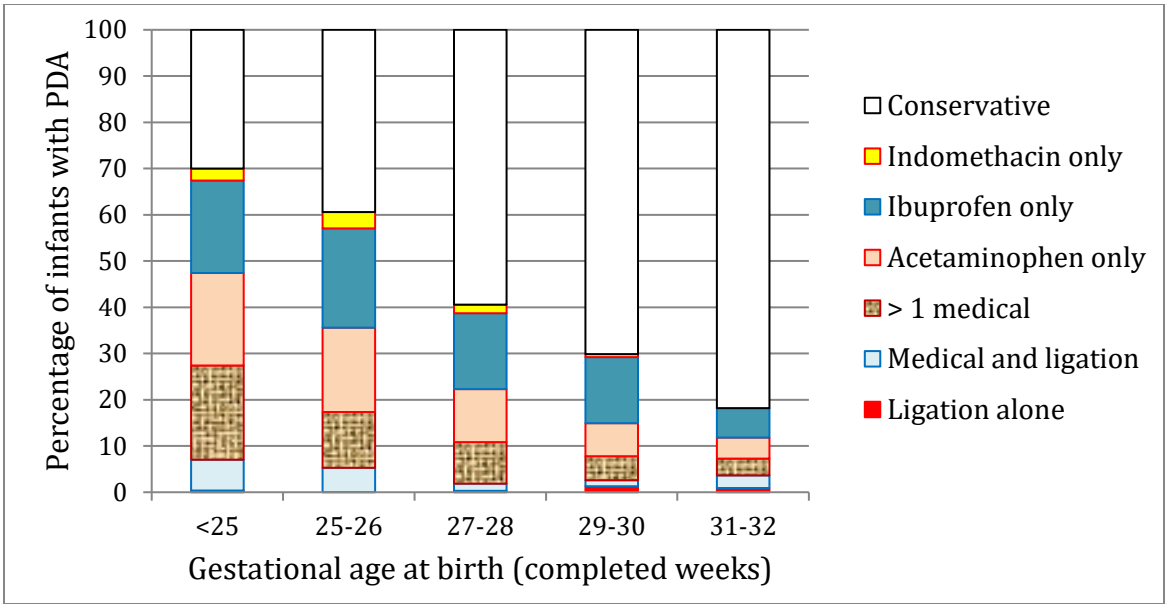
*A list of major anomalies can be found in the 2013 annual report, pages 124-127. It is available via the following link:
http://www.canadianneonatalnetwork.org/Portal/LinkClick.aspx?fileticket=lreR0871sjA%3d&tabid=39

Section D.3

Analyses based on number of eligible very preterm (GA <33 weeks) or very low birth weight (BW <1 500g) neonates

These included data from 4 321 eligible very preterm neonates and 2 921 eligible VLBW neonates.

Presentation #13
Patent ductus arteriosus (PDA) treatments: GA <33 weeks



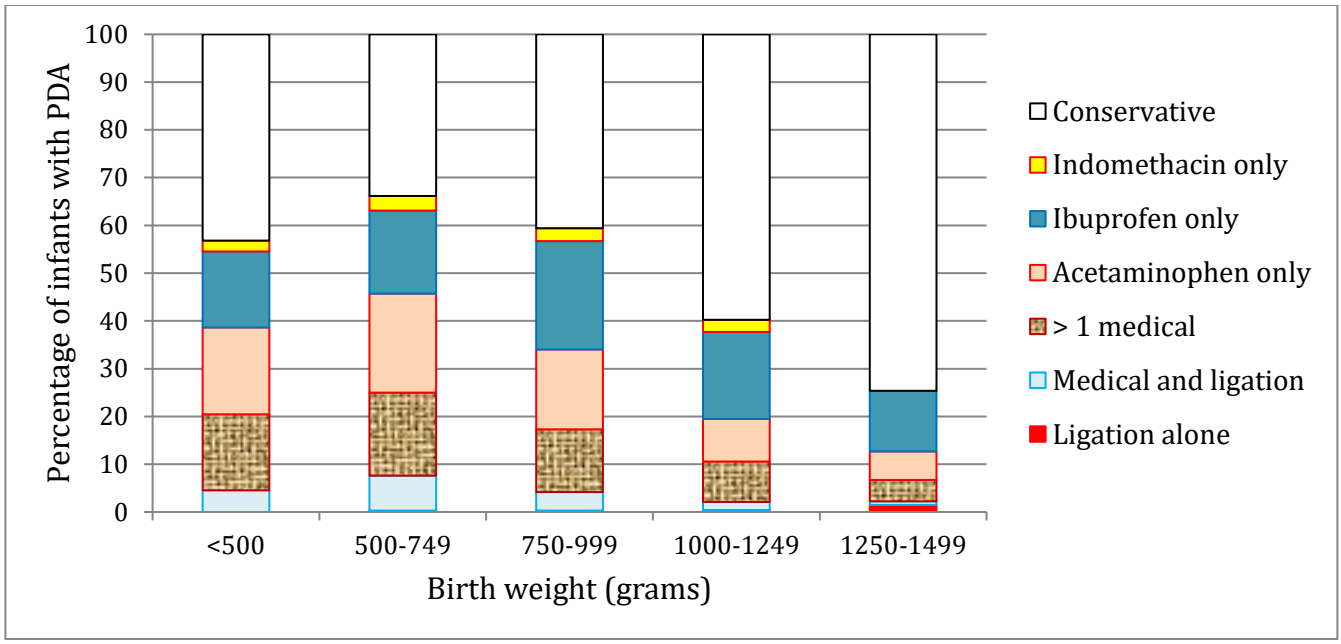
Birth GA (completed weeks)		Total	Missing data on PDA	PDA unknown	No PDA	Neonates with PDA	Treatment†						
							Conservative	Indo	Ibu	Acetaminophen	> 1 medical*	Medical and ligation#	Ligation alone
<25	**N**	351	0	10	71	270	81	7	54	54	55	18	1
	%						30%	3%	20%	20%	20%	7%	0%
25-26	**N**	515	2	2	171	340	134	12	73	62	41	18	0
	%						39%	4%	21%	18%	12%	5%	0%
27-28	**N**	783	2	3	455	323	192	6	53	37	29	5	1
	%						59%	2%	16%	11%	9%	2%	0%
29-30	**N**	1118	1	7	956	154	108	1	22	11	8	2	2
	%						70%	1%	14%	7%	5%	1%	1%
31-32	**N**	1554	2	8	1434	110	90	0	7	5	4	3	1
	%						82%	0%	6%	5%	4%	3%	1%
Total neonates included	**N**	4321	7	30	3087	1197	605	26	209	169	137	46	5
	%						51%	2%	17%	14%	11%	4%	0%

†The percentage of neonates receiving each PDA treatment was calculated using the total number of neonates diagnosed with PDA as the denominator.
*>1 medical = 2 or 3 of (Indomethacin or Ibuprofen or Acetaminophen)
#Medical and ligation = Ligation + at least one of the drugs (Indomethacin or Ibuprofen or Acetaminophen)

Out of 46 Medical and ligation = surgical (31), device close (17)
Out of 5 Ligation alone = surgical (3), device closure (2)

COMMENTS: Specific reasons for treatment with indomethacin and frequency of repeat course of medical treatment (when same drug was used) were not recorded. Excludes indomethacin prophylaxis started on the first day of age. Neonates were identified as without PDA if there was no clinical suspicion of PDA.

Presentation #14
Patent ductus arteriosus (PDA) treatments: BW <1500g



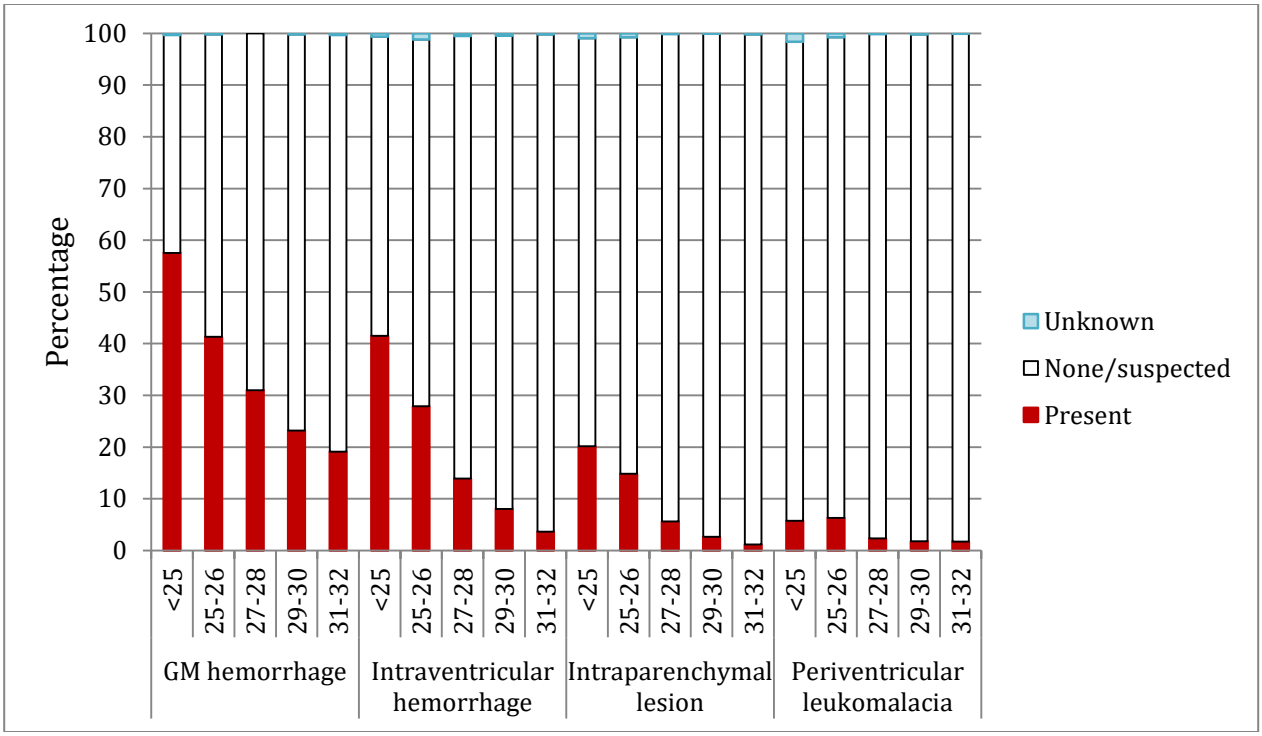
BW (grams)		Total	Missing data on PDA	PDA information unknown	No PDA	Neonates with PDA	Treatment†						
							Conservative	Indo	Ibu	Acetaminophen	> 1 medical*	Medical and ligation#	Ligation alone
<500	**N**	58	0	3	11	44	19	1	7	8	7	2	0
	%						43%	2%	16%	18%	16%	5%	0%
500-749	**N**	479	1	5	145	328	111	10	57	68	57	24	1
	%						34%	3%	17%	21%	17%	7%	0%
750-999	**N**	649	1	4	309	335	136	9	76	56	44	13	1
	%						41%	3%	23%	17%	13%	4%	0%
1000-1249	**N**	793	1	2	554	236	141	6	43	21	20	4	1
	%						60%	3%	18%	9%	8%	2%	0%
1250-1499	**N**	942	2	8	798	134	100	0	17	8	6	1	2
	%						75%	0%	13%	6%	4%	1%	1%
Total neonates included	**N**	2921	5	22	1817	1077	507	26	200	161	134	44	5
	%						47%	2%	19%	15%	12%	4%	0%

† The percentage of neonates receiving each PDA treatment was calculated using the total number of neonates diagnosed with PDA as the denominator.
*>1 medical = 2 or 3 of (Indomethacin or Ibuprofen or Acetaminophen)
#Medical and ligation = Ligation + at least one of the drugs (Indomethacin or Ibuprofen or Acetaminophen)

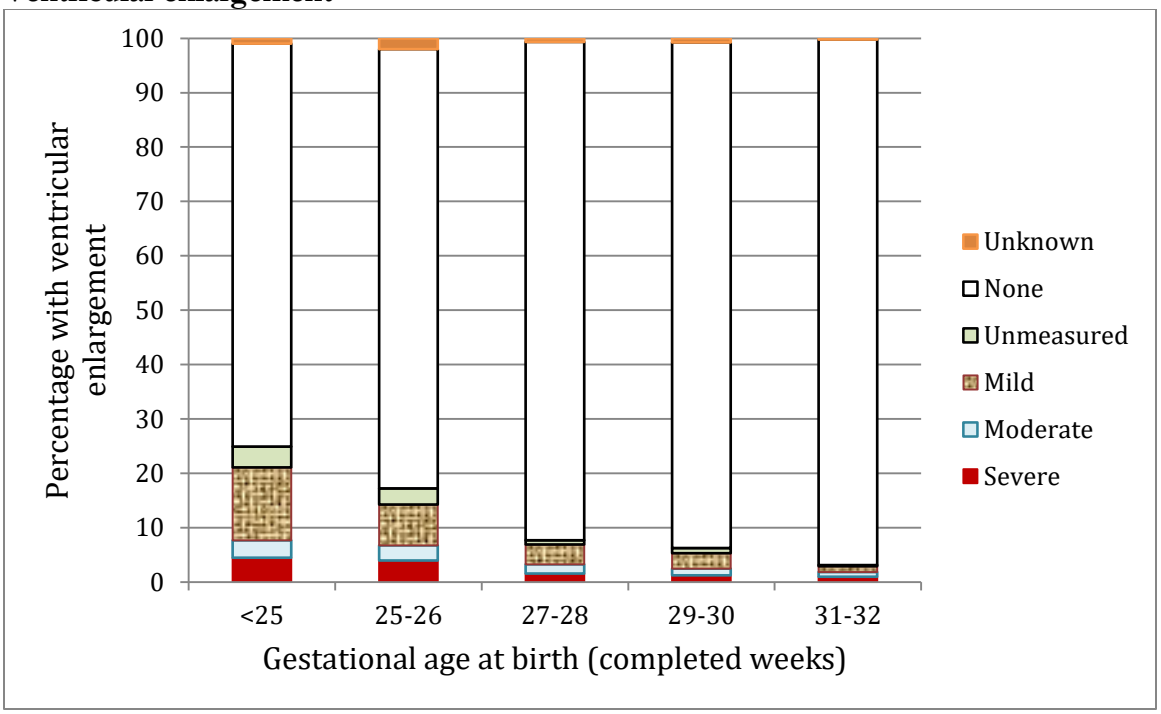
Out of 44 Medical and ligation = surgical (29), device close (17)
Out of 5 Ligation alone = surgical (3), device closure (2)

COMMENTS: Specific reasons for treatment with indomethacin and frequency of a repeat course of medical treatment (when same drug was used) were not recorded. Data excludes indomethacin prophylaxis started on the first day of age. Neonates were identified as without PDA if there was no clinical suspicion of PDA.

Presentation #15
Neuroimaging findings: GA <33 weeks



Ventricular enlargement



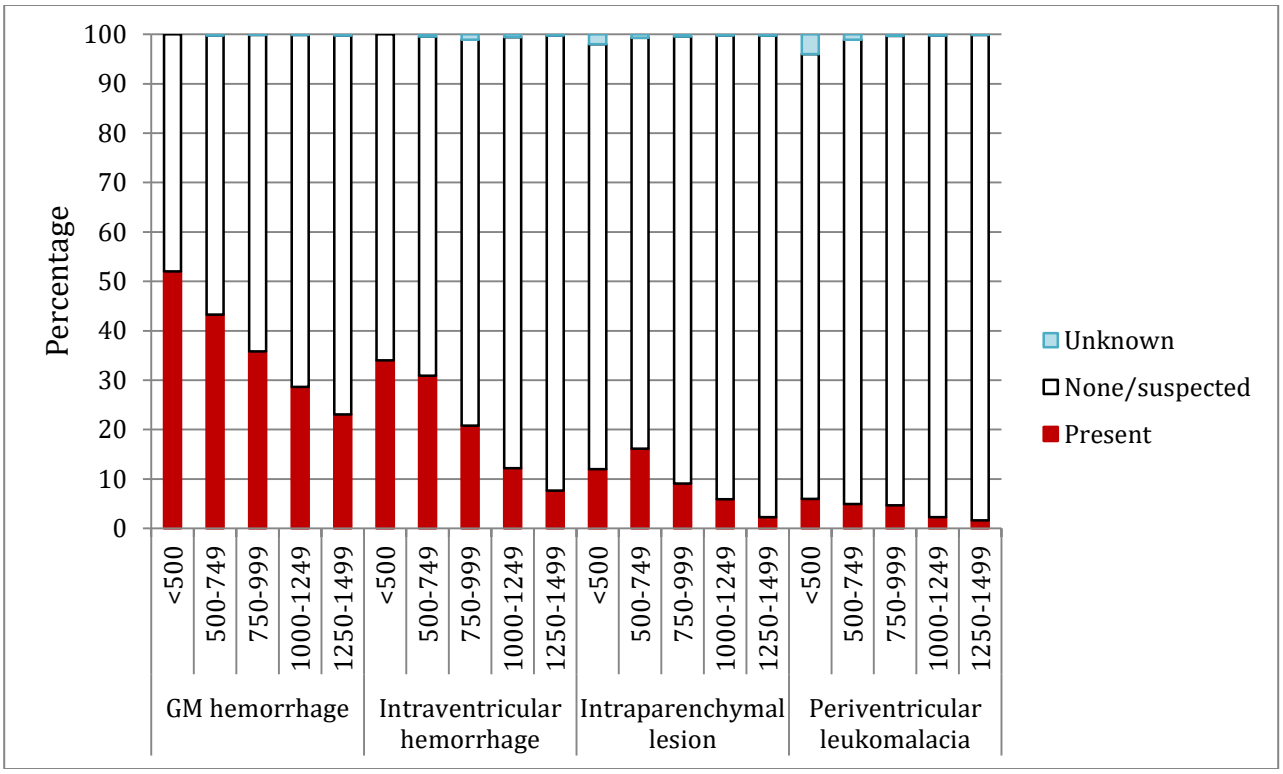
See page 144 for classifications of ventricular enlargement.

Presentation #15 (continued)
Neuroimaging findings: GA <33 weeks

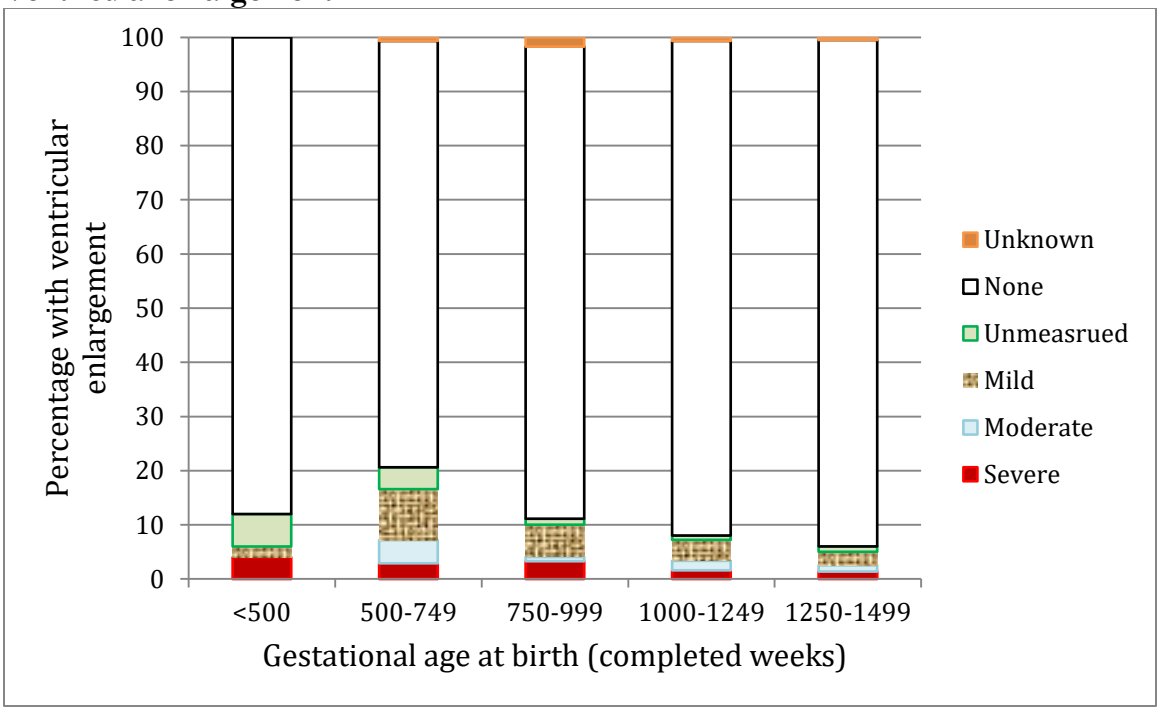
GA at birth (completed weeks)		Total	Neuro-imaging available	Neuroimaging findings																	
				GM hemorrhage			Intraventricular hemorrhage			Ventricular enlargement						Intraparenchymal lesion			Periventricular leukomalacia		
				Present	None/suspected	Unknown	Present	None/suspected	Unknown	Mild	Moderate	Severe	Unmeasured	None	Unknown	Present	None/suspected	Unknown	Present	None/suspected	Unknown
<25	N	351	313	180	132	1	130	181	2	42	10	14	12	232	3	63	247	3	18	290	5
	%			58%	42%	0%	42%	58%	1%	13%	3%	4%	4%	74%	1%	20%	79%	1%	6%	93%	2%
25-26	N	515	506	209	296	1	141	359	6	38	14	20	15	408	10	75	427	4	32	470	4
	%			41%	59%	0%	28%	71%	1%	8%	3%	4%	3%	81%	2%	15%	84%	1%	6%	93%	1%
27-28	N	783	768	238	530	0	107	657	4	28	13	12	6	703	5	43	724	1	18	749	1
	%			31%	69%	0%	14%	86%	1%	4%	2%	2%	1%	92%	1%	6%	94%	0%	2%	98%	0%
29-30	N	1118	1057	245	810	2	85	967	5	30	13	13	10	983	8	28	1028	1	19	1036	2
	%			23%	77%	0%	8%	91%	0%	3%	1%	1%	1%	93%	1%	3%	97%	0%	2%	98%	0%
31-32	N	1554	932	178	751	3	34	895	2	10	8	9	2	900	2	11	918	2	16	914	1
	%			19%	81%	0%	4%	96%	0%	1%	1%	1%	0%	97%	0%	1%	99%	0%	2%	98%	0%
Total number of neonates	N	4321	3576	1050	2519	7	497	3059	19	148	58	68	45	3226	28	220	3344	11	103	3459	13
	%			29%	70%	0%	14%	86%	1%	4%	2%	2%	1%	90%	1%	6%	94%	0%	3%	97%	0%

Note: Neuroimaging findings were not mutually exclusive, i.e. one neonate may have had more than one finding.
See page 144 for classifications of ventricular enlargement.

Presentation #16
Neuroimaging findings: BW <1500g



Ventricular enlargement



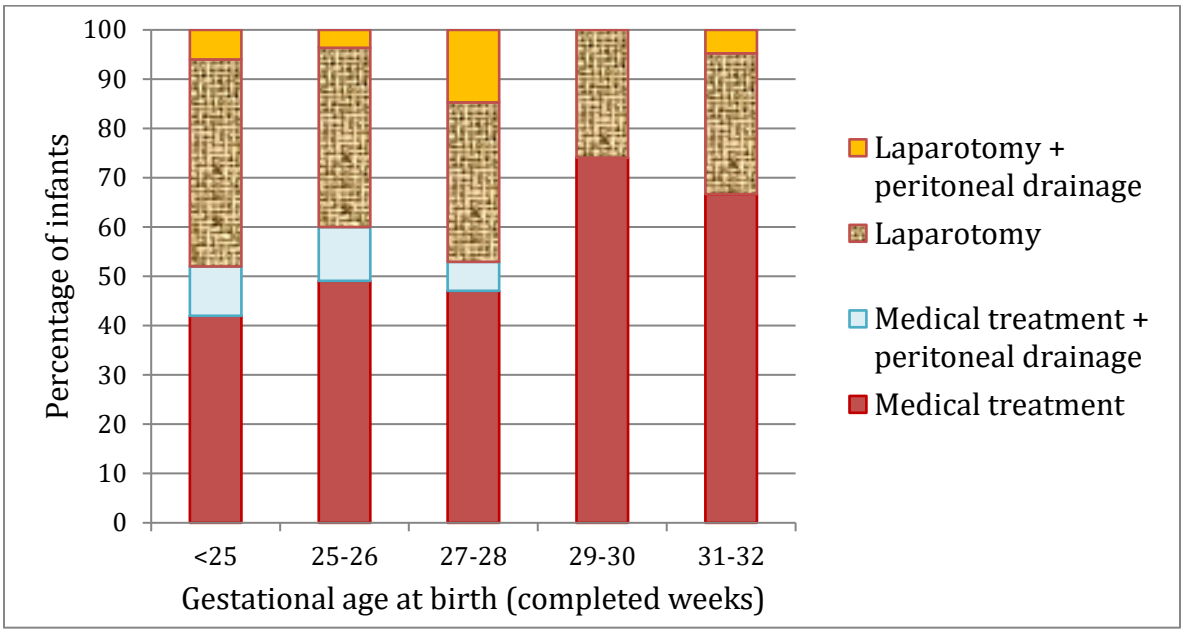
See page 144 for classifications of ventricular enlargement.

Presentation #16 (continued)
Neuroimaging findings: BW <1500g

BW (grams)		Total	Neuro-imaging available	Neuroimaging findings																	
				GM hemorrhage			Intraventricular hemorrhage			Ventricular enlargement						Intraparenchymal lesion			Periventricular leukomalacia		
				Present	None/suspected	Unknown	Present	None/suspected	Unknown	Mild	Moderate	Severe	Unmeasured	None	Unknown	Present	None/suspected	Unknown	Present	None/suspected	Unknown
<500	N	58	50	26	24	0	17	33	0	1	0	2	3	44	0	6	43	1	3	45	2
	%			52%	48%	0%	34%	66%	0%	2%	0%	4%	6%	88%	0%	12%	86%	2%	6%	90%	4%
500-749	N	479	446	193	252	1	138	306	2	42	19	13	18	351	3	72	371	3	22	419	5
	%			43%	57%	0%	31%	69%	0%	9%	4%	3%	4%	79%	1%	16%	83%	1%	5%	94%	1%
750-999	N	649	639	229	409	1	133	499	7	38	5	21	7	556	11	58	578	3	30	607	2
	%			36%	64%	0%	21%	78%	1%	6%	1%	3%	1%	87%	2%	9%	90%	0%	5%	95%	0%
1000-1249	N	793	747	214	532	1	91	652	4	29	13	12	6	682	5	44	701	2	17	728	2
	%			29%	71%	0%	12%	87%	1%	4%	2%	2%	1%	91%	1%	6%	94%	0%	2%	97%	0%
1250-1499	N	942	798	184	612	2	61	735	2	20	9	11	8	745	4	18	778	2	13	784	1
	%			23%	77%	0%	8%	92%	0%	3%	1%	1%	1%	93%	1%	2%	97%	0%	2%	98%	0%
Total neonates	N	2921	2680	846	1829	5	440	2225	15	130	46	59	42	2378	23	198	2471	11	85	2583	12
	%			32%	68%	0%	16%	83%	1%	5%	2%	2%	2%	89%	1%	7%	92%	0%	3%	96%	0%

Note: Neuroimaging findings were not mutually exclusive, i.e. one neonate may have more than one finding.
See page 144 for classifications of ventricular enlargement.

Presentation #17
Necrotizing enterocolitis (NEC) treatments: GA <33weeks



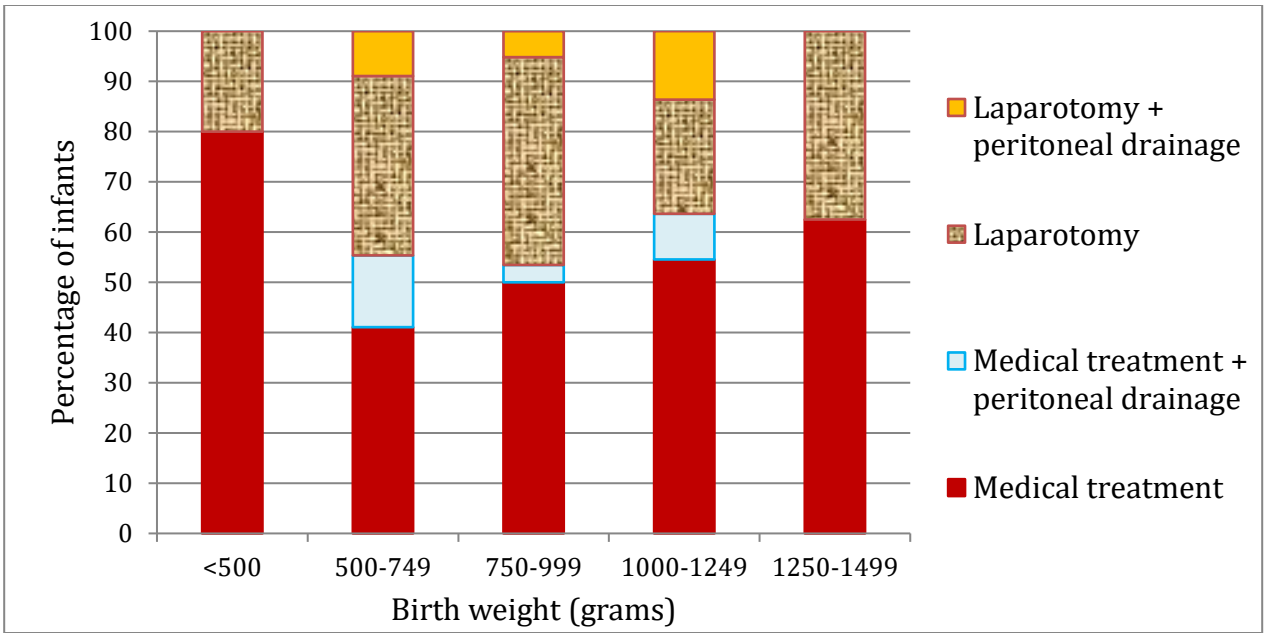
GA at birth (completed weeks)		Total number of neonates	Missing data on NEC	No NEC	NEC*	Neonates with necrotizing enterocolitis**				Death among infants with NEC**
						Medical treatment only	Medical + peritoneal drainage	Laparotomy	Peritoneal drainage + Laparotomy	
<25	N	351	1	300	50	21	5	21	3	23
	%			86%	14%	42%	10%	42%	6%	46%
25-26	N	515	2	458	55	27	6	20	2	17
	%			89%	11%	49%	11%	36%	4%	31%
27-28	N	783	3	746	34	16	2	11	5	6
	%			96%	4%	47%	6%	32%	15%	18%
29-30	N	1118	1	1090	27	20	0	7	0	8
	%			98%	2%	74%	0%	26%	0%	30%
31-32	N	1554	2	1531	21	14	0	6	1	2
	%			99%	1%	67%	0%	29%	5%	10%
Total number of neonates	N	4321	9	4125	187	98	13	65	11	56
	%			96%	4%	52%	7%	35%	6%	30%

*The percentage of neonates with NEC was calculated using the total number of neonates in the same GA category with data available on NEC as the denominator.
**The percentages were calculated using the total number of neonates in the same GA category that had NEC as the denominator.

COMMENTS: NEC is identified according to the following criteria: a) definite pneumatosis (air within the bowel wall) or portal/hepatic gas as diagnosed by x-ray or ultrasound, or b) if there is a surgical or autopsy diagnosis of NEC. Diagnoses of 'suspected NEC' or x-rays showing pneumoperitoneum without pneumatosis are not classified as NEC.

Number (%) of neonates with NEC and GA > 33 weeks:
GA 33 - 36 weeks: 29 neonates (0.7%)
GA ≥ 37 weeks: 22 neonates (0.4%)

Presentation #18
Necrotizing enterocolitis (NEC) treatments: BW <1500 g



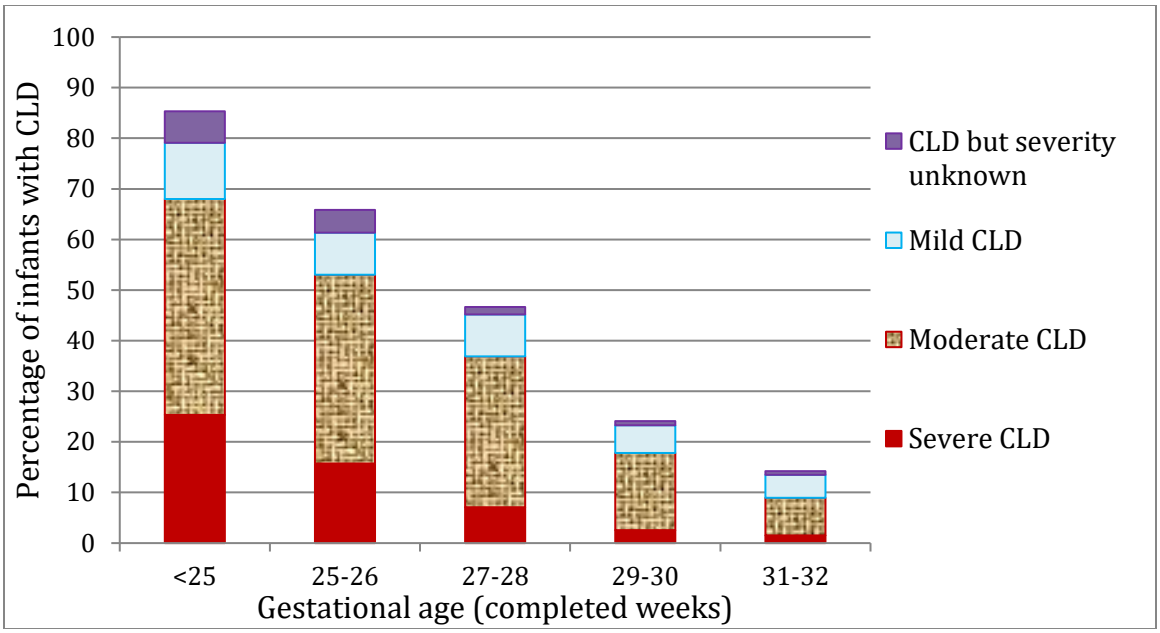
Birth weight (grams)		Total number of neonates	Missing data on NEC	No NEC	NEC*	Neonates with necrotizing enterocolitis**				Death among infants with NEC**
						Medical treatment only	Medical + peritoneal drainage	Laparotomy	Peritoneal drainage + laparatomy	
<500	N	58	0	53	5	4	0	1	0	3
	%			91%	9%	80%	0%	20%	0%	60%
500-749	N	479	2	421	56	23	8	20	5	26
	%			88%	12%	41%	14%	36%	9%	46%
750-999	N	649	2	589	58	29	2	24	3	15
	%			91%	9%	50%	3%	41%	5%	26%
1000-1249	N	793	1	770	22	12	2	5	3	5
	%			97%	3%	55%	9%	23%	14%	23%
1250-1499	N	942	2	924	16	10	0	6	0	2
	%			98%	2%	63%	0%	38%	0%	13%
Total number of neonates	N	2921	7	2757	157	78	12	56	11	51
	%			95%	5%	50%	8%	36%	7%	32%

*The percentage of neonates with NEC was calculated using the total number of neonates in the same GA category with data available on NEC as the denominator.
** The percentages were calculated using the total number of neonates in the same GA category that had NEC as the denominator.

COMMENTS: NEC is identified according to the following criteria: a) definite pneumatosis (air within the bowel wall) or portal/hepatic gas as diagnosed by x-ray or ultrasound, or b) if there is a surgical or autopsy diagnosis of NEC. Diagnoses of 'suspected NEC' or x-rays showing pneumoperitoneum without pneumatosis are not classified as NEC.

Number (%) of neonates with NEC and BW > 1500g:
BW 1500 - 2499g: 52 neonates (1.1%)
BW ≥ 2500g: 29 neonates (0.4%)

Presentation #19
Chronic lung disease (CLD) at 36 weeks post menstrual age (PMA) or discharge: GA <33 weeks

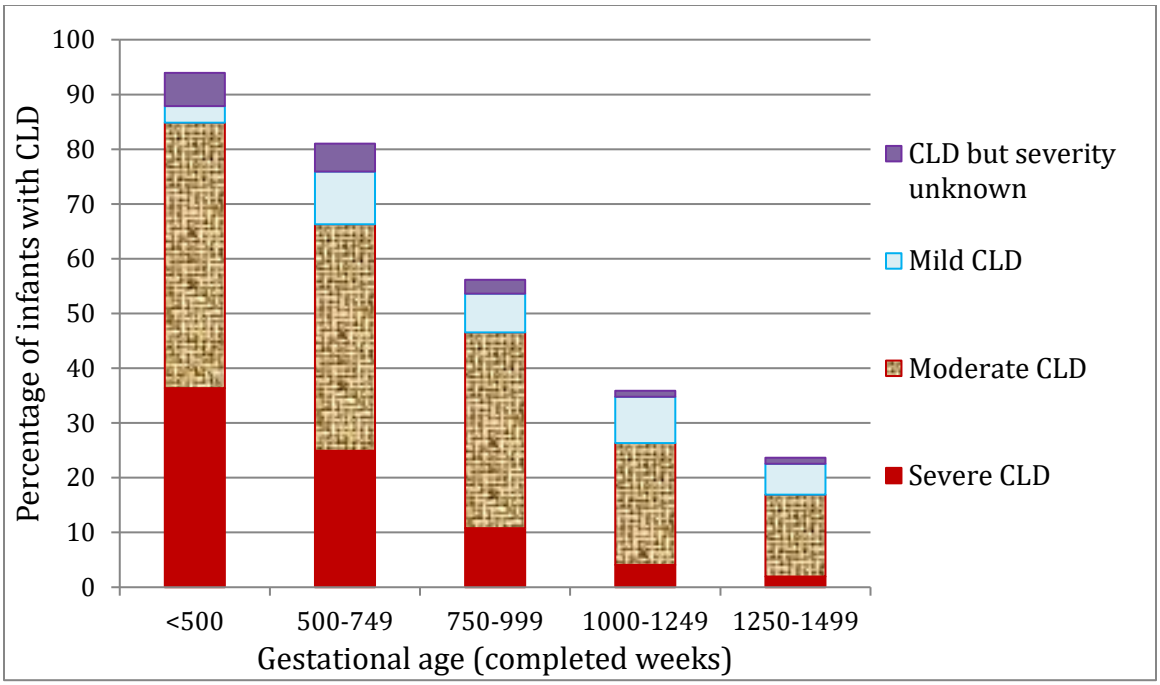


GA	Total number of neonates	Number of neonates who died before 36 weeks PMA	Number of surviving neonates whose respiratory support is unknown*	CLD from**	Number of neonates with known results	Number of neonates with severe CLD, N (%)	Number of neonates with moderate CLD, N (%)	Number of neonates with mild CLD, N (%)	Number of neonates with CLD but severity unknown, N (%)	Number of neonates without CLD, N (%)
<25	351	126	0	36w	199	54 (27)	83 (42)	20 (10)	14 (7)	28 (14)
				Disch	26	3 (12)	13 (50)	5 (19)	0	5 (19)
25-26	515	70	0	36w	319	65 (20)	131 (41)	29 (9)	11 (3)	83 (26)
				Disch	126	5 (4)	35 (28)	8 (6)	9 (7)	69 (55)
27-28	783	34	1	36w	439	51 (12)	149 (34)	41 (9)	5 (1)	193 (44)
				Disch	309	2 (1)	74 (24)	21 (7)	6 (2)	206 (67)
29-30	1 118	21	2	36w	443	24 (5)	87 (20)	40 (9)	6 (1)	286 (65)
				Disch	652	4 (1)	80 (12)	20 (3)	3 (0)	545 (84)
31-32	1 554	26	9	36w	634	18 (3)	67 (11)	54 (9)	7 (1)	488 (77)
				Disch	885	5 (1)	46 (5)	15 (2)	4 (0)	815 (92)
Total	4 321	277	12	36w	2034	212 (10)	517 (25)	184 (9)	43 (2)	1078 (53)
				Disch	1998	19 (1)	248 (12)	69 (3)	22 (1)	1640 (82)

COMMENTS: See page 145 for the definition of severity of CLD.
*unknown = first admission was after 36 weeks' PMA
** w = weeks' PMA, Disch = Status based on discharge status prior to 36 weeks' PMA

Note: Percentages of neonates with CLD were calculated based on the total number of neonates in the same GA category with known CLD results.

Presentation #20
Chronic lung disease (CLD) at 36 weeks post menstrual age (PMA) or discharge: BW < 1500g

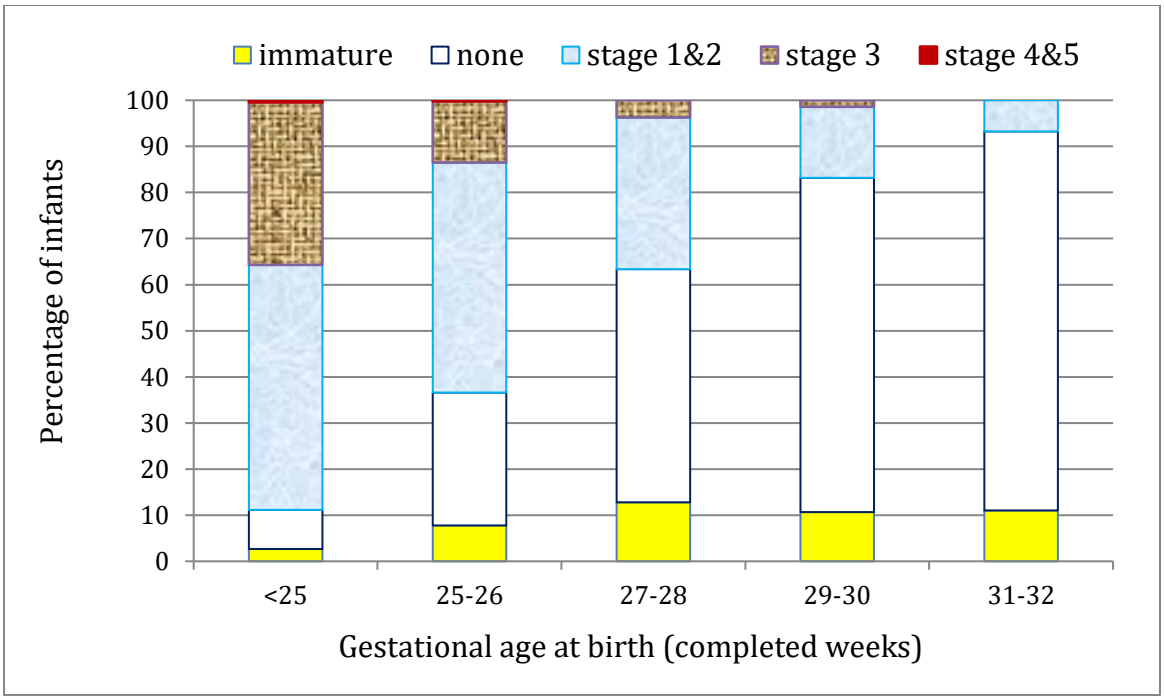


BW	Total number of neonates	Number of neonates who died before 36 weeks' PMA	Number of surviving neonates whose respiratory support is unknown*	CLD from**	Number of neonates with known results	Number of neonates with severe CLD, N (%)	Number of neonates with moderate CLD, N (%)	Number of neonates with mild CLD, N (%)	Number of neonates with CLD but severity unknown, N (%)	Number of neonates without CLD, N (%)
<500	58	25	0	36w	27	9 (33)	13 (48)	1 (4)	2 (7)	2 (7)
				Disch	6	3 (50)	3 (50)	0	0	0
500-749	479	126	0	36w	297	86 (29)	125 (42)	28 (9)	15 (5)	43 (14)
				Disch	56	2 (4)	21 (38)	6 (11)	3 (5)	24 (43)
750-999	649	56	0	36w	411	62 (15)	164 (40)	29 (7)	8 (2)	148 (36)
				Disch	182	2 (1)	48 (26)	13 (7)	7 (4)	112 (62)
1000-1249	793	58	2	36w	375	27 (7)	99 (26)	37 (10)	4 (1)	208 (55)
				Disch	358	3 (1)	64 (18)	25 (7)	4 (1)	262 (73)
1250-1499	942	126	0	36w	353	13 (4)	60 (17)	35 (10)	6 (2)	239 (68)
				Disch	463	3 (1)	62 (13)	11 (2)	3 (1)	384 (83)
Total	2 921	391	2	36w	1463	197 (13)	461 (32)	130 (9)	35 (2)	640 (44)
				Disch	1065	13 (1)	198 (19)	55 (5)	17 (2)	782 (73)

COMMENTS: See page 145 for the definition of severity of CLD.
*unknown = first admission was after 36 weeks' PMA
** w = weeks' PMA, Disch = Discharge prior to 36 weeks' PMA

Note: Percentages of neonates with CLD were calculated based on the total number of neonates in the same GA category with known CLD results.

Presentation #21
Retinopathy of prematurity (ROP) staging: GA <33 weeks

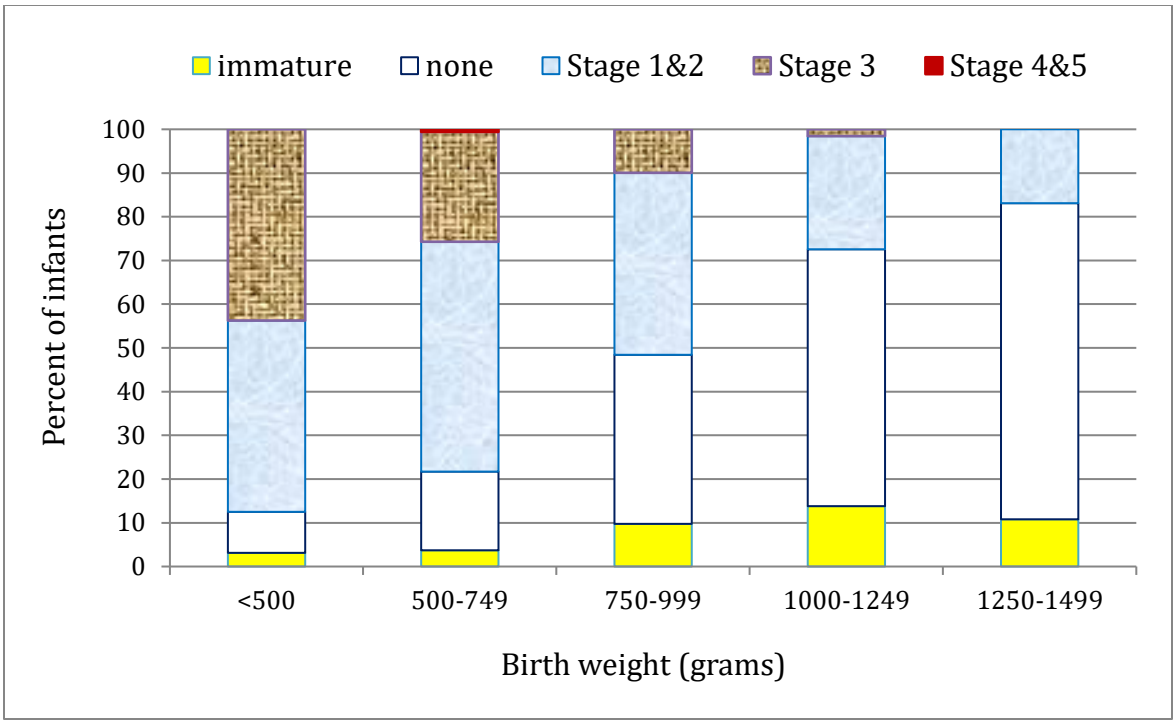


GA (completed weeks)		Total number of neonates	Number of neonates alive at 6 weeks of age	Number of neonates with known eye examination results	Retinopathy of prematurity*				
					Immature	None	Stages 1 & 2	Stage 3	Stages 4 & 5
<25	N	351	234	224	6	19	119	79	1
	%				3%	8%	53%	35%	0%
25-26	N	515	450	437	34	126	218	58	1
	%				8%	29%	50%	13%	0%
27-28	N	783	750	617	79	312	203	23	0
	%				13%	51%	33%	4%	0%
29-30	N	1 118	1 097	571	61	414	88	8	0
	%				11%	73%	15%	1%	0%
31-32	N	1 554	1 527	163	18	134	11	0	0
	%				11%	82%	7%	0%	0%
Total neonates included	N	4 321	4 058	2 012	198	1005	639	168	2
	%				10%	50%	32%	8%	0%

***The percentage of neonates diagnosed with each stage of ROP was calculated using the total number of neonates in the same GA category with known eye examination results as the denominator.**

COMMENTS: ROP is defined according to the International Classification of Retinopathy of Prematurity (ICROP) and includes the highest level of ROP in either eye. More advanced stages may have been detected in neonates transferred from network sites to level II sites or units. **Caution should be used when interpreting these data.**

Presentation #22
Retinopathy of prematurity (ROP) staging: BW< 1500 g

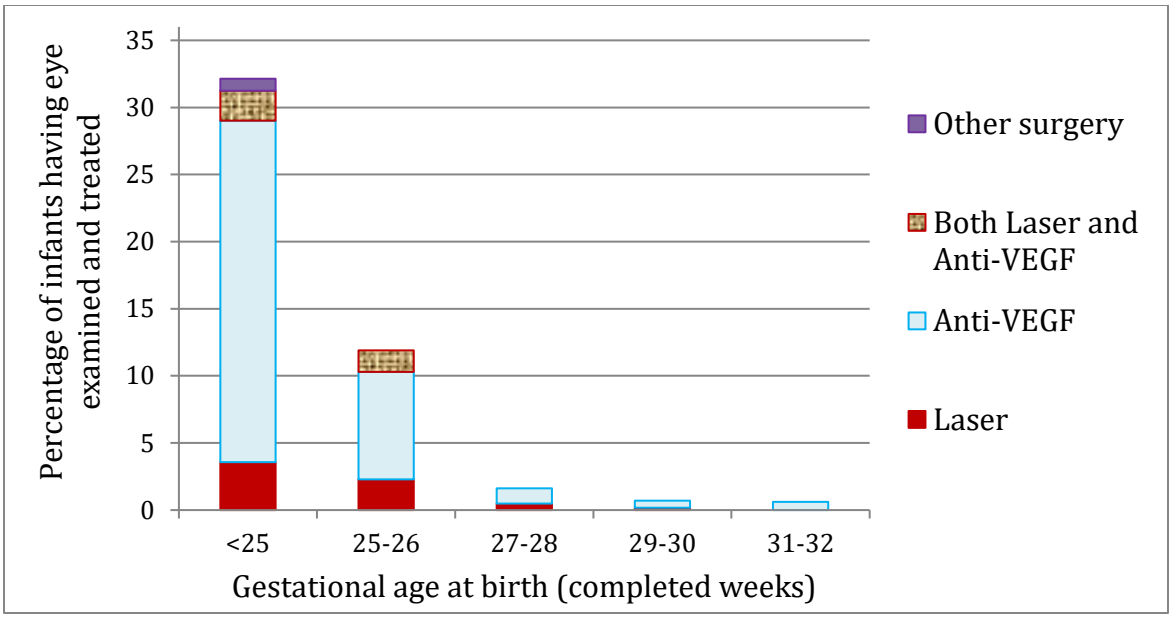


BW (grams)		Total number of neonates	Number of neonates alive at 6 weeks of age	Number of neonates with known eye examination results	Retinopathy of prematurity*				
					Immature	None	Stages 1 & 2	Stage 3	Stages 4 & 5
<500	N	58	34	32	1	3	14	14	0
	%				3%	9%	44%	44	0
500-749	N	479	364	350	13	63	184	88	2
	%				4%	18%	53%	25	1
750-999	N	649	603	543	53	210	226	54	0
	%				10%	39%	42%	10	0
1000-1249	N	793	760	514	71	302	133	8	0
	%				14%	59%	26%	2	0
1250-1499	N	942	924	361	39	261	61	0	0
	%				11%	72%	17%	0	0
Total neonates included	N	2 921	2 685	1 800	177	839	618	164	2
	%				10%	47%	34%	9	0

***The percentage of neonates diagnosed with each stage of ROP was calculated using the total number of neonates in the same GA category with known eye examination results as the denominator.**

COMMENTS: ROP is defined according to the International Classification of Retinopathy of Prematurity (ICROP) and includes the highest level of ROP in either eye. More advanced stages may have been detected in neonates transferred from network sites to level II sites or units. **Caution should be used when interpreting these data.**

Presentation #23
Retinopathy of prematurity (ROP) treatments: GA <33 weeks

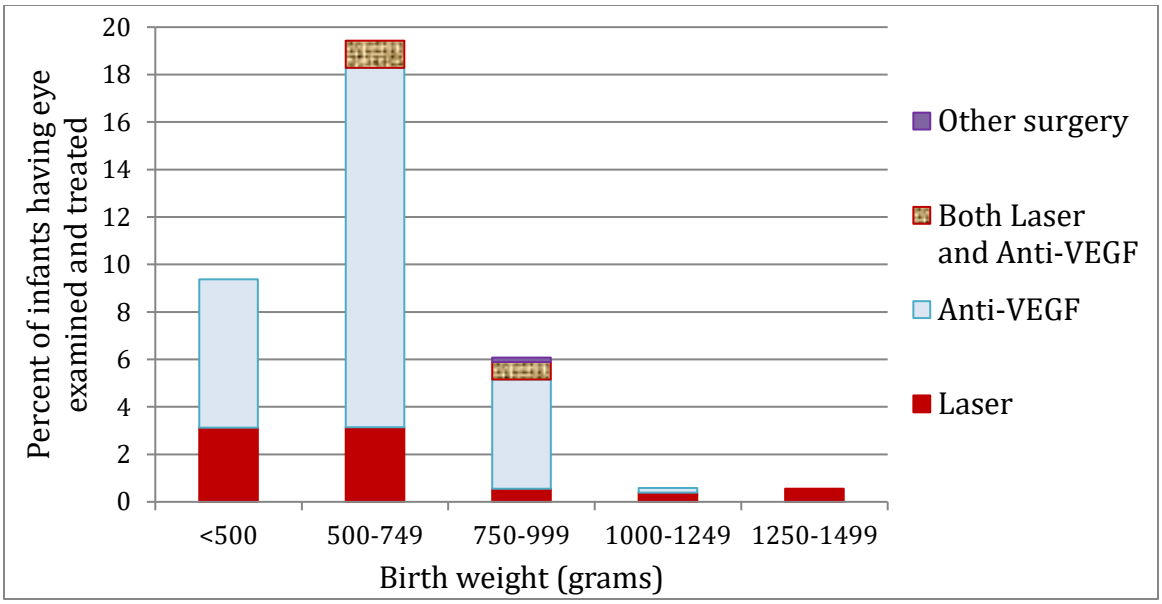


Birth GA (completed weeks)		Total number of neonates	Number of neonates with known eye examination results	Therapy for retinopathy of prematurity (ROP)*	Therapy for ROP			
					Laser	Anti-VEGF	Both Laser and Anti-VEGF	Other surgery**
<25	N	351	224	70	8	57	5	2
	%			31%				
25-26	N	515	437	52	10	35	7	0
	%			12%				
27-28	N	783	617	10	3	7	0	0
	%			2%				
29-30	N	1 118	571	4	1	3	0	0
	%			1%				
31-32	N	1 554	163	1	0	1	0	0
	%			1%				
Total neonates included	N	4 321	2 012	137	22	103	12	2
	%			7%				

***The percentage of neonates who received ROP therapy was calculated using the total number of neonates in the same GA category with known eye examination results as the denominator.**
****Infants who had other surgery may have one or both of Laser and Anti-VEGF treatments.**

COMMENTS: ROP is defined according to the International Classification of Retinopathy of Prematurity (ICROP) and includes the highest level of ROP in either eye. More advanced stages may have been detected in neonates transferred from network sites to level II sites or units. **Caution should be used when interpreting these data as some neonates did not have eye examination data.**

Presentation #24
Retinopathy of prematurity (ROP) treatments: BW <1500 g



BW (grams)		Total number of neonates	Number of neonates with known eye examination results	Therapy for retinopathy of prematurity (ROP)*	Therapy for ROP			
					Laser	Anti-VEGF	Both Laser and Anti-VEGF	Other surgery
<500	N	58	32	12	0	10	2	0
	%			38%				
500-749	N	479	350	84	12	65	7	2
	%			24%				
750-999	N	649	543	34	7	25	2	0
	%			6%				
1000-1249	N	793	514	6	3	2	1	0
	%			1%				
1250-1499	N	942	361	0	0	0	0	0
	%			0%				
Total neonates included	N	2 921	1 800	136	22	102	12	2
	%			8%				

***The percentage of neonates who received ROP therapy was calculated using the total number of neonates in the same GA category with known eye examination results as the denominator.**
****Infants who had other surgery may have one or both of Laser and Anti-VEGF treatments.**

COMMENTS: ROP is defined according to the International Classification of Retinopathy of Prematurity (ICROP) and includes the highest level of ROP in either eye. More advanced stages may have been detected in neonates transferred from network sites to level II sites or units. **Caution should be used when interpreting these data as some neonates did not have eye examination data.**

Presentation #25
Select major morbidity: GA <33 weeks

GA	Number of neonates	Number survived until discharge / transfer (%)	Major morbidity[a] (%)	CLD[b] (%)	Severe ROP[c] (%)	Severe neurological injury[d] (%)	NEC[e] (%)	Late onset sepsis [f]
<24	154	87 (56)	116 (75)	79 (91)	51 (59)	22 (17)	15 (10)	78 (51)
24	189	129 (68)	159 (84)	106 (81)	46 (37)	37 (21)	31 (16)	75 (40)
25	245	201 (82)	190 (76)	143 (70)	47 (24)	48 (20)	33 (14)	74 (30)
26	251	223 (89)	172 (69)	135 (60)	21 (11)	30 (12)	19 (8)	47 (19)
27	336	314 (93)	214 (64)	173 (55)	16 (6)	30 (9)	22 (7)	48 (14)
28	417	404 (97)	178 (43)	156 (39)	7 (3)	18 (4)	11 (3)	33 (8)
29	509	496 (97)	173 (34)	138 (28)	5 (2)	25 (5)	11 (2)	22 (4)
30	572	564 (99)	137 (24)	102 (18)	4 (2)	14 (3)	13 (2)	22 (4)
31	618	607 (98)	116 (19)	92 (15)	1 (1)	16 (3)	3 (0)	11 (2)
32	882	872 (99)	128 (15)	101 (12)	0	8 (2)	16 (2)	16 (2)
Total neonates	4 173	3 897 (93)	1 583 (38)	1 225 (31)	198 (11)	248 (7)	174 (4)	426 (10)

Inclusion criteria for these analyses:

1. Neonate born at <33 weeks GA without major congenital anomaly
2. Denominators were based on the number of neonates with available data and those without major congenital anomaly (see below for details)

Definitions:

[a] Major morbidity was counted as any one of the following

1. CLD (any grade)
2. Severe ROP
3. Severe neurological injury (IVH ≥ grade 3 and/or PVL)
4. Stage 2 or 3 NEC
5. Late onset sepsis

[b] Chronic lung disease was defined as per presentation #19 of any grade

[c] Severe ROP was defined as ROP stage 3,4,5 and/or those with ROP treatment (laser or intraocular injection).

[d] Severe neurological injury was defined as IVH ≥ grade 3 and/or PVL

[e] NEC defined as stage 2 or 3

[f] Late onset sepsis was defined as any positive blood and/or cerebrospinal fluid culture after 2 days of age. Analysis was neonate-based.

Denominator used in percentage calculation for each morbidity

Survivor until discharge: All neonates
Major morbidities: All neonates
CLD: First admission before 36 week PMA and survived beyond 36 week PMA
ROP: Eye exam done and results available
NEC: All neonates
Late onset sepsis: All neonates

E. Site Comparisons

E.1. Site Comparisons – Care Practices

Presentation #26
Prenatal and delivery room care practices: GA<29 weeks:
Site specific crude rates* (inborn only)

Site	Number of neonates	Antenatal $MgSO_4$			Antenatal steroids[a]	Timing of cord clamping			Admission temperature			Apgar <5 at 5 minutes
	N	Yes	No	Missing	Completed course within last week prior to birth[a]	<30 sec	30 – 59	≥60	<36.5	36.5-37.2	>37.2	
xxviii	≤ 20	83.3	16.7	0.0	33.3	0.0	50.0	16.7	66.7	0.0	33.3	20.0
xx		100.0	0.0	0.0	28.6	57.1	0.0	42.9	0.0	100.0	0.0	14.3
xiii		85.7	14.3	0.0	14.3	57.1	42.9	0.0	57.1	42.9	0.0	0.0
xxiii		100.0	0.0	0.0	72.7	27.3	27.3	45.5	18.2	63.6	18.2	27.3
viii		75.0	25.0	0.0	25.0	41.7	33.3	25.0	18.2	72.7	9.1	0.0
xii		75.0	18.8	6.3	73.3	37.5	37.5	12.5	7.7	61.5	30.8	6.3
i		81.3	18.8	0.0	56.3	31.3	43.8	25.0	12.5	68.8	18.8	0.0
xxxii		89.5	10.5	0.0	21.1	21.1	26.3	52.6	16.7	55.6	27.8	0.0
xxix	21 - 40	90.5	9.5	0.0	28.6	33.3	23.8	42.9	28.6	52.4	19.1	42.9
xxvii		73.9	8.7	17.4	43.5	30.4	17.4	52.2	56.5	39.1	4.4	26.1
ix		91.3	8.7	0.0	43.5	47.8	21.7	30.4	4.4	60.9	34.8	39.1
xxvi		87.5	12.5	0.0	41.7	25.0	20.8	54.2	54.2	45.8	0.0	16.7
iv		89.3	10.7	0.0	32.1	46.4	17.9	35.7	29.6	66.7	3.7	14.3
xix		67.9	32.1	0.0	50.0	28.6	32.1	35.7	22.2	59.3	18.5	7.1
xxxiii		90.9	9.1	0.0	36.4	66.7	24.2	6.1	84.9	6.1	9.1	6.1
xvii	41 - 70	93.0	7.0	0.0	37.2	67.4	9.3	20.9	78.8	21.2	0.0	14.0
vii		100.0	0.0	0.0	51.1	61.7	21.3	14.9	48.9	42.6	8.5	34.0
xxii		78.4	21.6	0.0	45.1	58.8	15.7	17.7	64.7	35.3	0.0	17.7
xxi		88.9	11.1	0.0	42.6	27.8	48.2	22.2	15.7	60.8	23.5	3.7
xv		94.6	5.4	0.0	35.7	35.7	42.9	19.6	25.0	51.8	23.2	7.4
iii		89.8	10.2	0.0	42.4	49.2	13.6	35.6	36.2	56.9	6.9	13.6
xxx		90.5	6.4	3.2	29.5	47.6	28.6	22.2	64.5	22.6	12.9	19.1
xxiv	> 70	84.0	16.0	0.0	42.7	64.0	2.7	24.0	5.4	59.5	35.1	12.0
xi		76.0	22.8	1.3	41.8	34.2	13.9	45.6	26.9	57.7	15.4	29.1
xviii		91.6	7.2	1.2	24.1	41.0	4.8	49.4	24.7	59.3	16.1	6.1
vi		50.5	46.2	3.2	38.7	45.2	14.0	40.9	32.6	44.6	22.8	9.7
xvi		91.3	6.8	1.9	42.7	46.6	18.5	35.0	33.3	54.6	12.1	16.5
ii		92.2	7.8	0.0	51.8	40.4	19.2	40.4	51.4	39.3	9.3	7.8
xxv		93.4	6.6	0.0	41.0	47.6	10.2	42.2	23.5	57.2	19.3	18.1
Total CNN		86.2	12.8	1.0	40.9	44.8	19.0	33.9	35.2	49.4	15.4	14.7

*Denominators were based on **inborn** neonates <29 weeks' GA admitted without major congenital anomaly.

[a] Completed course of antenatal steroids within the last week prior to birth = received at least two doses of corticosteroids for a period of 24 hours or more, but within one week of birth

These are unadjusted rates.

Presentation #27
Postnatal care practices: GA <29 weeks:
Site specific crude rates* (inborn only)

Site	Number of neonates	No mechanical ventilation at any time in first 3 days[a]	Never received mechanical ventilation[a]	Fed at any time in first 2 days of admission	Never received antimicrobials[b]	Exclusive mother's own milk feeding at discharge[c]	Exclusive formula feeding at discharge[c]
	N	%	%	%	%	%	%
xxviii	≤ 20	16.7	0.0	100.0	0.0	16.7	50.0
xx		42.9	14.3	71.4	14.3	14.3	28.6
xiii		28.6	14.3	100.0	0.0	28.6	57.1
xxiii		9.1	9.1	81.8	0.0	36.4	45.5
viii		33.3	25.0	91.7	33.3	58.3	8.3
xii		37.5	37.5	100.0	18.8	0.0	50.0
i		75.0	50.0	68.8	37.5	43.8	12.5
xxxii		42.1	36.8	47.4	15.8	47.4	31.6
xxix	21 - 40	14.3	9.5	81.0	4.8	19.1	42.9
xxvii		30.4	17.4	91.3	4.4	17.4	30.4
ix		26.1	26.1	73.9	13.0	39.1	21.7
xxvi		29.2	25.0	79.2	8.3	58.3	25.0
iv		10.7	10.7	96.4	3.6	32.1	21.4
xix		53.6	46.4	67.9	10.7	53.6	0.0
xxxiii		3.0	0.0	69.7	3.0	3.0	54.6
xvii	41 - 70	27.9	23.3	86.1	7.0	34.9	34.9
vii		27.7	21.3	51.1	0.0	25.5	27.7
xxii		23.5	15.7	86.3	5.9	19.6	41.2
xxi		18.5	18.5	63.0	9.3	51.9	13.0
xv		25.0	21.4	87.5	3.6	51.8	16.1
iii		37.3	28.8	78.0	1.7	44.1	23.7
xxx		22.2	19.1	55.6	9.5	30.2	34.9
xxiv	> 70	38.7	28.0	90.7	12.0	60.0	17.3
xi		39.2	34.2	89.9	7.6	46.8	25.3
xviii		19.3	19.3	85.5	6.0	56.6	10.8
vi		33.3	26.9	83.9	6.5	43.0	9.7
xvi		20.4	15.5	91.3	3.9	25.2	27.2
ii		46.1	41.1	90.8	7.8	64.5	9.9
xxv		57.2	44.6	86.1	6.6	62.7	7.8
Total CNN		33.5	27.2	82.1	7.3	44.4	20.8

*Denominators were based on **inborn** neonates <29 weeks' GA admitted without major congenital anomaly.

[a] Neonates either received high frequency ventilation or intermittent positive pressure ventilation.

[b] Neonates never received any antimicrobials. Prophylactic administration of trimethoprim or amoxicillin for the prevention of urinary tract infections with a suspected renal anomaly was not included as antimicrobials.

[c] Information obtained from *Discharge* screen/table of CNN database, includes discharge and transfer.

These are unadjusted rates.

Presentation #28

Proportion of babies on Invasive Mechanical Ventilation (IMV) among babies ALIVE at the specified post-natal ages (INBORN AND OUTBORN included)

- Invasive mechanical ventilation (IMV) includes any of conventional ventilation (IPPV), High Frequency Oscillatory Ventilation (HFOV) and High Frequency Jet Ventilation (HFJV)
- Denominator for each cell will be babies of the GA range *who are still alive at the specified post-natal age (and in the NICU)*
- Numerator for each cell will be babies from the GA range who are on IMV on that day *regardless of previous respiratory status* (i.e. this is ***not*** continuous days of IMV)

GA groups		**22-25 weeks' GA (N = 605)**					**26-28 weeks' GA (N = 1044)**				
Postnatal age	**Number of neonates based on GA 22-25**	**3 days**	**7 days**	**28 days**	**32 weeks CGA**	**36 weeks CGA**	**3 days**	**7 days**	**28 days**	**32 weeks CGA**	**36 weeks CGA**
CNN overall	Number alive	559	535	458	435	366	1025	1008	908	893	592
	Number on MV	461	414	262	85	32	402	277	107	71	24
	Proportion	82.5	77.4	57.2	19.5	8.7	39.2	27.5	11.8	8.0	4.1
Sites											
xxxi	1-3	100.0	100.0	100.0	0.0	100.0	100.0	100.0	0.0	0.0	0.0
xxiii		33.3	0.0	66.7	33.3	33.3	54.5	50.0	0.0	0.0	0.0
xxviii		100.0	100.0	NA	NA	NA	60.0	40.0	0.0	0.0	0.0
i		0.0	0.0	0.0	0.0	0.0	22.2	27.8	0.0	6.3	0.0
xx		100.0	100.0	100.0	100.0	100.0	45.5	45.5	36.4	36.4	0.0
v		66.7	66.7	33.3	0.0	0.0	37.5	0.0	16.7	0.0	0.0
xiii		100.0	66.7	66.7	66.7	0.0	20.0	0.0	0.0	0.0	0.0
viii	4-9	50.0	50.0	50.0	25.0	0.0	22.2	11.1	0.0	0.0	0.0
xii		50.0	25.0	0.0	0.0	0.0	37.5	25.0	6.3	0.0	0.0
xxxii		66.7	66.7	100.0	33.3	33.3	43.8	37.5	6.7	6.7	0.0
xxix		100.0	83.3	60.0	20.0	0.0	22.2	11.8	17.6	5.9	0.0
xxvi		85.7	66.7	60.0	0.0	0.0	28.6	14.3	5.0	5.0	0.0
xxxiii		100.0	100.0	83.3	40.0	0.0	89.3	82.1	46.4	39.3	7.7
iv		100.0	71.4	66.7	66.7	16.7	52.2	45.5	14.3	9.5	21.1
ix	10-25	87.5	100.0	50.0	33.3	0.0	35.7	28.6	7.1	0.0	0.0
xxvii		75.0	72.7	75.0	42.9	14.3	42.9	38.5	15.4	15.4	8.3
xix		100.0	100.0	66.7	25.0	12.5	23.8	19.0	5.0	5.0	0.0
xxii		90.0	90.0	46.2	23.1	7.7	51.2	34.1	17.1	5.0	0.0
xv		90.9	66.7	52.9	5.9	33.3	39.6	29.2	6.7	4.4	0.0
vii		95.2	94.7	80.0	50.0	23.1	41.4	31.0	14.8	11.1	0.0
xxi		100.0	77.3	66.7	11.1	0.0	54.3	51.5	23.3	16.7	0.0
xxx	26-35	90.9	90.9	73.7	5.9	0.0	61.7	54.3	20.0	6.7	5.3
xxiv		80.8	78.3	81.0	26.3	16.7	33.3	20.0	17.1	14.7	18.2
xvii		84.6	76.0	42.9	0.0	0.0	42.3	26.9	3.8	3.8	0.0
iii		80.8	80.8	40.0	5.0	5.3	46.2	34.2	10.8	2.7	6.1
xi	>35	97.1	94.1	48.3	6.9	7.4	31.3	27.1	10.9	7.1	3.4
vi		74.3	68.6	36.4	16.1	0.0	35.7	22.9	7.6	4.7	5.9
xviii		93.9	81.5	87.5	45.5	9.5	44.8	21.1	20.0	17.5	9.5
xvi		89.6	91.1	88.6	42.9	15.0	41.5	21.9	17.2	8.8	5.1
xxv		50.0	52.4	27.3	5.8	0.0	21.3	14.3	4.9	5.6	7.7
ii		81.9	78.6	50.0	12.1	7.7	33.6	15.2	2.4	1.3	0.0

Sites ii, xxxii and xvii did not have any infants in some or all of these categories.
NA = No infants in the denominator
Note that grouping of sites per number of neonates was based on the number of neonates in GA 22-25 category; and the number of corresponding neonates was not the same for GA 26-28 group.

E.2. Site Comparisons – Survival / Mortality

Presentation #29
Survival rates by site: All GA

Site	Percentage survival for each GA (completed weeks)								
	<25	25-26	27-28	29-30	31-32	33-34	35-36	≥37	Overall survival rate for sites*
Aϕ	66.7	54.5	84.2	94.4	97.4	91.7	100.0	100.0	91.7
B	50.0	88.9	100.0	100.0	96.6	100.0	100.0	99.3	98.5
C	100.0	75.0	100.0	100.0	96.4	100.0	98.6	98.5	98.5
D	0.0	57.1	90.9	100.0	97.8	100.0	100.0	98.3	97.1
Eϕ	NA	NA	NA	NA	87.5	100.0	92.9	92.0	94.4
Fϕ	57.1	80.0	100.0	100.0	94.9	100.0	100.0	94.1	93.6
G	75.0	84.4	97.1	100.0	100.0	100.0	99.4	98.1	97.9
H	100.0	NA	100.0	100.0	100.0	100.0	90.6	96.2	95.5
I	54.5	90.5	88.9	95.8	97.8	99.1	100.0	98.2	96.7
J	57.9	95.5	88.9	96.4	98.1	97.6	93.7	98.3	95.9
K	71.4	50.0	100.0	100.0	92.9	100.0	100.0	100.0	98.0
L	68.2	94.3	98.9	94.6	96.5	98.2	98.0	98.0	96.3
M	73.9	91.2	98.0	96.5	97.8	99.2	100.0	99.1	98.0
N	66.7	91.3	100.0	97.7	98.1	94.9	96.1	97.5	96.3
O	0.0	100.0	93.8	92.3	100.0	100.0	100.0	98.3	97.8
P	100.0	100.0	85.7	85.7	96.9	100.0	85.3	95.2	94.1
Q	NA	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Rϕ	66.7	78.9	95.6	100.0	95.7	NA	NA	NA	93.1
S	100.0	100.0	80.0	80.0	92.3	100.0	100.0	97.1	95.8
T	47.8	64.0	88.7	98.8	98.0	98.3	99.0	98.8	96.1
U	0.0	100.0	100.0	100.0	100.0	100.0	100.0	98.1	98.5
V	66.7	82.4	100.0	100.0	100.0	100.0	98.8	100.0	99.3
Wϕ	60.0	53.8	90.0	95.7	98.2	100.0	100.0	71.4	91.0
Xϕ	100.0	100.0	100.0	100.0	100.0	NA	NA	NA	100.0
Y	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.7
Z	50.0	100.0	100.0	100.0	100.0	100.0	98.6	100.0	98.1
AA	40.0	90.0	89.3	94.4	95.8	97.8	97.3	98.9	96.3
AB	75.0	66.7	100.0	93.8	100.0	97.7	100.0	98.0	97.6
ACϕ	56.3	91.3	94.1	100.0	100.0	100.0	NA	NA	94.3
AD	45.5	87.0	96.6	92.3	98.9	98.2	97.6	97.2	96.2
AE	73.9	90.6	94.7	99.0	100.0	100.0	100.0	100.0	96.3
AF	NA	NA	NA	100.0	100.0	100.0	100.0	100.0	100.0
AGϕ	72.7	83.8	98.0	96.1	100.0	NA	100.0	86.1	92.8
Overall survival rate for GA**	63.5	85.2	95.3	97.2	98.1	99.0	98.3	98.3	96.8

These analyses included 14 494 neonates from 33 sites. **Twenty-five sites collected data on all eligible admissions whereas eight sites (marked byϕ) collected data on selected eligible admissions only.** ϕ Please note the data collection criteria were not the same for these eight sites, and thus their rates may not be comparable with other sites.
Overall* = (number of neonates who survived per site / total number of neonates for that site)*100
Overall** = (number of neonates who survived for each GA category / total number of neonates in each GA category)*100
NA = no data available, 0 = no neonates survived, Delivery room deaths were not included

Presentation #30
Survival rates by site: All BW

Site	Percentage survival for each BW (g) category							
	<500	**500-749**	**750-999**	**1000-1249**	**1250-1499**	**1500-2499**	**≥2500**	**Overall survival rate for sites***
Aϕ	NA	66.7	73.7	83.3	96.2	96.5	100.0	91.7
B	NA	60.0	88.9	100.0	90.9	100.0	99.5	98.5
C	NA	100.0	85.7	100.0	91.7	100.0	98.2	98.5
D	0.0	33.3	75.0	90.0	95.8	100.0	98.7	97.1
Eϕ	NA	NA	NA	100.0	100.0	96.0	93.0	94.4
Fϕ	100.0	57.1	91.7	100.0	100.0	95.3	95.2	93.6
G	50.0	81.8	92.9	100.0	97.7	99.4	98.6	97.9
H	NA	100.0	NA	100.0	NA	90.0	96.6	95.5
I	100.0	63.6	95.2	96.0	95.0	99.4	98.0	96.7
J	0.0	85.7	76.9	92.0	96.0	96.7	97.8	95.9
K	0.0	71.4	92.9	94.4	100.0	98.3	100.0	98.0
L	80.0	76.8	95.7	100.0	93.8	96.8	98.5	96.3
M	50.0	78.6	95.7	93.2	98.5	99.7	99.3	98.0
N	0.0	73.3	96.6	100.0	96.0	97.2	97.1	96.3
O	NA	40.0	100.0	85.7	100.0	100.0	98.6	97.8
P	NA	100.0	100.0	77.8	100.0	94.6	94.0	94.1
Q	NA	NA	100.0	100.0	100.0	100.0	100.0	100.0
Rϕ	33.3	80.8	96.2	95.6	94.9	98.0	100.0	93.1
S	NA	100.0	100.0	71.4	100.0	96.3	97.8	95.8
T	33.3	59.3	84.6	89.8	97.1	98.4	98.8	96.1
U	NA	50.0	100.0	100.0	100.0	100.0	98.6	98.5
V	100.0	81.8	84.6	100.0	100.0	100.0	99.6	99.3
Wϕ	NA	40.0	90.9	87.5	95.2	98.6	84.6	91.0
Xϕ	NA	100.0	100.0	100.0	100.0	100.0	NA	100.0
Y	NA	100.0	100.0	100.0	100.0	100.0	99.5	99.7
Z	0.0	76.5	100.0	100.0	100.0	99.4	100.0	98.1
AA	25.0	57.9	100.0	95.7	97.6	96.7	98.3	96.3
AB	50.0	85.7	71.4	100.0	100.0	99.3	97.8	97.6
ACϕ	100.0	65.2	92.6	97.3	100.0	100.0	100.0	94.3
AD	33.3	71.4	86.8	94.7	97.9	98.4	96.9	96.2
AE	100.0	75.9	93.9	93.1	100.0	100.0	100.0	96.3
AF	NA	NA	NA	NA	100.0	100.0	100.0	100.0
AGϕ	60.0	71.7	94.9	100.0	98.1	99.0	87.8	92.8
Overall survival rate for BW**	51.7	72.7	91.8	95.2	97.6	98.6	98.2	96.8

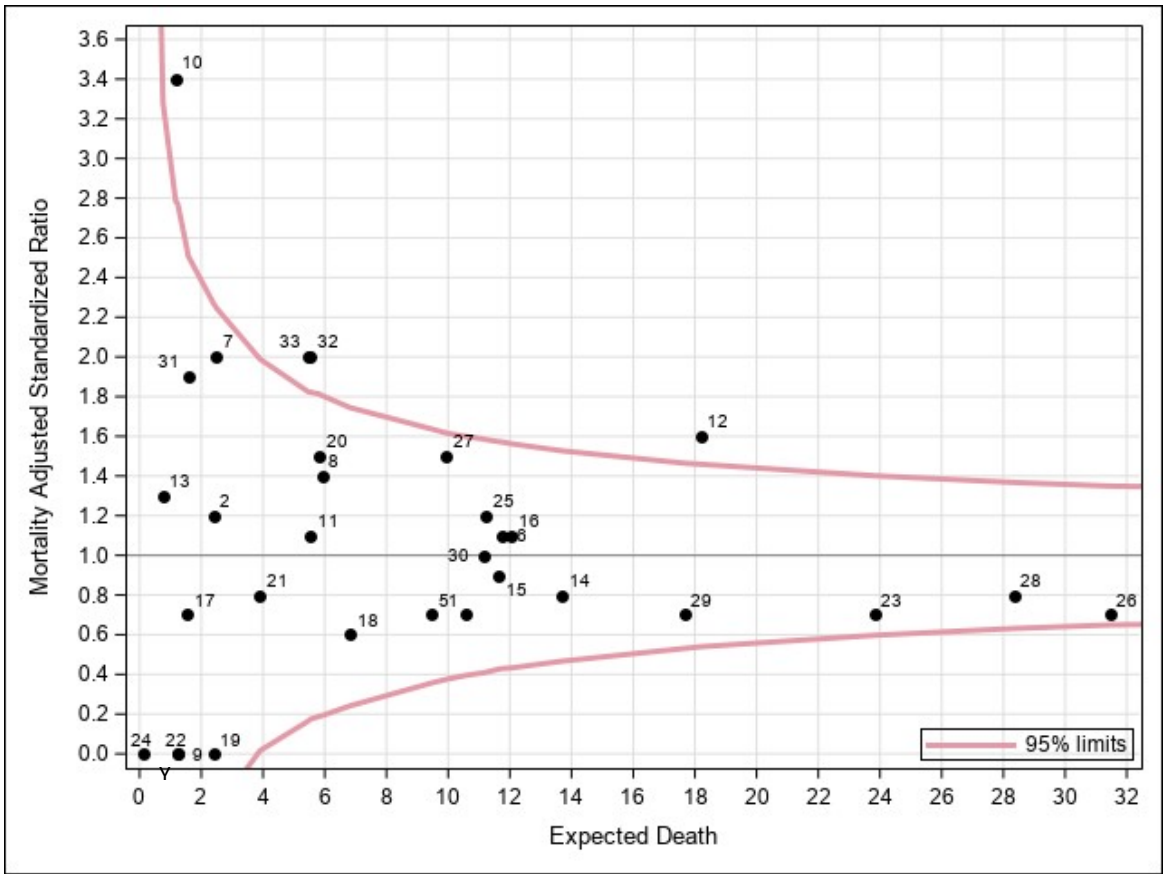
These analyses included 14 494 neonates from 33 sites. **Twenty-five sites collected data on all eligible admissions whereas eight sites (marked by**ϕ**) collected data on selected eligible admissions only.** ϕ Please note the data collection criteria were not the same for these eight sites, and thus their rates may not be comparable with other sites.
Overall* = (number of neonates who survived per site / total number of neonates for site)*100
Overall** = (number of neonates who survived for each BW category / total number of neonates in each BW category)*100
NA = no data available, 0 = no neonates survived, Delivery room deaths were not included

Presentation #31a
Mortality: GA<33 weeks: Adjusted standardized ratios by site

Site	Number of neonates	Number of deaths	Adjusted# expected number of deaths	Adjusted# standardized ratio	95% confidence interval (CI) for adjusted standardized ratio	
1	126	7	10.6	0.7	0.3	1.4
2	63	3	2.4	1.2	0.3	3.7
5	161	7	9.5	0.7	0.3	1.5
6	140	13	11.8	1.1	0.6	1.9
7	56	5	2.5	2.0	0.6	4.7
8	86	8	5.9	1.4	0.6	2.7
9	27	0	1.2	0.0	.	3.0
10	28	4	1.2	3.4	0.9	8.8
11	88	6	5.5	1.1	0.4	2.4
12	272	29	18.2	1.6	1.1	2.3
13	30	1	0.8	1.3	0.0	7.3
14	189	11	13.7	0.8	0.4	1.4
15	187	11	11.6	0.9	0.5	1.7
16	188	13	12.0	1.1	0.6	1.8
17	56	1	1.5	0.7	0.0	3.6
18	109	4	6.8	0.6	0.2	1.5
19	83	0	2.4	0.0	.	1.5
20	101	9	5.8	1.5	0.7	2.9
21	70	3	3.9	0.8	0.2	2.2
22	44	0	1.2	0.0	.	3.0
23	271	17	23.9	0.7	0.4	1.1
24	10	0	0.1	0.0	.	37.7
25	211	14	11.2	1.2	0.7	2.1
26	342	22	31.4	0.7	0.4	1.1
27	150	15	10.0	1.5	0.8	2.5
28	371	24	28.4	0.8	0.5	1.3
29	271	12	17.7	0.7	0.4	1.2
30	128	11	11.1	1.0	0.5	1.8
31	55	3	1.6	1.9	0.4	5.6
32	106	11	5.5	2.0	1.0	3.6
33	143	11	5.5	2.0	1.0	3.6

Numeric site codes were used in Presentations 31a-f and they may not correspond to other presentations in this report. Neonates with major congenital anomalies were excluded.
The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.
Note: Sites 3 and 4 were not included in this analysis due to small number of eligible neonates in this category.

Presentations #31b
Mortality: GA<33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 31a
Column 1: Numeric site codes
Column 2: Number of eligible neonates at each site (<33 weeks GA and no major anomaly)
Column 3: Number of neonates with the outcome of interest among those eligible neonates
Column 4: Expected number of neonates with outcome of interest after adjustment for GA, SGA, sex, and SNAPII > 20
Column 5: Adjusted standardized ratio calculated based on observed deaths/expected deaths
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

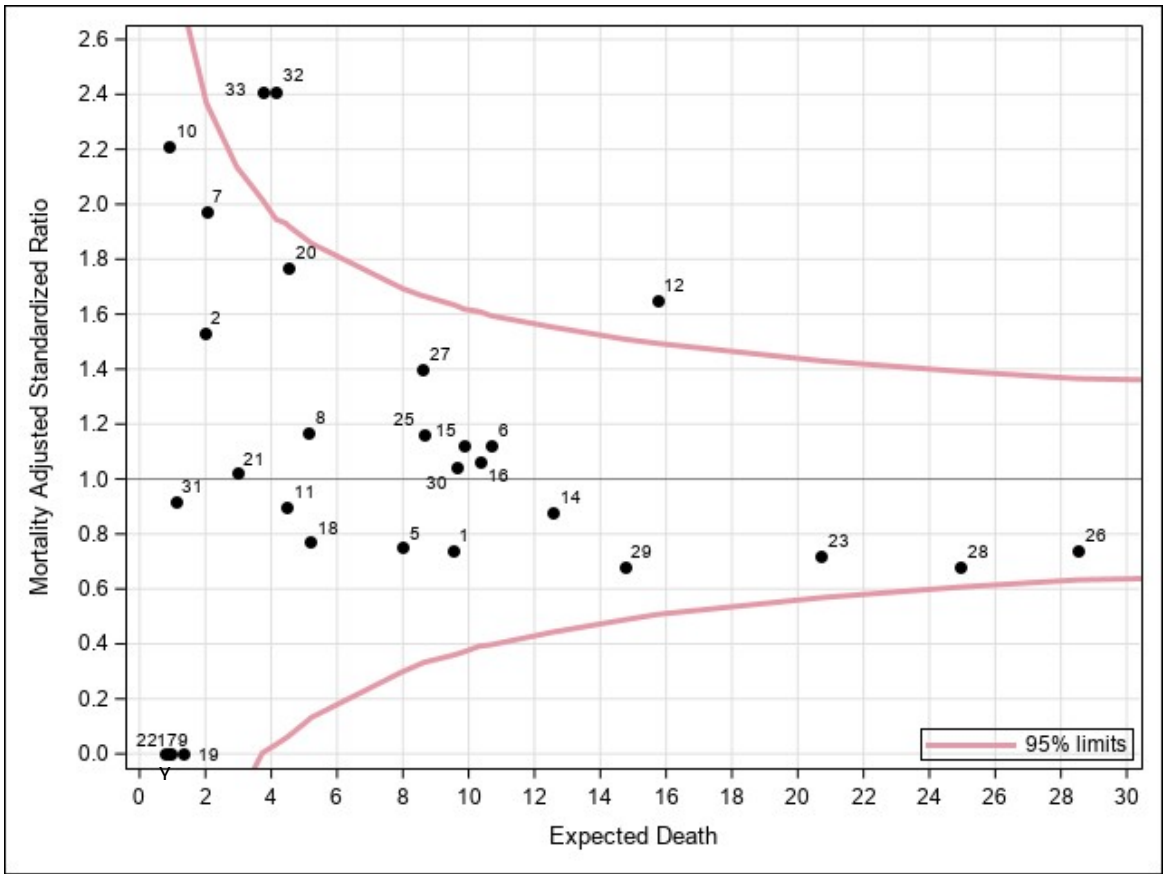
Explanation for Presentation 31b
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

Presentation #31c
Mortality: GA<29 weeks: Adjusted standardized ratios by site

Site	Number of neonates	Number of deaths	Adjusted# expected number of deaths	Adjusted# standardized ratio	95% confidence interval (CI) for adjusted standardized ratio	
1	50	7	9.5	0.7	0.3	1.5
2	22	3	2.0	1.5	0.3	4.5
5	69	6	8.0	0.8	0.3	1.6
6	66	12	10.7	1.1	0.6	2.0
7	20	4	2.0	2.0	0.5	5.1
8	32	6	5.1	1.2	0.4	2.5
9	8	0	1.0	0.0	.	3.8
10	11	2	0.9	2.2	0.2	8.0
11	28	4	4.5	0.9	0.2	2.3
12	97	26	15.8	1.6	1.1	2.4
14	85	11	12.6	0.9	0.4	1.6
15	69	11	9.9	1.1	0.6	2.0
16	78	11	10.3	1.1	0.5	1.9
17	12	0	0.9	0.0	.	4.2
18	36	4	5.2	0.8	0.2	2.0
19	19	0	1.3	0.0	.	2.8
20	27	8	4.5	1.8	0.8	3.5
21	22	3	3.0	1.0	0.2	3.0
22	13	0	0.8	0.0	.	4.8
23	111	15	20.7	0.7	0.4	1.2
25	61	10	8.6	1.2	0.6	2.1
26	183	21	28.5	0.7	0.5	1.1
27	50	12	8.6	1.4	0.7	2.4
28	180	17	24.9	0.7	0.4	1.1
29	105	10	14.7	0.7	0.3	1.2
30	59	10	9.6	1.0	0.5	1.9
31	11	1	1.1	0.9	0.0	5.1
32	28	10	4.1	2.4	1.2	4.4
33	33	9	3.7	2.4	1.1	4.6

Numeric site codes were used in Presentations 31a-f and they may not correspond to other presentations in this report.
Neonates with major congenital anomalies were excluded.
The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.
Note: Sites 3, 4, 13, 24 were excluded from the analysis due to the small number of eligible neonates.

Presentations #31d
Mortality: GA<29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 31c
Column 1: Numeric site codes
Column 2: Number of eligible neonates at each site (<29 weeks GA and no major anomaly)
Column 3: Number of neonates with the outcome of interest among those eligible neonates
Column 4: Expected number of neonates with outcome of interest after adjustment for GA, SGA, sex, and SNAPII > 20
Column 5: Adjusted standardized ratio calculated based on observed deaths/expected deaths
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

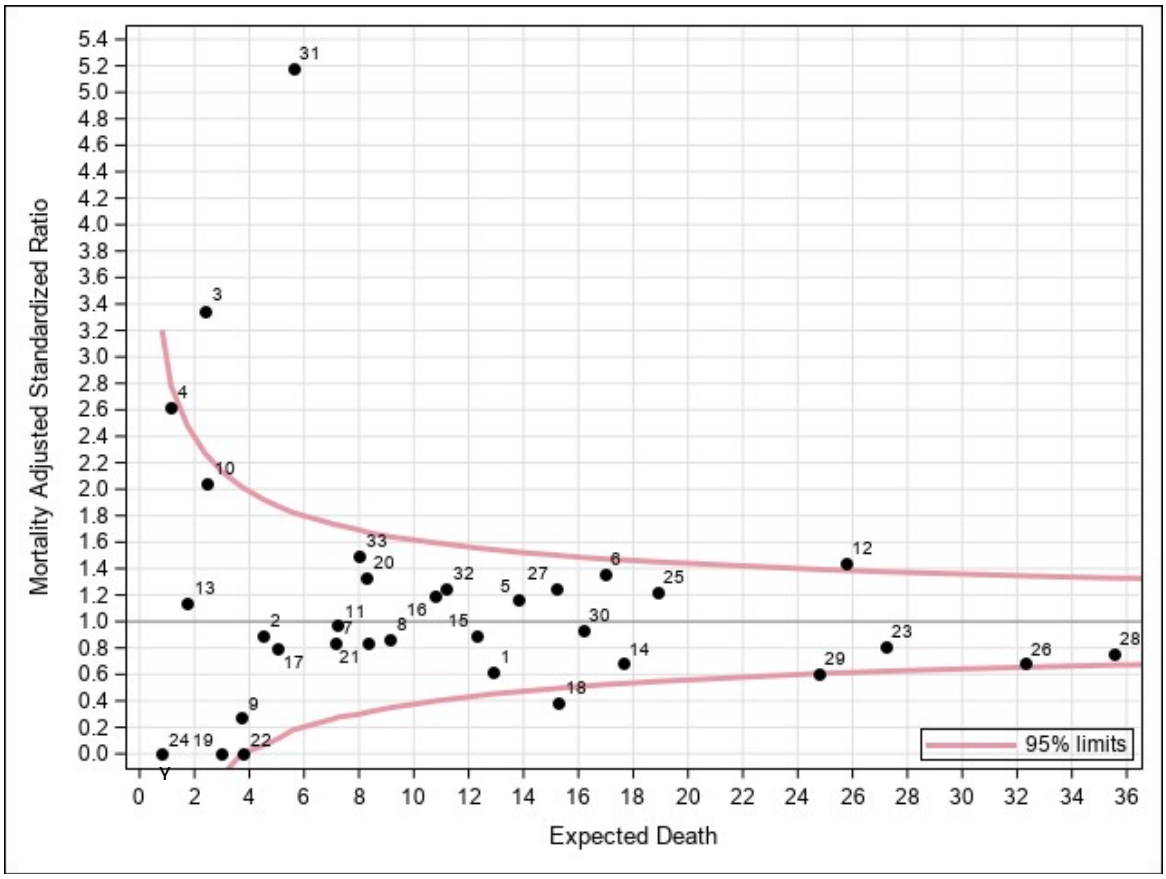
Explanation for Presentation 31d
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

Presentation #31e
Mortality: All neonates: Adjusted standardized ratios by site

Site	Number of neonates	Number of deaths	Adjusted# expected number of deaths	Adjusted# standardized ratio	95% confidence interval (CI) for adjusted standardized ratio	
1	406	8	12.9	0.6	0.3	1.2
2	332	4	4.5	0.9	0.2	2.3
3	160	8	2.4	3.4	1.4	6.6
4	66	3	1.1	2.6	0.5	7.7
5	489	16	13.8	1.2	0.7	1.9
6	621	23	17.0	1.4	0.9	2.0
7	313	6	7.1	0.8	0.3	1.8
8	389	8	9.2	0.9	0.4	1.7
9	303	1	3.7	0.3	0.0	1.5
10	108	5	2.4	2.0	0.7	4.8
11	106	7	7.2	1.0	0.4	2.0
12	953	37	25.7	1.4	1.0	2.0
13	132	2	1.8	1.1	0.1	4.1
14	829	12	17.6	0.7	0.4	1.2
15	188	11	12.3	0.9	0.4	1.6
16	188	13	10.8	1.2	0.6	2.1
17	384	4	5.0	0.8	0.2	2.0
18	791	6	15.2	0.4	0.1	0.9
19	83	0	3.0	0.0	.	1.2
20	136	11	8.3	1.3	0.7	2.4
21	358	7	8.4	0.8	0.3	1.7
22	329	0	3.8	0.0	.	1.0
23	311	22	27.2	0.8	0.5	1.2
24	92	0	0.8	0.0	.	4.5
25	721	23	18.9	1.2	0.8	1.8
26	607	22	32.3	0.7	0.4	1.0
27	624	19	15.2	1.3	0.8	2.0
28	911	27	35.5	0.8	0.5	1.1
29	904	15	24.8	0.6	0.3	1.0
30	503	15	16.2	0.9	0.5	1.5
31	448	29	5.6	5.2	3.5	7.4
32	478	14	11.2	1.3	0.7	2.1
33	165	12	8.0	1.5	0.8	2.6

Numeric site codes were used in Presentations 31a-f and they may not correspond to other presentations in this report.
Neonates with major congenital anomalies were excluded.
The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.

Presentations #31f
Mortality: All neonates: Adjusted standardized ratios by site



Explanation for Presentation 31e
Column 1: Numeric site codes
Column 2: Number of eligible neonates at each site (no major anomaly)
Column 3: Number of neonates with outcome of interest among those eligible neonates
Column 4: Expected number of neonates with the outcome of interest after adjustment for GA, SGA, sex, and SNAPII > 20
Column 5: Adjusted standardized ratio calculated based on observed deaths/expected deaths
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 31f
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

E.3. Site Comparisons –

Mortality / Morbidities

Presentation #32
Mortality/morbidities: GA<33 weeks: Site specific crude rates

Site	Number of neonates	Mortality	Severe neurological injury	Severe ROP	CLD at 36 weeks PMA or discharge*	NEC stage 2 or 3	Late onset sepsis	Mortality or severe morbidity
	N	%	%	%	%	%	%	%
S	<40	12.5	14.8	5.6	25.0	6.3	18.8	46.9
H		0.0	0.0	0.0	66.7	16.7	0.0	66.7
E		12.5	25.0	NA	33.3	0.0	12.5	50.0
AF		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Y		0.0	7.4	5.6	10.7	0.0	10.7	21.4
U		3.3	3.7	0.0	3.5	3.3	3.3	13.3
Q	40-80	0.0	7.1	2.8	11.1	0.0	6.7	20.0
C		3.5	1.9	6.7	14.6	0.0	1.8	19.3
O		8.8	3.6	4.8	22.6	3.9	10.5	33.3
P		7.0	10.2	0.0	34.0	8.8	8.8	56.1
B		6.2	8.3	13.0	14.8	3.1	13.9	27.7
AB		5.3	3.5	10.3	31.9	1.3	9.3	36.0
X	81-140	0.0	3.7	2.3	28.2	5.9	3.5	34.1
K		9.1	6.0	10.4	23.5	1.1	6.8	34.1
F		6.7	12.1	8.8	22.9	4.5	12.4	36.0
W		10.4	11.6	16.7	14.6	2.8	3.8	26.4
D		10.3	13.6	10.0	22.5	3.7	10.3	31.8
V		3.6	12.0	13.9	35.5	1.8	12.6	46.0
I		9.3	3.5	18.2	31.6	0.0	17.8	42.6
Z		5.3	6.4	6.2	25.0	2.3	6.9	33.6
A	141-200	8.9	9.7	10.1	26.7	3.4	8.2	36.3
J		9.5	13.0	6.8	25.9	3.4	18.2	39.9
AA		11.2	9.2	13.0	78.1	9.3	8.7	81.4
N		4.8	6.8	28.1	25.8	4.2	12.7	35.5
R		6.9	4.9	16.4	35.8	5.8	12.2	41.8
AC		5.8	4.5	3.3	48.6	2.6	8.9	56.5
G		5.7	10.1	10.3	28.7	2.1	13.0	39.4
AD	>200	7.3	6.6	10.8	28.9	10.9	8.2	36.8
T		10.7	6.8	22.4	34.0	5.7	12.5	45.0
M		5.3	4.5	9.1	38.2	1.8	7.0	43.0
AG		6.6	11.5	19.5	36.8	3.1	10.4	46.2
AE		6.7	7.5	15.1	23.8	7.5	10.1	37.1
L		6.9	6.9	8.9	45.2	4.8	12.2	52.0
Total CNN		7.0	7.6	11.1	32.6	4.3	10.4	41.9

Mortality or severe morbidity = Mortality prior to discharge or any of the five morbidities
*PMA: Post-menstrual age
NA = no data available
These are unadjusted rates.

Presentation #33
Mortality/morbidities: GA<29 weeks: Site specific crude rates

Site	Number of neonates	Mortality	Severe neurological injury	Severe ROP	CLD at 36 weeks PMA or discharge*	NEC stage 2 or 3	Late onset sepsis	Mortality or severe morbidity
	N	%	%	%	%	%	%	%
S	<15	14.3	14.3	9.1	25.0	7.1	21.4	57.1
H		0.0	0.0	0.0	100.0	50.0	0.0	100.0
U		16.7	0.0	0.0	20.0	16.7	16.7	50.0
Y		0.0	12.5	12.5	25.0	0.0	25.0	37.5
P		9.1	20.0	0.0	40.0	0.0	0.0	54.6
C		7.7	7.7	8.3	41.7	0.0	7.7	46.2
Q		0.0	15.4	7.7	38.5	0.0	15.4	53.9
X	15-30	0.0	5.3	5.9	52.6	5.3	10.5	57.9
O		19.1	7.1	9.1	41.2	0.0	19.1	57.1
B		13.6	9.1	17.7	42.1	9.1	31.8	59.1
AB		12.0	4.2	18.2	63.6	4.0	24.0	68.0
D		35.7	26.9	25.0	70.0	10.7	35.7	78.6
W		32.1	23.1	38.5	42.1	7.1	10.7	67.9
F		13.8	17.2	17.7	48.0	6.9	27.6	62.1
A	31-60	27.3	25.0	28.0	69.2	9.1	21.2	84.9
K		18.2	9.7	18.5	53.6	3.0	15.2	69.7
V		11.1	27.8	31.3	71.9	5.6	30.6	86.1
AA		24.5	17.7	16.7	90.2	22.6	20.8	94.3
Z		13.2	11.3	11.1	52.2	3.8	17.0	66.0
I		17.0	5.2	13.8	63.3	0.0	32.2	76.3
AD	61-100	15.9	13.3	17.4	73.1	27.0	25.4	77.8
J		17.7	16.9	8.8	45.6	4.4	35.3	64.7
N		8.6	10.1	27.6	45.3	8.6	22.9	61.4
AC		15.1	8.6	5.1	82.5	4.2	16.4	89.0
R		13.9	9.0	18.8	69.1	13.9	26.6	73.4
G		12.6	14.6	15.3	55.3	3.5	24.1	69.0
T	>100	26.7	13.2	28.1	60.5	9.9	22.8	73.3
M		9.3	8.4	11.3	64.7	3.7	15.7	69.4
AG		13.3	14.2	26.1	65.4	6.7	22.5	77.5
AE		11.9	11.2	16.7	38.7	12.4	17.8	59.5
L		9.5	9.7	11.2	67.8	9.0	24.3	75.7
Total CNN		14.6	12.4	16.6	58.8	8.5	22.3	71.1

Mortality or severe morbidity = Mortality prior to discharge or any of the five morbidities
*PMA: Post-menstrual age
Note: Sites E and AF had no neonates with GA<29.
These are unadjusted rates.

E.3.1. Site Comparisons – Late Onset Sepsis and Antimicrobial Use

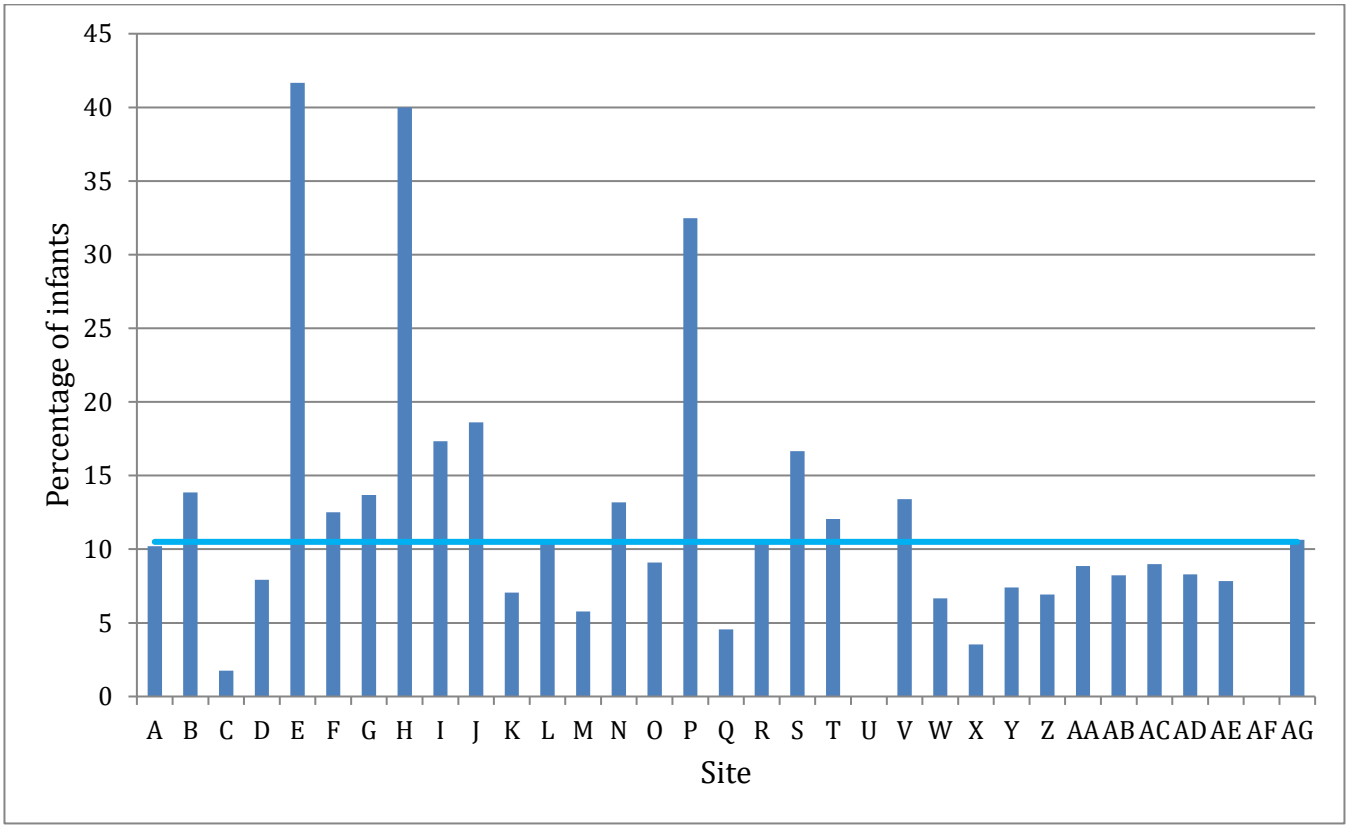
In presentations #34 and #35, late onset sepsis was attributed to the hospital where the first episode of sepsis was acquired. Each neonate was counted only once even if there were multiple episodes of infections.

In presentations #36 and #37, assignment of infection was based on location where the infection happened and not assigned to the hospital where the first episode of sepsis was acquired. Each episode of infection was counted (the total number of episodes exceeds the total number of neonates).

In all other presentations of this report, all morbidities including late onset sepsis were attributed to the hospital where the neonate was first admitted.

Presentation #34

Late onset sepsis: GA<33 weeks: Site specific crude rates
(n=4 261 neonates, 60 excluded due to death before 3 days of age)



Site	A	B	C	D	E	F	G	H	I	J	K	
%	10.2	13.8	1.8	7.9	41.7	12.5	13.7	40.0	17.3	18.6	7.1	
Site	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**V**	
%	10.5	5.8	13.2	9.1	32.5	4.5	10.5	16.7	12.0	0.0	13.4	
Site	**W**	**X**	**Y**	**Z**	**AA**	**AB**	**AC**	**AD**	**AE**	**AF**	**AG**	**CNN**
%	6.7	3.5	7.4	6.9	8.9	8.2	9.0	8.3	7.8	0.0	10.6	10.5

COMMENTS: Late onset sepsis is defined as any positive blood and/or cerebrospinal fluid culture after 2 days of age (analysis is neonate-based and deaths before 3 days of age are excluded).

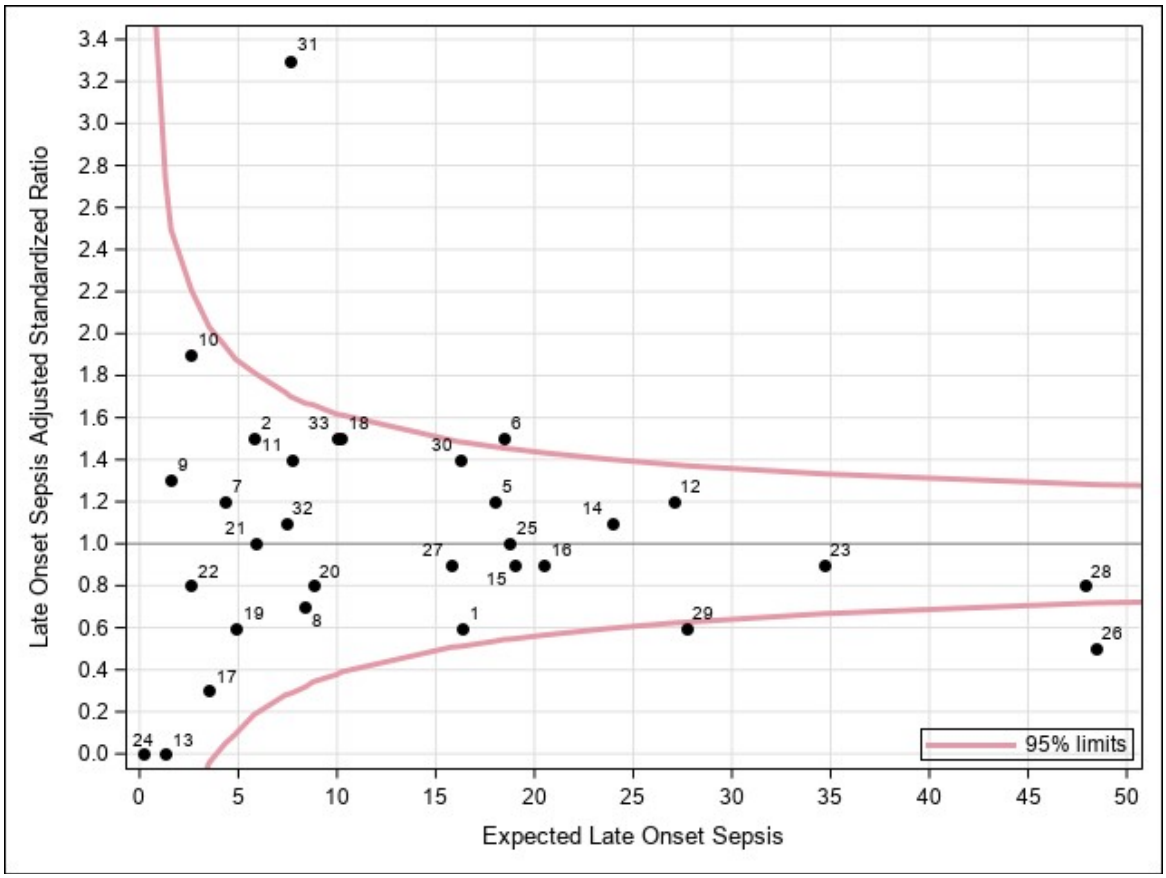
In presentations #34 and #35, late onset sepsis was attributed to the hospital where the first episode of sepsis was acquired. Each neonate was counted only once even if there were multiple episodes of infections.

Presentation #35a
Late onset sepsis: GA<33 weeks: Adjusted standardized ratios by site

Site	Number of neonates	Number of NI	Adjusted# expected number of NI	Adjusted# standardized ratio	95% confidence interval (CI) for adjusted standardized ratio	
1	130	9	16.3	0.6	0.3	1.0
2	65	9	5.8	1.5	0.7	2.9
5	167	22	18.0	1.2	0.8	1.9
6	145	27	18.5	1.5	1.0	2.1
7	55	5	4.3	1.2	0.4	2.7
8	85	6	8.4	0.7	0.3	1.6
9	27	2	1.6	1.3	0.1	4.5
10	30	5	2.6	1.9	0.6	4.5
11	88	11	7.7	1.4	0.7	2.6
12	274	33	27.0	1.2	0.8	1.7
13	29	0	1.3	0.0	.	2.8
14	190	26	23.9	1.1	0.7	1.6
15	189	17	19.0	0.9	0.5	1.4
16	181	19	20.5	0.9	0.6	1.4
17	57	1	3.5	0.3	0.0	1.6
18	112	15	10.2	1.5	0.8	2.4
19	85	3	4.9	0.6	0.1	1.8
20	105	7	8.8	0.8	0.3	1.6
21	73	6	5.9	1.0	0.4	2.2
22	44	2	2.6	0.8	0.1	2.8
23	282	30	34.6	0.9	0.6	1.2
24	10	0	0.2	0.0	.	16.4
25	217	18	18.7	1.0	0.6	1.5
26	332	26	48.4	0.5	0.4	0.8
27	158	14	15.8	0.9	0.5	1.5
28	380	40	47.9	0.8	0.6	1.1
29	277	16	27.7	0.6	0.3	0.9
30	127	22	16.2	1.4	0.9	2.1
31	77	25	7.6	3.3	2.1	4.8
32	101	8	7.4	1.1	0.5	2.1
33	147	15	10.0	1.5	0.8	2.5

Numeric site codes were used in Presentations 35a-d and they may not correspond to other presentations in this report. *Late onset sepsis was attributed to the hospital where the first episode of sepsis was acquired. *Neonates who died before 3 days of age were excluded.
The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.
Note: Sites 3 and 4 were not included in this analysis due to small number of eligible neonates in this category.

Presentation # 35b
Late onset sepsis: GA<33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 35a
Column 1: Numeric site codes
Column 2: Number of eligible neonates at each site (<33 weeks GA)
Column 3: Number of neonates with outcome of interest among those eligible neonates
Column 4: Expected number of neonates with outcome of interest after adjustment for GA, SGA, sex, and SNAPII > 20
Column 5: Adjusted standardized ratio calculated based on observed late onset sepsis/expected late onset sepsis
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 35b
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

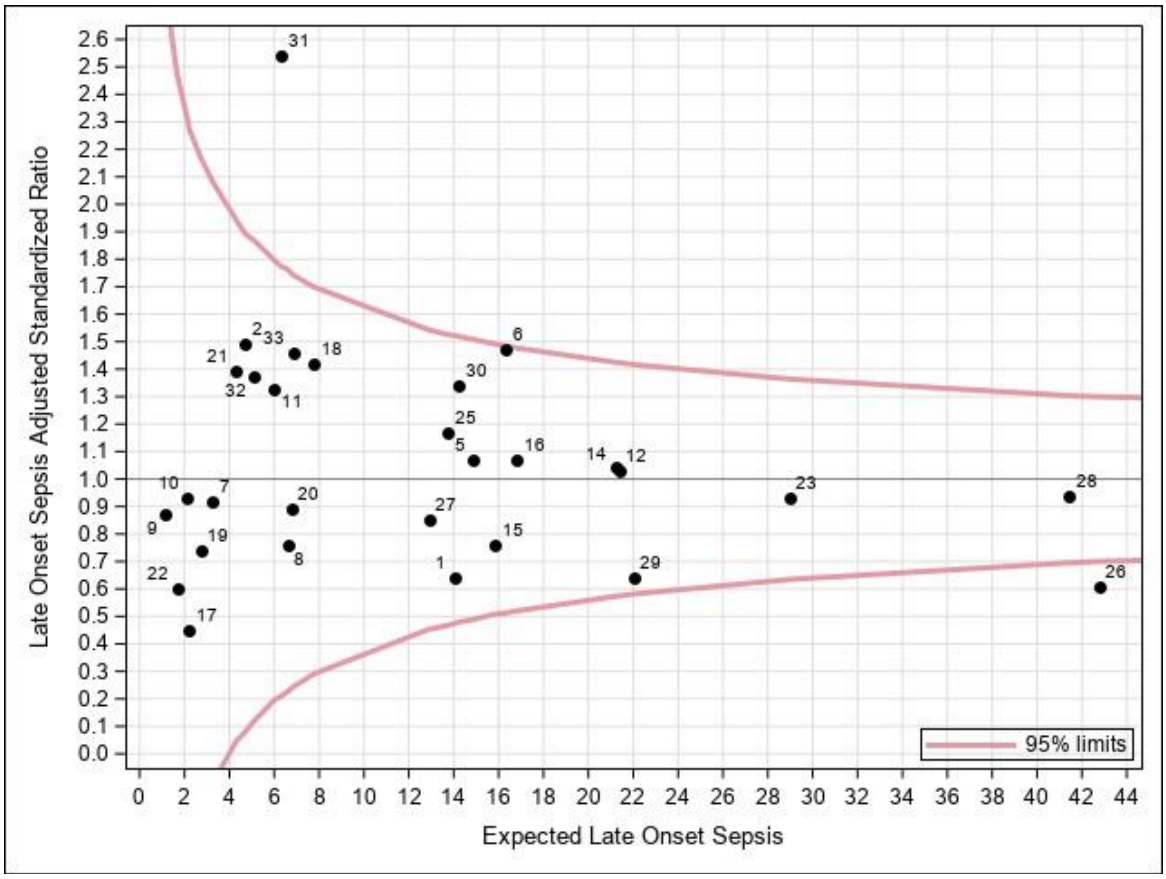
Presentation #35c
Late onset sepsis: GA<29 weeks: Adjusted standardized ratios by site

Site	Number of neonates	Number of NI	Adjusted# expected number of NI	Adjusted# standardized ratio	95% confidence interval (CI) for adjusted standardized ratio	
1	52	9	14.0	0.6	0.3	1.2
2	22	7	4.7	1.5	0.6	3.1
5	70	16	14.9	1.1	0.6	1.7
6	66	24	16.3	1.5	0.9	2.2
7	19	3	3.3	0.9	0.2	2.7
8	31	5	6.6	0.8	0.2	1.8
9	7	1	1.1	0.9	0.0	4.9
10	13	2	2.1	0.9	0.1	3.4
11	29	8	6.0	1.3	0.6	2.6
12	96	22	21.4	1.0	0.6	1.6
14	84	22	21.2	1.0	0.6	1.6
15	71	12	15.8	0.8	0.4	1.3
16	74	18	16.8	1.1	0.6	1.7
17	13	1	2.2	0.5	0.0	2.5
18	36	11	7.8	1.4	0.7	2.5
19	19	2	2.7	0.7	0.1	2.7
20	27	6	6.8	0.9	0.3	1.9
21	24	6	4.3	1.4	0.5	3.0
22	12	1	1.7	0.6	0.0	3.3
23	114	27	29.0	0.9	0.6	1.4
25	62	16	13.7	1.2	0.7	1.9
26	174	26	42.8	0.6	0.4	0.9
27	51	11	12.9	0.9	0.4	1.5
28	179	39	41.4	0.9	0.7	1.3
29	103	14	22.0	0.6	0.3	1.1
30	59	19	14.2	1.3	0.8	2.1
31	27	16	6.3	2.5	1.5	4.1
32	23	7	5.1	1.4	0.6	2.8
33	35	10	6.8	1.5	0.7	2.7

Numeric site codes were used in Presentations 35a-d and they may not correspond to other presentations in this report.
*Late onset sepsis was attributed to the hospital where the first episode of sepsis was acquired.
*Neonates who died before 3 days of age are excluded.
The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.

Note: Sites 3, 4, 13, 24 were excluded from the analysis due to the small number of eligible neonates.

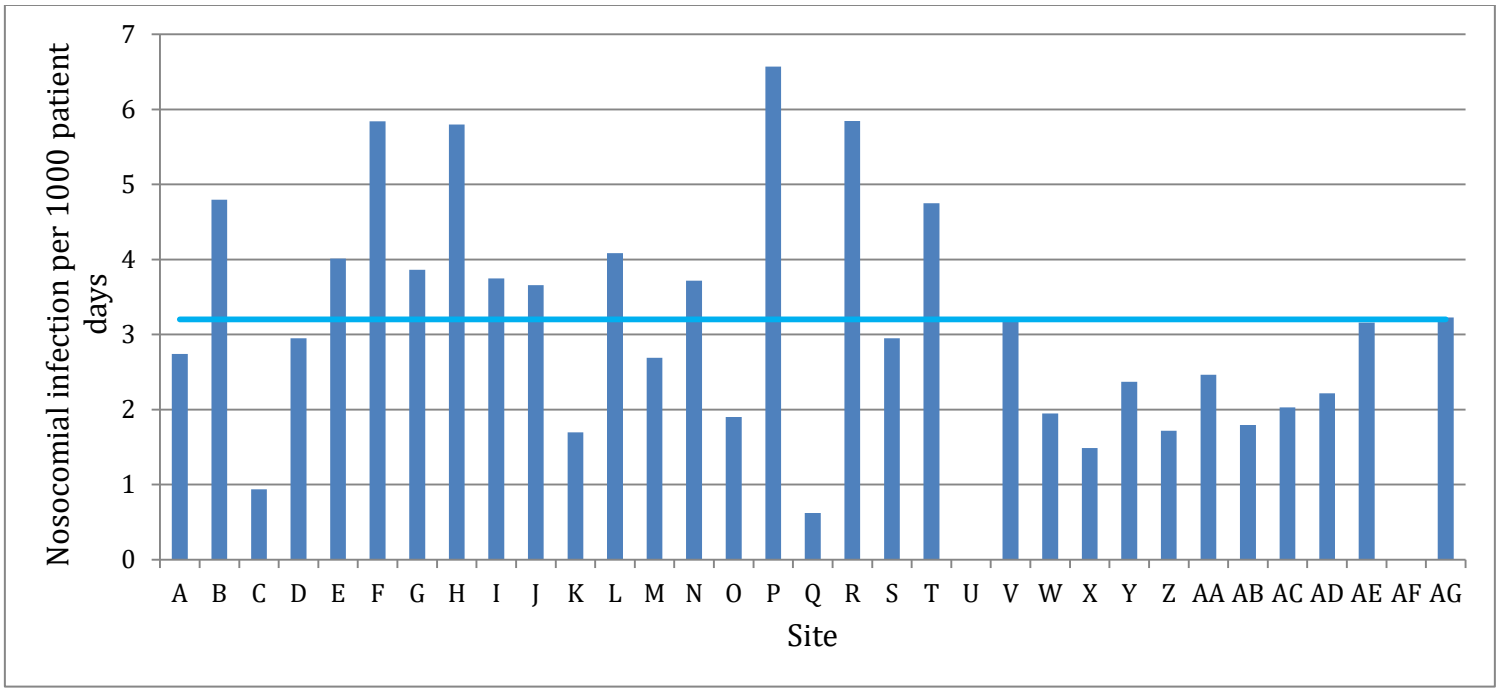
Presentation # 35d
Late onset sepsis: GA<29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 35c
Column 1: Numeric site codes
Column 2: Number of eligible neonates at each site (<29 weeks GA)
Column 3: Number of neonates with outcome of interest among those eligible neonates
Column 4: Expected number of neonates with outcome of interest after adjustment for GA, SGA, sex, and SNAPII > 20
Column 5: Adjusted standardized ratio calculated based on observed late onset sepsis/expected late onset sepsis
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 35d
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

Presentation #36
Late onset sepsis per 1000 patient days: GA<33 weeks: Site specific crude rates



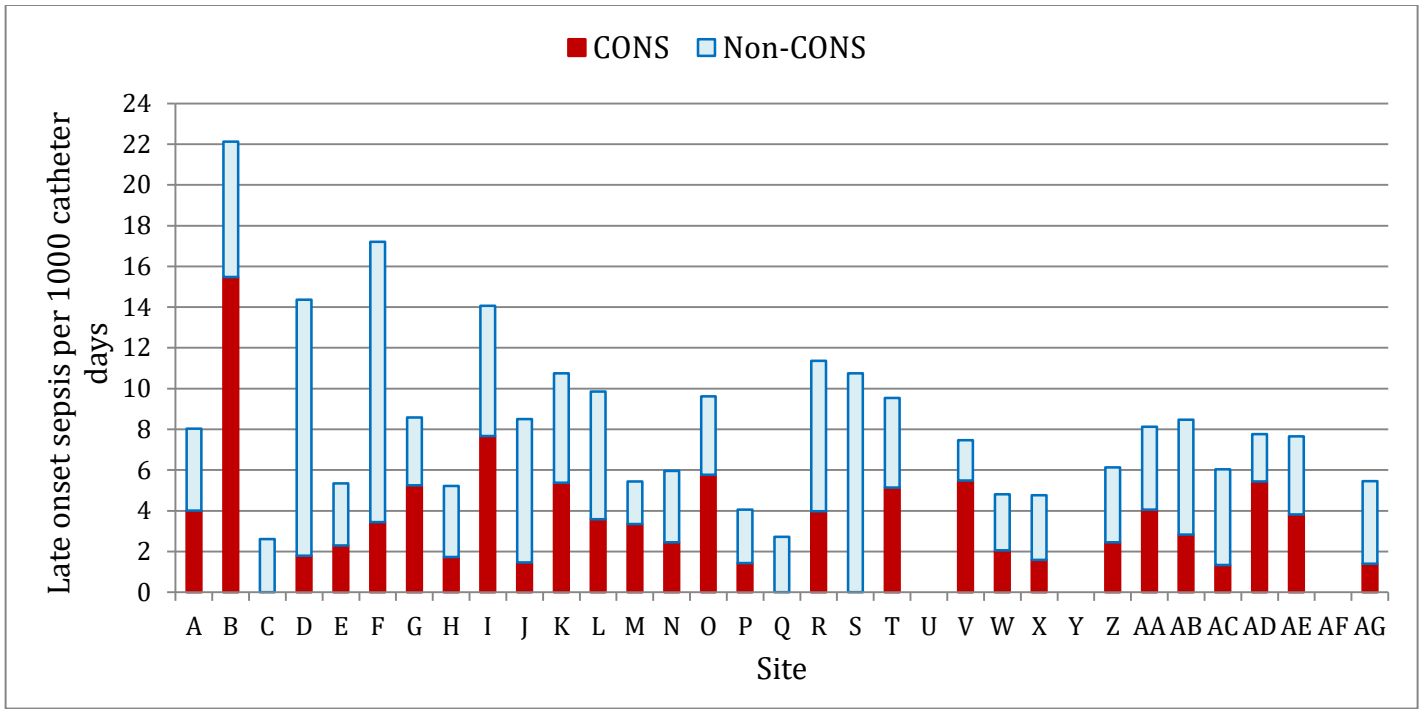
Site	Infections per 1000 patient days	Site	Infections per 1000 patient days	Site	Infections per 1000 patient days
A	2.7	**L**	4.1	**W**	1.9
B	4.8	**M**	2.7	**X**	1.5
C	0.9	**N**	3.7	**Y**	2.4
D	2.9	**O**	1.9	**Z**	1.7
E	4.0	**P**	6.6	**AA**	2.5
F	5.8	**Q**	0.6	**AB**	1.8
G	3.9	**R**	5.8	**AC**	2.0
H	5.8	**S**	3.0	**AD**	2.2
I	3.7	**T**	4.7	**AE**	3.2
J	3.7	**U**	0.0	**AF**	0.0
K	1.7	**V**	3.2	**AG**	3.2
				CNN	3.2

Total number of neonates = 4 321

COMMENTS: Late onset sepsis is defined as positive blood and/or cerebrospinal fluid culture after 2 days of age (includes all admissions). Considerable variation exists when late onset sepsis is analyzed as infections per 1000 patient days. Note that it is possible that certain sites with high retro transfer rates may report a high incidence per 1000 patient days since neonates who are transferred out are those with lower acuity. If a neonate had >1 distinct episodes of infection, each episode will be counted as separate infections in the numerator.

In presentations #36 and #37, the infection was assigned to the hospital where the infection happened and not assigned to the hospital where the first episode of sepsis happened.

Presentation #37a
Central Line-Associated Bloodstream Infections per 1000 central line* days:
GA < 33 weeks: Site specific crude rates

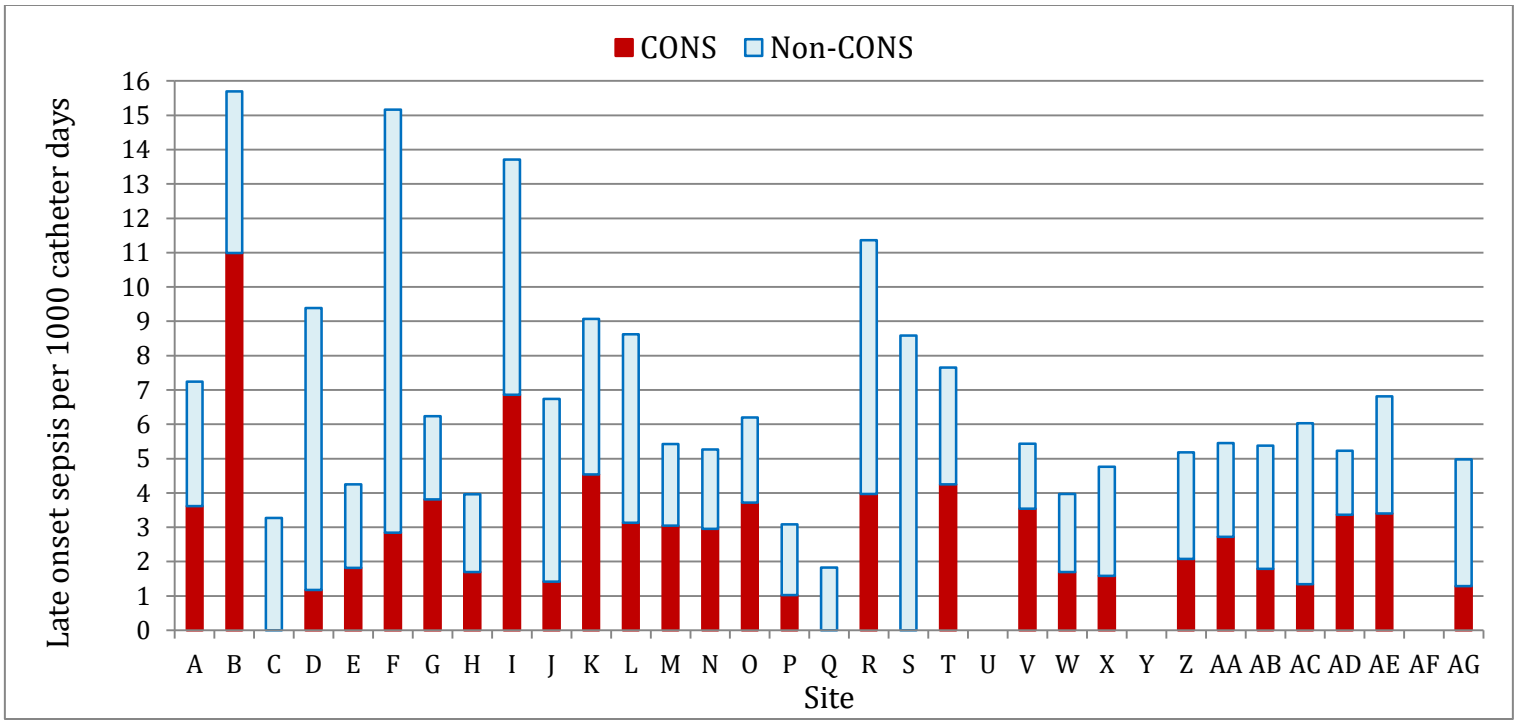


Site	CLABSI**		Central line days	CLABSI per 1000 central line days	
	CONS	Non-CONS		CONS	Non-CONS
A	6	6	1494	4.0	4.0
B	7	3	452	15.5	6.6
C	0	1	383	0.0	2.6
D	1	7	557	1.8	12.6
E	3	4	1309	2.3	3.1
F	3	12	872	3.4	13.8
G	11	7	2097	5.2	3.3
H	1	2	575	1.7	3.5
I	6	5	782	7.7	6.4
J	5	24	3412	1.5	7.0
K	2	2	372	5.4	5.4
L	12	21	3346	3.6	6.3
M	8	5	2391	3.3	2.1
N	7	10	2851	2.5	3.5
O	3	2	520	5.8	3.8
P	6	11	4197	1.4	2.6
Q	0	1	367	0.0	2.7

Site	CLABSI**		Central line days	CLABSI per 1000 central line days	
	CONS	Non-CONS		CONS	Non-CONS
R	7	13	1761	4.0	7.4
S	0	2	186	0.0	10.8
T	14	12	2723	5.1	4.4
U	0	0	121	0.0	0.0
V	11	4	2007	5.5	2.0
W	3	4	1456	2.1	2.7
X	1	2	630	1.6	3.2
Y	0	0	82	0.0	0.0
Z	4	6	1630	2.5	3.7
AA	6	6	1476	4.1	4.1
AB	2	4	708	2.8	5.6
AC	4	14	2984	1.3	4.7
AD	14	6	2574	5.4	2.3
AE	10	10	2612	3.8	3.8
AF	0	0	25	0.0	0.0
AG	8	23	5683	1.4	4.0
CNN	165	229	52635	3.1	4.4

*Central line = Any of UV, surgical CVL, or PICC
** CLABSI was defined as a primary bloodstream infection in a neonate who developed infection while a central line was in situ or within 2 days of removal of the central line.

Presentation #37b
Central Line-Associated Bloodstream Infections per 1000 central line* days:
All neonates: Site specific crude rates

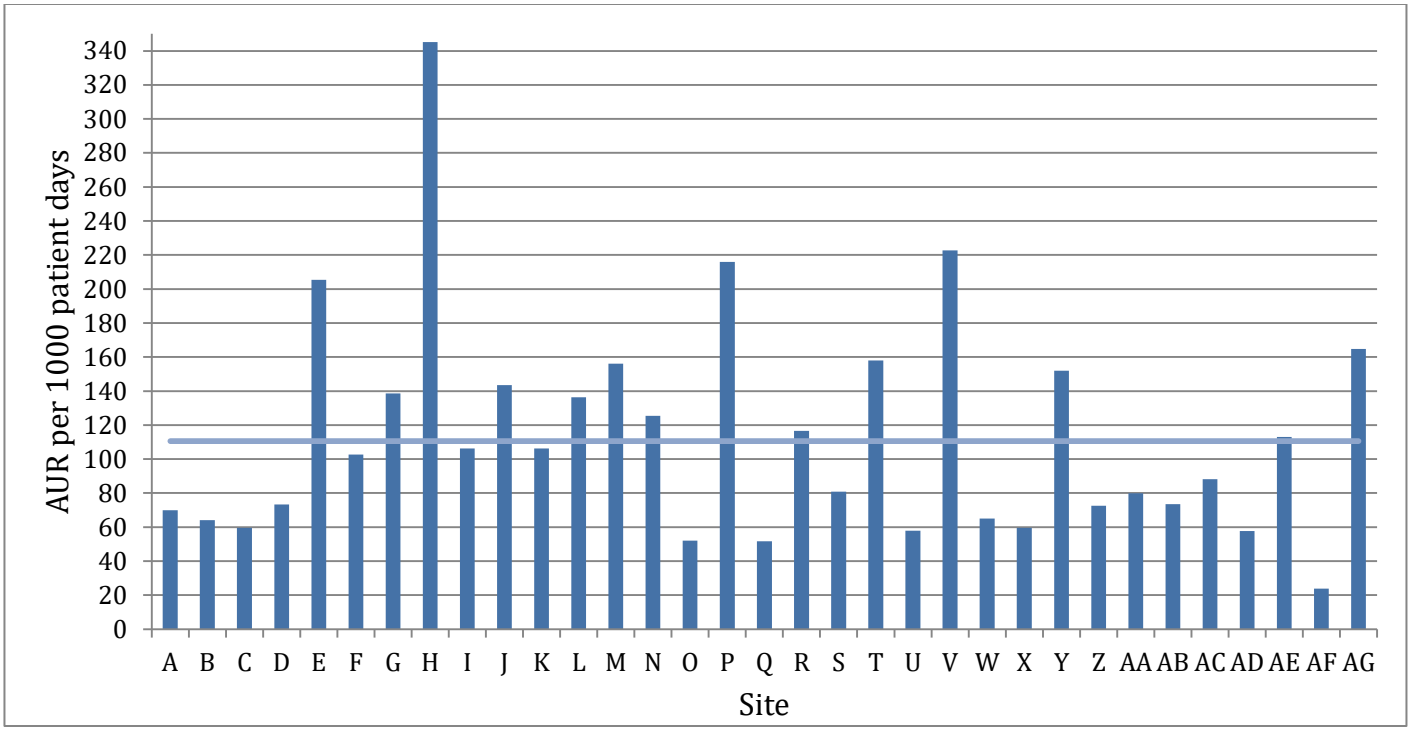


Site	CLABSI**		Central line days	CLABSI per 1000 central line days	
	CONS	Non-CONS		CONS	Non-CONS
A	6	6	1658	3.6	3.6
B	7	3	637	11.0	4.7
C	0	2	612	0.0	3.3
D	1	7	852	1.2	8.2
E	3	4	1647	1.8	2.4
F	3	13	1055	2.8	12.3
G	11	7	2886	3.8	2.4
H	3	4	1767	1.7	2.3
I	7	7	1021	6.9	6.9
J	8	30	5639	1.4	5.3
K	2	2	441	4.5	4.5
L	12	21	3829	3.1	5.5
M	9	7	2951	3.0	2.4
N	14	11	4745	3.0	2.3
O	3	2	807	3.7	2.5
P	7	14	6816	1.0	2.1
Q	0	1	548	0.0	1.8

Site	CLABSI**		Central line days	CLABSI per 1000 central line days	
	CONS	Non-CONS		CONS	Non-CONS
R	7	13	1761	4.0	7.4
S	0	2	233	0.0	8.6
T	20	16	4704	4.3	3.4
U	0	0	209	0.0	0.0
V	15	8	4231	3.5	1.9
W	3	4	1765	1.7	2.3
X	1	2	630	1.6	3.2
Y	0	0	122	0.0	0.0
Z	4	6	1928	2.1	3.1
AA	6	6	2202	2.7	2.7
AB	2	4	1116	1.8	3.6
AC	4	14	2984	1.3	4.7
AD	18	10	5354	3.4	1.9
AE	10	10	2937	3.4	3.4
AF	0	0	80	0.0	0.0
AG	8	23	6233	1.3	3.7
CNN	194	259	74400	2.6	3.5

*Central line = Any of UV, surgical CVL, or PICC
** CLABSI was defined as a primary bloodstream infection in a neonate who developed infection while a central line was in situ or within 2 days of removal of the central line.

Presentation #38
Days of antimicrobial use per 1000 patient days among neonates who did not develop NEC, early-onset sepsis or late onset sepsis: GA <33 weeks*

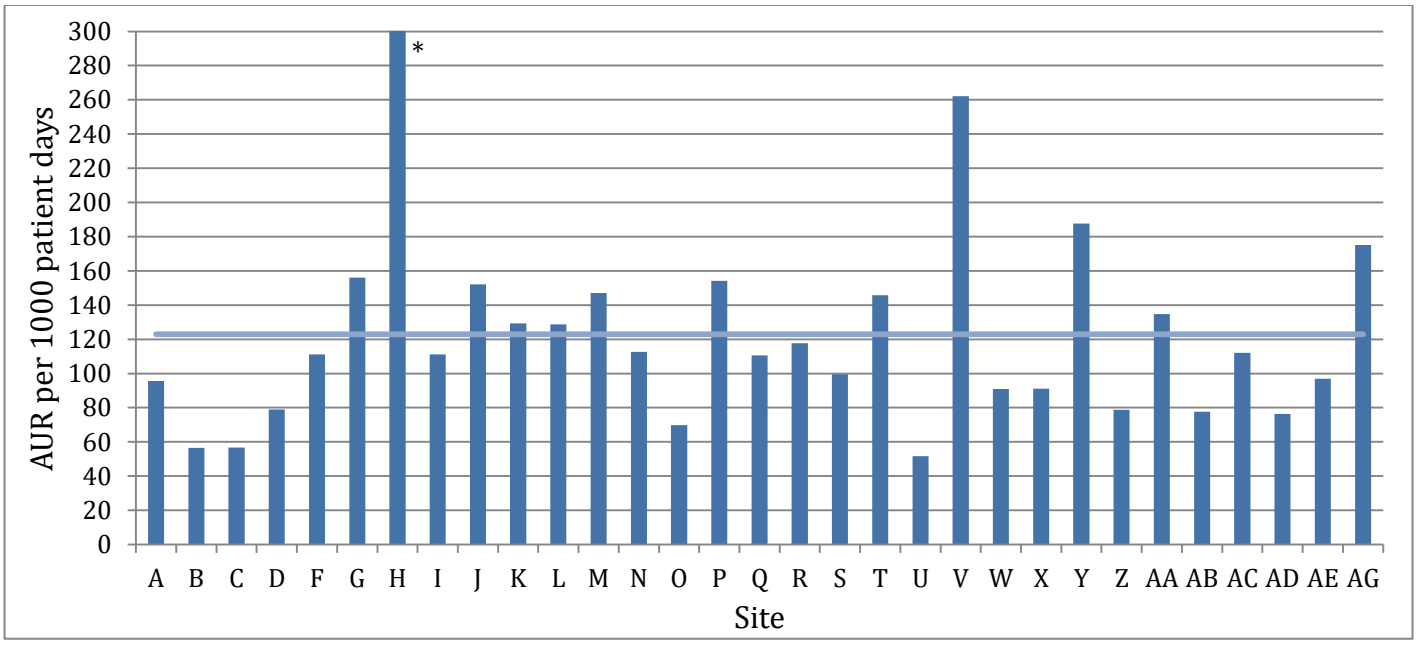


Site	Days of antimicrobial use per 1000 patient days	Site	Days of antimicrobial use per 1000 patient days	Site	Days of antimicrobial use per 1000 patient days
A	70.0	**L**	136.3	**W**	65.0
B	64.1	**M**	156.1	**X**	59.6
C	59.6	**N**	125.5	**Y**	151.9
D	73.3	**O**	52.0	**Z**	72.6
E	205.5	**P**	216.0	**AA**	79.9
F	102.7	**Q**	51.6	**AB**	73.5
G	138.6	**R**	116.5	**AC**	88.1
H	345.1	**S**	80.9	**AD**	57.8
I	106.3	**T**	158.0	**AE**	113.0
J	143.6	**U**	57.8	**AF**	23.8
K	106.2	**V**	222.7	**AG**	164.8
				CNN	110.5

*Denominators were based on neonates born < 33 weeks' GA without major congenital anomaly who did not develop early-onset sepsis, late-onset sepsis or necrotising enterocolitis.

Note: Prophylactic administration of trimethoprim or amoxicillin for the prevention of urinary tract infections with a suspected renal anomaly was not included.

Presentation #39
Days of antimicrobial use per 1000 patient days among neonates who did not develop NEC, early-onset sepsis or late onset sepsis: GA <29 weeks*



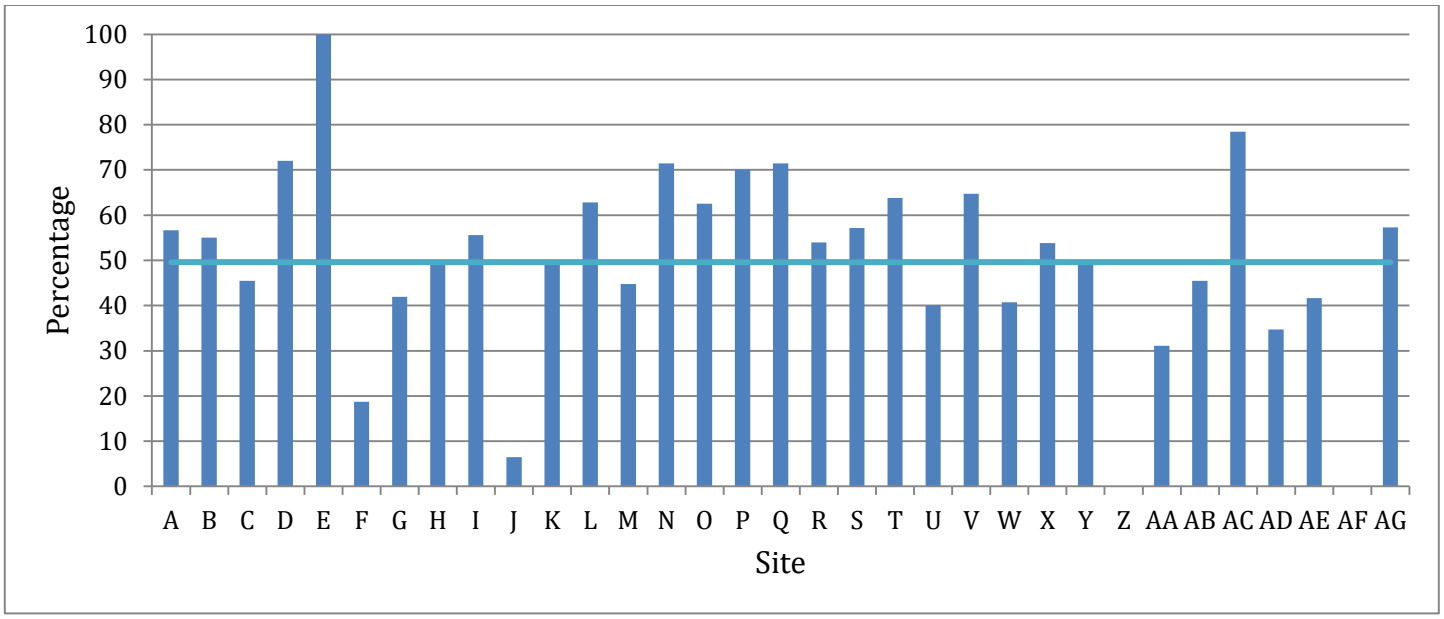
Site	Days of antimicrobial use per 1000 patient days	Site	Days of antimicrobial use per 1000 patient days	Site	Days of antimicrobial use per 1000 patient days
A	95.5	**M**	147.0	**X**	91.2
B	56.5	**N**	112.7	**Y**	187.6
C	56.8	**O**	69.8	**Z**	78.7
D	78.9	**P**	154.1	**AA**	134.7
F	111.2	**Q**	110.6	**AB**	77.7
G	156.1	**R**	117.7	**AC**	112.0
H	446.4	**S**	99.6	**AD**	76.4
I	111.1	**T**	145.7	**AE**	96.9
J	152.1	**U**	51.6	**AG**	175.1
K	129.3	**V**	262.2		
L	128.8	**W**	90.9	**CNN**	122.9

*Denominators were based on neonates born < 29 weeks' GA without major congenital anomaly who did not develop early-onset sepsis, late-onset sepsis or necrotising enterocolitis.

Note: Sites E and AF do not have any neonates with GA < 29.
*Site H's rate goes over the upper limit of Y-axis. Refer to the table for site H's actual rate.

Note: Prophylactic administration of trimethoprim or amoxicillin for the prevention of urinary tract infections with a suspected renal anomaly was not included.

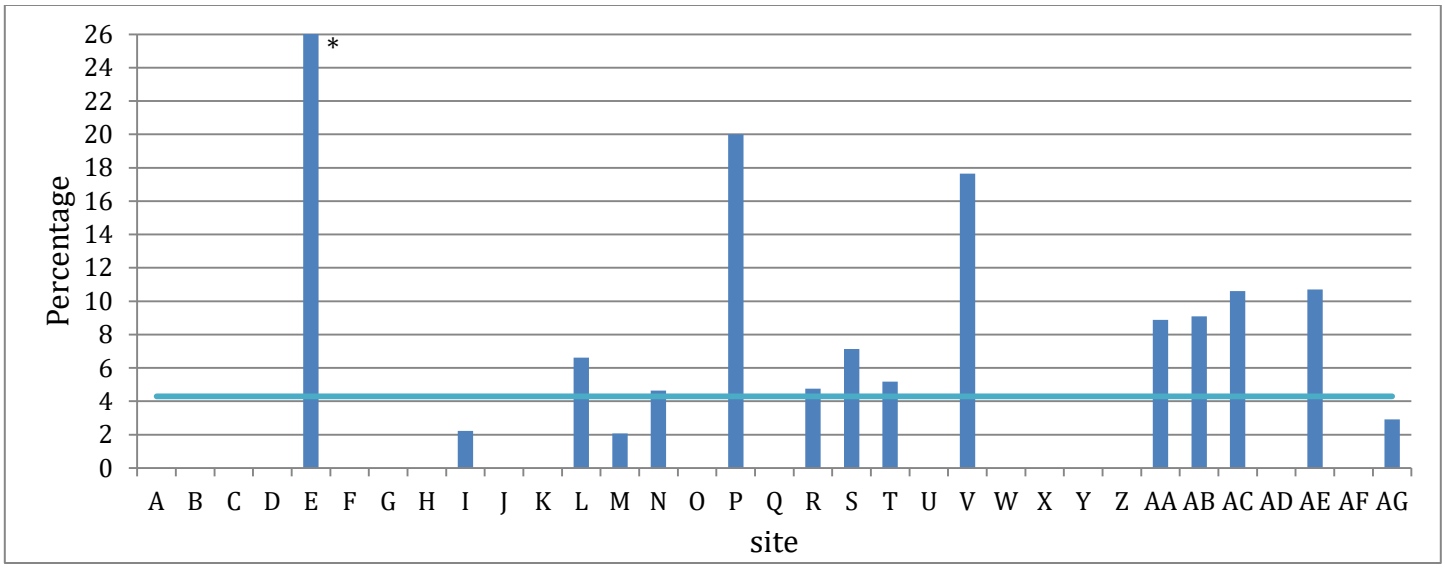
Presentation #40
Rate of treatment# for patent ductus arteriosus (PDA): GA<33 weeks who had PDA*: Site specific crude rates



Site	Treatment# for PDA among neonates who had PDA (%)		Site	Treatment# for PDA among neonates who had PDA (%)
A	56.7		**R**	54.0
B	55.0		**S**	57.1
C	45.5		**T**	63.8
D	72.0		**U**	40.0
E	100.0		**V**	64.7
F	18.8		**W**	40.7
G	41.9		**X**	53.9
H	50.0		**Y**	50.0
I	55.6		**Z**	0.0
J	6.5		**AA**	31.1
K	50.0		**AB**	45.5
L	62.8		**AC**	78.5
M	44.8		**AD**	34.7
N	71.4		**AE**	41.7
O	62.5		**AF**	0.0
P	70.0		**AG**	57.3
Q	71.4		**CNN**	49.6

Total number of neonates who had PDA = 1 194
*PDA diagnosis is based on clinical suspicion and/or echocardiography findings.
#Treatment of PDA includes any of indomethacin, ibuprofen, acetaminophen, or ligation.
The percentage of neonates with treated PDA was attributed to the site where the neonate was first admitted.

Presentation #41
Surgical patent ductus arteriosus (PDA) closure rate: GA<33 weeks who had PDA: Site specific crude rates



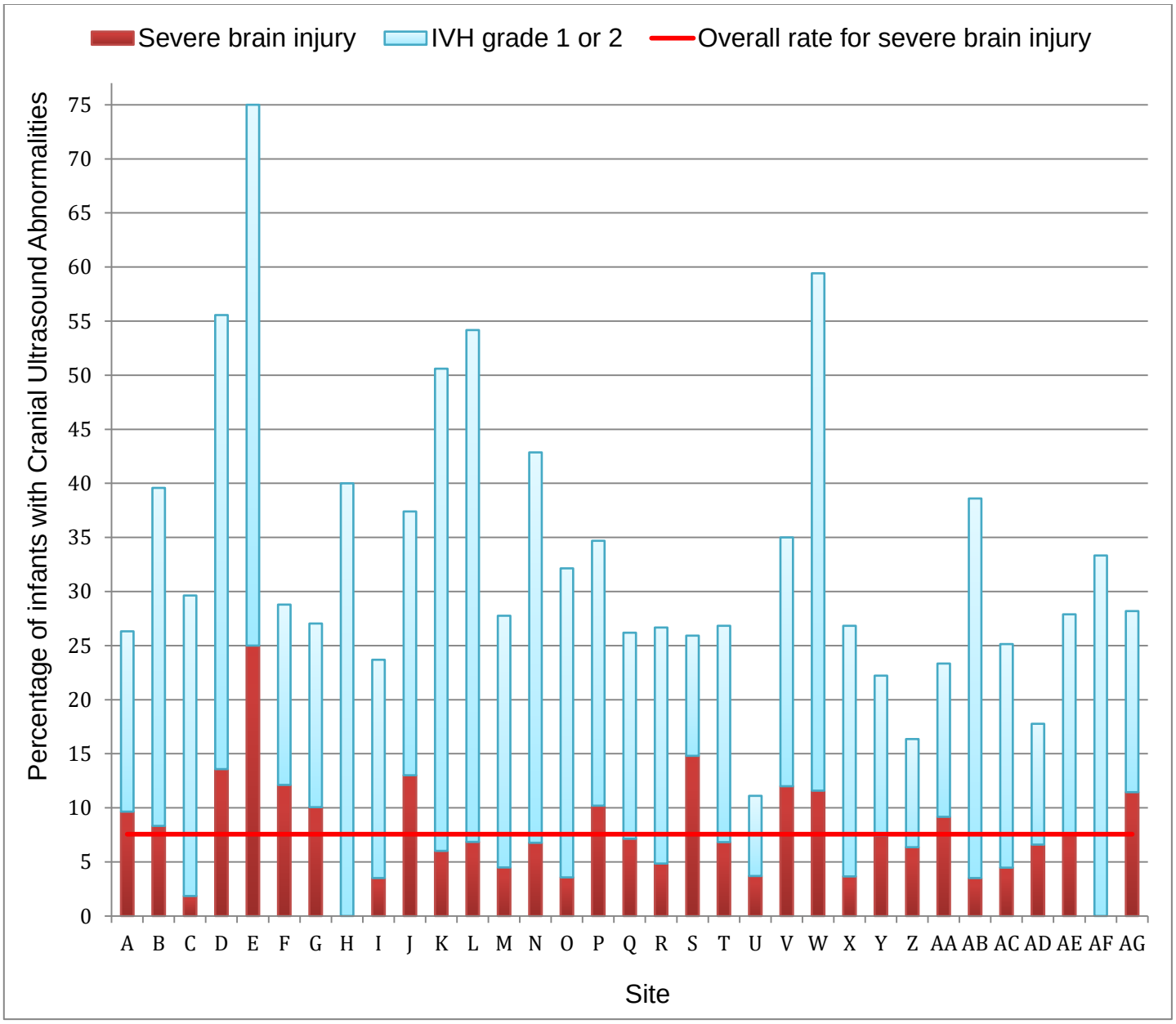
Site	Surgical ligation for PDA among neonates who had PDA (%)		Site	Surgical ligation for PDA among neonates who had PDA (%)
A	0.0		**R**	4.8
B	0.0		**S**	7.1
C	0.0		**T**	5.2
D	0.0		**U**	0.0
E	100.0		**V**	17.7
F	0.0		**W**	0.0
G	0.0		**X**	0.0
H	0.0		**Y**	0.0
I	2.2		**Z**	0.0
J	0.0		**AA**	8.9
K	0.0		**AB**	9.1
L	6.6		**AC**	10.6
M	2.1		**AD**	0.0
N	4.7		**AE**	10.7
O	0.0		**AF**	0.0
P	20.0		**AG**	2.9
Q	0.0		**CNN**	4.3

Total number of neonates who had PDA = 1 194

*Site E's rate goes over the upper limit of Y-axis. Refer to the table for site E's actual rate.

The percentage of neonates with treated PDA was attributed to the site where the neonate was first admitted.

Presentation #42
Severe brain injury rates: GA<33 weeks: Site specific crude rates



IVH grade 1 or 2 = Germinal matrix hemorrhage or intraventricular hemorrhage **without** ventricular enlargement

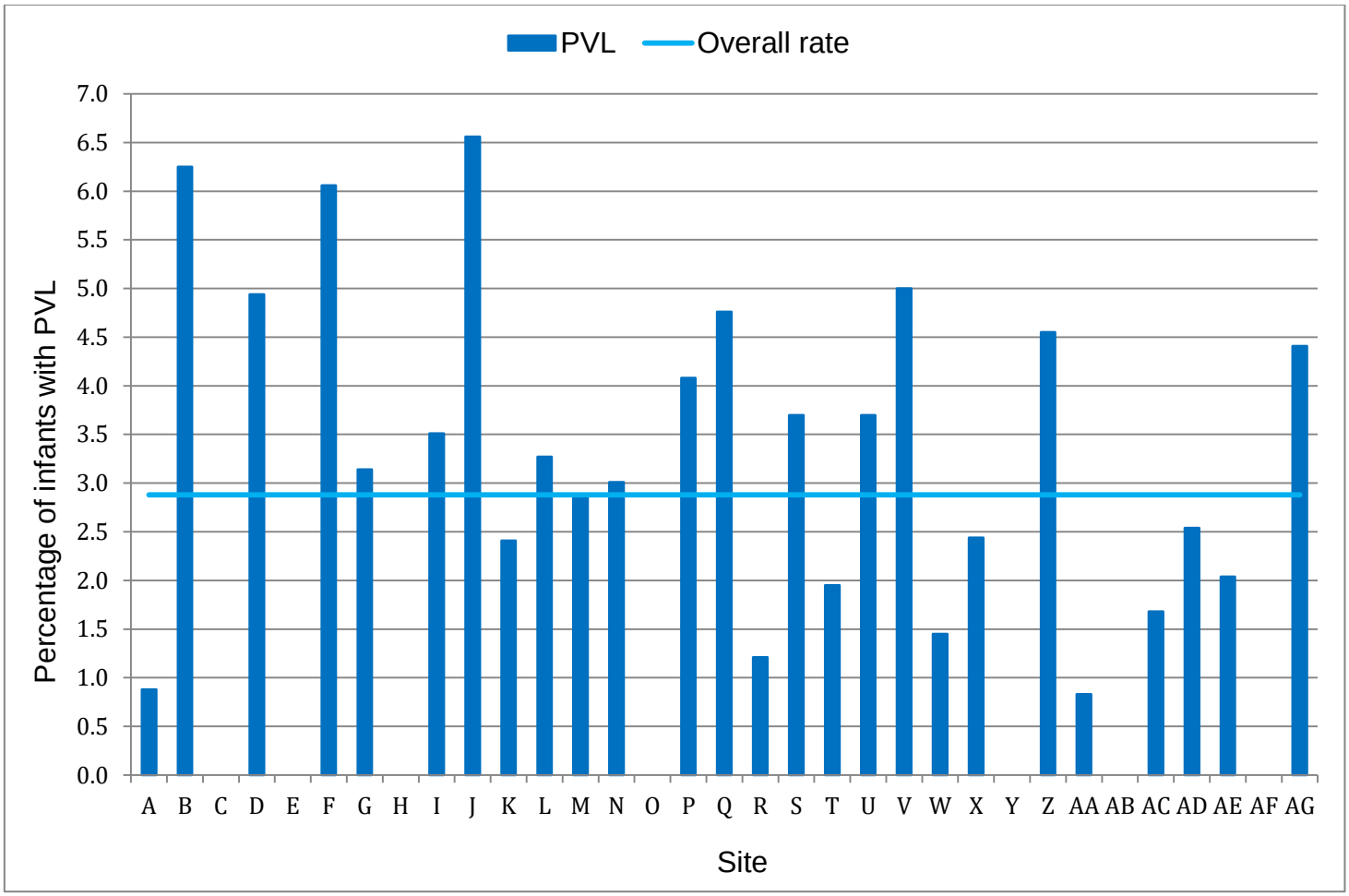
IVH grade 3 or 4 or PVL (severe brain injury) = Intraventricular hemorrhage **with** ventricular enlargement or persistent parenchymal echogenicity or periventricular leukomalacia

Presentation #42 (continued)
Severe brain injury rate: GA<33 weeks: Site specific crude rates

Site	<25	25-26	27-28	29-30	31-32	Overall rate* per site %
A	50.0	36.4	15.8	5.6	2.2	9.7
B	25.0	11.1	0.0	0.0	15.4	8.3
C	0.0	25.0	0.0	0.0	0.0	1.9
D	0.0	50.0	9.1	6.3	8.7	13.6
E	NA	NA	NA	NA	25.0	25.0
F	42.9	20.0	5.9	14.3	0.0	12.1
G	38.9	3.3	11.8	6.8	3.0	10.1
H	0.0	NA	0.0	0.0	0.0	0.0
I	10.0	4.8	3.7	0.0	3.1	3.5
J	29.4	18.2	7.7	4.2	11.8	13.0
K	0.0	28.6	5.6	3.7	4.0	6.0
L	12.2	11.3	7.6	4.6	1.6	6.9
M	18.2	5.9	5.9	1.2	1.9	4.5
N	18.2	17.4	2.9	5.0	0.0	6.8
O	50.0	0.0	0.0	0.0	0.0	3.6
P	0.0	50.0	16.7	9.1	7.1	10.2
Q	NA	50.0	0.0	5.9	0.0	7.1
R	0.0	21.1	6.7	1.7	0.0	4.9
S	0.0	0.0	20.0	20.0	12.5	14.8
T	25.0	20.0	6.0	2.9	0.0	6.8
U	0.0	0.0	0.0	0.0	9.1	3.7
V	66.7	23.5	25.0	3.1	3.1	12.0
W	0.0	41.7	10.0	8.7	0.0	11.6
X	0.0	0.0	7.1	3.5	2.9	3.7
Y	0.0	33.3	0.0	0.0	5.9	7.4
Z	14.3	16.0	0.0	3.2	0.0	6.4
AA	38.5	20.0	7.1	2.9	2.9	9.2
AB	0.0	16.7	0.0	6.3	0.0	3.5
AC	7.7	13.0	5.9	5.4	0.0	4.5
AD	50.0	8.7	3.7	4.7	2.7	6.6
AE	19.1	11.1	6.8	2.3	0.0	7.5
AF	NA	NA	NA	0.0	0.0	0.0
AG	17.9	22.9	6.0	9.4	8.0	11.5
Overall rate per GA group %**	19.8	16.2	6.8	4.3	3.1	7.6

Total number of neonates = 3 576
Severe brain injury includes Grade 3 or 4 IVH or PVL
Note that the proportion of neonates with neuroimaging data available varies by GA.
745 neonates were excluded due to neuroimaging data not available.
*Overall % = (number of neonates with cranial ultrasound abnormalities for site / total number of neonates for site with neuroimaging data available) *100
**Overall % = (number of neonates with cranial ultrasound abnormalities for GA category / total number of neonates in GA category with neuroimaging data available) *100
NA = no data available

Presentation #43
Periventricular leukomalacia (PVL) rates: GA<33 weeks: Site specific crude rates



Presentation #43 (continued)
Periventricular leukomalacia (PVL) rate: GA<33 weeks: Site specific crude rates

Site	<25	25-26	27-28	29-30	31-32	Overall rate* per site %
A	0.0	0.0	0.0	2.8	0.0	0.9
B	0.0	11.1	0.0	0.0	15.4	6.3
C	0.0	0.0	0.0	0.0	0.0	0.0
D	0.0	25.0	9.1	0.0	0.0	4.9
E	NA	NA	NA	NA	0.0	0.0
F	14.3	20.0	0.0	9.5	0.0	6.1
G	16.7	0.0	2.9	2.3	0.0	3.1
H	0.0	NA	0.0	0.0	0.0	0.0
I	10.0	4.8	3.7	0.0	3.1	3.5
J	11.8	4.6	3.9	4.2	9.1	6.6
K	0.0	28.6	0.0	0.0	0.0	2.4
L	4.9	7.6	2.2	3.4	0.0	3.3
M	0.0	5.9	5.9	1.2	1.9	2.9
N	9.1	8.7	0.0	2.5	0.0	3.0
O	0.0	0.0	0.0	0.0	0.0	0.0
P	0.0	0.0	0.0	0.0	7.1	4.1
Q	NA	50.0	0.0	0.0	0.0	4.8
R	0.0	5.3	2.2	0.0	0.0	1.2
S	0.0	0.0	0.0	0.0	12.5	3.7
T	6.3	8.0	2.0	0.0	0.0	2.0
U	0.0	0.0	0.0	0.0	9.1	3.7
V	33.3	11.8	6.3	3.1	0.0	5.0
W	0.0	0.0	0.0	4.4	0.0	1.5
X	0.0	0.0	7.1	3.5	0.0	2.4
Y	0.0	0.0	0.0	0.0	0.0	0.0
Z	7.1	12.0	0.0	3.2	0.0	4.6
AA	0.0	0.0	0.0	0.0	2.9	0.8
AB	0.0	0.0	0.0	0.0	0.0	0.0
AC	7.7	0.0	0.0	5.4	0.0	1.7
AD	20.0	4.4	3.7	0.0	1.4	2.5
AE	2.4	3.2	4.1	0.0	0.0	2.0
AF	NA	NA	NA	0.0	0.0	0.0
AG	3.6	5.7	2.0	4.7	6.0	4.4
Overall rate per GA group %**	5.8	6.3	2.3	1.8	1.7	2.9

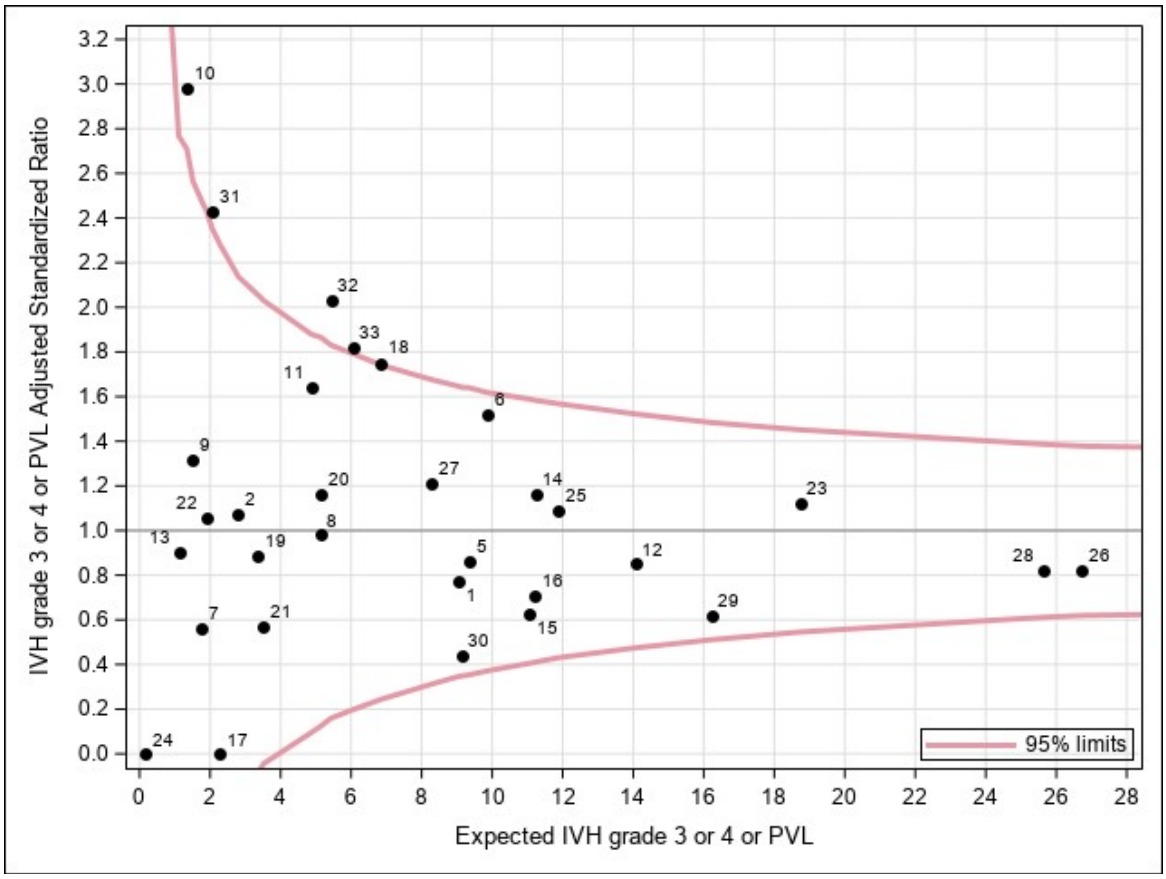
Total number of neonates = 3 576
Note that the proportion of neonates with neuroimaging data available varies by GA.
745 neonates were excluded due to neuroimaging data not available.
*Overall % = (number of neonates with PVL for site / total number of neonates for site) *100
**Overall % = (number of neonates with PVL for GA category / total number of neonates in GA category) *100
NA = no data available

Presentation #44a
IVH grade 3 or 4 or PVL: GA<33 weeks: Adjusted standardized ratios by site

Site	Total number of neonates	Number of neonates with available data	Number of neonates with IVH G3/4 or PVL	Adjusted# expected number of neonates with IVH G3/4 or PVL	Adjusted# standardized ratio	95% confidence interval for adjusted standardized ratio	
1	126	105	7	9.1	0.8	0.3	1.6
2	63	47	3	2.8	1.1	0.2	3.1
5	161	128	8	9.3	0.9	0.4	1.7
6	140	115	15	9.9	1.5	0.9	2.5
7	56	27	1	1.8	0.6	0.0	3.1
8	86	81	5	5.1	1.0	0.3	2.3
9	27	26	2	1.5	1.3	0.1	4.8
10	28	23	4	1.3	3.0	0.8	7.6
11	88	65	8	4.9	1.6	0.7	3.2
12	272	199	12	14.1	0.9	0.4	1.5
13	30	27	1	1.1	0.9	0.0	5.0
14	189	155	13	11.2	1.2	0.6	2.0
15	187	175	7	11.1	0.6	0.3	1.3
16	188	164	8	11.2	0.7	0.3	1.4
17	56	53	0	2.3	0.0	.	1.6
18	109	98	12	6.8	1.8	0.9	3.1
19	83	80	3	3.4	0.9	0.2	2.6
20	101	65	6	5.2	1.2	0.4	2.5
21	70	53	2	3.5	0.6	0.1	2.1
22	44	41	2	1.9	1.1	0.1	3.8
23	271	210	21	18.7	1.1	0.7	1.7
24	10	6	0	0.2	0.0	.	19.8
25	211	188	13	11.9	1.1	0.6	1.9
26	342	291	22	26.7	0.8	0.5	1.2
27	150	111	10	8.3	1.2	0.6	2.2
28	371	317	21	25.6	0.8	0.5	1.3
29	271	234	10	16.2	0.6	0.3	1.1
30	128	113	4	9.1	0.4	0.1	1.1
31	55	47	5	2.1	2.4	0.8	5.7
32	106	80	11	5.4	2.0	1.0	3.6
33	143	111	11	6.0	1.8	0.9	3.3

Numeric site codes were used in Presentations 44a-d and they may not correspond to other presentations in this report. Neonates with major congenital anomalies are excluded.
The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.
Note: Sites 3 and 4 were not included in this analysis due to small number of eligible neonates in this category.

Presentation #44b
IVH grade 3 or 4 or PVL: GA<33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 44a
Column 1: Numeric site codes
Column 2: Total number of neonates at each site (<33 weeks GA and no major anomaly)
Column 3: Number of eligible neonates at each site (<33 weeks GA and no major anomaly) who were actually used to fit the model
Column 4: Number of neonates with outcome of interest among those eligible neonates
Column 5: Expected number of neonates with outcome of interest after adjustment for GA, SGA, sex, and SNAPII > 20
Column 6: Adjusted standardized ratio calculated based on observed IVH or PVL/expected IVH or PVL
Columns 7 and 8: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 44b
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

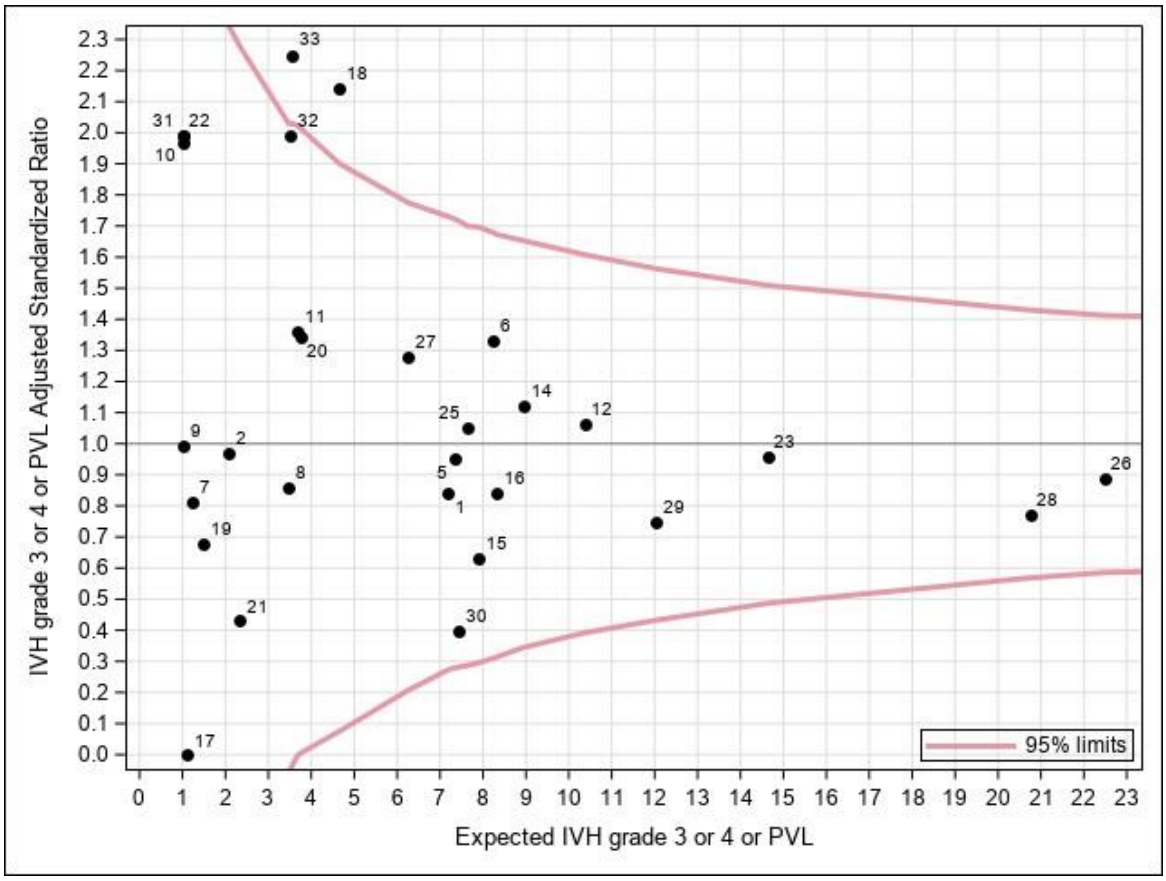
Presentation# 44c
IVH grade 3 or 4 or PVL: GA<29 weeks: Adjusted standardized ratios by site

Site	Total number of neonates	Number of neonates with available data	Number of neonates with IVH G3/4 or PVL	Adjusted# expected number of neonates with IVH G3/4 or PVL	Adjusted# standardized ratio	95% confidence interval for adjusted standardized ratio	
1	50	50	6	7.2	0.8	0.3	1.8
2	22	22	2	2.1	1.0	0.1	3.5
5	69	68	7	7.3	1.0	0.4	2.0
6	66	63	11	8.2	1.3	0.7	2.4
7	20	13	1	1.2	0.8	0.0	4.5
8	32	30	3	3.5	0.9	0.2	2.5
9	8	8	1	1.0	1.0	0.0	5.5
10	11	11	2	1.0	2.0	0.2	7.1
11	28	28	5	3.7	1.4	0.4	3.2
12	97	88	11	10.4	1.1	0.5	1.9
14	85	80	10	9.0	1.1	0.5	2.1
15	69	66	5	7.9	0.6	0.2	1.5
16	78	77	7	8.3	0.8	0.3	1.7
17	12	12	0	1.1	0.0	.	3.3
18	36	36	10	4.7	2.1	1.0	3.9
19	19	19	1	1.5	0.7	0.0	3.8
20	27	25	5	3.7	1.3	0.4	3.1
21	22	21	1	2.3	0.4	0.0	2.4
22	13	13	2	1.0	2.0	0.2	7.2
23	111	104	14	14.6	1.0	0.5	1.6
25	61	58	8	7.6	1.0	0.5	2.1
26	183	177	20	22.5	0.9	0.5	1.4
27	50	48	8	6.3	1.3	0.6	2.5
28	180	178	16	20.7	0.8	0.4	1.3
29	105	104	9	12.0	0.7	0.3	1.4
30	59	58	3	7.4	0.4	0.1	1.2
31	11	10	2	1.0	2.0	0.2	7.2
32	28	26	7	3.5	2.0	0.8	4.1
33	33	32	8	3.5	2.3	1.0	4.4

Numeric site codes were used in Presentations 44a-d and they may not correspond to other presentations in this report.
Neonates with major congenital anomalies are excluded.
The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.

Note: Sites 3, 4, 13, 24 were excluded from the analysis due to the small number of eligible neonates.

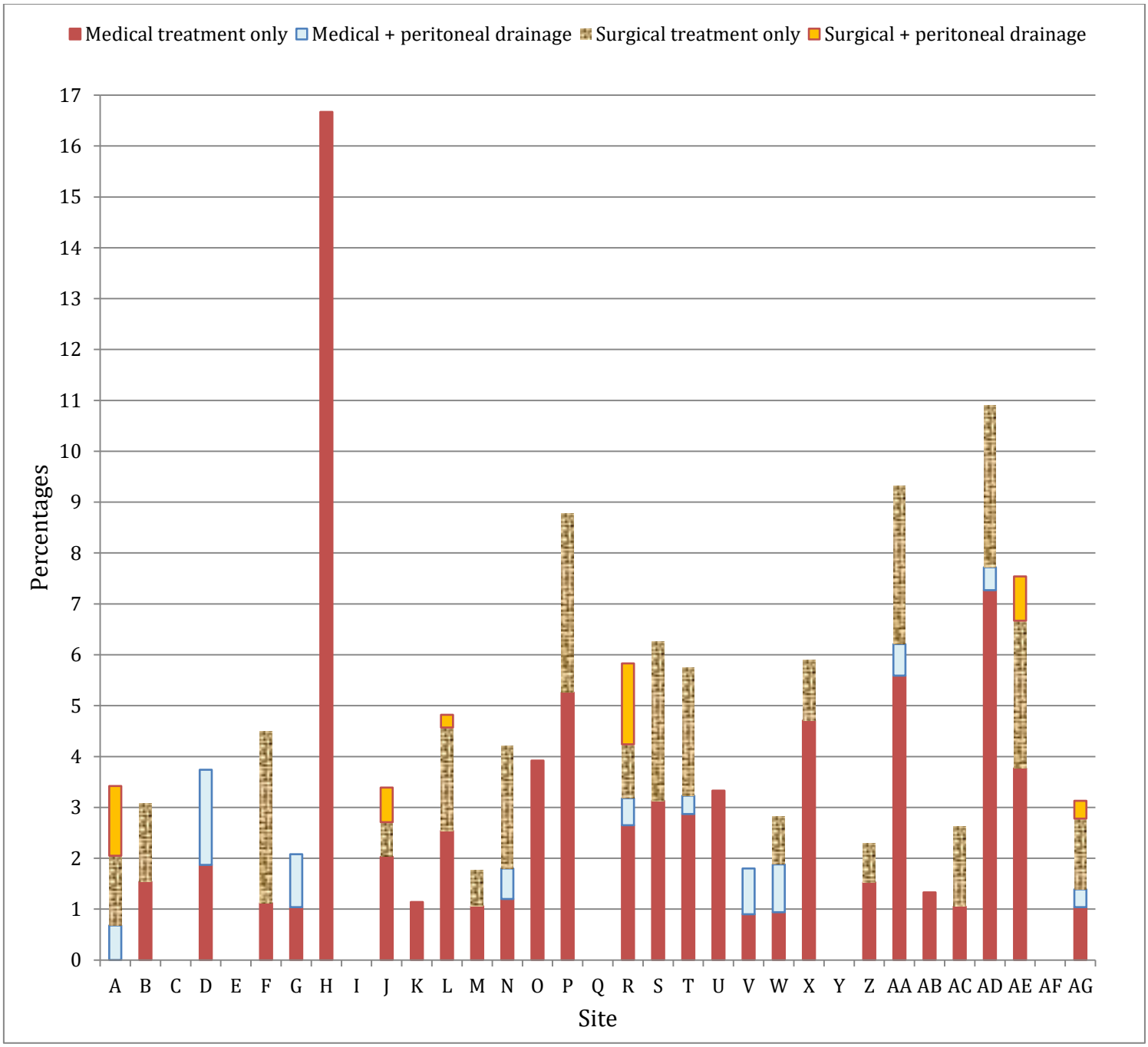
Presentation #44d
IVH grade 3 or 4 or PVL: GA<29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 44c
Column 1: Numeric site codes
Column 2: Total number of neonates at each site (<29 weeks GA and no major anomaly)
Column 3: Number of eligible neonates at each site (<29 weeks GA and no major anomaly) who were actually used to fit the model
Column 4: Number of neonates with outcome of interest among those eligible neonates
Column 5: Expected number of neonates with outcome of interest after adjustment for GA, SGA, sex, and SNAPII > 20
Column 6: Adjusted standardized ratio calculated based on observed IVH or PVL/expected IVH or PVL
Columns 7 and 8: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 44d
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

Presentation #45
Necrotizing enterocolitis (NEC) treatment rates: GA<33 weeks:
Site specific crude rates



Presentation #45 (continued)
Necrotizing enterocolitis (NEC) treatment rates: GA<33 weeks:
Site specific crude rates

Site	Treatment (%)				
	Medical treatment only	Medical + peritoneal drainage	Laparotomy only	Peritoneal drainage + Laparotomy	Any
A	0.0	0.7	1.4	1.4	3.4
B	1.5	0.0	1.5	0.0	3.1
C	0.0	0.0	0.0	0.0	0.0
D	1.9	1.9	0.0	0.0	3.7
E	0.0	0.0	0.0	0.0	0.0
F	1.1	0.0	3.4	0.0	4.5
G	1.0	1.0	0.0	0.0	2.1
H	16.7	0.0	0.0	0.0	16.7
I	0.0	0.0	0.0	0.0	0.0
J	2.0	0.0	0.7	0.7	3.4
K	1.1	0.0	0.0	0.0	1.1
L	2.5	0.0	2.0	0.3	4.8
M	1.1	0.0	0.7	0.0	1.8
N	1.2	0.6	2.4	0.0	4.2
O	3.9	0.0	0.0	0.0	3.9
P	5.3	0.0	3.5	0.0	8.8
Q	0.0	0.0	0.0	0.0	0.0
R	2.7	0.5	1.1	1.6	5.8
S	3.1	0.0	3.1	0.0	6.3
T	2.9	0.4	2.5	0.0	5.7
U	3.3	0.0	0.0	0.0	3.3
V	0.9	0.9	0.0	0.0	1.8
W	0.9	0.9	0.9	0.0	2.8
X	4.7	0.0	1.2	0.0	5.9
Y	0.0	0.0	0.0	0.0	0.0
Z	1.5	0.0	0.8	0.0	2.3
AA	5.6	0.6	3.1	0.0	9.3
AB	1.3	0.0	0.0	0.0	1.3
AC	1.1	0.0	1.6	0.0	2.6
AD	7.3	0.5	3.2	0.0	10.9
AE	3.8	0.0	2.9	0.9	7.5
AF	0.0	0.0	0.0	0.0	0.0
AG	1.0	0.4	1.4	0.4	3.1
Total	2.3	0.3	1.5	0.3	4.3

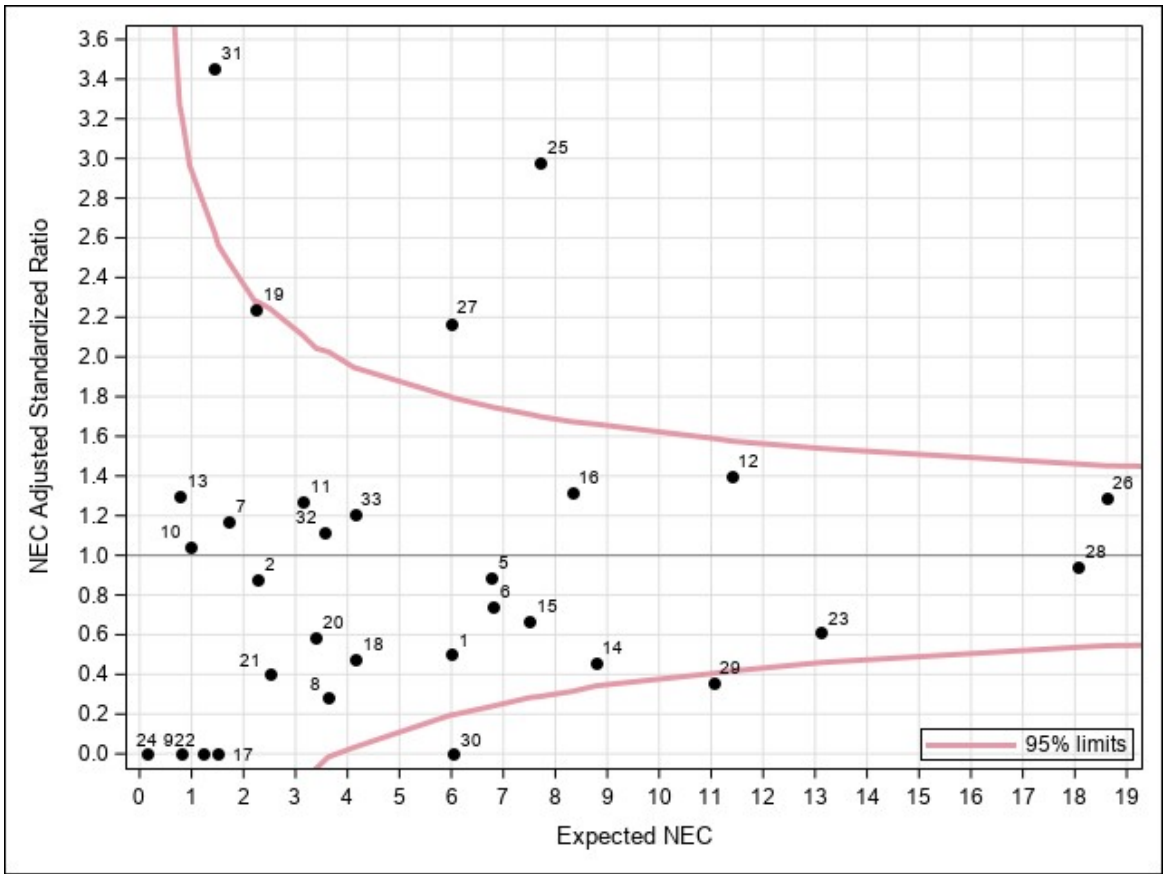
COMMENTS: These analyses include 4 312 neonates from 33 sites.

Presentation #46a
Necrotizing enterocolitis (NEC): GA<33 weeks: Adjusted standardized ratios by site

Site	Number of neonates	Number of neonates with NEC	Adjusted# expected number of neonates with NEC	Adjusted# standardized ratio	95% confidence interval for adjusted standardized ratio	
1	126	3	6.0	0.5	0.1	1.5
2	63	2	2.3	0.9	0.1	3.2
5	161	6	6.8	0.9	0.3	1.9
6	140	5	6.8	0.7	0.2	1.7
7	56	2	1.7	1.2	0.1	4.2
8	86	1	3.6	0.3	0.0	1.5
9	27	0	0.8	0.0	.	4.5
10	28	1	1.0	1.0	0.0	5.8
11	88	4	3.1	1.3	0.3	3.3
12	272	16	11.4	1.4	0.8	2.3
13	30	1	0.8	1.3	0.0	7.2
14	189	4	8.8	0.5	0.1	1.2
15	187	5	7.5	0.7	0.2	1.6
16	188	11	8.3	1.3	0.7	2.4
17	56	0	1.5	0.0	.	2.4
18	109	2	4.1	0.5	0.1	1.7
19	83	5	2.2	2.2	0.7	5.2
20	101	2	3.4	0.6	0.1	2.1
21	70	1	2.5	0.4	0.0	2.2
22	44	0	1.2	0.0	.	3.0
23	271	8	13.1	0.6	0.3	1.2
24	10	0	0.2	0.0	.	24.2
25	211	23	7.7	3.0	1.9	4.5
26	342	24	18.6	1.3	0.8	1.9
27	150	13	6.0	2.2	1.2	3.7
28	371	17	18.1	0.9	0.5	1.5
29	271	4	11.0	0.4	0.1	0.9
30	128	0	6.0	0.0	.	0.6
31	55	5	1.4	3.5	1.1	8.1
32	106	4	3.6	1.1	0.3	2.9
33	143	5	4.1	1.2	0.4	2.8

Numeric site codes were used in Presentations 46a-d and they may not correspond to other presentations in this report. Neonates with major congenital anomalies are excluded.
Variables adjusted for in the prediction model: GA, SGA, sex, and SNAPII > 20
Note: Sites 3 and 4 were not included in this analysis due to small number of eligible neonates in this category.

Presentation #46b
Necrotizing enterocolitis (NEC): GA<33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 46a
Column 1: Numeric site codes
Column 2: Number of eligible neonates at each site (<33 weeks GA and no major anomaly)
Column 3: Number of neonates with outcome of interest among those eligible neonates
Column 4: Expected number of neonates with outcome of interest after adjustment for GA, SGA, sex, and SNAPII > 20
Column 5: Adjusted standardized ratio calculated based on observed NEC/expected NEC
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 46b
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

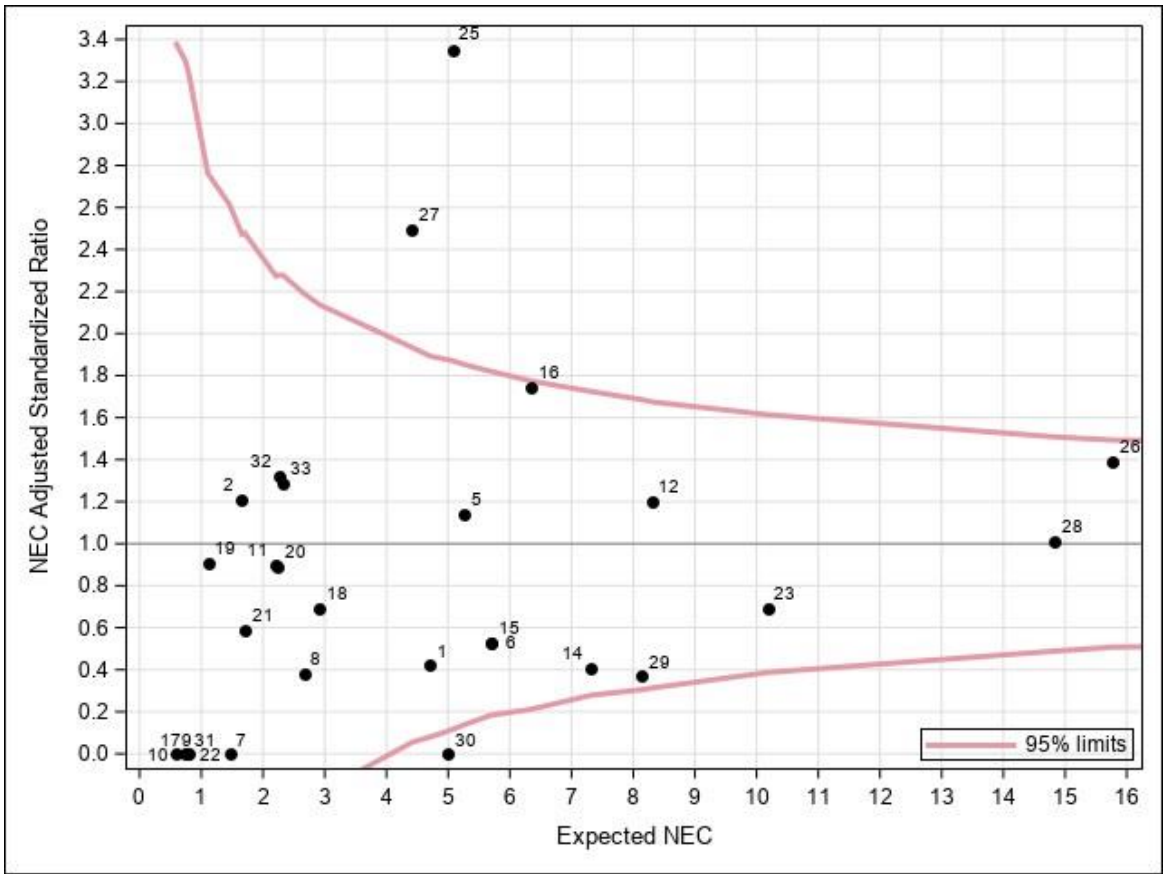
Presentation #46c
NEC: GA<29 weeks: Adjusted standardized ratios by site

Site	Number of neonates	Number of neonates with NEC	Adjusted## expected number of neonates with NEC	Adjusted## standardized ratio	95% confidence interval for adjusted standardized ratio	
1	50	2	4.7	0.4	0.0	1.5
2	22	2	1.7	1.2	0.1	4.4
5	69	6	5.3	1.1	0.4	2.5
6	66	3	5.7	0.5	0.1	1.5
7	16	0	1.5	0.0	.	2.5
8	32	1	2.7	0.4	0.0	2.1
9	8	0	0.6	0.0	.	6.4
10	11	0	0.7	0.0	.	5.1
11	28	2	2.2	0.9	0.1	3.3
12	97	10	8.3	1.2	0.6	2.2
14	84	3	7.3	0.4	0.1	1.2
15	68	3	5.7	0.5	0.1	1.5
16	78	11	6.3	1.7	0.9	3.1
17	12	0	0.8	0.0	.	4.5
18	36	2	2.9	0.7	0.1	2.5
19	19	1	1.1	0.9	0.0	5.0
20	27	2	2.2	0.9	0.1	3.2
21	22	1	1.7	0.6	0.0	3.3
22	13	0	0.8	0.0	.	4.9
23	111	7	10.2	0.7	0.3	1.4
25	61	17	5.1	3.4	2.0	5.4
26	183	22	15.8	1.4	0.9	2.1
27	50	11	4.4	2.5	1.2	4.5
28	180	15	14.8	1.0	0.6	1.7
29	105	3	8.1	0.4	0.1	1.1
30	59	0	5.0	0.0	.	0.7
31	11	0	0.8	0.0	.	4.7
32	28	3	2.3	1.3	0.3	3.9
33	33	3	2.3	1.3	0.3	3.8

Numeric site codes were used in Presentations 46a-d and they may not correspond to other presentations in this report.
Neonates with major congenital anomalies are excluded.
The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.

Note: Sites 3, 4, 13, 24 were excluded from the analysis due to the small number of eligible neonates.

Presentation #46d
NEC: GA<29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 46c
Column 1: Numeric site codes
Column 2: Number of eligible neonates at each site (<29 weeks GA and no major anomaly)
Column 3: Number of neonates with outcome of interest among those eligible neonates
Column 4: Expected number of neonates with outcome of interest after adjustment for GA, SGA, sex, and SNAPII > 20
Column 5: Adjusted standardized ratio calculated based on observed NEC/expected NEC
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 46d
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

Presentation #47
Chronic lung disease (CLD): GA<33 weeks: Site specific crude rates

	GA at birth					
Site	**<25**	**25-26**	**27-28**	**29-30**	**31-32**	**Overall CLD rate for sites**
A	100.0	71.4	64.7	26.5	12.0	26.7
B	50.0	62.5	22.2	0.0	3.6	14.8
C	100.0	66.7	25.0	12.5	3.7	14.6
D	100.0	88.9	50.0	17.7	4.6	22.5
E	NA	NA	NA	NA	33.3	33.3
F	100.0	75.0	29.4	19.1	8.1	22.9
G	93.3	51.9	41.2	13.6	6.6	28.7
H	100.0	.	100.0	100.0	33.3	66.7
I	83.3	57.9	62.5	13.0	6.7	31.6
J	81.8	57.1	20.0	17.9	8.0	25.9
K	80.0	60.0	44.4	11.1	3.9	23.5
L	93.3	70.0	58.2	39.1	14.7	45.2
M	88.2	78.1	48.0	27.4	19.1	38.2
N	75.0	52.4	34.3	20.5	5.9	25.8
O	NA	100.0	33.3	23.1	8.7	22.6
P	50.0	50.0	33.3	41.7	28.6	34.0
Q	NA	50.0	33.3	0.0	0.0	11.1
R	100.0	66.7	62.8	20.6	6.7	35.8
S	33.3	0.0	25.0	50.0	16.7	25.0
T	90.9	82.4	45.8	29.1	17.4	34.0
U	NA	0.0	25.0	0.0	0.0	3.5
V	100.0	85.7	56.3	21.9	18.6	35.5
W	100.0	42.9	22.2	13.0	5.6	14.6
X	0.0	100.0	42.9	31.0	13.5	28.2
Y	100.0	33.3	0.0	0.0	5.6	10.7
Z	71.4	64.0	21.4	12.5	6.5	25.0
AA	100.0	100.0	84.0	77.1	71.4	78.1
AB	100.0	100.0	46.7	25.0	14.7	31.9
AC	90.0	85.7	78.1	35.1	28.4	48.6
AD	100.0	85.0	59.3	24.6	6.6	28.9
AE	70.6	39.7	22.5	11.5	4.7	23.8
AF	NA	NA	NA	0.0	0.0	0.0
AG	87.5	71.0	51.0	27.4	11.2	36.8
Overall CLD rate for GA group	85.3	65.8	46.7	24.1	14.2	32.6

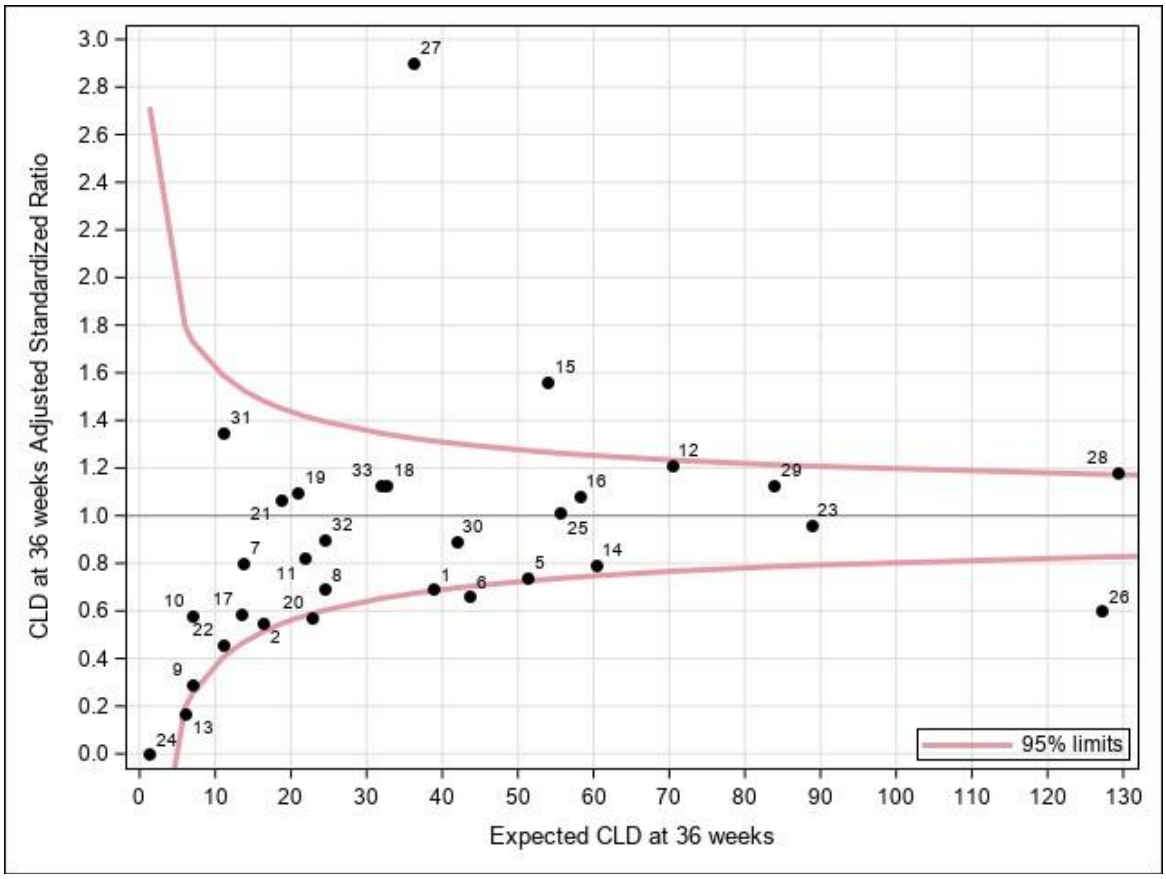
Total number of neonates = 4 032
289 neonates were excluded due to death prior to week 36 or first admission after week 36
NA = Data not available

Presentation #48a
Chronic lung disease (CLD): GA <33 weeks: Adjusted standardized ratios by site

Site	Total number of neonates	Number of neonates with available data	Number of neonates with CLD at 36w or discharge	Adjusted# expected number of CLD at 36w or discharge	Adjusted# standardized ratio	95% confidence interval for adjusted standardized ratio	
1	126	119	27	38.9	0.7	0.5	1.0
2	63	60	9	16.3	0.6	0.3	1.1
5	161	154	38	51.3	0.7	0.5	1.0
6	140	127	29	43.7	0.7	0.4	1.0
7	56	52	11	13.7	0.8	0.4	1.4
8	86	79	17	24.5	0.7	0.4	1.1
9	27	27	2	6.9	0.3	0.0	1.0
10	28	24	4	6.9	0.6	0.2	1.5
11	88	82	18	21.9	0.8	0.5	1.3
12	272	246	85	70.5	1.2	1.0	1.5
13	30	29	1	6.0	0.2	0.0	0.9
14	189	177	48	60.4	0.8	0.6	1.1
15	187	177	84	53.8	1.6	1.2	1.9
16	188	175	63	58.2	1.1	0.8	1.4
17	56	55	8	13.5	0.6	0.3	1.2
18	109	105	37	32.6	1.1	0.8	1.6
19	83	83	23	20.8	1.1	0.7	1.7
20	101	92	13	22.8	0.6	0.3	1.0
21	70	67	20	18.6	1.1	0.7	1.7
22	44	44	5	10.9	0.5	0.1	1.1
23	271	251	85	88.8	1.0	0.8	1.2
24	10	10	0	1.3	0.0	.	2.8
25	211	195	56	55.5	1.0	0.8	1.3
26	342	321	76	127.2	0.6	0.5	0.7
27	150	136	105	36.2	2.9	2.4	3.5
28	371	347	153	129.3	1.2	1.0	1.4
29	271	261	95	83.9	1.1	0.9	1.4
30	128	117	37	41.8	0.9	0.6	1.2
31	55	48	15	11.1	1.4	0.8	2.2
32	106	97	22	24.5	0.9	0.6	1.4
33	143	134	36	31.9	1.1	0.8	1.6

Numeric site codes were used in Presentations 48a-d and they may not correspond to other presentations in this report. Neonates with major congenital anomalies and death before 36 weeks were excluded. # The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.
Note: Site 3 and 4 were not included in this analysis due to small number of eligible neonates in this category.

Presentation #48b
Chronic lung disease (CLD): GA <33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 48a
Column 1: Numeric site codes
Column 2: Total number of neonates at each site (<33 weeks GA and no major anomaly)
Column 3: Number of eligible neonates at each site (<33 weeks GA and no major anomaly) who were actually used to fit the model
Column 4: Number of neonates with outcome of interest among those eligible neonates
Column 5: Expected number of neonates with outcome of interest after adjustment for GA, SGA, sex, and SNAPII > 20
Column 6: Adjusted standardized ratio calculated based on observed CLD/expected CLD
Columns 7 and 8: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 48b
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

Note: Deaths before 36 weeks were excluded in the denominator.

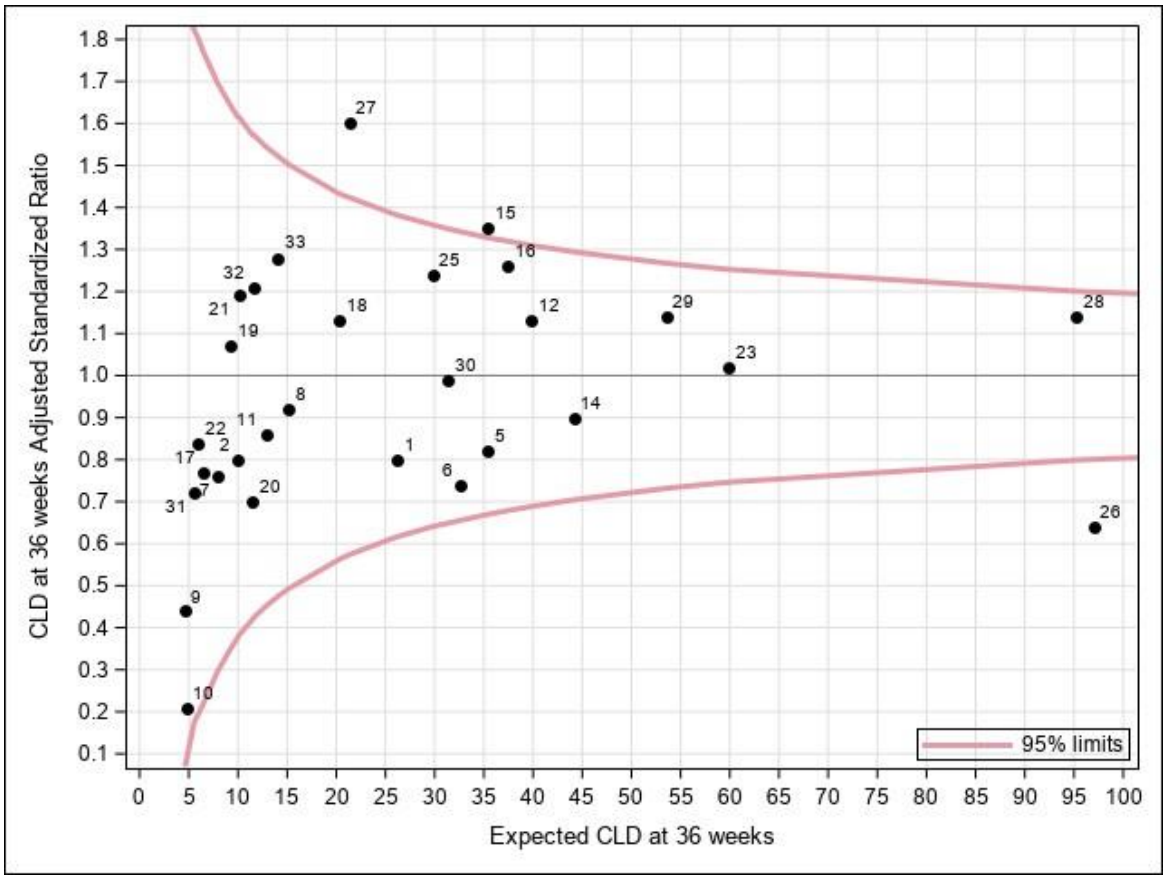
Presentation #48c
Chronic lung disease (CLD): GA <29 weeks: Adjusted standardized ratios by site

Site	Total number of neonates	Number of neonates with available data	Number of neonates with CLD at 36w or discharge	Adjusted# expected number of neonates with CLD at 36w or discharge	Adjusted# standardized ratio	95% confidence interval for adjusted standardized ratio	
1	50	43	21	26.1	0.8	0.5	1.2
2	22	19	8	10.0	0.8	0.3	1.6
5	69	63	29	35.3	0.8	0.5	1.2
6	66	55	24	32.6	0.7	0.5	1.1
7	20	16	6	7.9	0.8	0.3	1.6
8	32	27	14	15.1	0.9	0.5	1.6
9	8	8	2	4.6	0.4	0.0	1.6
10	11	9	1	4.8	0.2	0.0	1.2
11	28	24	11	12.8	0.9	0.4	1.5
12	97	73	45	39.8	1.1	0.8	1.5
14	85	74	40	44.3	0.9	0.6	1.2
15	69	59	48	35.4	1.4	1.0	1.8
16	78	67	47	37.4	1.3	0.9	1.7
17	12	12	5	6.5	0.8	0.2	1.8
18	36	32	23	20.3	1.1	0.7	1.7
19	19	19	10	9.3	1.1	0.5	2.0
20	27	19	8	11.4	0.7	0.3	1.4
21	22	19	12	10.1	1.2	0.6	2.1
22	13	13	5	5.9	0.8	0.3	2.0
23	111	96	61	59.9	1.0	0.8	1.3
25	61	50	37	29.8	1.2	0.9	1.7
26	183	162	62	97.1	0.6	0.5	0.8
27	50	38	34	21.3	1.6	1.1	2.2
28	180	163	109	95.2	1.1	0.9	1.4
29	105	96	61	53.5	1.1	0.9	1.5
30	59	49	31	31.3	1.0	0.7	1.4
31	11	10	4	5.5	0.7	0.2	1.8
32	28	20	14	11.6	1.2	0.7	2.0
33	33	26	18	14.1	1.3	0.8	2.0

Numeric site codes were used in Presentations 48a-d and they may not correspond to other presentations in this report.
Neonates with major congenital anomalies and death before 36 weeks were excluded.
The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.

Note: Sites 3, 4, 13, 24 were excluded from the analysis due to the small number of eligible neonates.

Presentation #48d
Chronic lung disease (CLD): GA <29 weeks: Adjusted standardized ratios by site

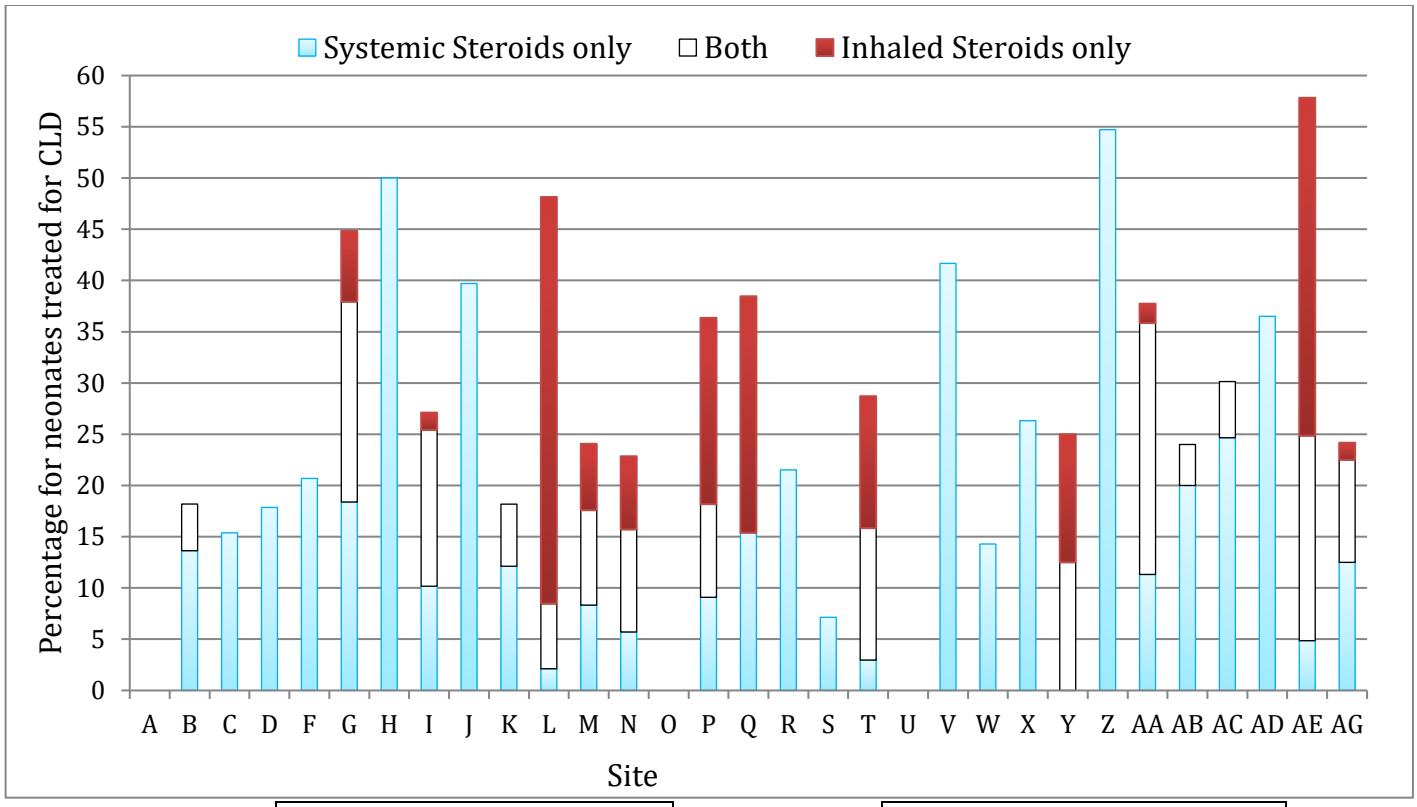


Explanation for Presentation 48c
Column 1: Numeric site codes
Column 2: Total number of neonates at each site (<29 weeks GA and no major anomaly)
Column 3: Number of eligible neonates at each site (<29 weeks GA and no major anomaly) who were actually used to fit the model
Column 4: Number of neonates with outcome of interest among those eligible neonates
Column 5: Expected number of neonates with outcome of interest after adjustment for GA, SGA, sex, and SNAPII > 20
Column 6: Adjusted standardized ratio calculated based on observed CLD/expected CLD
Columns 7 and 8: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 48d
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

Note: Deaths before 36 weeks were excluded in the denominator.

Presentation #49a
Postnatal use of steroids for treatment of CLD: GA<29 weeks: Site specific crude rates†

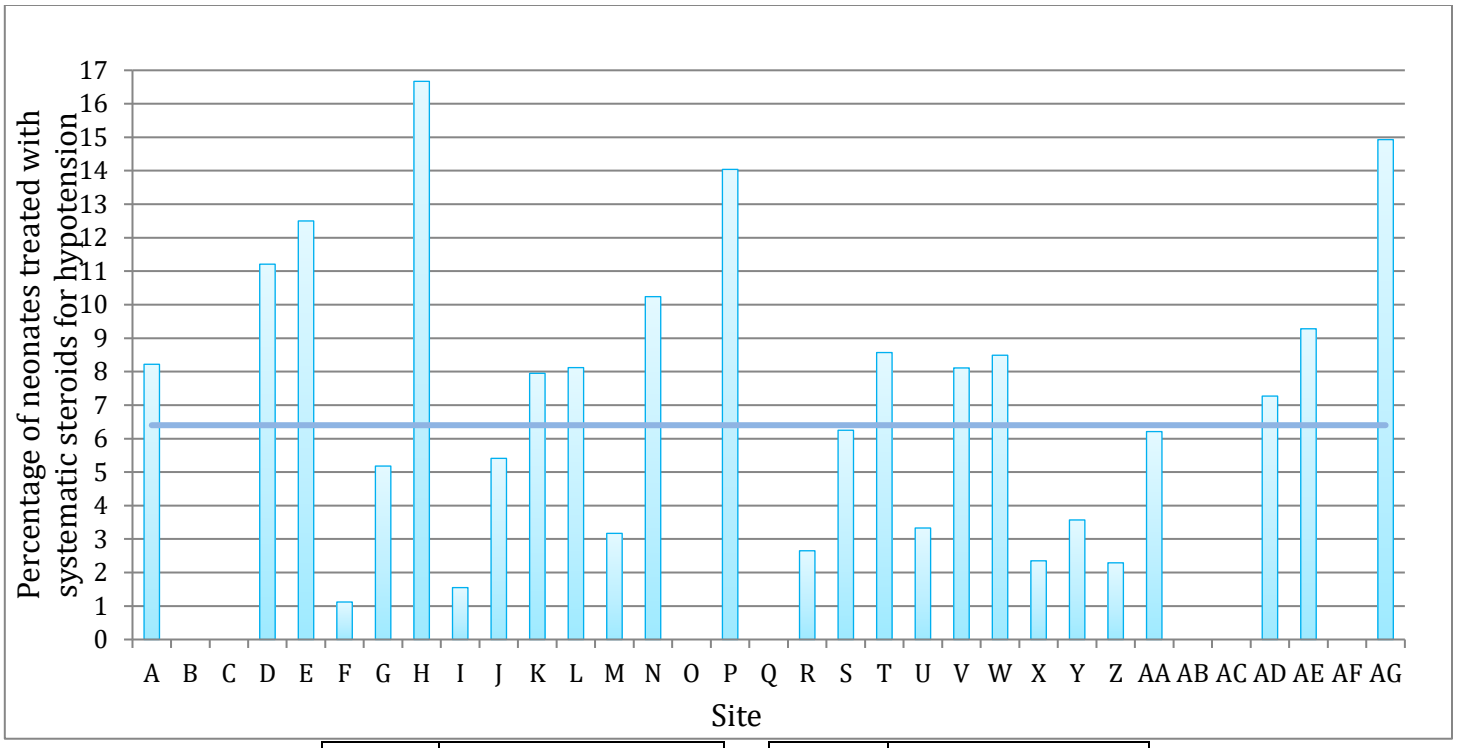


Site	Postnatal steroid use (%)		
	Systemic Steroids only	Both	Inhaled Steroids only
A	0.0	0.0	0.0
B	13.6	4.6	0.0
C	15.4	0.0	0.0
D	17.9	0.0	0.0
F	20.7	0.0	0.0
G	18.4	19.5	6.9
H	50.0	0.0	0.0
I	10.2	15.3	1.7
J	39.7	0.0	0.0
K	12.1	6.1	0.0
L	2.1	6.4	39.7
M	8.3	9.3	6.5
N	5.7	10.0	7.1
O	0.0	0.0	0.0
P	9.1	9.1	18.2
Q	15.4	0.0	23.1

Site	Postnatal steroid use (%)		
	Systemic Steroids only	Both	Inhaled Steroids only
R	21.5	0.0	0.0
S	7.1	0.0	0.0
T	3.0	12.9	12.9
U	0.0	0.0	0.0
V	41.7	0.0	0.0
W	14.3	0.0	0.0
X	26.3	0.0	0.0
Y	0.0	12.5	12.5
Z	54.7	0.0	0.0
AA	11.3	24.5	1.9
AB	20.0	4.0	0.0
AC	24.7	5.5	0.0
AD	36.5	0.0	0.0
AE	4.9	20.0	33.0
AG	12.5	10.0	1.7
Total	14.6	8.5	10.7

Total number of neonates = 1 649
† Percentage of neonates treated for CLD at each network site; results were attributed to the site of first admission; Sites E and AF did not have any neonates with GA<29.
COMMENTS: Specific criteria for these treatments at each site were not documented here.

Presentation #49b
Systemic steroids for hypotension: GA<33 weeks: Site specific crude rates†



Site	Postnatal systemic steroids use for hypotension (%)
A	8.2
B	0.0
C	0.0
D	11.2
E	12.5
F	1.1
G	5.2
H	16.7
I	1.6
J	5.4
K	8.0
L	8.1
M	3.2
N	10.2
O	0.0
P	14.0
Q	0.0

Site	Postnatal systemic steroids use for hypotension (%)
R	2.7
S	6.3
T	8.6
U	3.3
V	8.1
W	8.5
X	2.4
Y	3.6
Z	2.3
AA	6.2
AB	0.0
AC	0.0
AD	7.3
AE	9.3
AF	0.0
AG	14.9
Total	6.4

Total number of neonates = 4 321
† Percentage of neonates treated with systemic steroids for hypotension at each network site; results were attributed to the site of first admission.

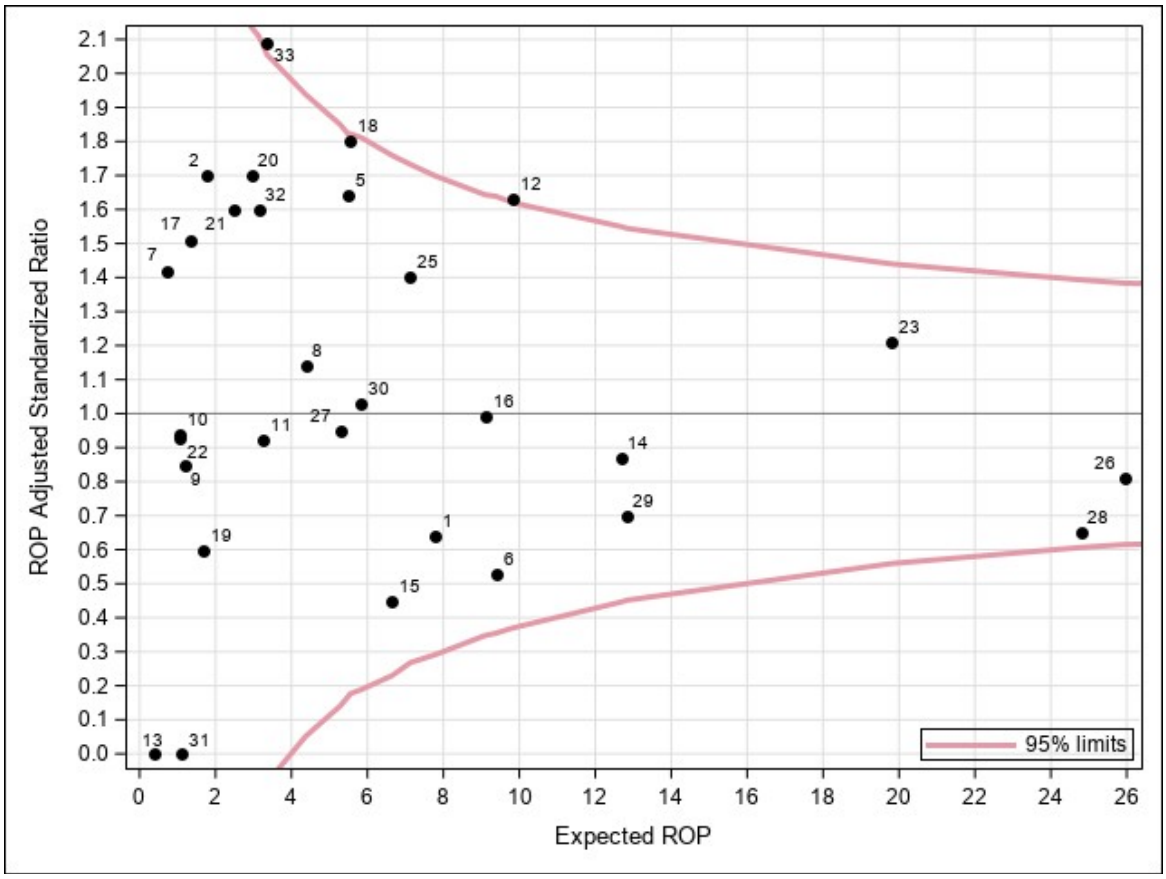
COMMENTS: Specific criteria for these treatments at each site were not documented here.

Presentation #50a
ROP ≥ Stage 3: GA<33 weeks: Adjusted standardized ratios by site

Site	Total number of neonates	Number of neonates with available data	Number of neonates with ROP ≥ Stage 3	Adjusted# expected number of neonates with ROP ≥ Stage 3	Adjusted# standardized ratio	95% confidence interval for adjusted standardized ratio	
1	126	77	5	7.8	0.6	0.2	1.5
2	63	23	3	1.8	1.7	0.3	5.0
5	161	32	9	5.5	1.6	0.7	3.1
6	140	70	5	9.4	0.5	0.2	1.2
7	56	20	1	0.7	1.4	0.0	7.9
8	86	46	5	4.4	1.1	0.4	2.7
9	27	17	1	1.2	0.9	0.0	4.7
10	28	14	1	1.1	0.9	0.0	5.2
11	88	34	3	3.3	0.9	0.2	2.7
12	272	72	16	9.8	1.6	0.9	2.6
13	30	19	0	0.4	0.0	.	9.8
14	189	112	11	12.7	0.9	0.4	1.6
15	187	90	3	6.7	0.5	0.1	1.3
16	188	55	9	9.1	1.0	0.5	1.9
17	56	30	2	1.3	1.5	0.2	5.5
18	109	71	10	5.6	1.8	0.9	3.3
19	83	42	1	1.7	0.6	0.0	3.3
20	101	29	5	2.9	1.7	0.5	4.0
21	70	35	4	2.5	1.6	0.4	4.1
22	44	35	1	1.1	0.9	0.0	5.2
23	271	113	24	19.8	1.2	0.8	1.8
25	211	89	10	7.1	1.4	0.7	2.6
26	342	138	21	25.9	0.8	0.5	1.2
27	150	41	5	5.3	0.9	0.3	2.2
28	371	180	16	24.8	0.6	0.4	1.0
29	271	94	9	12.9	0.7	0.3	1.3
30	128	33	6	5.8	1.0	0.4	2.2
31	55	8	0	1.1	0.0	.	3.3
32	106	50	5	3.1	1.6	0.5	3.7
33	143	69	7	3.4	2.1	0.8	4.3

Numeric site codes were used in Presentations 50a-d and they may not correspond to other presentations in this report.
Neonates with major congenital anomalies are excluded.
The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.
Note: Sites 3, 4, 24 were not included in this analysis due to small number of eligible neonates in this category.

Presentation #50b
ROP ≥ Stage 3: GA<33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 50a
Column 1: Numeric site codes
Column 2: Total number of neonates at each site (<33 weeks GA and no major anomaly)
Column 3: Number of eligible neonates at each site (<33 weeks GA and no major anomaly) who were actually used to fit the model
Column 4: Number of neonates with outcome of interest among those eligible neonates
Column 5: Expected number of neonates with outcome of interest after adjustment for GA, SGA, sex, and SNAPII > 20
Column 6: Adjusted standardized ratio calculated based on observed ROP/expected ROP
Columns 7 and 8: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 50b
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

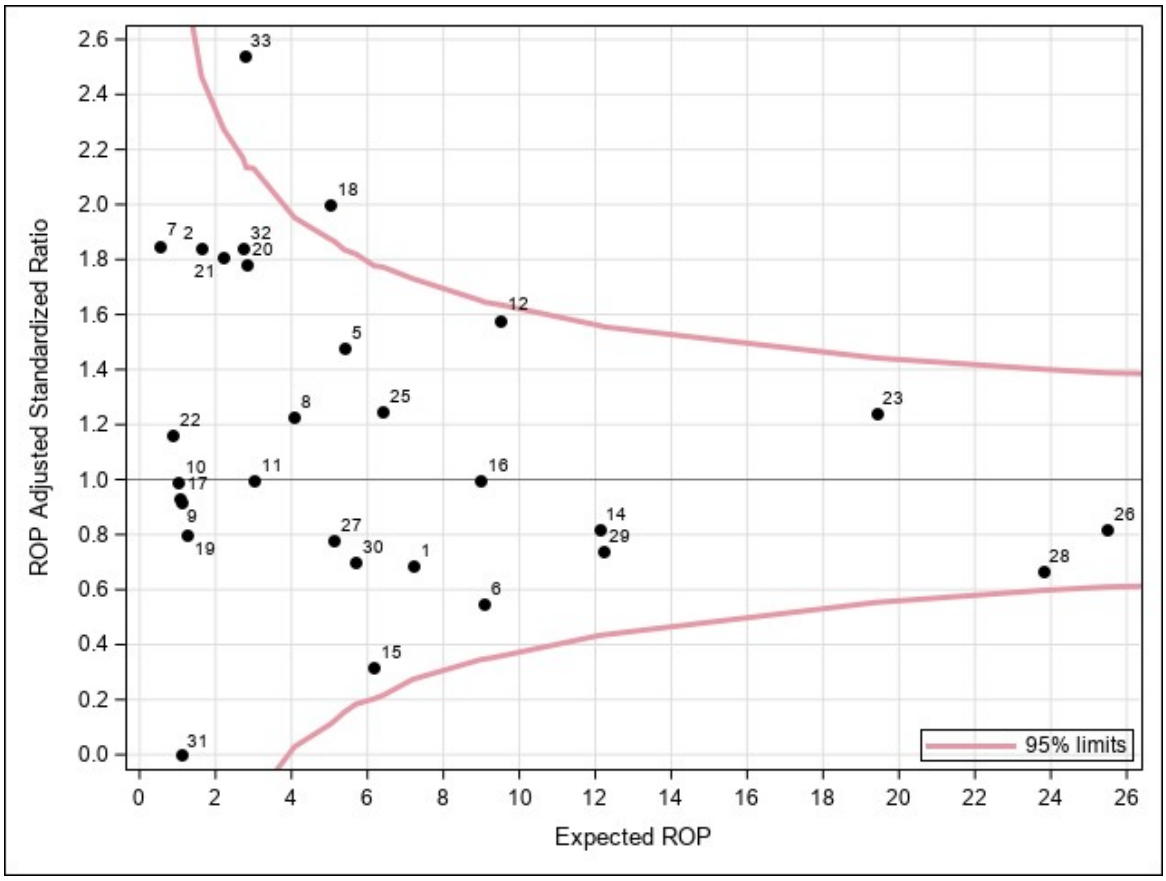
Presentation #50c
ROP ≥ Stage 3: GA<29 weeks: Adjusted standardized ratios by site

Site	Total number of neonates	Number of neonates with available data	Number of neonates with ROP≥ Stage 3	Adjusted# expected number of neonates with ROP≥ Stage 3	Adjusted# standardized ratio	95% confidence interval for adjusted standardized ratio	
1	50	43	5	7.2	0.7	0.2	1.6
2	22	17	3	1.6	1.8	0.4	5.4
5	69	29	8	5.4	1.5	0.6	2.9
6	66	55	5	9.1	0.6	0.2	1.3
7	20	10	1	0.5	1.8	0.0	10.3
8	32	26	5	4.1	1.2	0.4	2.9
9	8	8	1	1.1	0.9	0.0	5.1
10	11	8	1	1.0	1.0	0.0	5.5
11	28	17	3	3.0	1.0	0.2	2.9
12	97	54	15	9.5	1.6	0.9	2.6
14	85	70	10	12.1	0.8	0.4	1.5
15	69	38	2	6.2	0.3	0.0	1.2
16	78	48	9	9.0	1.0	0.5	1.9
17	12	12	1	1.1	0.9	0.0	5.2
18	36	32	10	5.0	2.0	1.0	3.7
19	19	17	1	1.3	0.8	0.0	4.4
20	27	13	5	2.8	1.8	0.6	4.2
21	22	19	4	2.2	1.8	0.5	4.6
22	13	13	1	0.9	1.2	0.0	6.4
23	111	83	24	19.4	1.2	0.8	1.8
25	61	44	8	6.4	1.3	0.5	2.5
26	183	125	21	25.5	0.8	0.5	1.3
27	50	27	4	5.1	0.8	0.2	2.0
28	180	145	16	23.8	0.7	0.4	1.1
29	105	77	9	12.2	0.7	0.3	1.4
30	59	29	4	5.7	0.7	0.2	1.8
31	11	5	0	1.1	0.0	.	3.4
32	28	20	5	2.7	1.8	0.6	4.3
33	33	25	7	2.8	2.5	1.0	5.2

Numeric site codes were used in Presentations 50a-d and they may not correspond to other presentations in this report.
Neonates with major congenital anomalies are excluded.
The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.

Note: Sites 3, 4, 13, 24 were excluded from the analysis due to the small number of eligible neonates.

Presentation #50d
ROP ≥ Stage 3: GA<29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 50c
Column 1: Numeric site codes
Column 2: Total number of neonates at each site (<29 weeks GA and no major anomaly)
Column 3: Number of eligible neonates at each site (<29 weeks GA and no major anomaly) who were actually used to fit the model
Column 4: Number of neonates with outcome of interest among those eligible neonates
Column 5: Expected number of neonates with outcome of interest after adjustment for GA, SGA, sex, and SNAPII > 20
Column 6: Adjusted standardized ratio calculated based on observed ROP/expected ROP
Columns 7 and 8: 95% CI around the adjusted standardized ratio for the outcome

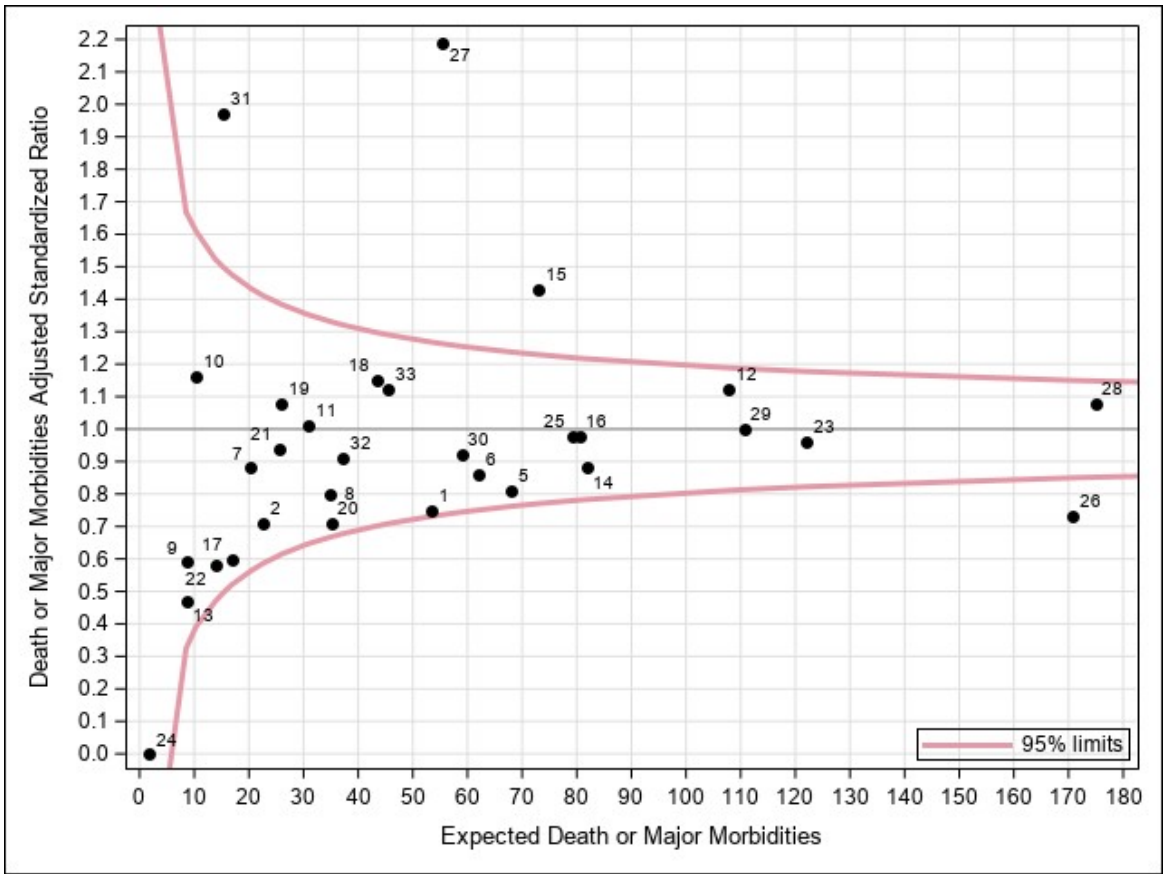
Explanation for Presentation 50d
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

Presentation #51a
Mortality or major morbidity: GA < 33 weeks: Adjusted standardized ratios by site

Site	Number of neonates	Number of neonates with mortality or major morbidities	Adjusted# expected number of neonates with mortality or major morbidities	Adjusted# standardized ratio	95% confidence interval for adjusted standardized ratio	
1	126	40	53.5	0.7	0.5	1.0
2	63	16	22.6	0.7	0.4	1.2
5	161	55	68.1	0.8	0.6	1.1
6	140	53	62.0	0.9	0.6	1.1
7	56	18	20.4	0.9	0.5	1.4
8	86	28	34.9	0.8	0.5	1.2
9	27	5	8.5	0.6	0.2	1.4
10	28	12	10.3	1.2	0.6	2.0
11	88	31	30.8	1.0	0.7	1.4
12	272	121	107.9	1.1	0.9	1.3
13	30	4	8.5	0.5	0.1	1.2
14	189	72	81.9	0.9	0.7	1.1
15	187	104	72.8	1.4	1.2	1.7
16	188	79	80.4	1.0	0.8	1.2
17	56	10	16.8	0.6	0.3	1.1
18	109	50	43.4	1.2	0.9	1.5
19	83	28	25.9	1.1	0.7	1.6
20	101	25	35.1	0.7	0.5	1.1
21	70	24	25.6	0.9	0.6	1.4
22	44	8	13.8	0.6	0.2	1.1
23	271	117	122.1	1.0	0.8	1.1
24	10	0	1.7	0.0	.	2.2
25	211	78	79.4	1.0	0.8	1.2
26	342	125	170.8	0.7	0.6	0.9
27	150	121	55.3	2.2	1.8	2.6
28	371	189	175.0	1.1	0.9	1.2
29	271	111	110.7	1.0	0.8	1.2
30	128	54	58.9	0.9	0.7	1.2
31	55	30	15.3	2.0	1.3	2.8
32	106	34	37.3	0.9	0.6	1.3
33	143	51	45.5	1.1	0.8	1.5

Major morbidity = IVH 3 or 4 or PVL or BPD or ROP >stage 2 or NEC or nosocomial sepsis
Numeric site codes were used in Presentations 51a-d and they may not correspond to other presentations in this report. Neonates with major congenital anomalies were excluded.
The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.
Note: Sites 3 and 4 were not included in this analysis due to small number of eligible neonates in this category.

Presentation #51b
Mortality or major morbidity: GA < 33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 51a
Column 1: Numeric site codes
Column 2: Number of eligible neonates at each site (<33 weeks GA and no major anomaly)
Column 3: Number of neonates with outcome of interest among those eligible neonates
Column 4: Expected number of neonates with outcome of interest after adjustment for GA, small for gestational age, sex, and SNAPII > 20
Column 5: Adjusted standardized ratio calculated based on observed death or morbidities/expected deaths or morbidities
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

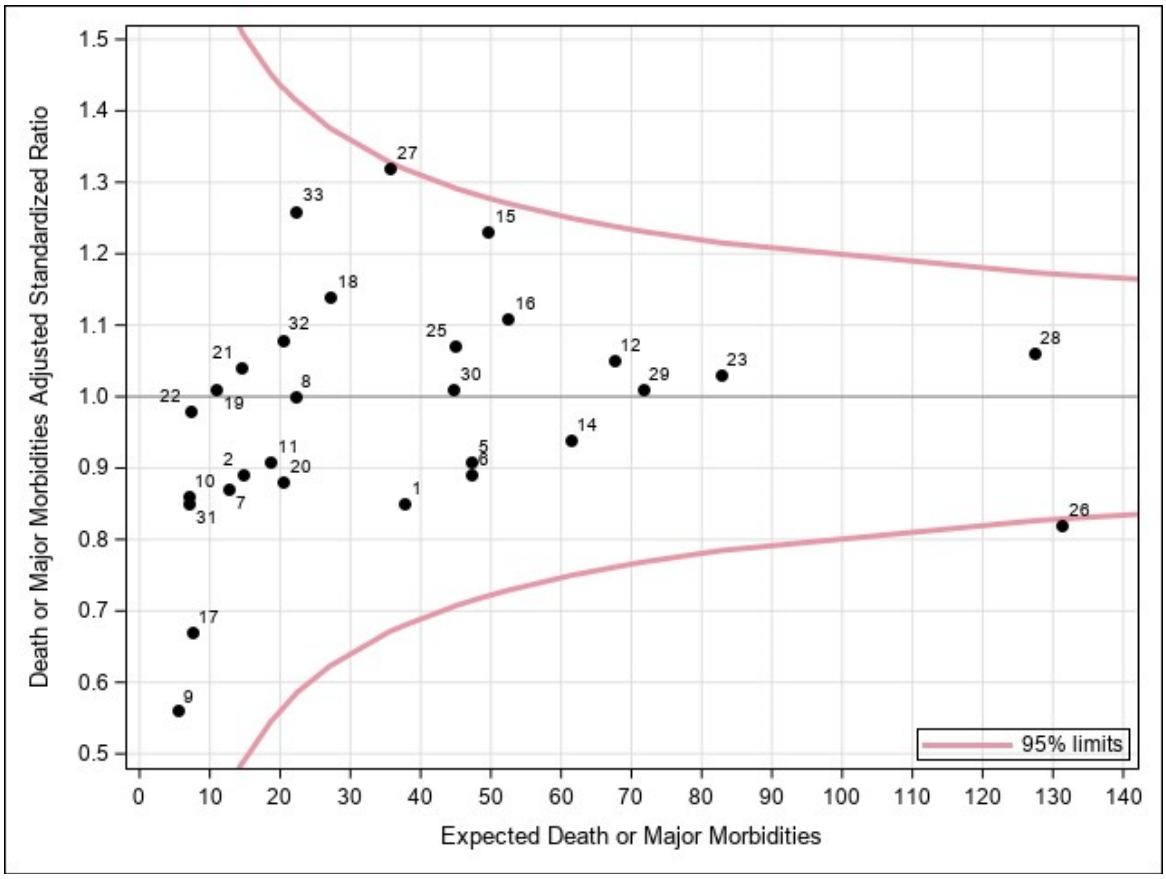
Explanation for Presentation 51b
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

Presentation #51c
Mortality or major morbidity: GA < 29 weeks: Adjusted standardized ratios by site

Site	Number of neonates	Number of neonates with mortality or major morbidities	Adjusted# expected number of neonates with mortality or major morbidities	Adjusted# standardized ratio	95% confidence interval for adjusted standardized ratio	
1	50	32	37.7	0.8	0.6	1.2
2	22	13	14.6	0.9	0.5	1.5
5	69	43	47.1	0.9	0.7	1.2
6	66	42	47.2	0.9	0.6	1.2
7	20	11	12.7	0.9	0.4	1.6
8	32	22	22.1	1.0	0.6	1.5
9	8	3	5.4	0.6	0.1	1.6
10	11	6	6.9	0.9	0.3	1.9
11	28	17	18.7	0.9	0.5	1.5
12	97	71	67.4	1.1	0.8	1.3
14	85	58	61.5	0.9	0.7	1.2
15	69	61	49.5	1.2	0.9	1.6
16	78	58	52.5	1.1	0.8	1.4
17	12	5	7.5	0.7	0.2	1.6
18	36	31	27.1	1.1	0.8	1.6
19	19	11	10.9	1.0	0.5	1.8
20	27	18	20.4	0.9	0.5	1.4
21	22	15	14.5	1.0	0.6	1.7
22	13	7	7.1	1.0	0.4	2.0
23	111	85	82.8	1.0	0.8	1.3
25	61	48	45.0	1.1	0.8	1.4
26	183	108	131.4	0.8	0.7	1.0
27	50	47	35.6	1.3	1.0	1.8
28	180	135	127.4	1.1	0.9	1.3
29	105	72	71.6	1.0	0.8	1.3
30	59	45	44.6	1.0	0.7	1.3
31	11	6	7.1	0.9	0.3	1.9
32	28	22	20.3	1.1	0.7	1.6
33	33	28	22.3	1.3	0.8	1.8

Major morbidity = IVH 3 or 4 or PVL or BPD or ROP >stage 2 or NEC or nosocomial sepsis
Numeric site codes were used in Presentations 51a-d and they may not correspond to other presentations in this report.
Neonates with major congenital anomalies were excluded.
The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.
Note: Sites 3, 4, 13, 24 were excluded from the analysis due to the small number of eligible neonates.

Presentation #51d
Mortality or major morbidity: GA < 29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 51c
Column 1: Numeric site codes
Column 2: Number of eligible neonates at each site (<29 weeks GA and no major anomaly)
Column 3: Number of neonates with outcome of interest among those eligible neonates
Column 4: Expected number of neonates with outcome of interest after adjustment for GA, SGA, sex, and SNAPII > 20
Column 5: Adjusted standardized ratio calculated based on observed death or morbidities/expected deaths or morbidities
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

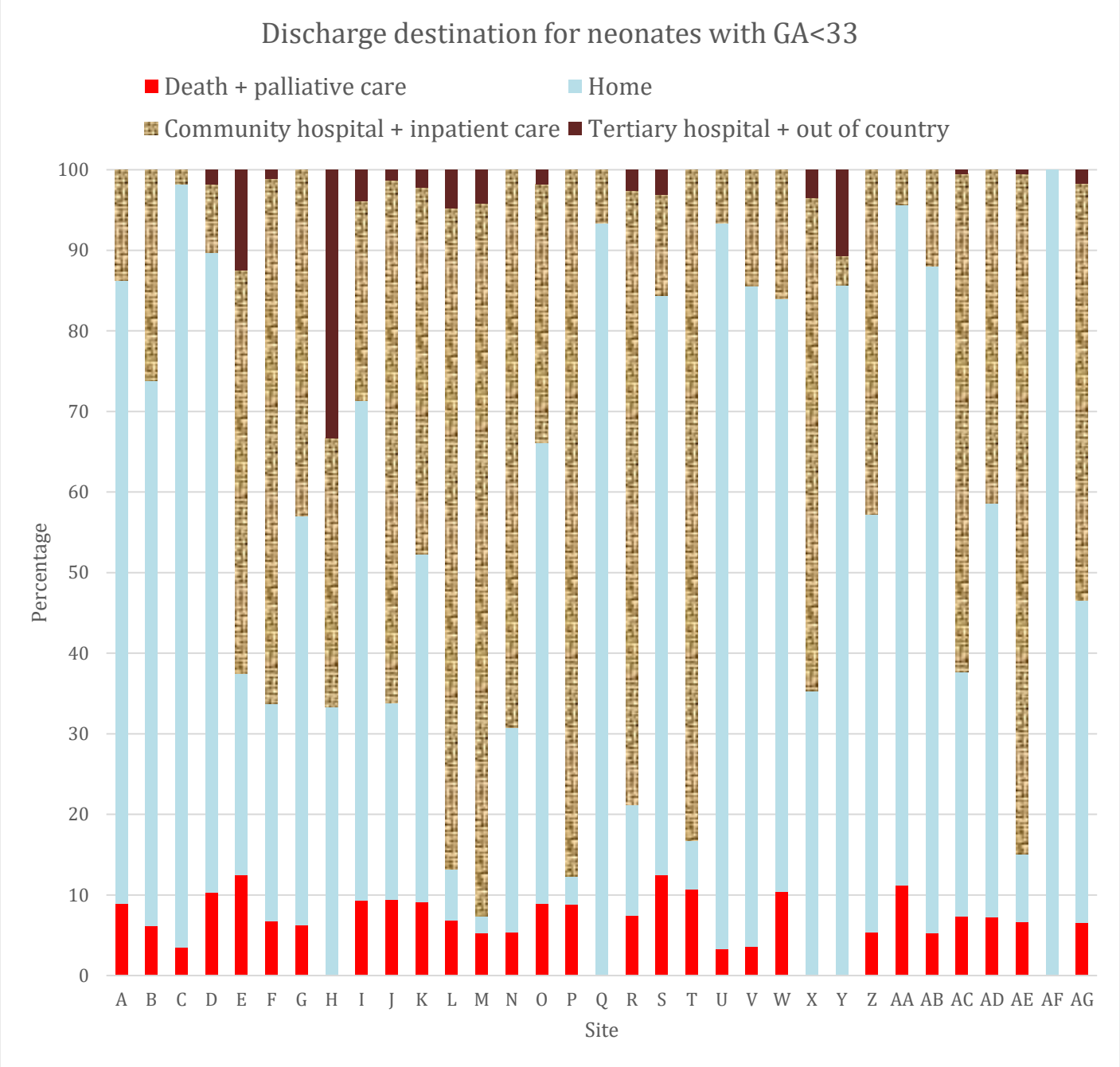
Explanation for Presentation 51d
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

F. Discharge Disposition and Status

Presentation #52a
Final discharge destination: All GA: Crude rates

		GA (completed weeks)								
		< 25	**25-26**	**27-28**	**29-30**	**31-32**	**33-34**	**35-36**	**≥37**	**Total**
Home	N	116	210	310	372	624	1008	1236	3317	7193
	%	33.1	40.8	39.6	33.3	40.2	49.7	53.9	56.7	
Community hospital	N	49	172	368	643	777	735	460	565	3769
	%	14.0	33.4	47.0	57.6	50.0	36.3	20.1	9.7	
Tertiary hospital	N	22	10	13	8	12	30	39	231	365
	%	6.3	1.9	1.7	0.7	0.8	1.5	1.7	4.0	
Died	N	128	76	37	31	30	20	39	101	462
	%	36.5	14.8	4.7	2.8	1.9	1.0	1.7	1.7	
Palliative care (home/other institute)	N	0	2	0	2	3	2	2	21	32
	%	0.0	0.4	0.0	0.2	0.2	0.1	0.1	0.4	
Another inpatient area in site	N	36	44	55	61	107	231	517	1613	2664
	%	10.3	8.5	7.0	5.5	6.9	11.4	22.6	27.6	
Out of country discharge	N	0	1	0	0	1	1	0	3	6
	%	0.0	0.2	0.0	0.0	0.1	0.1	0.0	0.1	
Total neonates included	N	351	515	783	1117	1554	2027	2293	5851	14491
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Discharge destination missing	N									3
GA missing	N									0
Total number of neonates	N									14494

Presentation #52b
Final discharge destination by site: GA<33



Presentation #52b (continued)
Final discharge destination by site: GA<33

	Discharge destination			
Site	**Death + Palliative care**	**Home**	**Community hospital + inpatient area**	**Tertiary hospital + Out of country**
A	8.9	77.4	13.7	0.0
B	6.2	67.7	26.2	0.0
C	3.5	94.7	1.8	0.0
D	10.3	79.4	8.4	1.9
E	12.5	25.0	50.0	12.5
F	6.7	27.0	65.2	1.1
G	6.2	50.8	43.0	0.0
H	0.0	33.3	33.3	33.3
I	9.3	62.0	24.8	3.9
J	9.5	24.3	64.9	1.4
K	9.1	43.2	45.5	2.3
L	6.9	6.4	82.0	4.8
M	5.3	2.1	88.4	4.2
N	5.4	25.3	69.3	0.0
O	8.9	57.1	32.1	1.8
P	8.8	3.5	87.7	0.0
Q	0.0	93.3	6.7	0.0
R	7.4	13.8	76.2	2.7
S	12.5	71.9	12.5	3.1
T	10.7	6.1	83.2	0.0
U	3.3	90.0	6.7	0.0
V	3.6	82.0	14.4	0.0
W	10.4	73.6	16.0	0.0
X	0.0	35.3	61.2	3.5
Y	0.0	85.7	3.6	10.7
Z	5.3	51.9	42.8	0.0
AA	11.2	84.5	4.4	0.0
AB	5.3	82.7	12.0	0.0
AC	7.3	30.4	61.8	0.5
AD	7.3	51.4	41.4	0.0
AE	6.7	8.4	84.4	0.6
AF	0.0	100.0	0.0	0.0
AG	6.6	39.9	51.7	1.7
Total %	**7.2**	**37.8**	**53.5**	**1.6**
Total N	**309**	**1632**	**2312**	**67**

Presentation #52c

Resource use (proportion of admissions and of total patient days) per case-mix group within each site among site with COMPLETE data (n=25)

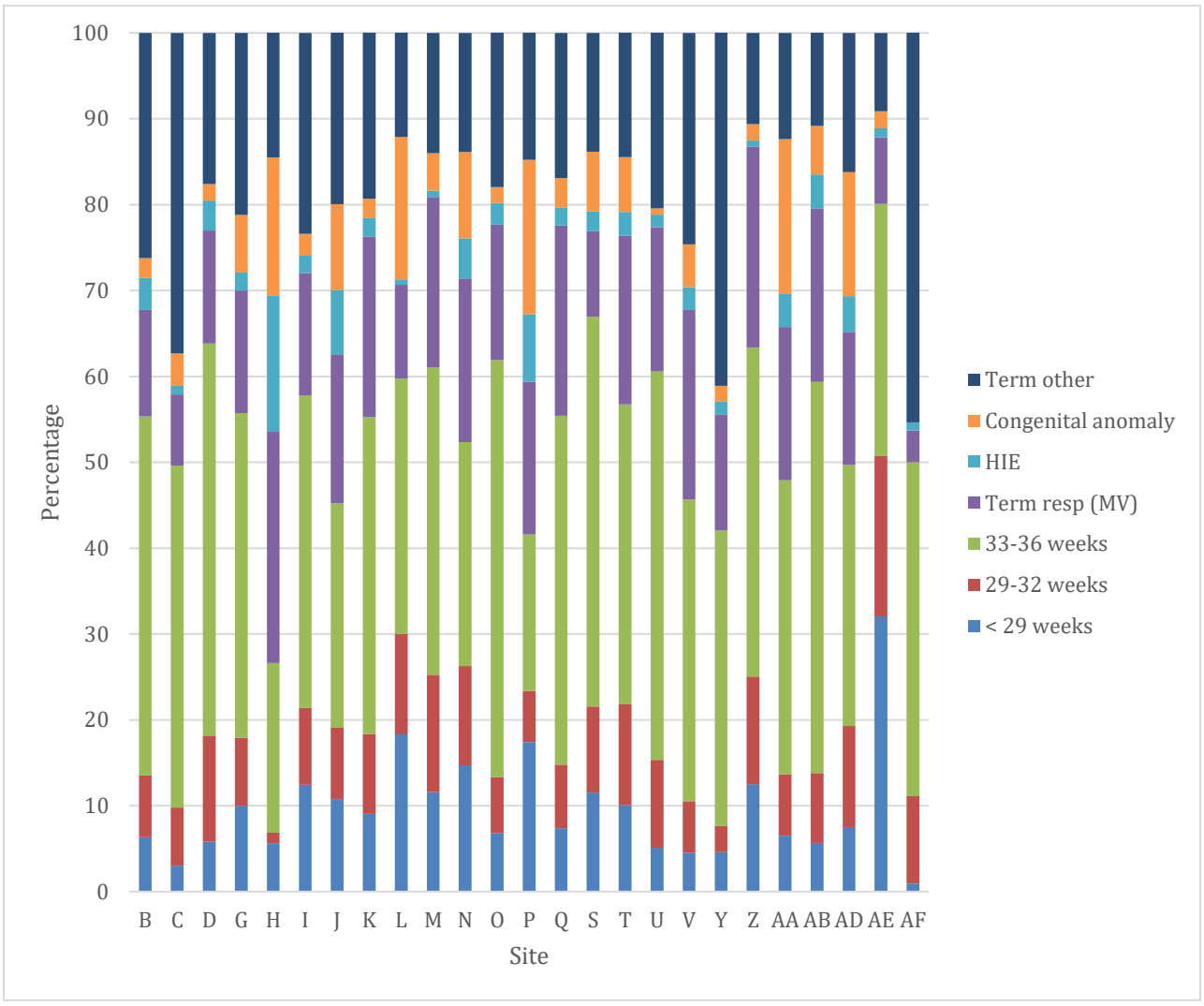
DEFINITIONS for case mix groups

For each site all admission were included (so same patient may be counted twice since unit of analysis is the admission)

Admissions to were categorized according to 1 diagnostic group – i.e. an admission can only be categorized in one of these groups

	DEFINTITION
< 29 weeks	Born <29 weeks GA WITHOUT major congenital anomaly
29-32 weeks	Born 29-32 weeks GA WITHOUT major congenital anomaly
33-36 weeks	Born 33-36 weeks GA WITHOUT major congenital anomaly or HIE
Term resp (MV)	Born ≥37 weeks GA - WITHOUT major congenital anomaly - Without hypoxic ischemic encephalopathy (with and without cooling) - Received ≥1 days of respiratory support defined as any of the following o HFV o IPPV o NI Ventilation o CPAP o High flow
HIE	Infants born ≥35 weeks with hypoxic ischemic encephalopathy (with and without cooling)
Congenital anomaly	Infant with MAJOR congenital anomaly – regardless of GA
Term other	Infants born ≥37 weeks that do not meet any of the diagnostic categories

Presentation #52c1
Proportion of total admission

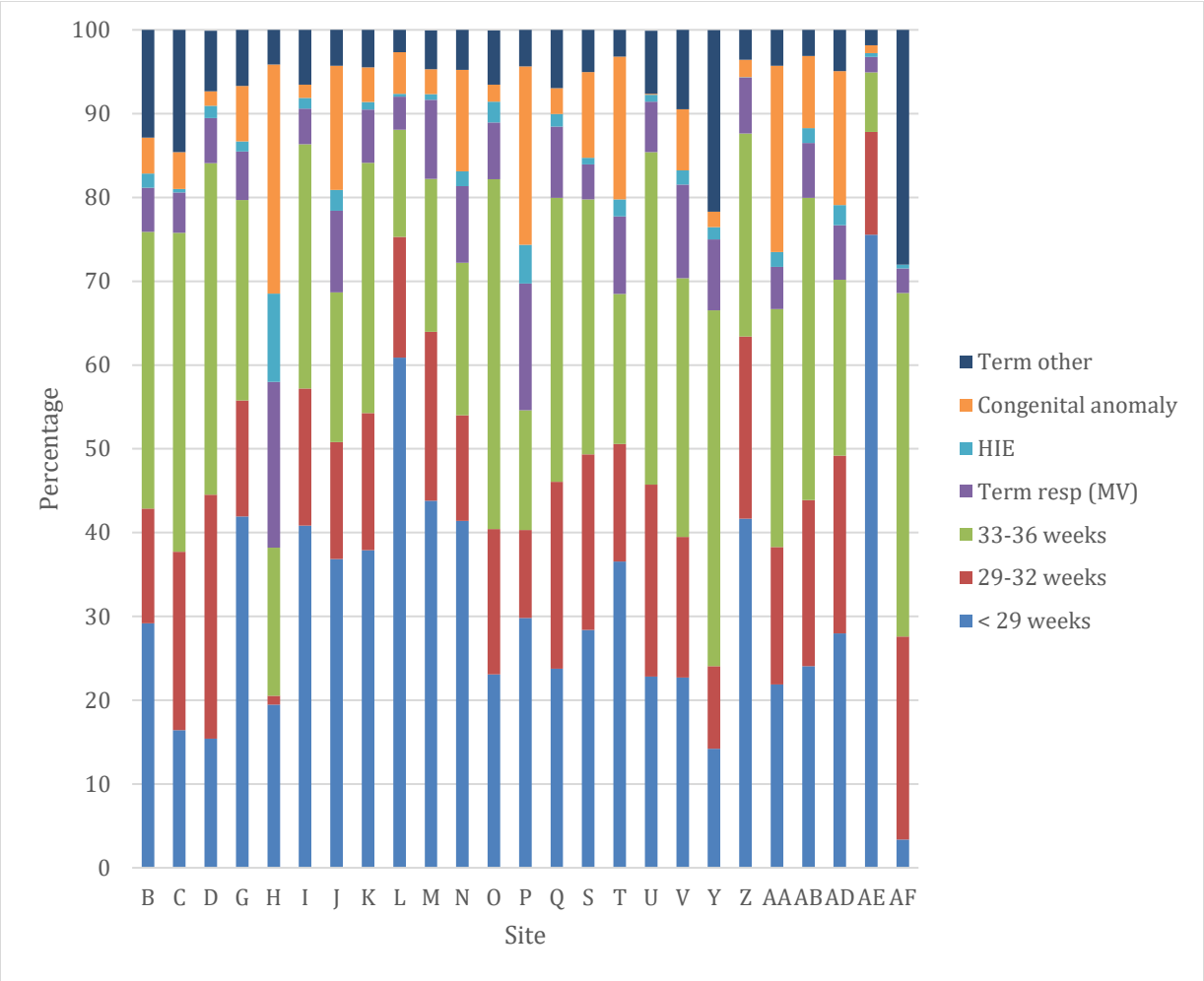


Presentation #52c1
Proportion of total admission (continued)

Site	< 29 weeks	29-32 weeks	33-36 weeks	Term resp (MV)	HIE	Congenital anomaly	Term other
B	6.3	7.2	41.8	12.4	3.8	2.3	26.2
C	3.0	6.8	39.9	8.3	1.0	3.8	37.3
D	5.8	12.4	45.7	13.2	3.5	1.9	17.6
G	10.0	7.9	37.8	14.3	2.1	6.7	21.2
H	5.7	1.2	19.8	27.0	15.7	16.1	14.5
I	12.4	9.0	36.4	14.3	2.0	2.6	23.4
J	10.8	8.3	26.2	17.4	7.5	10.0	20.0
K	9.1	9.3	36.9	21.0	2.2	2.2	19.3
L	18.3	11.7	29.7	10.9	0.6	16.6	12.2
M	11.6	13.7	35.8	19.8	0.7	4.4	14.0
N	14.7	11.5	26.1	19.1	4.7	10.0	13.9
O	6.8	6.5	48.6	15.8	2.5	1.9	18.0
P	17.4	6.0	18.2	17.8	7.9	18.0	14.8
Q	7.4	7.4	40.6	22.2	2.1	3.4	16.9
S	11.5	10.0	45.4	10.0	2.3	6.9	13.9
T	10.1	11.8	34.9	19.7	2.8	6.4	14.5
U	5.1	10.2	45.3	16.8	1.5	0.7	20.4
V	4.5	6.0	35.1	22.1	2.7	5.0	24.6
Y	4.6	3.1	34.4	13.5	1.5	1.8	41.1
Z	12.5	12.5	38.3	23.4	0.7	1.9	10.6
AA	6.5	7.2	34.2	17.8	3.9	18.0	12.4
AB	5.7	8.1	45.6	20.2	3.9	5.7	10.8
AD	7.5	11.8	30.4	15.5	4.2	14.5	16.2
AE	32.1	18.7	29.3	7.8	1.1	2.0	9.1
AF	0.9	10.2	38.9	3.7	0.9	0.0	45.4
Total	11.0	9.7	34.0	16.5	3.2	8.0	17.6

Denominator = total admission in site
*only for sites with complete data

Presentation #52c2
Proportion of total patient days



Presentation #52c2
Proportion of total patient days (continued)

Site	< 29 weeks	29-32 weeks	33-36 weeks	Term resp (MV)	HIE	Congenital anomaly	Term other
B	29.2	13.7	33.0	5.2	1.7	4.3	12.9
C	16.4	21.3	38.1	4.8	0.4	4.4	14.6
D	15.4	29.1	39.6	5.4	1.5	1.7	7.2
G	41.9	13.8	23.9	5.8	1.2	6.6	6.7
H	19.5	1.1	17.7	19.8	10.5	27.3	4.1
I	40.9	16.3	29.2	4.3	1.3	1.6	6.6
J	36.9	13.9	17.9	9.7	2.5	14.9	4.3
K	37.9	16.4	29.9	6.4	0.9	4.2	4.5
L	60.9	14.4	12.8	4.0	0.3	4.9	2.7
M	43.8	20.2	18.2	9.4	0.7	3.0	4.6
N	41.4	12.6	18.2	9.1	1.8	12.1	4.8
O	23.1	17.4	41.7	6.8	2.5	2.0	6.5
P	29.8	10.5	14.3	15.1	4.6	21.3	4.4
Q	23.8	22.3	33.9	8.5	1.5	3.1	6.9
S	28.4	21.0	30.4	4.2	0.8	10.2	5.0
T	36.5	14.1	17.9	9.2	2.0	17.0	3.2
U	22.8	22.9	39.7	6.0	0.8	0.1	7.5
V	22.7	16.8	30.9	11.2	1.7	7.3	9.5
Y	14.2	9.9	42.4	8.5	1.5	1.8	21.7
Z	41.7	21.7	24.2	6.7	0.0	2.1	3.6
AA	21.9	16.4	28.4	5.1	1.8	22.2	4.3
AB	24.1	19.8	36.1	6.6	1.7	8.6	3.1
AD	28.0	21.2	21.0	6.5	2.4	16.0	4.9
AE	75.5	12.3	7.1	1.8	0.4	1.0	1.8
AF	3.4	24.2	41.0	2.9	0.5	0.0	28.0
Total	35.3	16.5	24.0	7.3	1.7	9.5	5.6

Proportion of total patient days = (sum of length of stay of all the patients within a category) / (sum of length of stay of each patient admitted in the NICU for the year)

*only for sites with complete data

Presentation #53
Support at discharge: Neonates who were discharged directly home: Crude rates

		GA (completed weeks)								
		< 25	**25-26**	**27-28**	**29-30**	**31-32**	**33-34**	**35-36**	**≥37**	**Total**
Total available	N	351	515	783	1118	1554	2027	2295	5851	14494
Number of neonates who survived and were discharged home directly from the NICU	**N**	**116**	**210**	**310**	**372**	**624**	**1008**	**1236**	**3317**	**7193**
Oxygen	N	34	39	35	18	24	41	34	113	338
	%	29.3	18.6	11.3	4.8	3.9	4.1	2.8	3.4	4.7
Monitor	N	18	19	19	7	30	32	33	127	285
	%	15.5	9.1	6.1	1.9	4.8	3.2	2.7	3.8	4.0
Enterostomy	N	1	1	1	2	1	1	2	8	17
	%	0.9	0.5	0.3	0.5	0.2	0.1	0.2	0.2	0.2
Gavage	N	16	20	40	16	12	15	19	58	196
	%	13.8	9.5	12.9	4.3	1.9	1.5	1.5	1.8	2.7
Tracheostomy	N	2	0	0	0	0	1	1	4	8
	%	1.7	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
Gastrostomy	N	5	9	7	5	6	5	11	21	69
	%	4.3	4.3	2.3	1.3	1.0	0.5	0.9	0.6	1.0
Ventilation	N	0	0	0	0	0	0	0	1	1
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CPAP	N	2	2	1	0	0	1	2	5	13
	%	1.7	1.0	0.3	0.0	0.0	0.1	0.2	0.2	0.2
Feeding status at discharge directly home										
Mother's own milk only	N	35	76	125	157	230	352	389	1010	2374
	%	30.2	36.2	40.3	42.2	36.9	34.9	31.5	30.5	33.0
Formula only	N	57	84	106	126	185	260	318	774	1910
	%	49.1	40.0	34.2	33.9	29.7	25.8	25.7	23.3	26.6
Mother's own milk and formula	N	23	47	77	87	205	384	525	1509	2857
	%	19.8	22.4	24.8	23.4	32.9	38.1	42.5	45.5	39.7

Note: In this presentation, denominators were based on the number of neonates who survived and were discharged directly home.

G. Hypoxic Ischemic Encephalopathy

Presentation #54
Hypoxic Ischemic Encephalopathy

A. Sarnat staging at the time of admission and receipt of hypothermia

		Sarnat's staging of HIE on admission				
		Stage 1	**Stage 2**	**Stage 3**	**Unknown stage**	**Total**
Hypothermia treatment	**Yes**	63	260	116	50	489
	No	82	25	24	57	188
	Unknown	2	4	2	3	11
	Total	**147**	**289**	**142**	**110**	**688**

B. Reason for not receiving hypothermia treatment*

Reason	**Number**
Chromosomal anomalies	2
Major congenital anomalies	4
Weight < 2000g or GA < 35 weeks	51
Extreme condition	17
Head trauma or intracranial hemorrhage	4
Mild HIE	86
Unit policy	13
Health care team preference	5
Delayed transfer	10
Parental request	1
Unknown	27

*One neonate can have more than one reasons.

C. Time of admission

Time	**Number**
<6 hours from birth	464
6 – 12 hours from birth	169
>12 hours from birth	54
Total**	687

**1 neonate was missing either time of birth or time of admission.

Presentation #54 (continued)
Hypoxic Ischemic Encephalopathy

D. Characteristics of neonates who received hypothermia (N=489)

Characteristics	N		Results
Target temperature	488	< 33^{0}C	1 (0%)
		33-34^{0}C	296 (61%)
		33.5-34.5^{0}C	95 (19%)
		34-35^{0}C	6 (1%)
		34.5-35.5^{0}C	0 (0%)
		Unknown	90 (18%)
Seizures at initiation	489		135 (28%)
Seizures at completion	489		1 (0%)
GA < 33 weeks	489		0 (0%)
Birthweight < 2000g	489		10 (2%)
During hypothermia	476	Hypotension	156 (33%)
	466	Thrombocytopenia	86 (18%)
	475	Coagulopathy	160 (34%)
	468	Persistent metabolic acidosis	82 (18%)
Death	489		65 (13%)
Discharge on palliation	489		9 (2%)

E. Encephalopathy stage in relation to hypothermia treatment

Encephalopathy stage*		**At the end of hypothermia**					
		Stage 1	**Stage 2**	**Stage 3**	**Unknown**	**Normal**	**Total**
At the start of hypothermia	**Stage 1**	15	2	0	9	28	54
	Stage 2	47	110	8	31	69	265
	Stage 3	9	17	69	19	3	117
	Unknown	4	2	1	32	14	53
	Total	75	131	78	91	114	489

*The numbers may be different from table A because table E presents encephalopathy staging at the start and end of hypothermia, whereas table A presents encephalopathy staging at the first assessment.

Presentation #54 (continued)

F. Outcomes of infants with hypoxic ischemic encephalopathy that received therapeutic hypothermia stratified per stage of encephalopathy at time of initiation of therapeutic hypothermia and combined

	Stage 1	Stage 2	Stage 3	Stage unknown	Total
Number of infants	54	265	117	53	489
Mortality, %	N/A	6 (2%)	53 (45%)	5 (9%)	65 (13%)
Brain injury[a], %	N/A	71 (29%)	50 (56%)	7 (17%)	138 (33%)
Mortality or brain injury[b], %	11 (22%)	73 (30%)	86 (77%)	12 (27%)	182 (40%)
Length of stay among survivors, days, median (IQR)	8 (6, 10)	9 (7, 14)	17.5 (10.5, 27.5)	9 (8, 13.5)	9 (7, 14)
Length of stay among infants who died, days, median (IQR)	N/A	12 (5, 44)	5 (3, 7)	2 (1, 2)	5 (2, 8)
Gavage feeds at NICU discharge or transfer among survivors, %*	11 (20%)	51 (19%)	25 (21%)	9 (17%)	96 (20%)

Brain injury defined as any of the following abnormalities on neonatal MRI: basal ganglia/thalamic injury and/or watershed/white matter injury, and diffusion changes

[a] Brain injury rate is calculated among infants with magnetic resonance imaging results
[b]Mortality or Brain injury rate is calculated among infants who died and/or had magnetic resonance imaging results

Presentation #54 (continued)
Hypoxic Ischemic Encephalopathy
For neonates* who received hypothermia (N=489)

Characteristics		N	Mean (h)	SD (h)	Min (h)	1st Q (h)	Median (h)	3rd Q (h)	Max (h)	Outside of recommendation
Timing of hypothermia (in hours)**	**Age at Initiation**	483	5.0	3.8	0.0	2.6	4.7	6.3	30.0	After 6 hours 139 (29%)
	Age at re-warming	486	72.0	20.2	1.0	74.3	76.3	78.3	247.8	After 78 hours 137 (28%)
Temperature during hypothermia	**Lowest temp during hypothermia**	384	32.8	0.7	28.5	32.5	33.0	33.2	34.4	Lowest temp < 32.5C 194 (51%)
	Highest temp during hypothermia	382	34.1	0.7	32.1	33.7	33.9	34.1	37.1	Highest temp > 35.5C 20 (5%)

*Neonates with time of initiation > 72 hours were excluded.
**All timings were calculated from time of birth in hours of age.

H. Trend Analyses over last 12 years

This section includes trend analyses of specific outcomes from the last 12 years (2010-21) for neonates <33 weeks' GA in CNN sites. The following table describes the number of neonates in the respective GA categories that were included in these trend analyses. Delivery room deaths were excluded.

Number of neonates by admission year and GA

		GA											Total
Year	Number of Sites	<23	23	24	25	26	27	28	29	30	31	32	
2011	30	15	86	166	242	318	332	391	467	553	643	828	4041
2012	30	28	85	184	285	294	348	416	510	610	738	872	4370
2013	29	16	76	197	247	267	357	434	479	620	733	836	4262
2014	31	8	81	226	250	332	362	412	517	585	743	871	4387
2015	30	14	99	177	248	289	317	425	470	536	662	793	4030
2016	30	16	79	214	275	272	380	431	437	551	722	861	4238
2017	31	16	133	215	257	294	325	434	467	606	743	868	4358
2018	32	25	132	215	271	334	380	424	518	576	744	863	4482
2019	32	25	118	217	279	297	342	440	470	613	740	905	4446
2020	33	15	127	201	236	265	310	402	491	593	634	834	4108
2021	33	32	99	214	254	298	331	448	514	577	761	941	4469
2022	33	30	126	195	254	261	351	432	529	589	642	912	4321

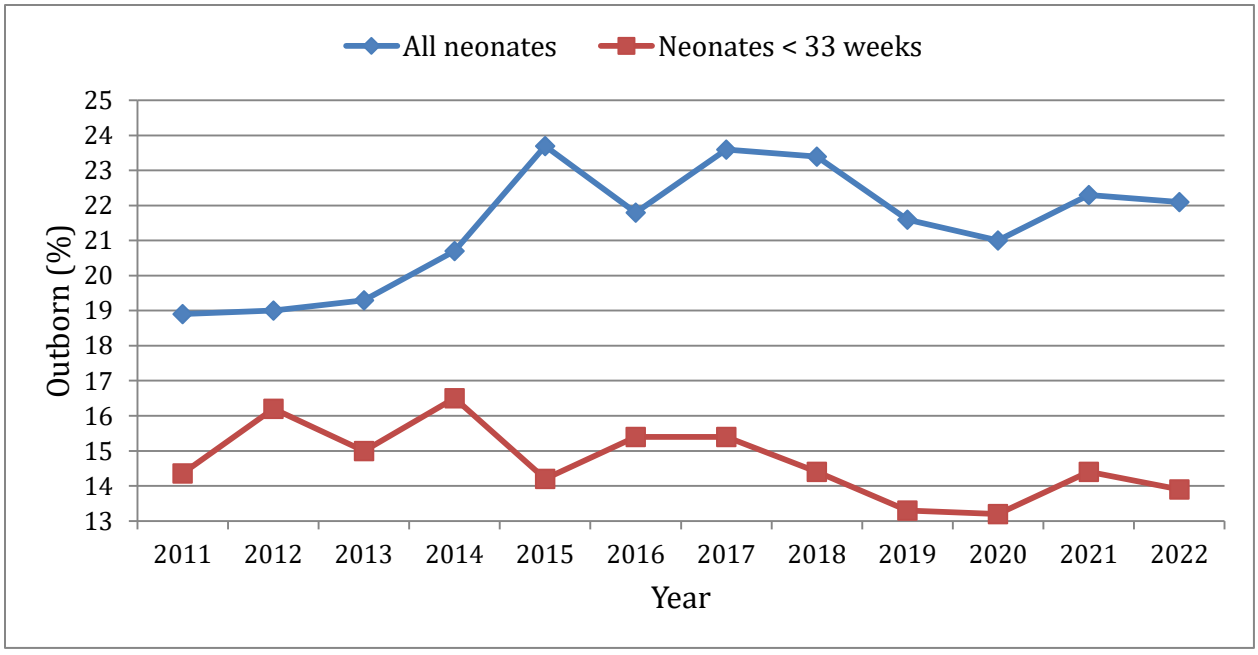
Number of neonates by admission year and birth weight

		Birth weight					Total
Year	Number of Sites	< 500	500 - 749	750 - 999	1000 – 1249	1250 – 1499	
2011	30	31	383	660	680	794	2548
2012	30	48	441	696	815	922	2922
2013	29	36	428	651	842	919	2876
2014	31	36	458	760	804	922	2980
2015	30	40	406	680	792	864	2782
2016	30	40	472	710	744	901	2867
2017	31	38	478	678	806	920	2920
2018	32	55	508	739	807	977	3086
2019	32	50	482	685	802	937	2956
2020	33	43	436	668	731	878	2756
2021	33	43	479	673	831	933	2959
2022	33	58	479	649	793	942	2921

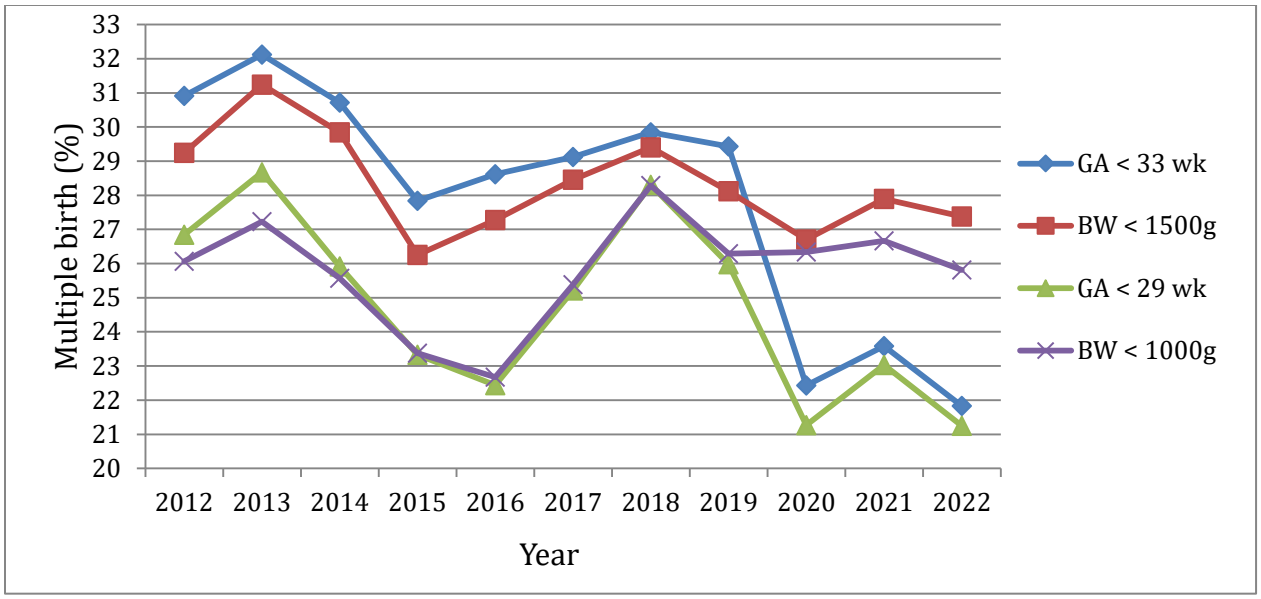
1. Neonates in the participating sites: Admission status:

		All neonates			Infants with GA<33 weeks		
Year	**Number of Sites**	**Total Number of Neonates***	**Inborn (%)**	**Outborn (%)**	**Number of Neonates* with GA<33**	**Inborn (%)**	**Outborn (%)**
2011	**30**	13 548	10 972 (81.0%)	2 576 (19.0%)	4 040	3 460 (85.6%)	580 (14.4%)
2012	**30**	14 222	11 475 (80.7%)	2 747 (19.3%)	4 370	3 663 (83.8%)	707 (16.2%)
2013	**29**	14 489	11 487 (79.2%)	3 002 (20.7%)	4 262	3 624 (85.0%)	638 (15.0%)
2014	**31**	14 038	11 473 (76.3%)	3 565 (23.7%)	4 383	3658 (83.5%)	725 (16.5%)
2015	**30**	14 814	11 583 (78.2%)	3 231 (21.8%)	4 030	3 459 (85.8%)	571 (14.2%)
2016	**30**	14 905	11 388 (76.4%)	3 517 (23.6%)	4 238	3 585 (84.6%)	653 (15.4%)
2017	**31**	14 773	11 320 (76.6%)	3 453 (23.4%)	4 358	3 685 (84.6%)	673 (15.4%)
2018	**32**	15 479	12 134 (78.4%)	3 345 (21.6%)	4 481	3 836 (85.6%)	645 (14.4%)
2019	**32**	14 868	11 750 (79.0%)	3 118 (21.0%)	4 446	3 856 (86.7%)	590 (13.3%)
2020	**33**	14 271	11 091 (77.7%)	3 180 (22.3%)	4 108	3 564 (86.8%)	544 (13.2%)
2021	**33**	14 651	11 419 (77.9%)	3 232 (22.1%)	4 469	3 826 (85.6%)	643 (14.4%)
2022	**33**	14 494	11 345 (78.3%)	3 149 (21.7%)	4 321	3 722 (86.1%)	599 (13.9%)

*total number of neonates excluding those who are missing admission status

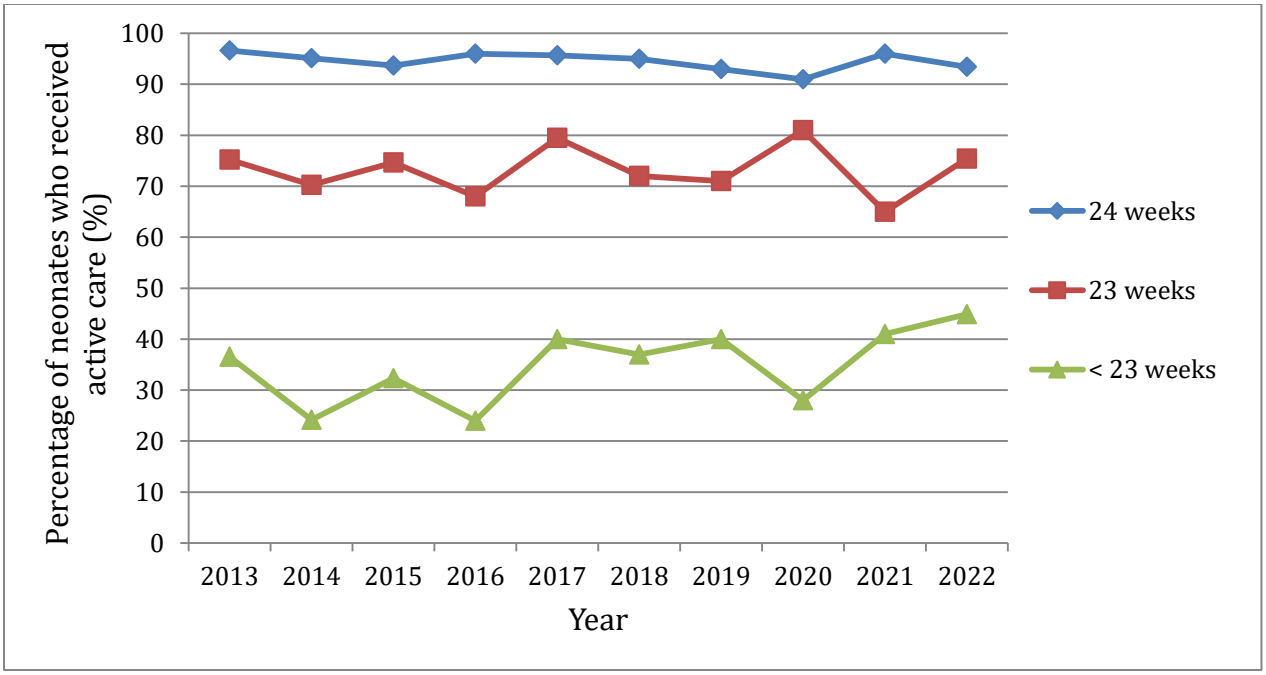


2. Multiple births



		2014	2015	2016	2017	2018	2019	2020	2021	2022
GA < 29 weeks	Total	1671	1569	1667	1674	1780	1717	1556	1675	1649
	Multiple	441	366	374	422	504	446	349	395	360
		(26%)	(23%)	(22%)	(25%)	(28%)	(26%)	(22%)	(24%)	(22%)
	Twin	415	321	345	375	466	415	316	364	336
	Higher-Order	26	45	29	47	38	31	33	31	24
GA < 33 weeks	Total	4387	4030	4238	4358	4481	4445	4108	4468	4321
	Multiple	1356	1122	1213	1269	1337	1308	1097	1246	1183
		(31%)	(28%)	(29%)	(29%)	(30%)	(29%)	(27%)	(28%)	(27%)
	Twin	1229	996	1094	1156	1202	1191	1000	1112	1079
	Higher-Order	127	126	119	113	135	117	97	134	104
BW < 1000g	Total	1254	1126	1222	1194	1301	1217	1147	1194	1186
	Multiple	329	264	277	303	368	320	244	275	252
		(26%)	(23%)	(23%)	(25%)	(28%)	(26%)	(21%)	(23%)	(21%)
	Twin	306	236	260	269	338	295	218	249	232
	Higher-Order	23	28	17	34	30	25	26	26	20
BW < 1500g	Total	2980	2782	2867	2920	3085	2955	2756	2958	2921
	Multiple	900	731	782	831	907	831	726	789	754
		(30%)	(26%)	(27%)	(28%)	(29%)	(28%)	(26%)	(27%)	(26%)
	Twin	802	634	703	747	812	757	656	706	687
	Higher-Order	98	97	79	84	95	74	70	83	67

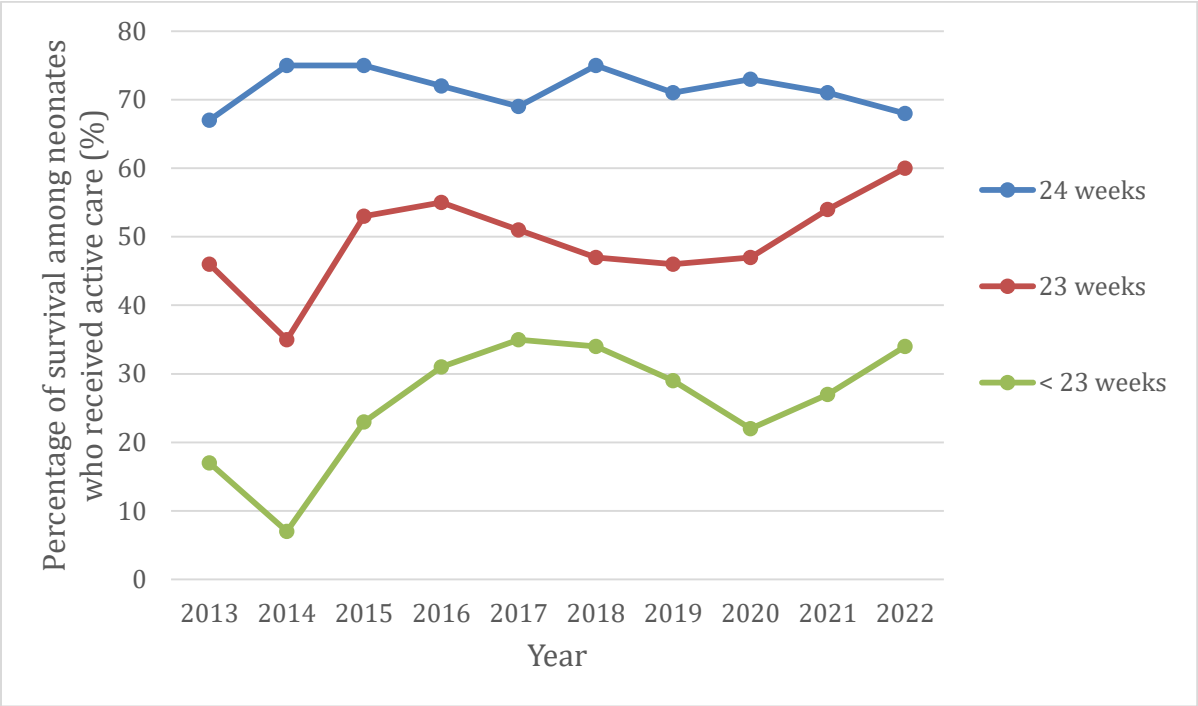
3a. Proportion of neonates who received active care out of all (including delivery room (DR) deaths)



		2014	2015	2016	2017	2018	2019	2020	2021	2022
<23 weeks	Number of neonates who received active care *(a-c) +e*	14	22	16	26	35	35	18	37	35
	Total number of neonates including DR deaths *a+d+e*	58	68	67	65	95	88	64	91	78
	Percentage of neonates who received active care	24%	32%	24%	40%	37%	40%	28%	41%	45%
23 weeks	Number of neonates who received active care *(a-c) +e*	92	106	82	136	133	127	131	101	129
	Total number of neonates including DR deaths *a+d+e*	131	142	121	171	185	178	162	155	171
	Percentage of neonates who received active care	70%	75%	68%	80%	72%	71%	81%	65%	75%
24 weeks	Number of neonates who received active care *(a-c) +e*	233	178	217	221	224	224	199	216	197
	Total number of neonates including DR deaths *a+d+e*	245	190	227	231	235	240	218	226	211
	Percentage of neonates who received active care	95%	94%	96%	96%	95%	93%	91%	96%	93%

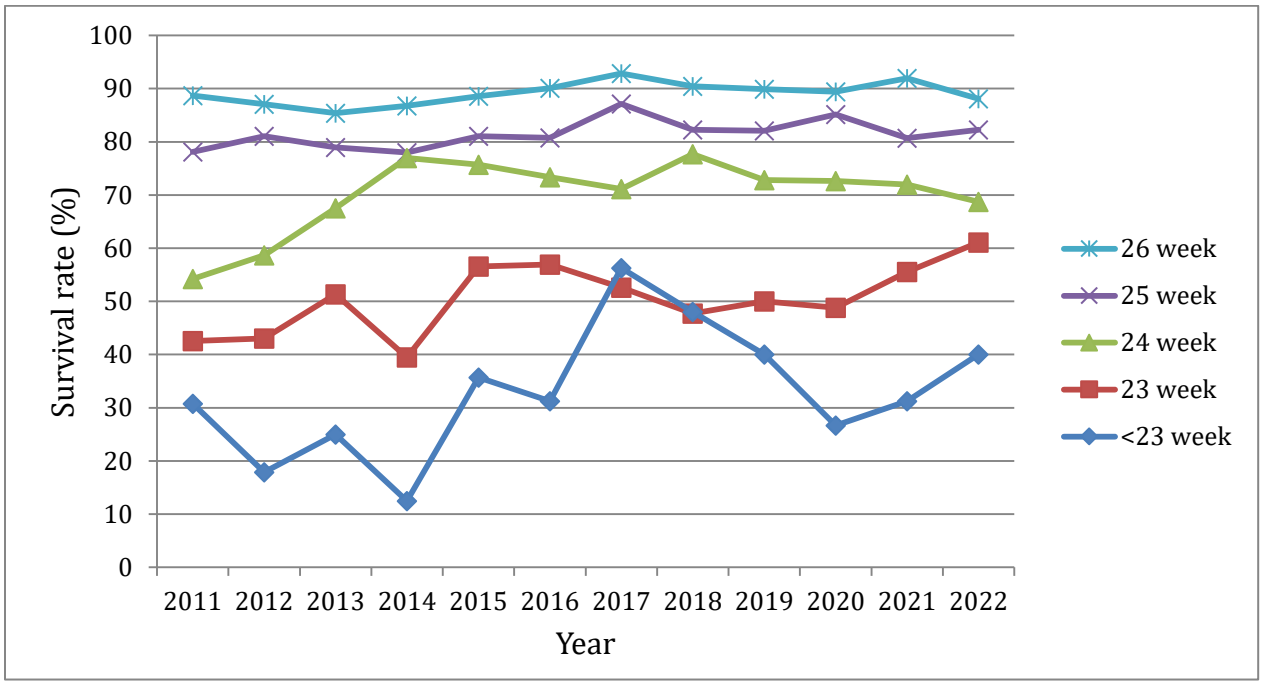
Note: Refer to presentation #4 for detailed breakdown of neonates by GA in 2022.
The alphabet notations used in the table above are carried from presentation #4.
Information should be interpreted with caution as not all sites provided data on delivery room deaths. Active care refers to infants who received cardiopulmonary resuscitation at birth.

3b. Trends in survival among neonates who received active care (including delivery room deaths)

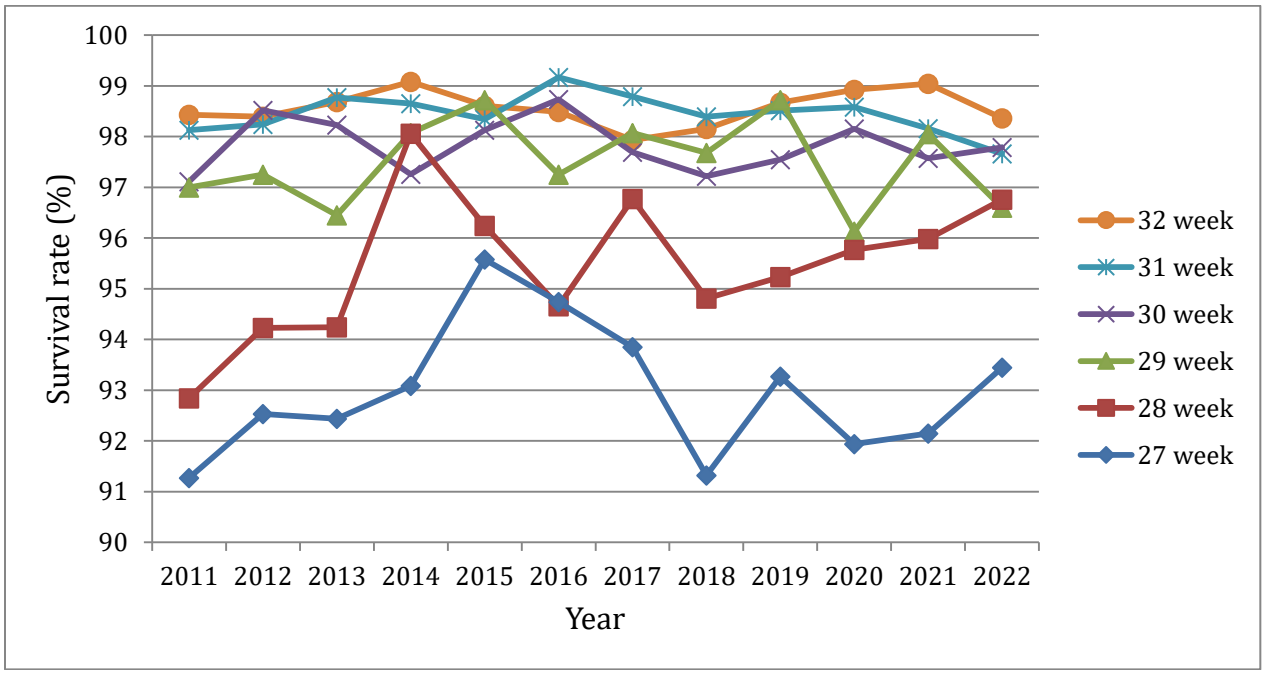


4. Survival rate among those who were admitted to NICU:

a. 22-26 weeks' GA:

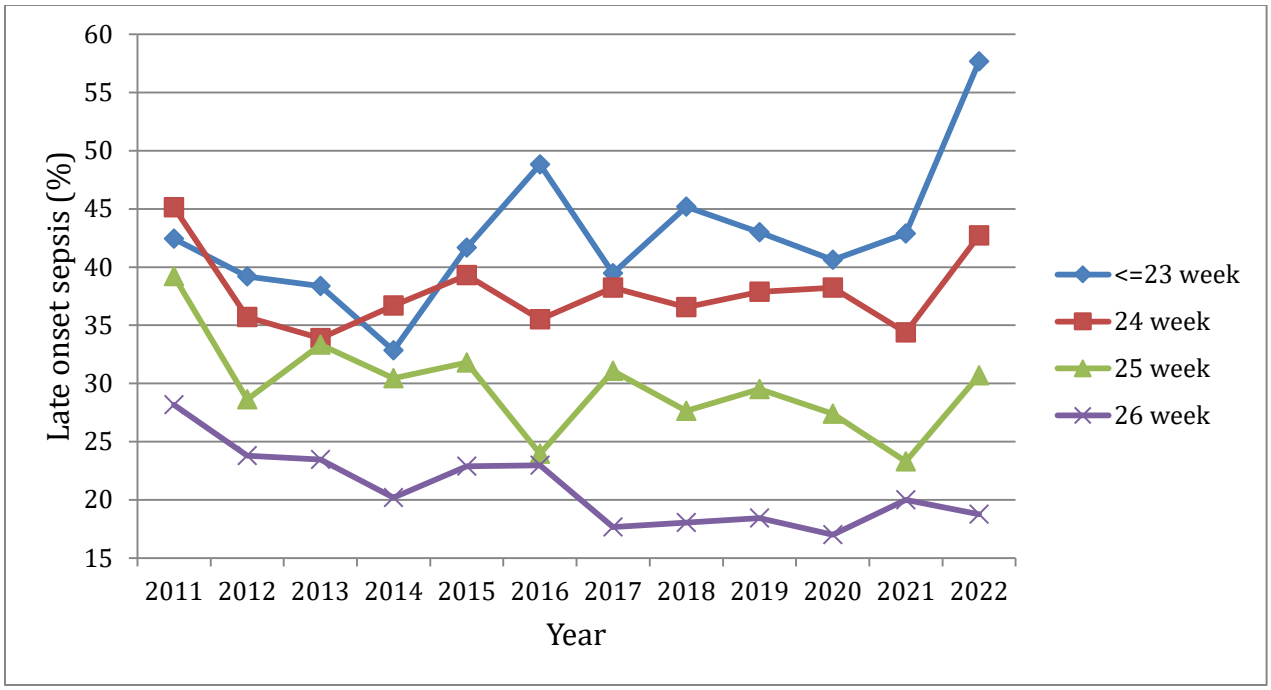


b. 27-32 weeks' GA:

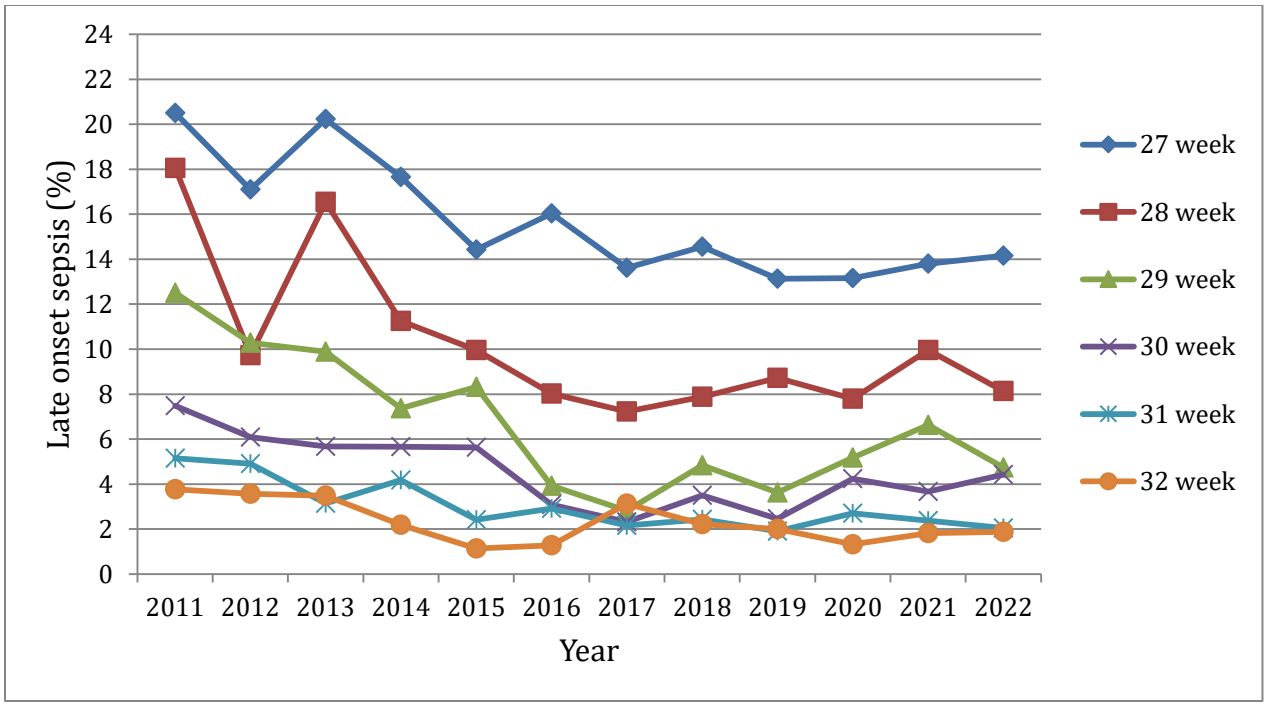


5. Late onset sepsis (with at least one infection) among neonates who survived beyond 2 days post birth

a. 23-26 weeks' GA:

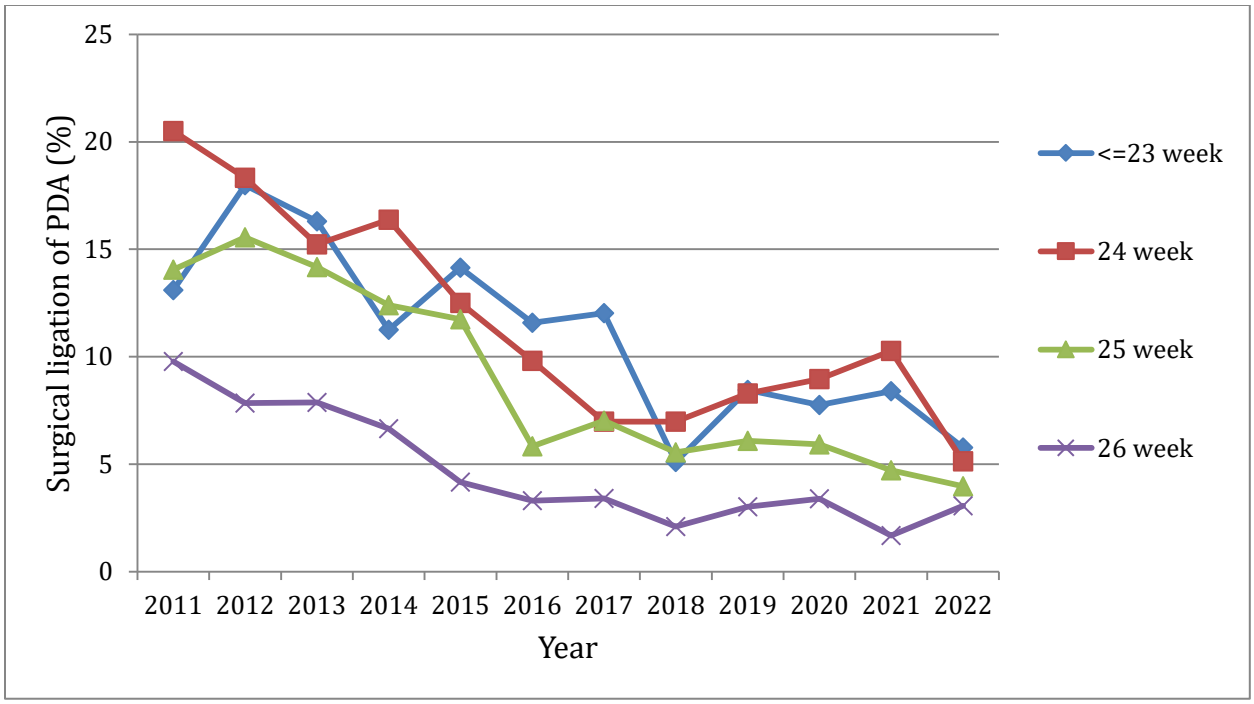


b. 27-32 weeks' GA:

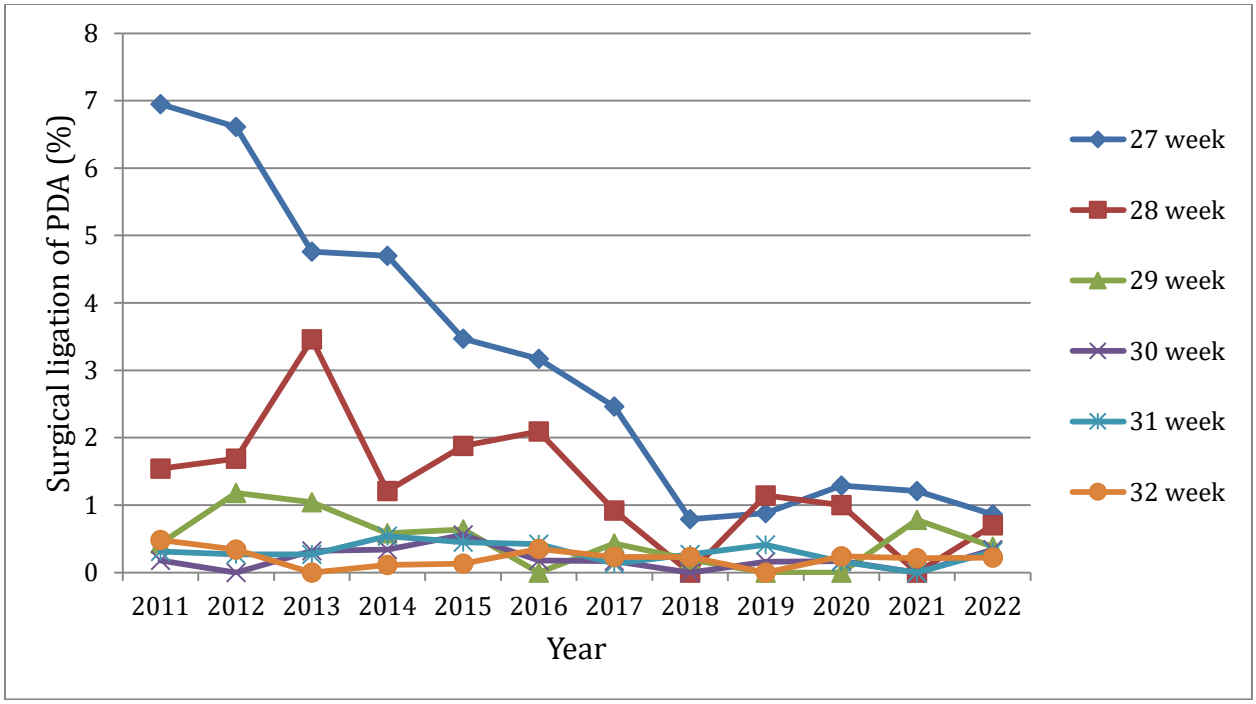


6. Surgical ligation or device closure of PDA among all neonates

a. 23-26 weeks' GA:

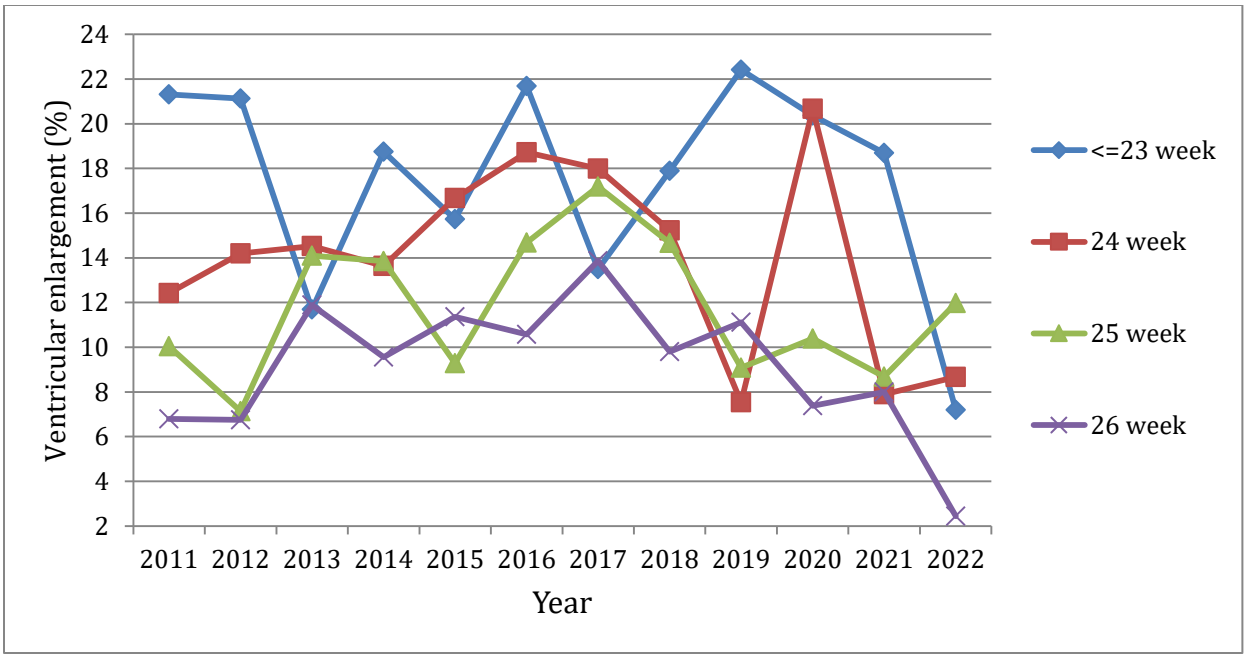


b. 27-32 weeks' GA:

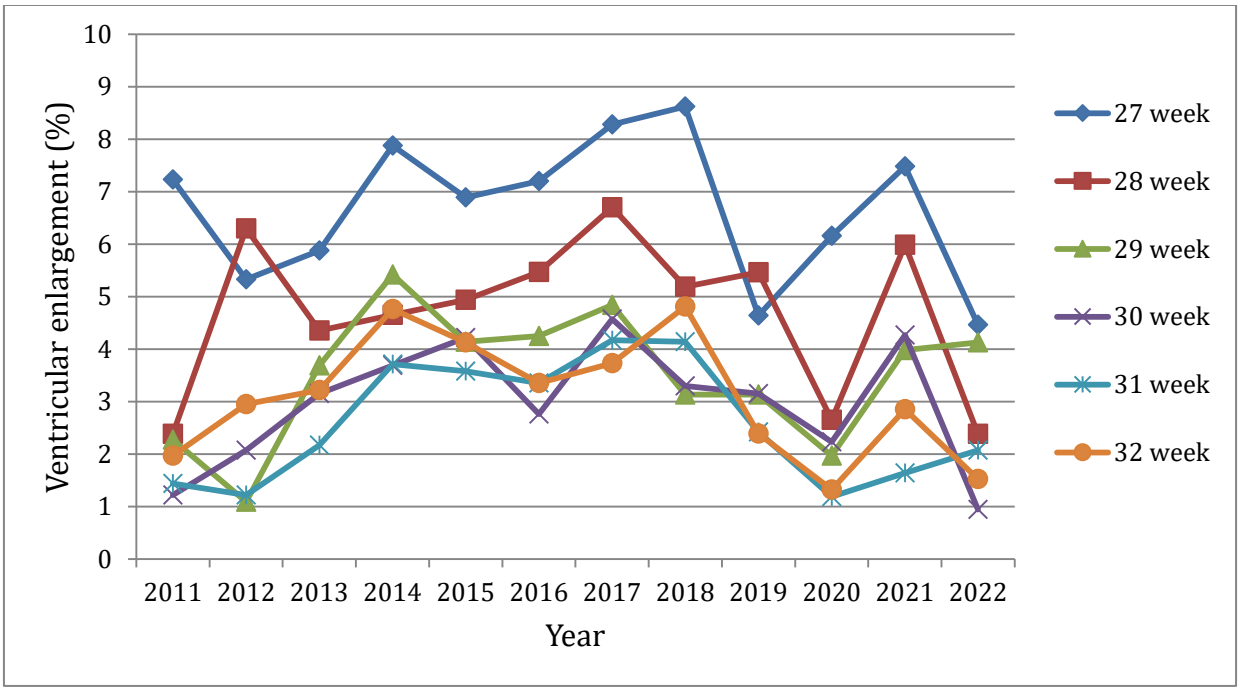


7. Ventricular enlargement (VE): (moderate and severe VE only; among neonates who received ultrasound exams)

a. 23-26 weeks' GA:

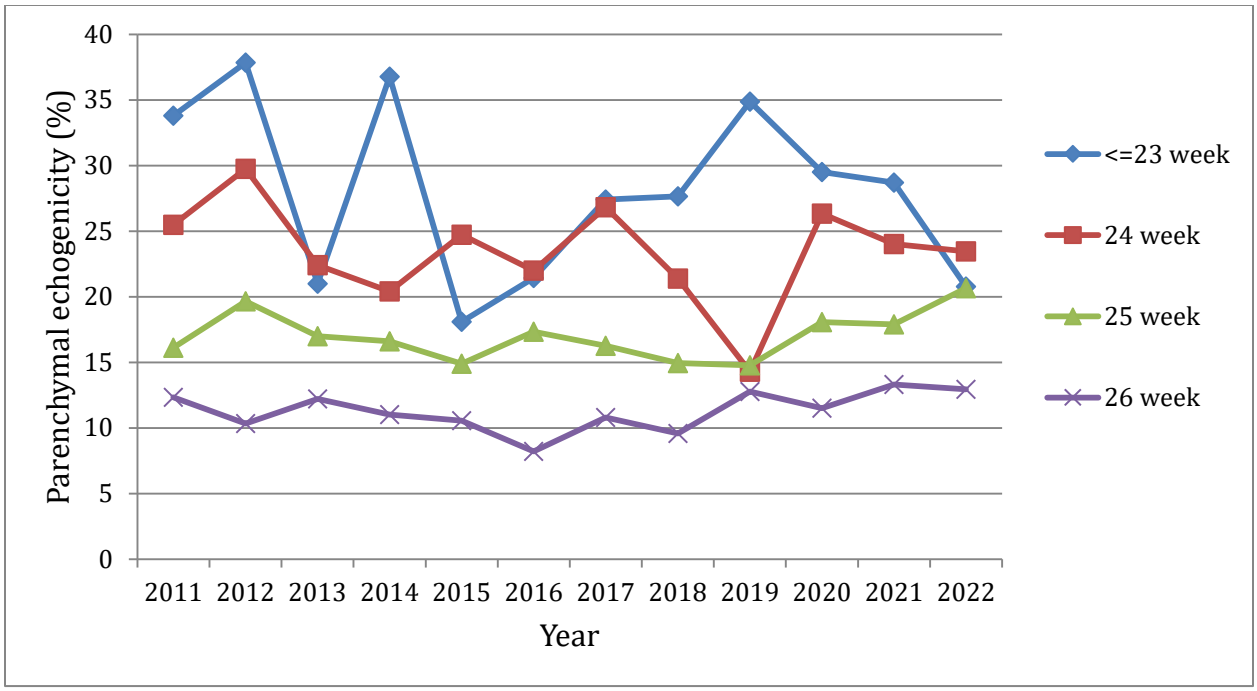


b. 27-32 weeks' GA:

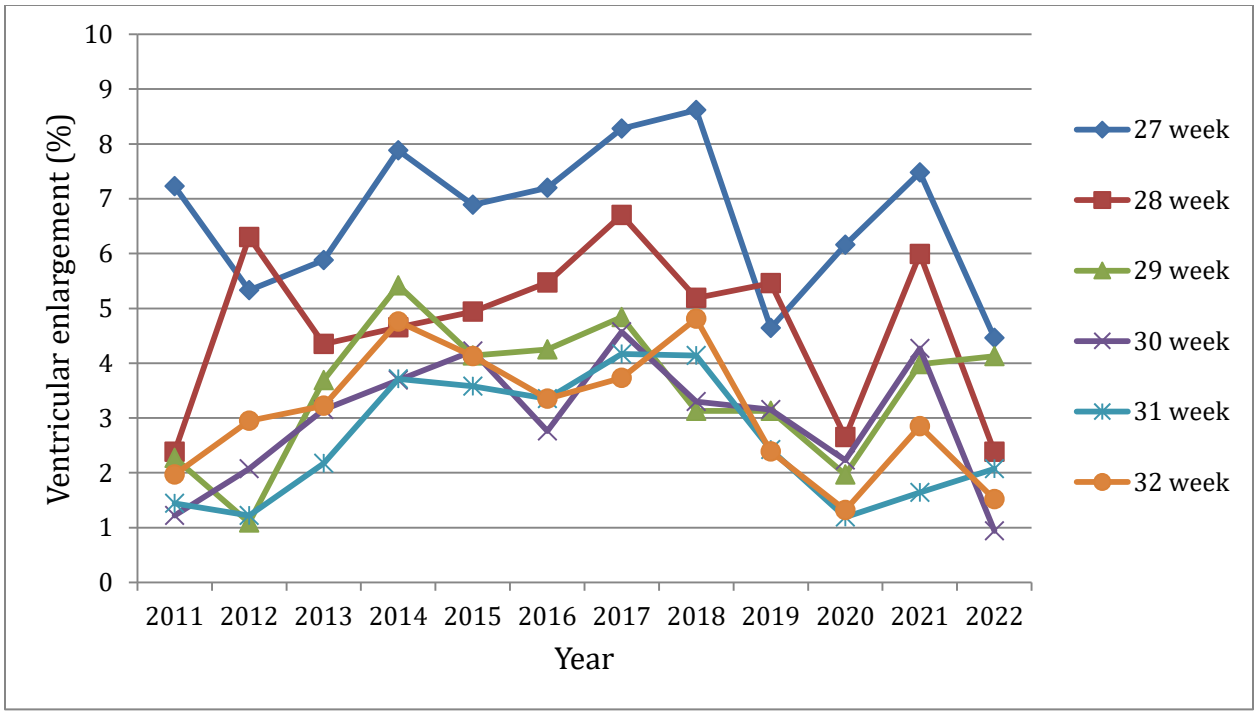


8. Parenchymal echogenicity (among neonates who received ultrasound exams)

a. 23-26 weeks' GA:

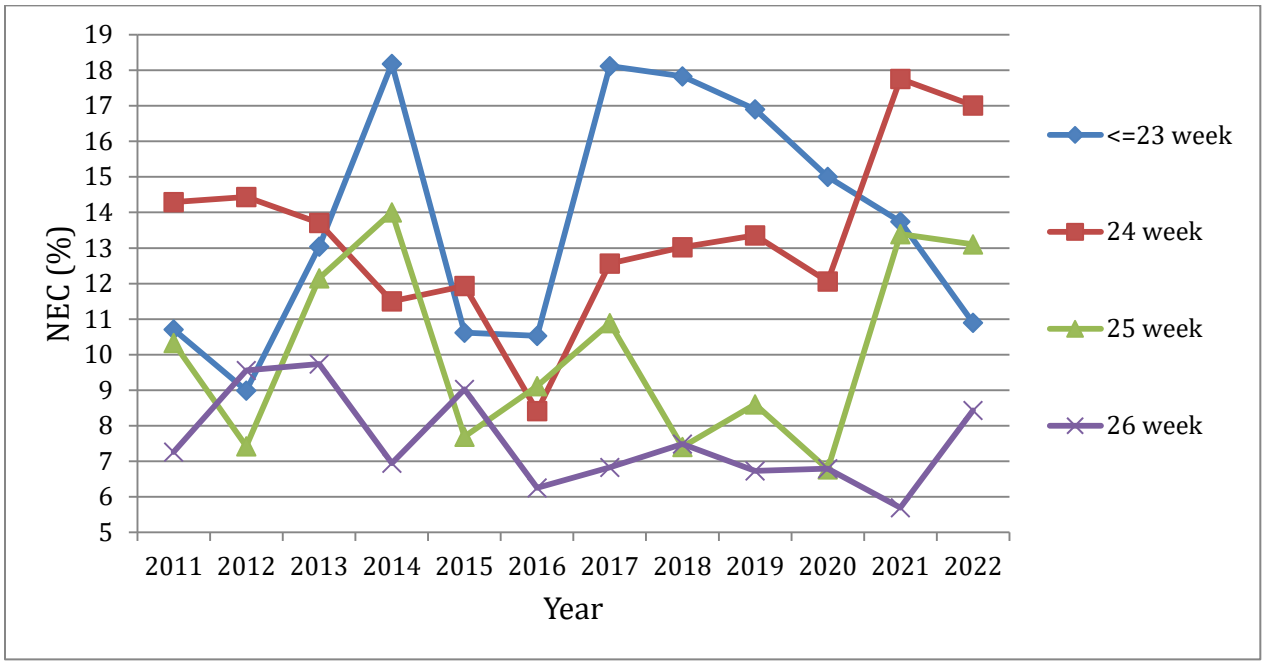


b. 27-32 weeks GA:

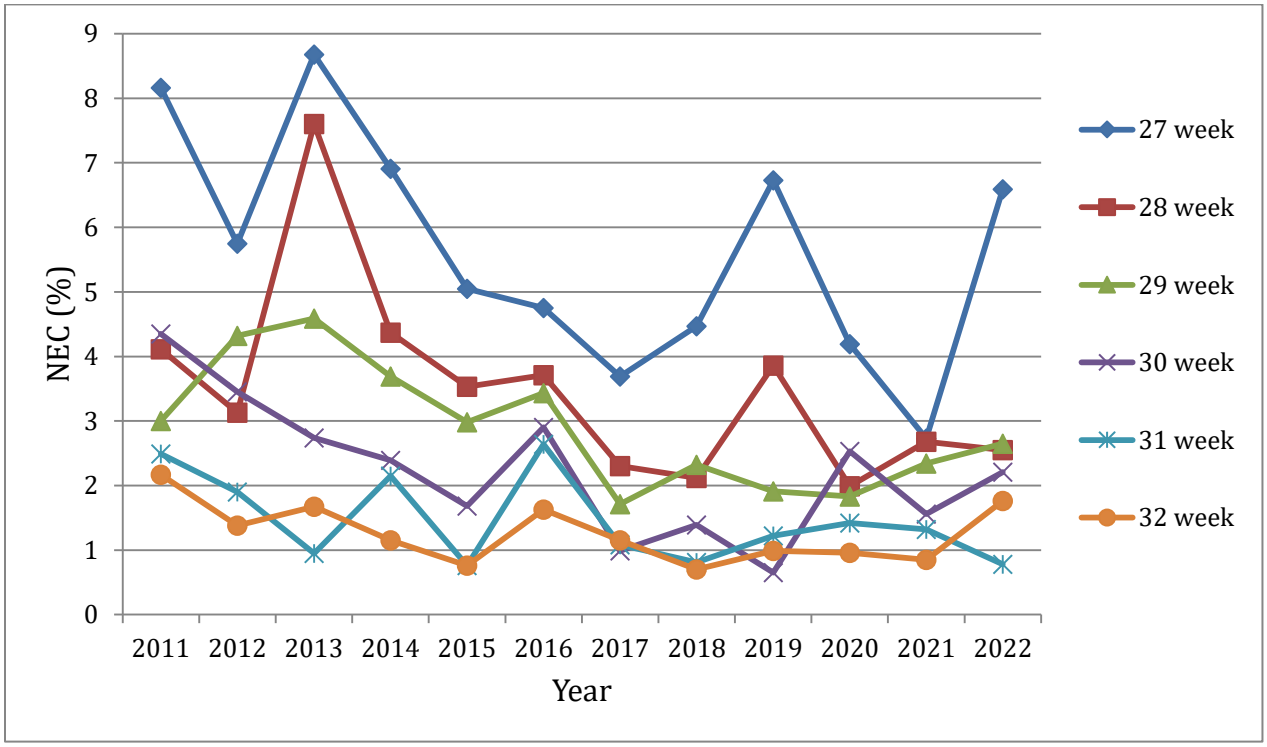


9. NEC:

a. 23-26 weeks' GA:

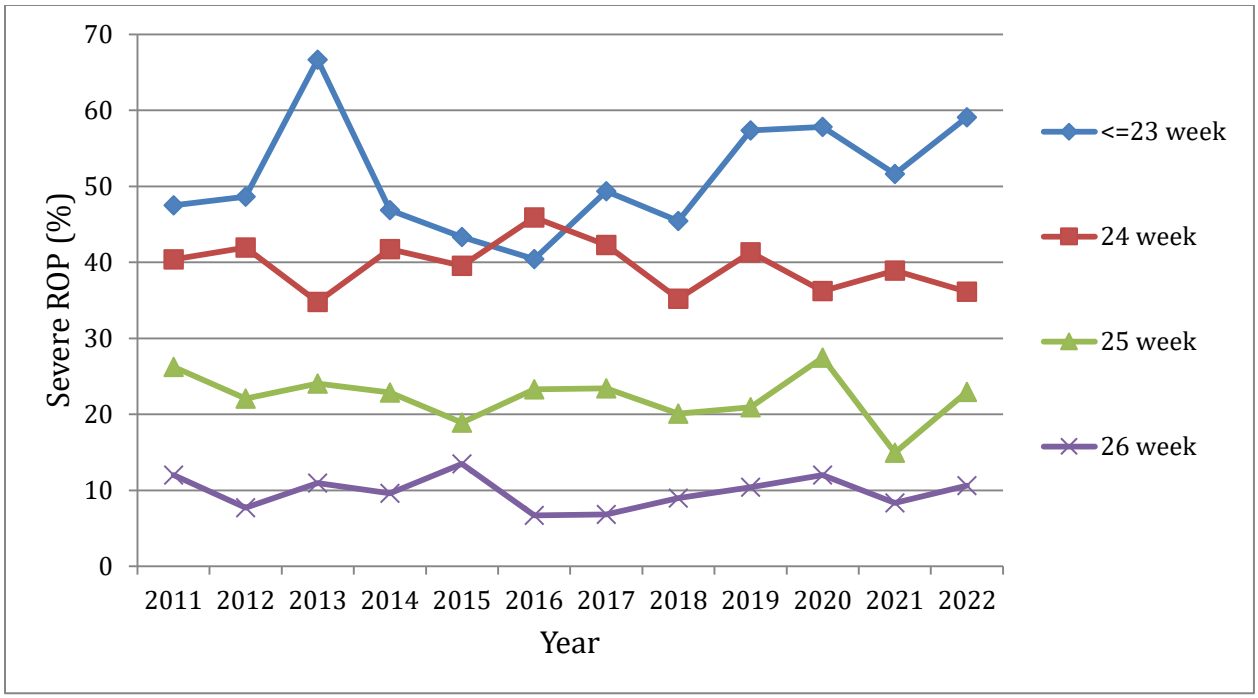


b. 27-32 weeks' GA:

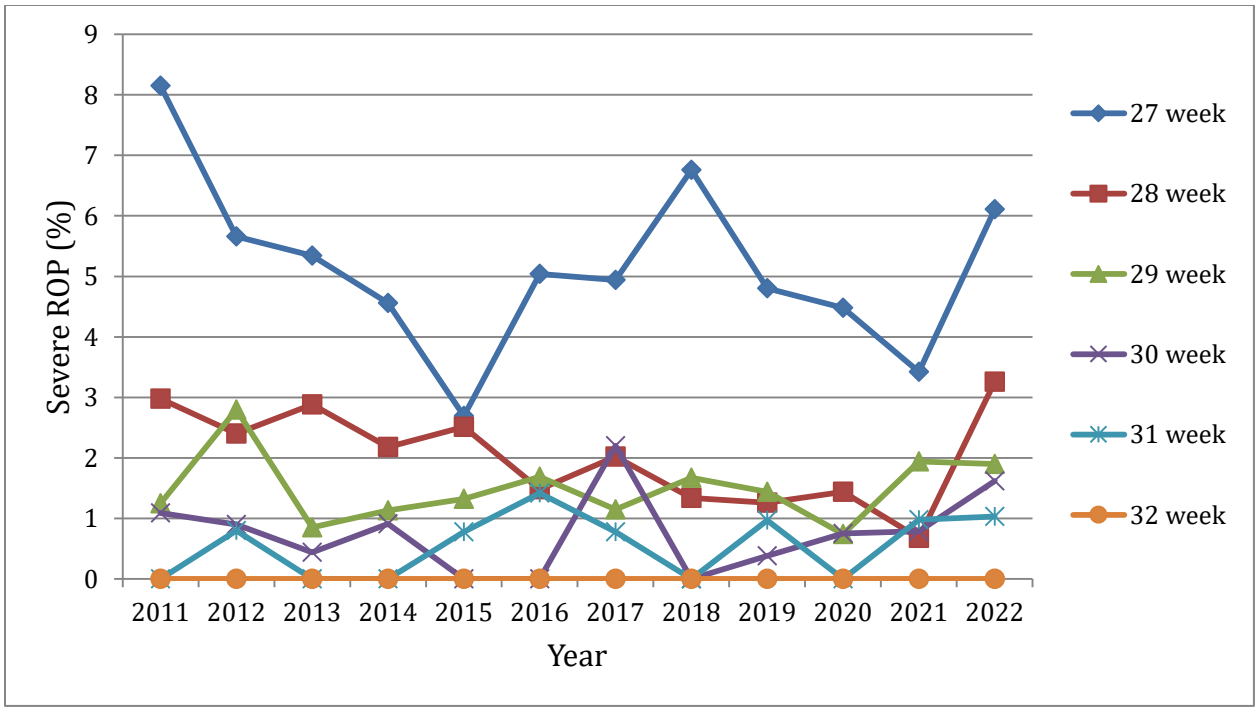


10. Severe ROP (≥ Stage 3 or ROP treatment) among neonates who received eye exams:

a. 23-26 weeks' GA:

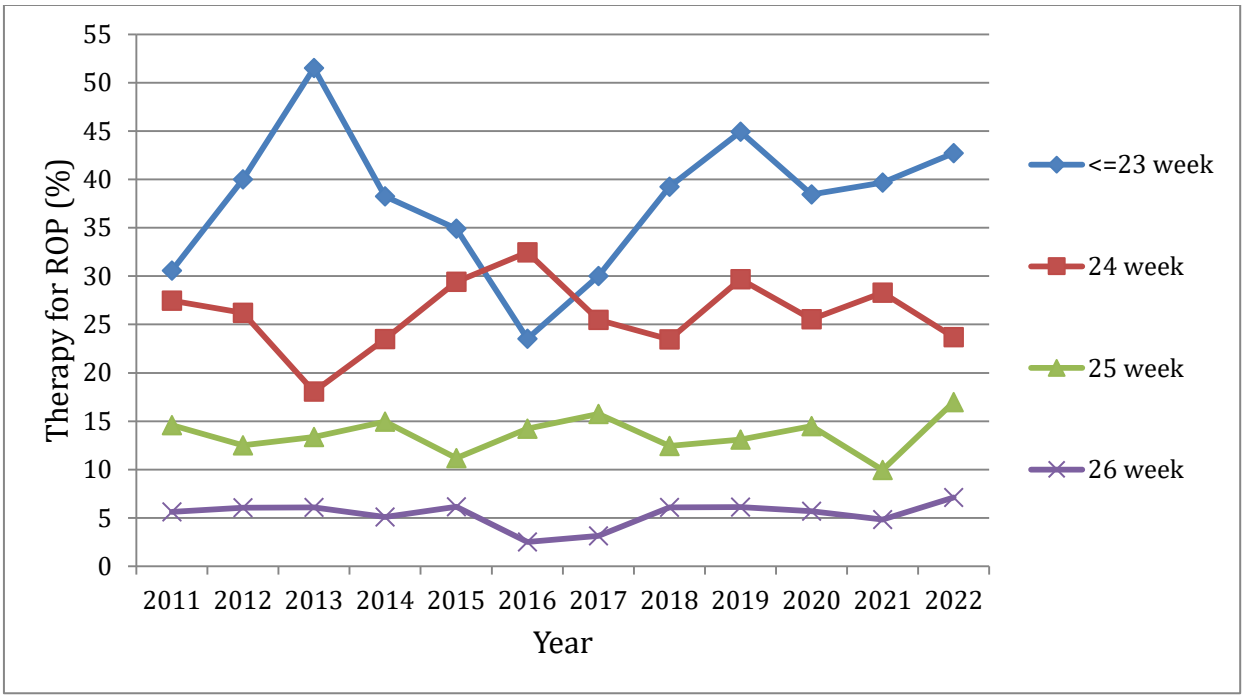


b. 27-32 weeks' GA:

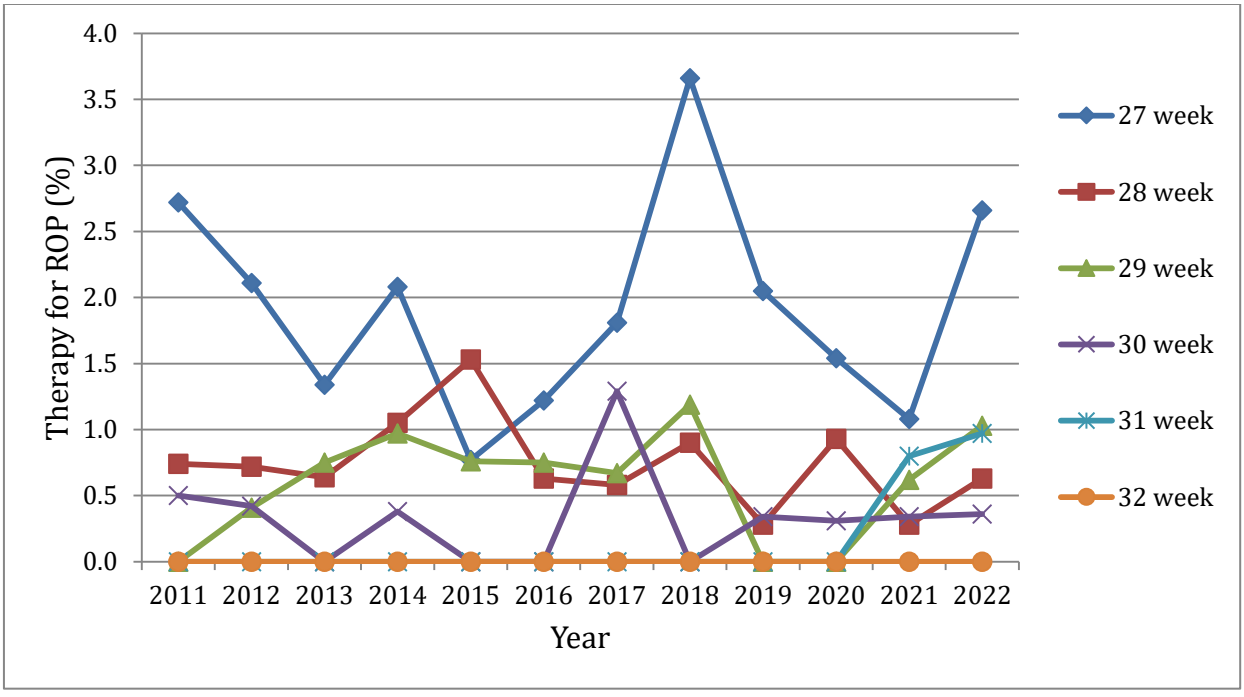


11. Therapy for ROP (among neonates who received eye exams)

a. 23-26 weeks' GA:

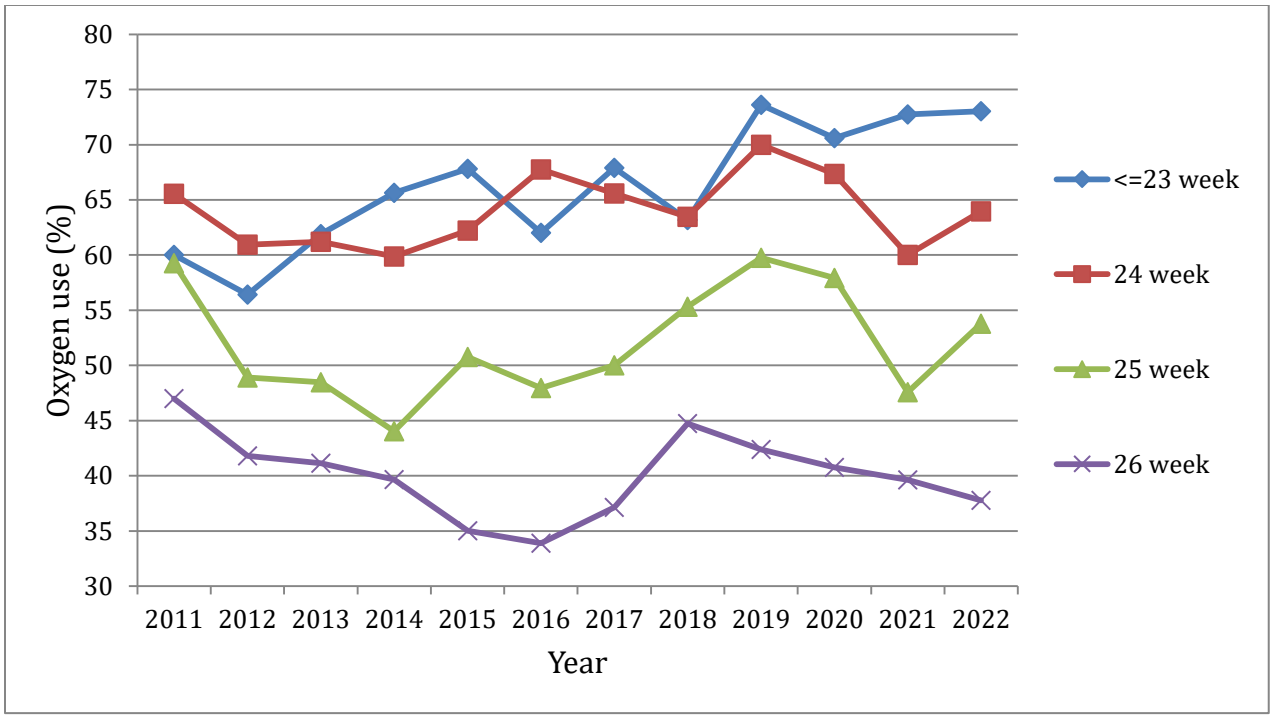


b. 27-32 weeks' GA:

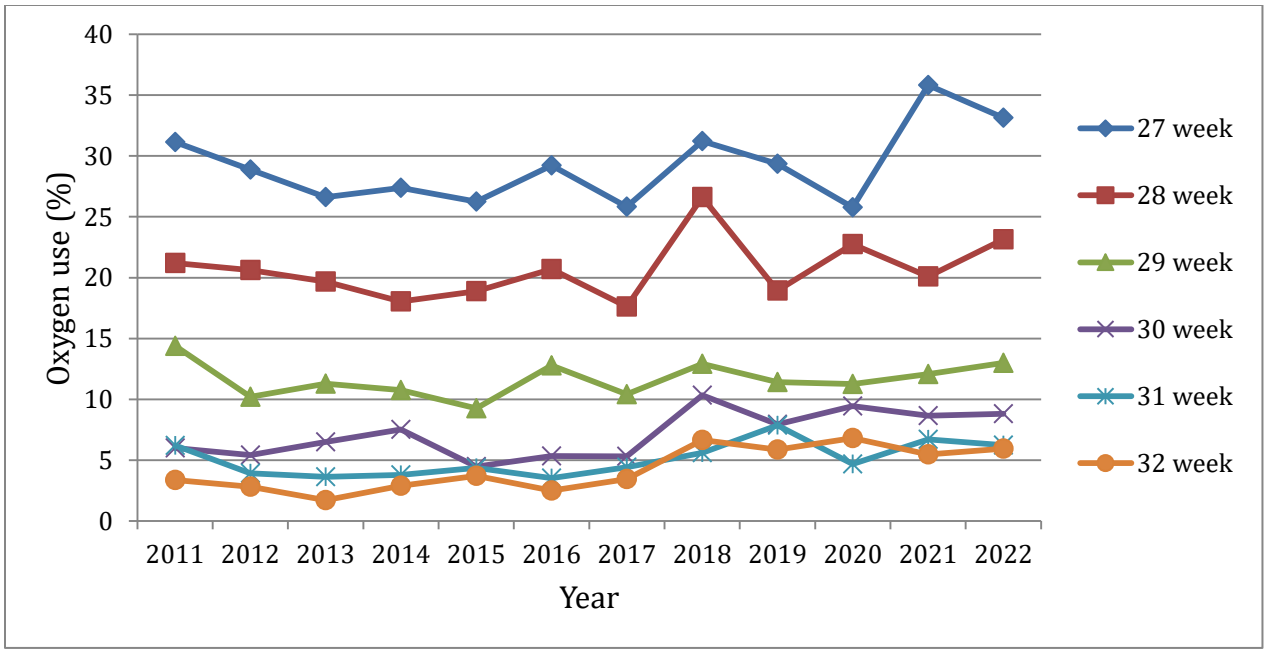


12a. Oxygen use at 36 weeks or at discharge:

a. 23-26 weeks' GA:

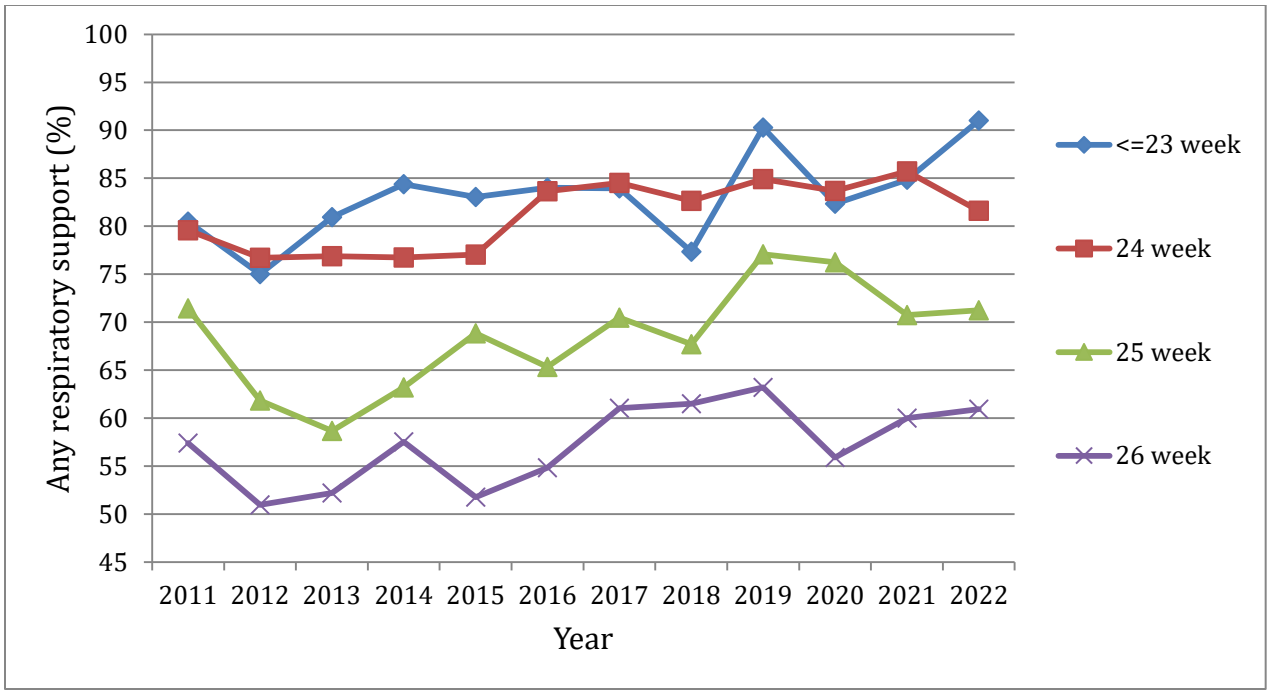


b. 27-32 weeks' GA:

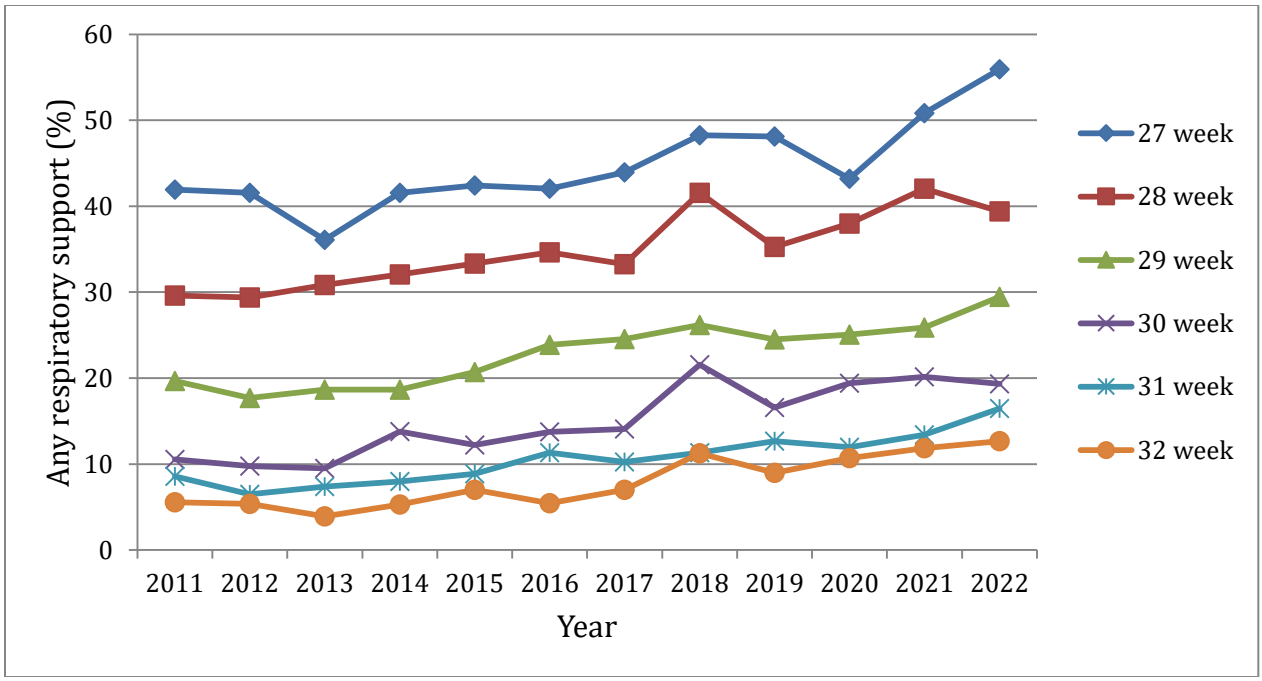


12b. Any respiratory support at 36 weeks or at discharge:

a. 23-26 weeks' GA:

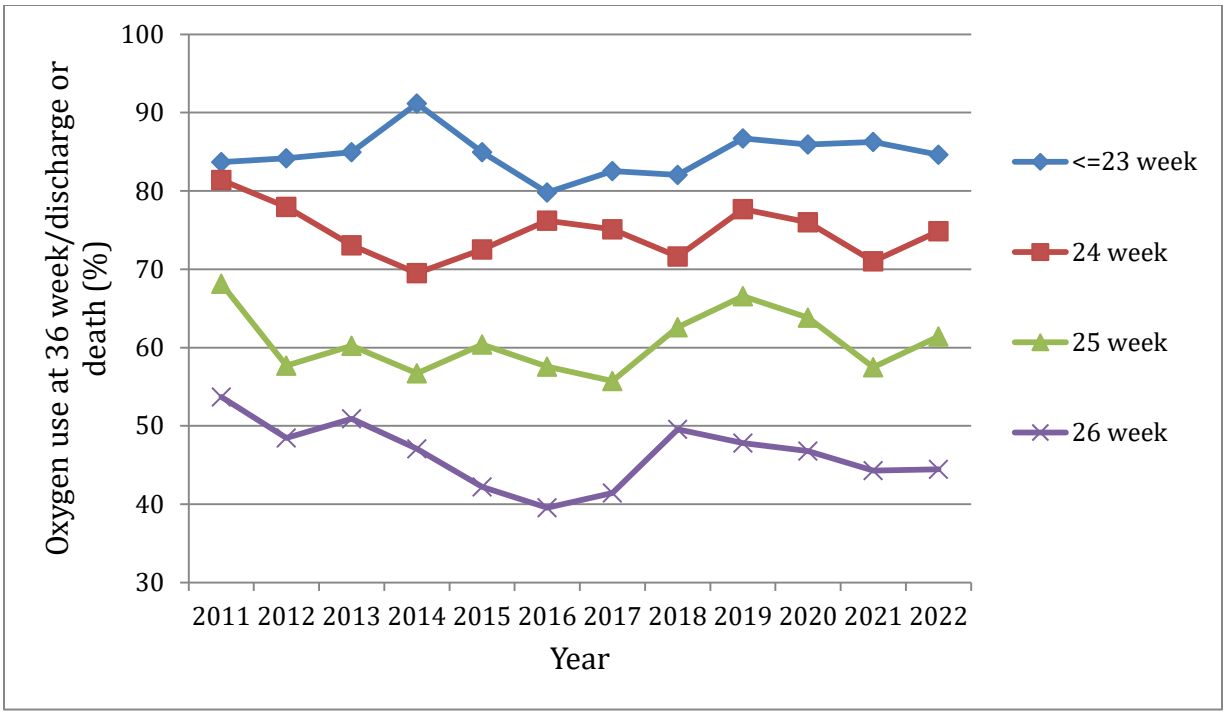


b. 27-32 weeks' GA:

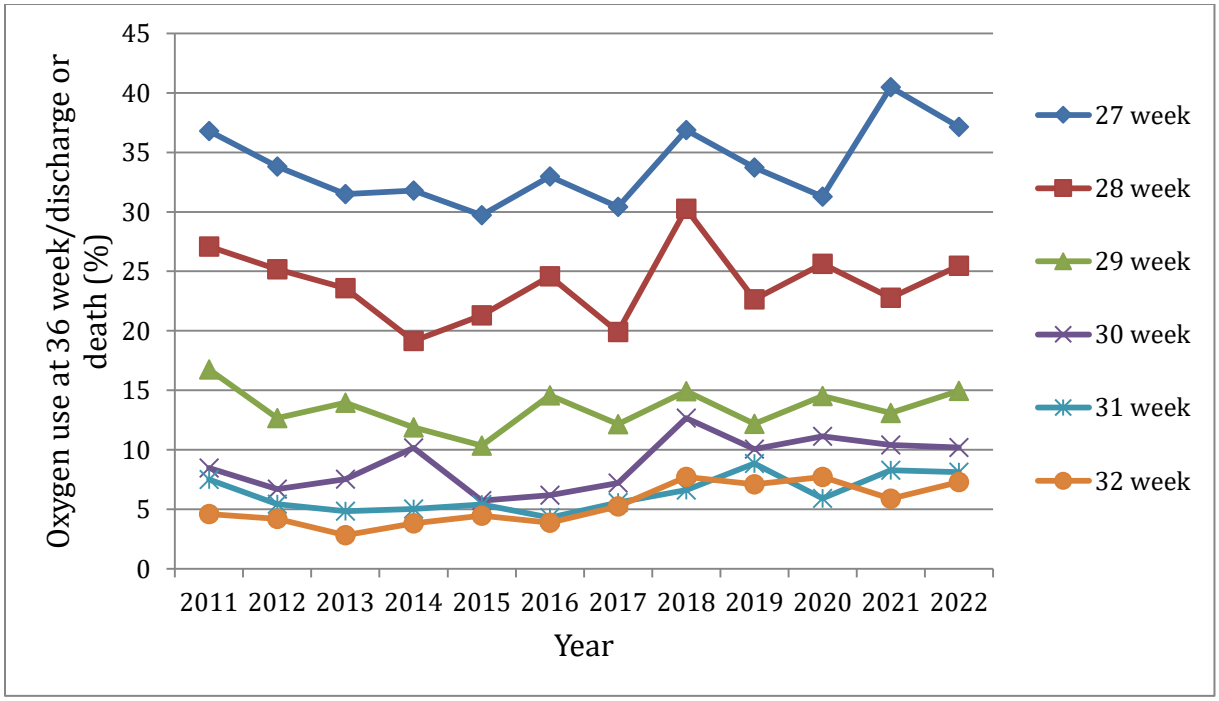


13a. Oxygen use at 36 weeks/discharge or death:

a. 23-26 weeks' GA:

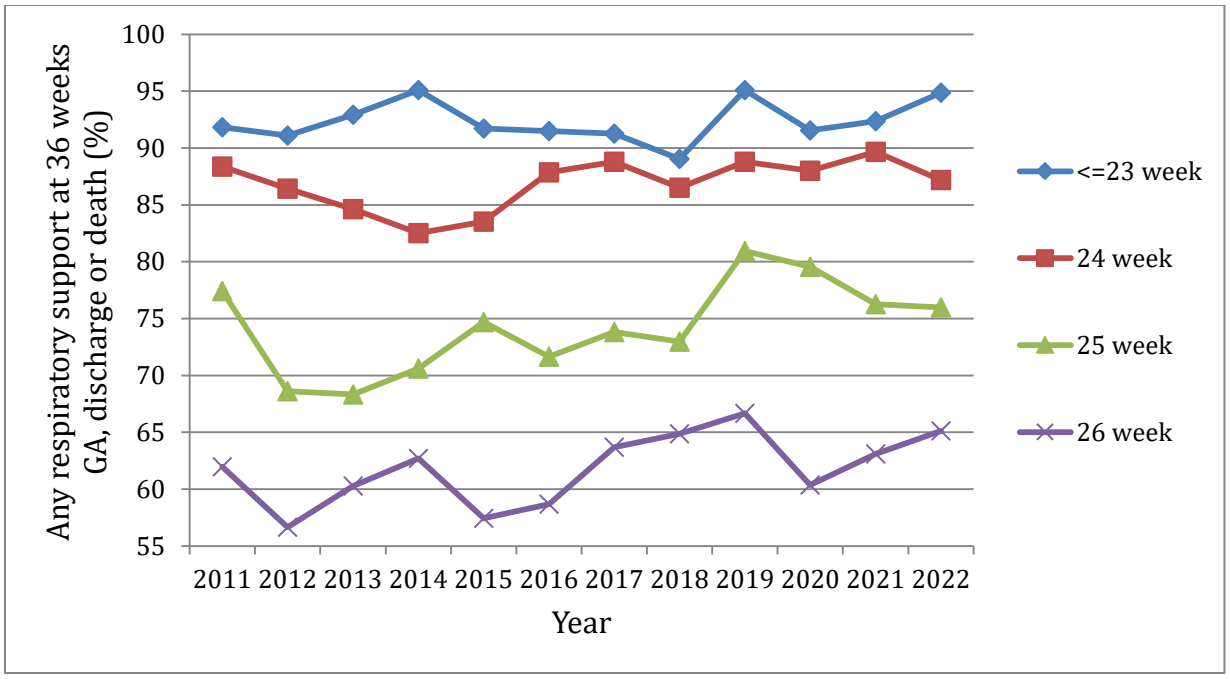


b. 27-32 weeks' GA:

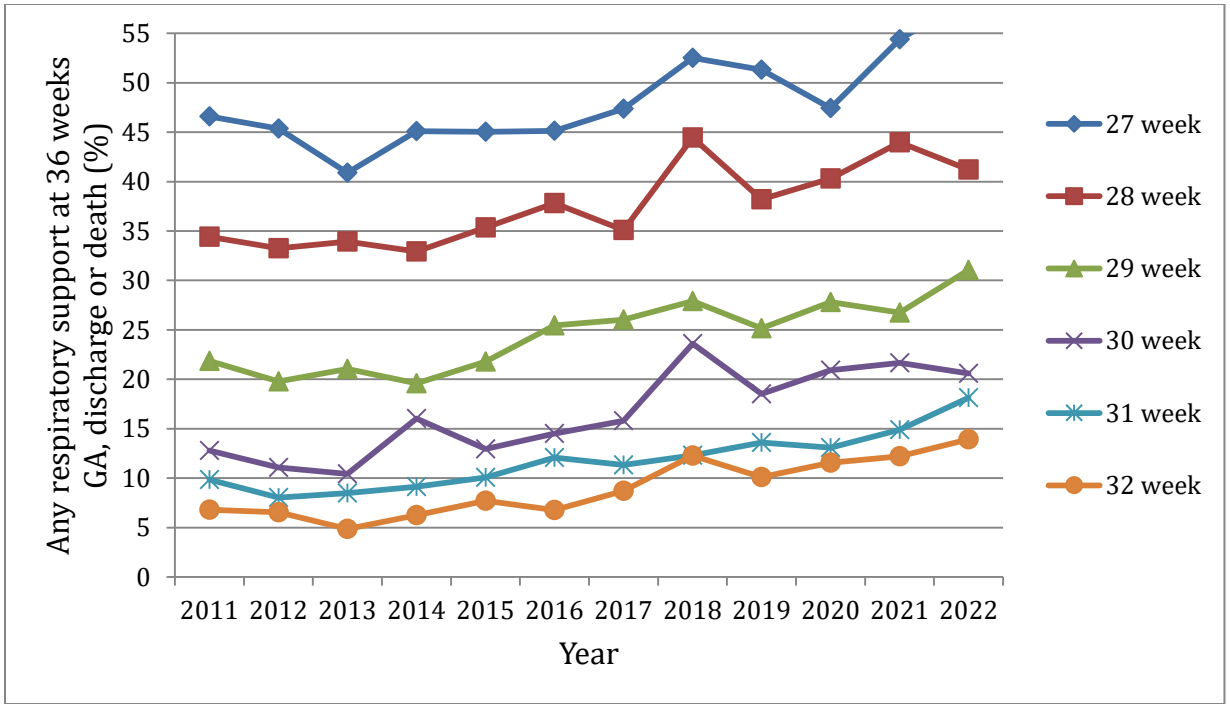


13b. Any respiratory support at 36 weeks/discharge or death:

a. 23-26 weeks' GA:

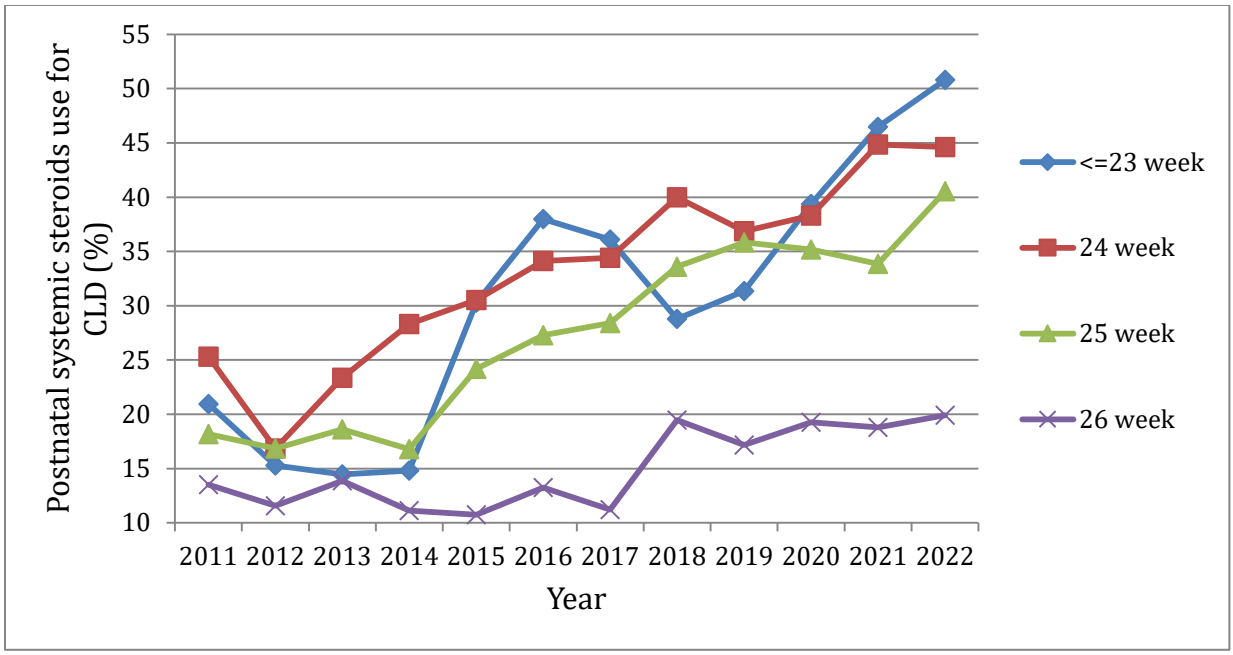


b. 27-32 weeks' GA:

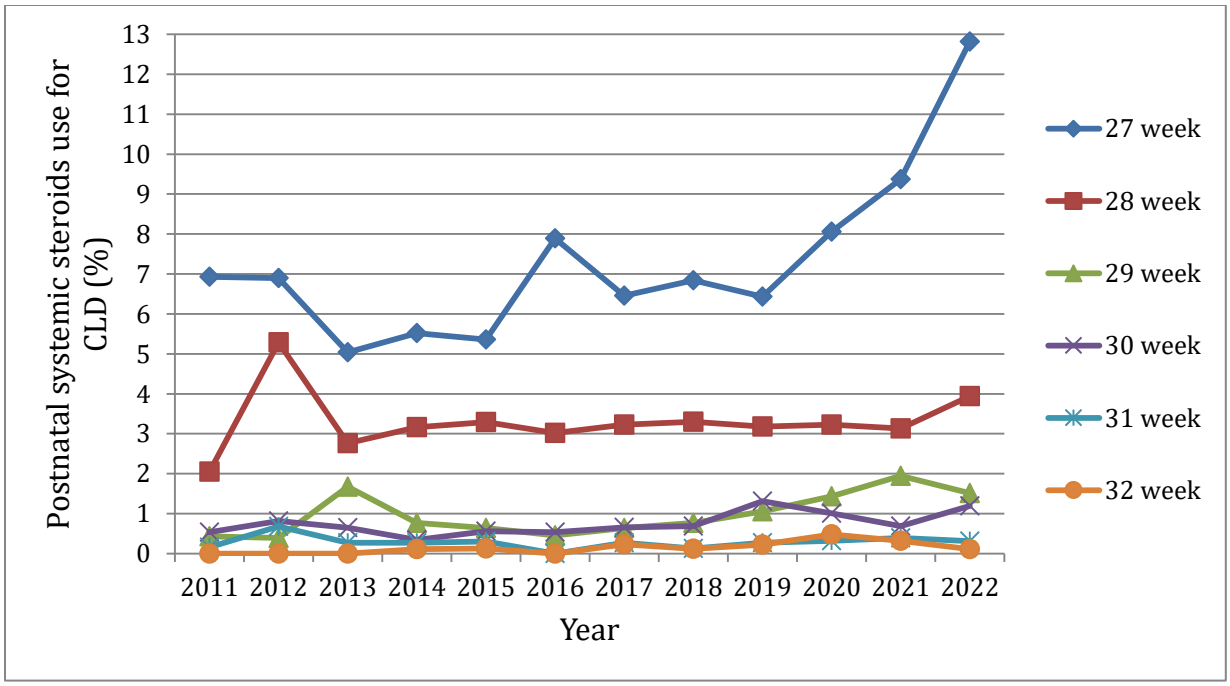


14. Postnatal systemic steroids use for chronic lung disease (CLD)

a. 23-26 weeks' GA:



b. 27-32 weeks' GA:

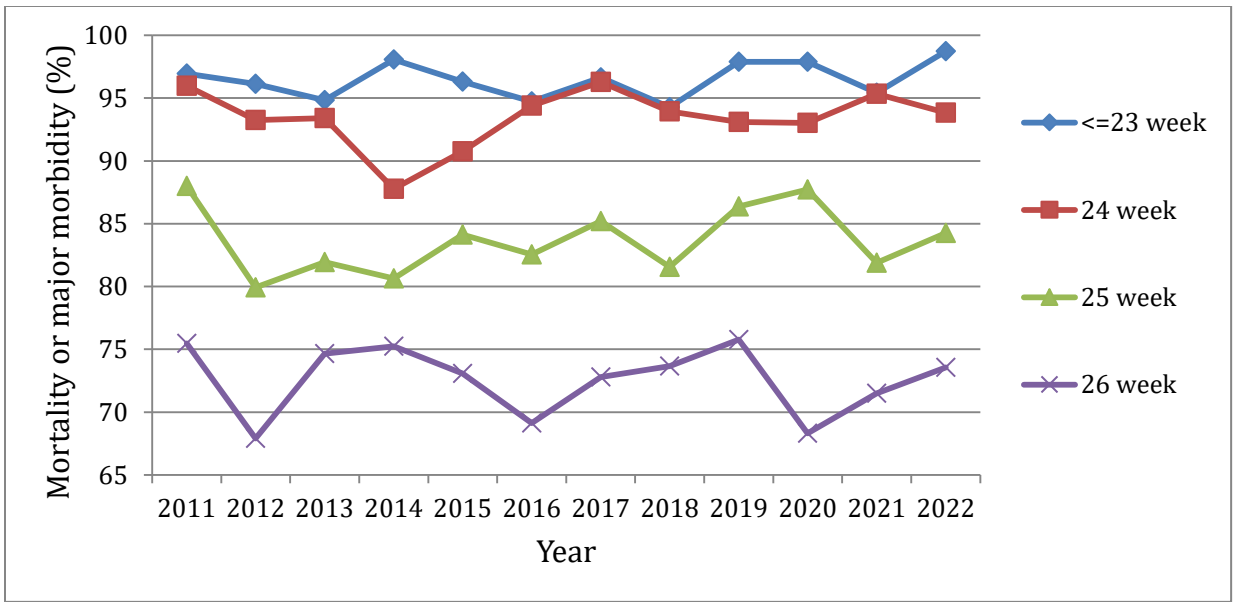


15. Mortality or major morbidity including CLD

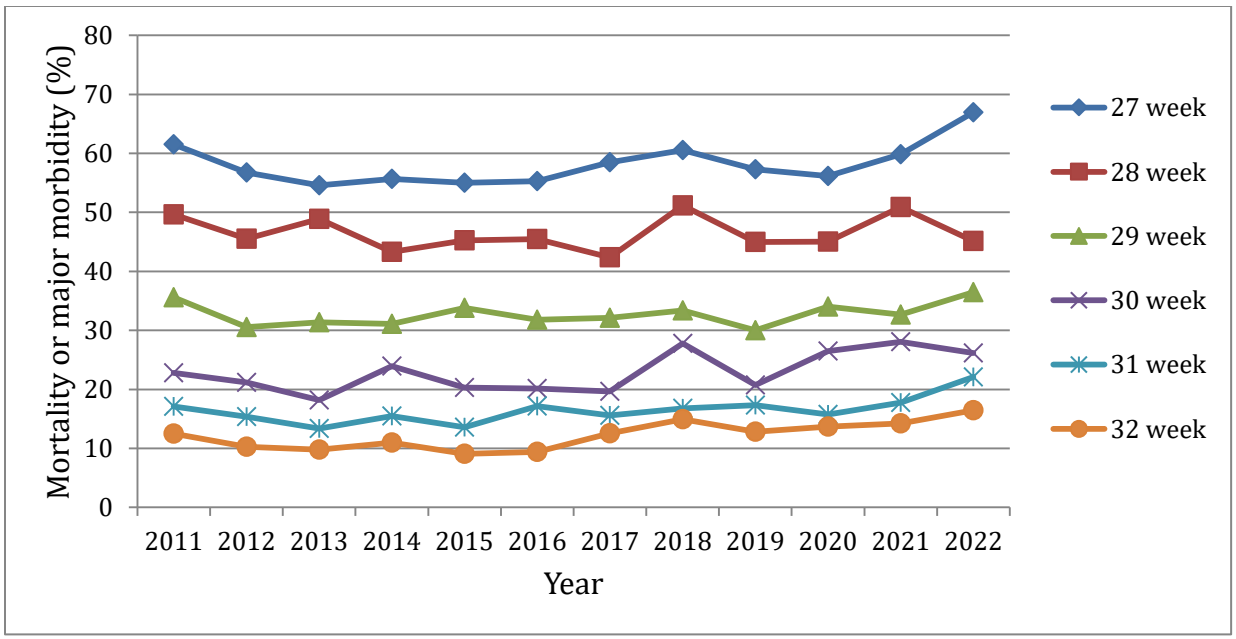
Major morbidity was counted as any one of the following:

1. CLD (any grade)
2. Severe ROP (stage 3,4,5 and/or those with ROP treatment)
3. Severe neurological injury (IVH grade 3 or grade 4 or PVL)
4. NEC (stage 2 or 3)
5. Late onset sepsis (any positive blood and/or cerebrospinal fluid culture after 2 days of age)

a. 23-26 weeks' GA:



b. 27-32 weeks' GA:

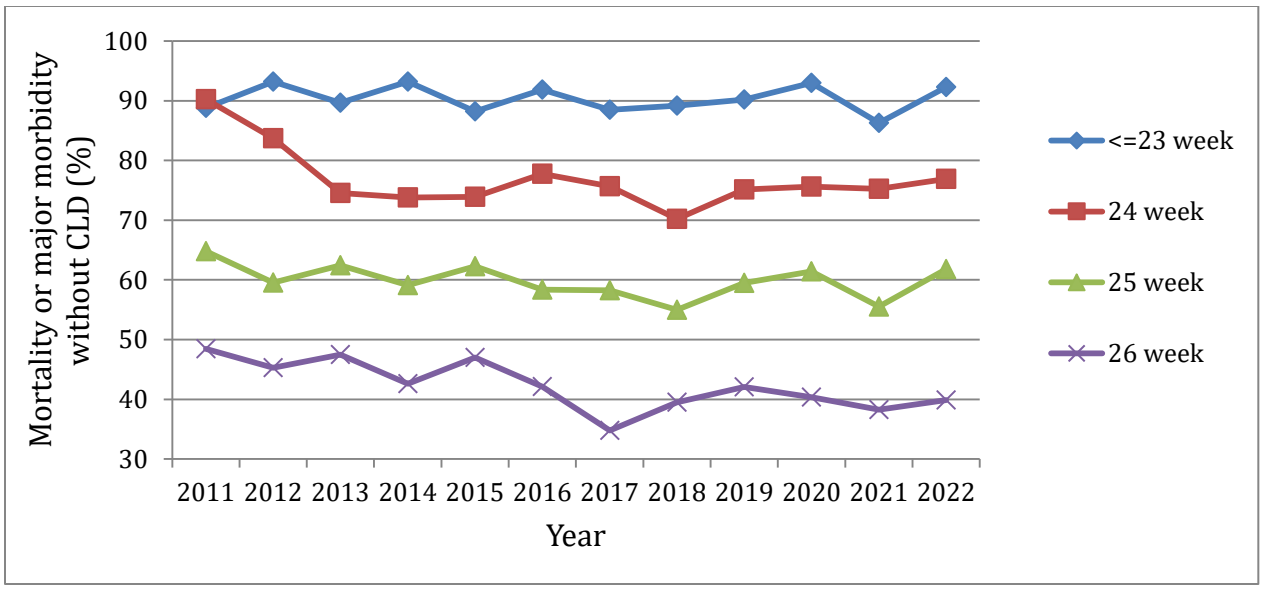


16. Mortality or major morbidity excluding CLD

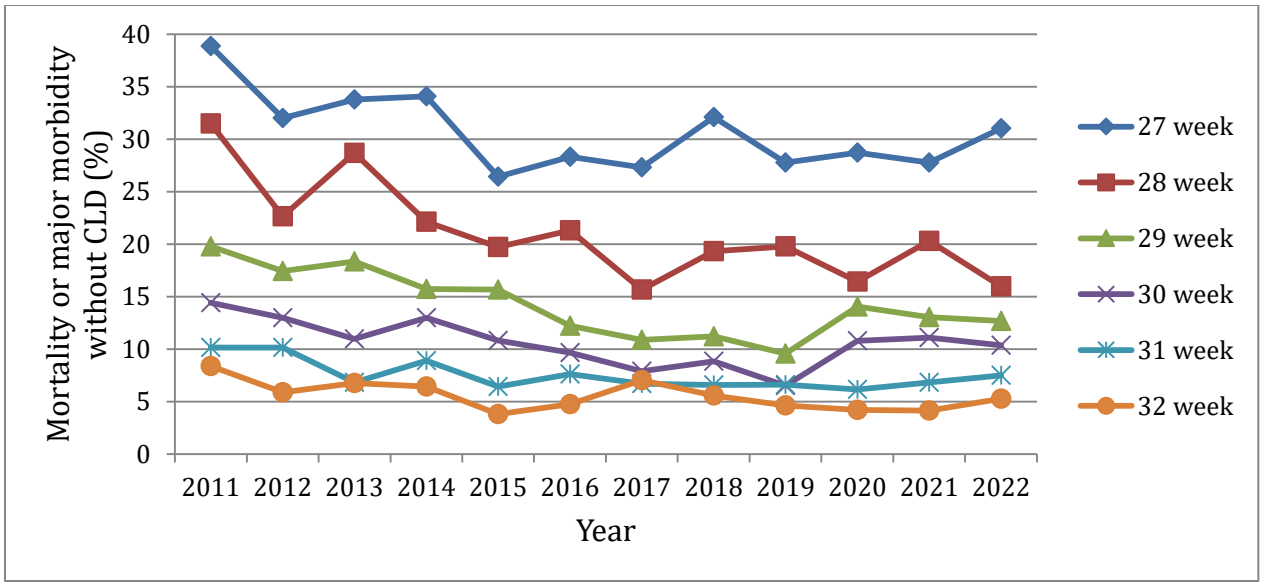
Major morbidity was counted as any one of the following:

1. Severe ROP (stage 3,4,5 and/or those with ROP treatment)
2. Severe neurological injury (IVH grade 3 or grade 4 or PVL)
3. NEC (stage 2 or 3)
4. Late onset sepsis (any positive blood and/or cerebrospinal fluid culture after 2 days of age)

a. 23-26 weeks' GA:



b. 27-32 weeks' GA:



I. 2022 CNN publications

Peer reviewed publications

1) Yeung T, Rios D, Beltempo M, Khurshid F, Toye J, Ojah C, Zupancic JAF, Lee SK, Pechlivanglou P, Shah PS, Canadian Neonatal Network Investigators, Canadian Preterm Birth Network Investigators. The trends in costs of tertiart-level Neonatal Intensive Care for Neonates Born Preterm at 22 0/7 – 28 6/7 Weeks of Gestation from 2010 to 2019 in Canada. J Pediatr. 2022 March. Article in press.
2) Alshaikh B, Yusuf K, Dressler-Mund D, Mehrem AA, Augustine S, Bodani J, Yoon E, Shah PS, Canadian Neonatal Network Investigators, Canadian Preterm Birth Network Investigators. Rates and Determinants of Home Nasogastric Tube Feeding in Infants Born Very Preterm. . J Pediatr. 2022 March. Article in press.
3) Ricci MF, Shah PS, Moddemann D, Lee SK, Synnes A on behalf of the Canadian Neonatal Network (CNN) and Canadian Neonatal Follow-Up Network (CNFUN) investigators. Neurodevelopmental Outcomes of Infants <29 weeks' Gestation born in Canada between 2009 and 2016. J Pediatr. 2022 May. Article in press.
4) Ting JY, Yoon EW, Fajardo CA, Daboval T, Bertelle V, Shah PS & Canadian Neonatal Network (CNN) Investigators. Antimicrobial utilization in very-low-birth-weight infants: association with probiotic use. J Perinatol. 2022 Apr 11.
5) Ghotra S, Feeny D, Barr R, Yang J, Saigal S, Vincer M, Afifi J, Shah PS, Lee SK, Synnes AR, Canadian Neonatal Follow-up Network investigators; Canadian Neonatal Network Site Investigators. Parent-Reported Health Status of Preterm Survivors in a Canadian Cohort. Archives of Disease in Childhood. 2022 Jan;107(1):87-93.
6) Synnes A, Petrie J, Grunau RE, Church P, Kelly E, Moddemann D, Ye X, Lee SK, O'brien K, Canadian Neonatal Network Investigators; Canadian Neonatal Follow-up Network Investigators. Family integrated care: very preterm neurodevelopmental outcomes at 18 months. Arch Dis child Fetal Neonatal Ed. 2022 Jan;107(1):76-81.
7) Brown BE, Shah PS, Afifi JK, Sherlock RL, Adie MA, Monterrosa LA, Crane JM, Ye XY, El-Naggar WI, Canadian Neonatal Network and the Canadian Preterm Birth Network Investigators. Delayed Cord Clamping in Small for Gestational Age Preterm Infants. Am J Obstet Gynecol. 2022 Feb;226(2):247.e1-247.e10.
8) Chevaillier M, Debillon T, Darlow BA, Synnes AR, Pierrat V, Hurrion E, Yang J, Ego A, Ancel PY, Lui K, Shah PS, Luu TM, Australian and New Zealand Neonatal Network (ANZNN); Canadian Neonatal Network (CNN); Canadian Neonatal Follow-Up Network (CNFUN); Etude Epidémiologique sur les Petits Ages Gestationnels (EPIPAGE-2) Investigators. Mortality and Significant Neurosensory Impairment in Preterm Infants: An International Comparison. Arch Dis Child Fetal Neonatal Ed. 2022 May;107(3):317-323.
9) Shah PS, Norman M, Rusconi F, Kusuda S, Reichman B, Battin M, Bassler D, Modi N, Hakansson S, Yang J, Lee SK, Helenius K, Vento M, Lehtonen L, Adams M, Isayama T, Lui K, Gagliardi L, International Network for Evaluating Outcomes of Neonates (iNeo) Investigators. Five-minute Apgar Score and Outcomes in Neonates of 24-28 Weeks' Gestation. Arch Dis Child Fetal Neonatal Ed. 2022 Jul;107(4):437-446.
10) Zhou Q, Ong M, Lan M, Ye XY, Ting JT, Shah PS, Lee SK on behalf of the Canadian Neonatal Network (CNN) investigators. Decreasing Trend in Incidence of Late Onset Culture Positive Bloodstream Infections but Not Late Onset Meningitis in Preterm Infants

<33 Weeks Gestation in Canadian Neonatal Intensive Care Unit. Neonatalogy. 2022:119(1):60-67.
11) Kandraju H, Jasani B, Shah PS, Church PT, Luu TM, Yee XY, Stavel M, Mukerji A, Shah V. Timing of Systemic Steroids and Neurodevelopmental Outcomes in Infants <29 Weeks Gestation. MPDI. Article in press.
12) Shah PS, Joynt C, Hakansson S, Narvey M, Naver L, Soderling J, Yang J, Beltempo M, Stephansson O, Fell DB, Money D, Ting JT, Norman M. Infants Born to Mothers Who Were SARS-CoV-2 Positive during Pregnancy and Admitted to Neonatal Intensive Care Unit. Neonatology. 2022 Sept 9; 119: 619-628.
13) Shah PS, Isayama T, Helenius KK, Feliciano LS, Beltempo M, Bassler D, Hakansson S, Rusconi R, Modi N, Battin M, Vento M, Adams M, Lehtonen L, Norman M, Kusuda S, Reichman B, Lui K, Lee SK on behalf of the International Network for Evaluating Outcomes of Neonates (iNeo). International network for evaluating outcomes of neonates: outputs and future directions. Pediatr Med. 2022; 5:40.
14) Fell, D. B., Dimanlig-Cruz, S., Regan, A. K., Håberg, S. E., Gravel, C. A., Oakley, L., Alton, G. D., Török, E., Dhinsa, T., Shah, P. S., Wilson, K., Sprague, A. E., El-Chaâr, D., Walker, M. C., Barrett, J., Okun, N., Buchan, S. A., Kwong, J. C., Wilson, S. E., Dunn, S. I., … Dougan, S. D. (2022). Risk of preterm birth, small for gestational age at birth, and stillbirth after covid-19 vaccination during pregnancy: population based retrospective cohort study. BMJ (Clinical research ed.), 378, e071416.

Abstracts

1) Jabbour E, Patel S, Pechlivanoglou P, Shah P, Beltempo M. Validation of a Costing Algorithm in the Neonatal Intensive Care Unit and Identification of Cost Drivers for Neonates. PAS 2022: 30.338.
2) Weisz D, Thomas L, Ye X, Jasani B, Nissimov S, Hyderi A, Surak A, Soraisham A, Villeneuve A, Lapointe A, Hebert A, Louis D, Bhattarcharya S, Zhu F, Altit G, Castaldo M, Deshpande P, Lalitha R, Mitra S, ElSayed Y, Ben Fadel N, Ting J, Jacob G, Shah P, Jain A. Reliability of echocardiography indices for patent ductus arteriosus evaluation among extremely preterm neonates by neonatologist experts in a national network. PAS 2022: 214.220.
3) Kilmartin K, Khorram B, Dahan M, Wintermark P, Shah P. Outcomes of Neonates with a 10-minute Apgar Score of Zero: A Systematic Review and Meta-Analysis. PAS 2022: 365.132.
4) Chowdhury D, Jain A, Mohamed A, Shah P, Deshpande P. Single-room vs. Open-Bay NICU Design, Cerebral Maturation and Sleep-wake Cycling in Preterm Infants. PAS 2022: 470.342.
5) Moore S, Nunes G, Dancea A, Beltempo M, Wutthigate P, Simoneau J, Altit G. Early Cardiac Function and Pulmonary Hypertension are Associated with Adverse Cardio-Respiratory Outcomes in Extreme Preterms. PAS 2022: 193.219.
6) Soullane S, Shah P, Lodha A, Shivananda S, Redpath S, Seshia M, Simpson C, Pechlivanoglou P, Piedbeouf B, Ye X, Beltempo M. Association of Neonatal Intensive Care Unit Resources with Outcomes Among Very Preterm Infants. PAS 2022: 399.436.
7) Ng L, Patel S, Besner M, Hugues P, Lapointe A, Bizgu V, Sant'Anna G, Beltempo M. The Association between BMI Trajectories and Bronchopulmonary Dysplasia among Preterm Infants Born Less Than 30 Weeks Gestational Age. PAS 2022:454.335.

8) Shah P, Beltempo M, Toye J, Khurshid F, Ye X, Ting J. Early antimicrobial exposure and weight gain in extremely low gestation age infants without culture-proven sepsis or intestinal pathologies. PAS 2022: 549.428.
9) Shahroor M, Elkhouli M, Ganji N, Lee K, Pierro A, Shah P. Medical and surgical necrotizing enterocolitis: Characteristics, progression, and outcomes. PAS 2022: 507.426.
10) Ting J, Afifi J, Lee K, Dunn M, Elsharkawy A, Gupta-Bhatnagar S, Landry M, Toye J, Bodani J, Chao M, Srigley J, Lisboa L, Khan S, Donohue M, Kuan M, Richter L, Shah P, Choudhury J, Minion J, Hamilton C. Antibiogram of bacterial pathogens in neonatal intensive care units in Canada. PAS 2022: 546.428.

Oral Poster Symposia

1) Brahmbhatt S, Read B, DaSilva O, Bhattacharya S. A Survey of Surfactant Delivery Methods in Canada. PAS 2022: 85.438.
2) Yeund T, Ghanem M, Shah J, Kajal D, Shah P, Ibrahim J, Mohsen N, Mohamed A. Ultrasonographic assessment of diaphragmatic function in preterm infants with bronchopulmonary dysplasia. PAS 2022: 1295.6.
3) Kandraju H, Jasani B, Shah, P, Church P, Ye X, Shah V. Association of the timing of systemic postnatal steroids administration for bronchopulmonary dysplasia and neurodevelopmental outcomes in preterm infants < 29 weeks GA. PAS 2022: 2530.8.
4) Groulx-Boivin E, Paquette M, Khairy M, Beltempo M, Dudley R, Ferrand A, Bizgu V, Garfinkle J. Spontaneous resolution of post-hemorrhagic ventricular dilatation in preterm newborns and neurodevelopmental outcomes. PAS 2022: 1130.4.
5) Kandraju H, Jasani B, Shah PS, Church PT, Ye XY, Shah VS. Association of the timing of systemic postnatal steroids administration for bronchopulmonary dysplasia and neurodevelopmental outcomes in preterm infants < 29 weeks GA. PAS 2022: 2530.8.

J. Appendices

Outcomes Definitions

Mortality: Death prior to discharge from the NICU.

Severe neurological injury: Intraventricular hemorrhage (IVH), ventricular enlargement or parenchymal echogenicity or periventricular leukomalacia (PVL): Defined as grade 3 IVH (intraventricular hemorrhage with ventricular enlargement) or grade 4 IVH (intraventricular hemorrhage and persistent parenchymal echogenicity) or persistent parenchymal echogenicity.

Ventricular enlargement

- ***None:*** Measurement of ventricles was <7 mm at any level section of lateral ventricle.
- ***Mild:*** Measurement was 7 to 10 mm at any level of the larger lateral ventricle. Classify as "mild" if there was no mention of "ventricular enlargement", "ventriculomegaly" or "hydrocephalus", or if the most severe report was of "mild ventriculomegaly" or "mild ventricular enlargement", or if described as "suspected"
- ***Moderate:*** Measurement was 11 to 15 mm at any level of the larger lateral ventricle on sagittal scan. Classify as "moderate" if the terms "grade III IVH", "ventricular enlargement", "ventriculomegaly" or "hydrocephalus" were used with "moderate", or without descriptors.
- ***Severe:*** Measurement was >15 mm at any level of the larger lateral ventricle on a sagittal scan, or ventricular drainage/shunting was required. If no measurement was made, classify as "severe" if the terms "severe" or "significant" were used to describe "grade III IVH", "ventricular enlargement", "ventriculomegaly" or "hydrocephalus".
- ***Not measured***
- ***Unknown***

Severe retinopathy of prematurity (ROP): Stage 3, 4 or 5 ROP as defined by the International Classification of Retinopathy of Prematurity[1] and/or those infants requiring treatment (laser or intraocular injection). ROP was scored as the highest stage in either eye identified at any time.

Necrotizing enterocolitis (NEC): Stage 2 or 3 NEC according to Bell's classification[2], diagnosed by clinical and imaging findings.

Sepsis: Isolation of bacterial, fungal or viral organism from blood or cerebrospinal fluid in a symptomatic infant.

Chronic lung disease (CLD): Defined as respiratory support given at 36 weeks' post menstrual age or at discharge (if earlier than 36 weeks' PMA) to level 2 centers and was classified in different degrees of severity described as follows (Note that some sites collect CLD status at 36 weeks' PMA for infants transferred to level 2 centers):

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[1] An International Committee for the Classification of Retinopathy of Prematurity. **The International Classificaiton of Retinopathy of Prematurity Revisited.** Arch Ophthalmol 2005;123:991-999

[2] Bell MJ, Ternberg JL, Feigin RD, et al. **Neonatal necrotizing enterocolitis. Therapeutic decisions based upon clinical staging.** Ann Surg 1978;187:1–7

Chronic lung disease (CLD) continued:

Severity	Respiratory support at time of classification (at 36 weeks' PMA or at discharge if baby was discharged prior to 36 weeks' PMA)	Oxygen	Flow rate
No CLD	None	21%	None
Mild CLD	Headbox or incubator	>21%	Any amount
	Nasal cannula	100%	<0.1L/min
	Nasal cannula blended air/oxygen	21-99%	<1.5L/min
Moderate CLD	Nasal cannula	100%	≥0.1L/min
	Nasal cannula blended air/oxygen	21-29%	≥1.5L/min
	CPAP, SIPAP, NIPPV, NIHFV	21-29%	
Severe CLD	Nasal cannula blended oxygen	≥30%	≥1.5L/min
	CPAP, SIPAP, NIPPV, NIHFV	≥30%	
	Mechanical ventilation (intubated)	21-100%	

Survival without major morbidities: Defined as survival at discharge from the NICU without having any of CLD, NEC stage 2 or 3, IVH grade 3 or 4 or PVL, sepsis, or ROP stage 3, 4, 5, or ROP treatment.

Variables Definitions

Definitions of CNN variables can be found in the CNN abstractors' manual. The manual can be accessed on the CNN website (www.canadianneonatalnetwork.org/portal) via the following link: http://www.canadianneonatalnetwork.org/portal/Portals/0/CNN%20Manuals/CNN%20Manual_20210225.pdf

Major Anomalies

A list of major anomalies can be found in the 2013 annual report, pages 124-127.
It is available via the following link:
http://www.canadianneonatalnetwork.org/Portal/LinkClick.aspx?fileticket=lreR0871sjA%3d&tabid=39

Abbreviations

ANCS	Antenatal Corticosteroids
BW	Birth Weight
BPD	Bronchopulmonary dysplasia
CONS	Coagulase-Negative Staphylococcus
CPAP	Continuous Positive Airway Pressure
CLABSI	Central Line-Associated Bloodstream Infection
CLD	Chronic Lung Disease
CVL	Central Venous Line
DR	Delivery Room
EPIQ	Evidence-based Practice for Improving Quality
ETT	Endotracheal Tube
GA	Gestational Age
GBS	Group B Streptococcus
GM	Germinal Matrix
HFV	High Frequency Ventilation
HIE	Hypoxic Ischemic Encephalopathy
ICROP	International Classification of Retinopathy of Prematurity
IPPV	Intermittent Positive Pressure Ventilation
IVH	Intra-Ventricular Hemorrhage
NEC	Necrotizing Enterocolitis
NI	Nosocomial Infection
NICE	Neonatal-Perinatal Interdisciplinary Capacity Enhancement
NICU	Neonatal Intensive Care Units
NTISS	Neonatal Therapeutic Intervention Scoring System
PDA	Patent Ductus Arteriosus
PEC	Parenchymal Echogenicity
PICC	Peripherally Inserted Central Catheters
PIV	Peripheral Intravenous
PMA	Postmenstrual Age
PPV	Positive Pressure Ventilation

PVL	Periventricular Leukomalacia
RDS	Respiratory Distress Syndrome
ROP	Retinopathy of Prematurity
SD	Standard Deviation
SEM	Standard Error of Mean
SGA	Small for Gestational Age
SNAP	Score for Acute Neonatal Physiology
SNAP-IIPE	Score for Acute Neonatal Physiology Version II, Perinatal Extension
SR	Standardized Ratio
TPN	Total Parenteral Nutrition
TRIPS	Transport Risk Index of Physiologic Stability
UV	Umbilical Vein
VE	Ventricular Enlargement
VEGF	Vascular Endothelial Growth Factor
VLBW	Very Low Birth Weight
VP	Ventriculoperitoneal

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