The Canadian Neonatal Network ™

Le Réseau Néonatal Canadien ™

Annual Report 2021 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 2021. 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.

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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 2021. Admissions between January 1, 2021 and December 31, 2021 who were discharged by March 31, 2022 were included. Seven (7) infants who were admitted in 2020 but discharged after March 31, 2021 were also included in the 2021 report. Delivery room deaths, moribund neonates, and readmissions from 2020 were excluded.

Total number of eligible admissions to participating sites (See section D.1 for analyses)	15 760
Total number of eligible individual neonates (See section D.2. for analyses)	14 651
Total number of eligible very preterm (GA <33 weeks) neonates	4 469
Total number of eligible extremely preterm (GA <29 weeks) neonates (See section D.3. for analyses)	1 676
Total number of eligible very low birth weight (BW <1500 g) neonates (See section D.3. for analyses)	2 959

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 2021, ten (10) 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.
h. Neonates who were not admitted to participating NICUs were not included in this report.

Noteworthy findings:

a. Out of 33 CNN sites, 31 had maternity units in their facilities; and of those, 30 collected data on delivery room deaths in 2021.

b. Among infants born <33 weeks' GA and admitted to Level 3 NICUs, rate of outborn birth continues to decrease from 16.5% in 2010 to 14.4% in 2021.

c. The proportion of infants receiving active care in the delivery room among hospital with a Level 3 NICU remained similar at lower GAs:
   i. At 22 weeks' GA, 40% of all neonates received active care in the delivery room
   ii. At 23 weeks' GA, 65% of all neonates received active care in the delivery room

d. The survival rate has remained similar at lower GAs:
   i. At 22 weeks' GA, 11% of all neonates and 27% of neonates who received intensive care survived.
   ii. At 23 weeks' GA, 35% of all neonates and 54% of neonates who received intensive care survived.

e. The survival rate also remained similar at lower BWs:
   i. At 400-499g, 23% of all neonates and 46% of neonates who received intensive care survived.
   ii. At 500-599g, 50% of all neonates and 65% of neonates who received intensive care survived.

f. Among inborn neonates <29 weeks' GA at birth:
   i. 40% received a complete course of antenatal steroids within the last week prior to birth
   ii. 85% received MgSO4 for neuroprotection.
   iii. 56% received deferred cord clamping ≥30 sec
   iv. 30% were hypothermic (temperature <36.5^{0}C) on admission.
   v. 83% received feeds within the first 2 days of admission
   vi. 26% were never intubated during their stay.
   vii. 43% were exclusively receiving mother's own milk at discharge

g. Among neonates <33 weeks that received only a single course medical treatment for PDA, rate of acetaminophen use has increased from 20% in 2018 to 36% in 2021.

h. Among infants <33 weeks with early onset sepsis, E. Coli was the most common etiology (46% of cases).

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

j. A total of 682 neonates were diagnosed with HIE and of whom 520 received hypothermia (compared to 460 in 2020).

Among neonates born <29 weeks' GA, rate of BPD increased from 55% in 2020 to 58% in 2021

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	y	y	y	y	n	y	n
University of Alberta Hospital - Stollery, Edmonton, AB*	< 33 weeks GA, HIE, 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, 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	< 33 weeks GA and other selected 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	< 29 weeks GA	y	n	y	n	n	y	y
Hôpital Maisonneuve-Rosemont, Montreal , 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	< 34 weeks GA, HIE, CDH & gastroschisis	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	< 33 weeks GA	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, 2021 and December 31, 2021, and were discharged by March 31, 2022. 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. Seven (7) infants who were admitted in 2020 but discharged after March 31, 2021 were also included in the 2021 report. Delivery room deaths, moribund neonates, and readmissions from 2020 were excluded. A total of 14 651 patients accounted for 15 760 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 usually entered into a laptop 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 15 760 eligible admissions (including readmissions) to 33 sites. 23 of these sites submitted complete data (n=12 963) on all admissions and 10 sites submitted data on a selected admission cohort (n=2 797).

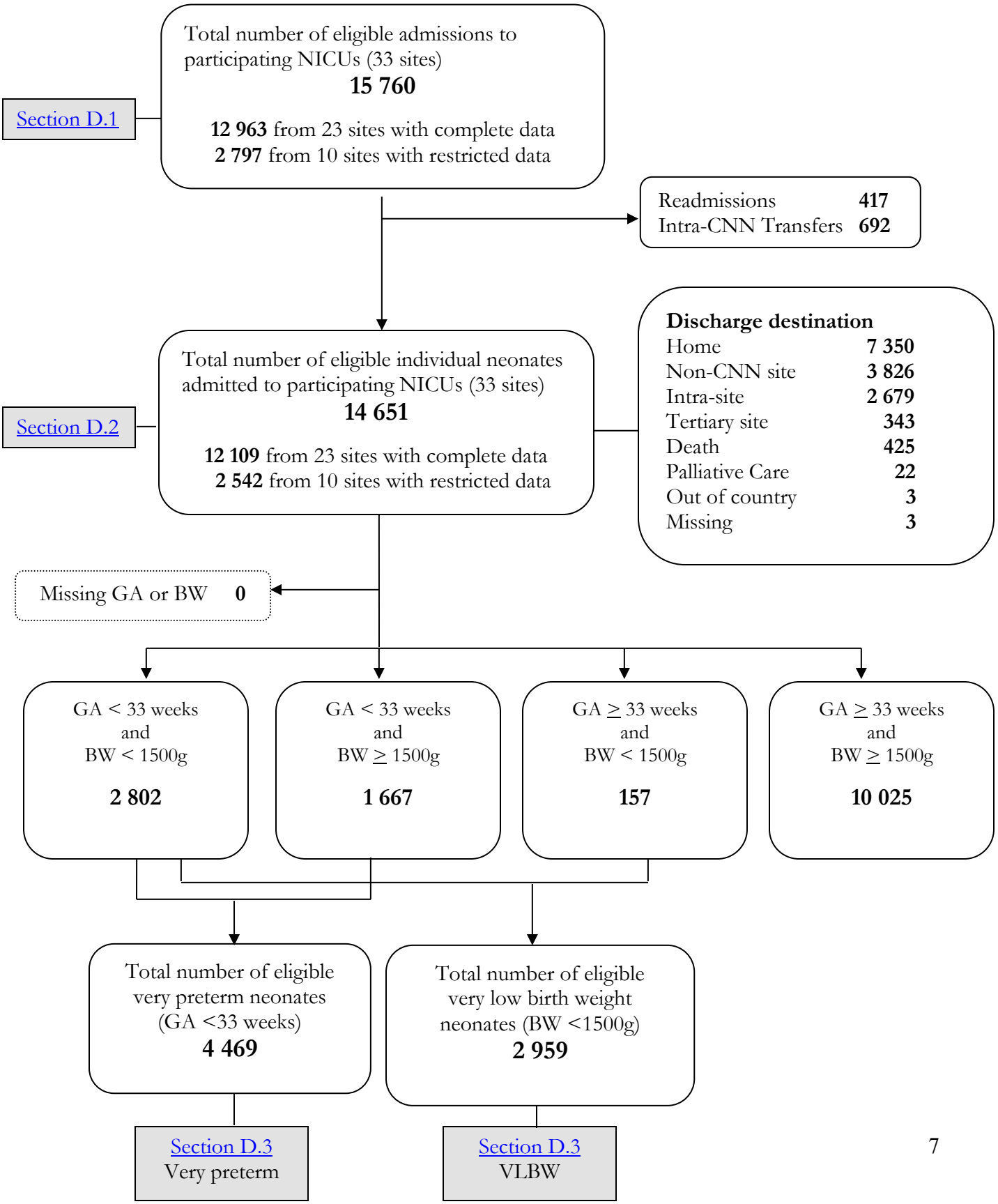
Section D.2. Analyses based on number of eligible neonates admitted to participating sites

These include data from 14 651 eligible neonates admitted to 33 sites. 23 of these sites submitted complete data (n=12 109) on all eligible admitted neonates and 10 sites submitted data on selected eligible admitted neonates (n=2 542).

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 4 469 eligible very preterm neonates and 2 959 eligible very low birth weight (VLBW) neonates.

Canadian Neonatal Network™ Database: Admissions between January 1, 2021 and December 31, 2021 who were discharged by March 31, 2022. Seven (7) infants who were admitted in 2020 but discharged after March 31, 2021 were also included in the 2021 report. Delivery room deaths, moribund neonates, and readmissions from 2020 were excluded.

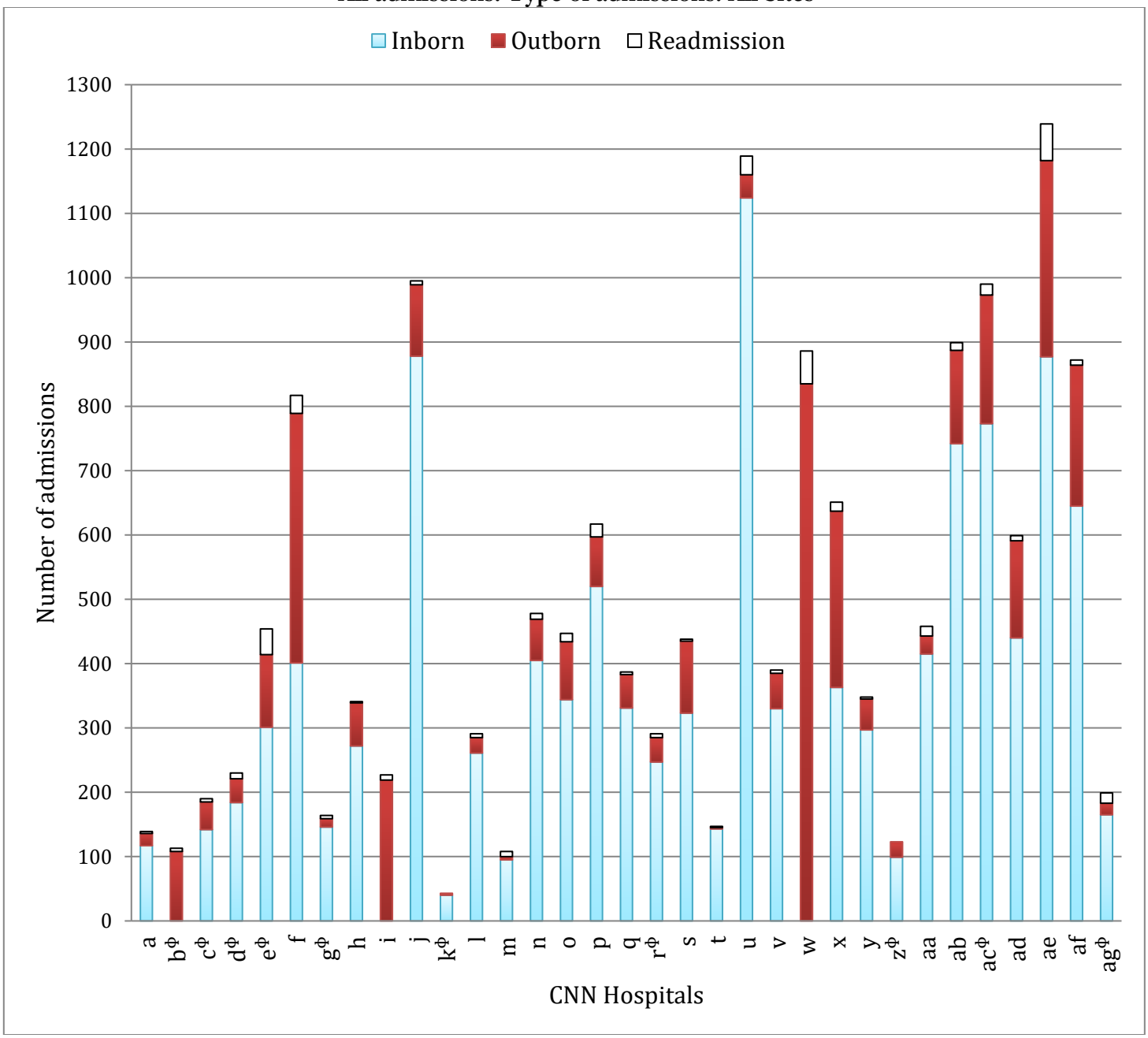


Section D.1

Analyses based on number of eligible admissions to participating sites

These include data from 15 760 eligible admissions (including readmissions) to 33 sites. 23 of these sites submitted complete data (n=12 963) on all admissions and 10 sites submitted data on a selected admission cohort (n=2 797).

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



ϕ Data collected on selected cohort of eligible admissions only.

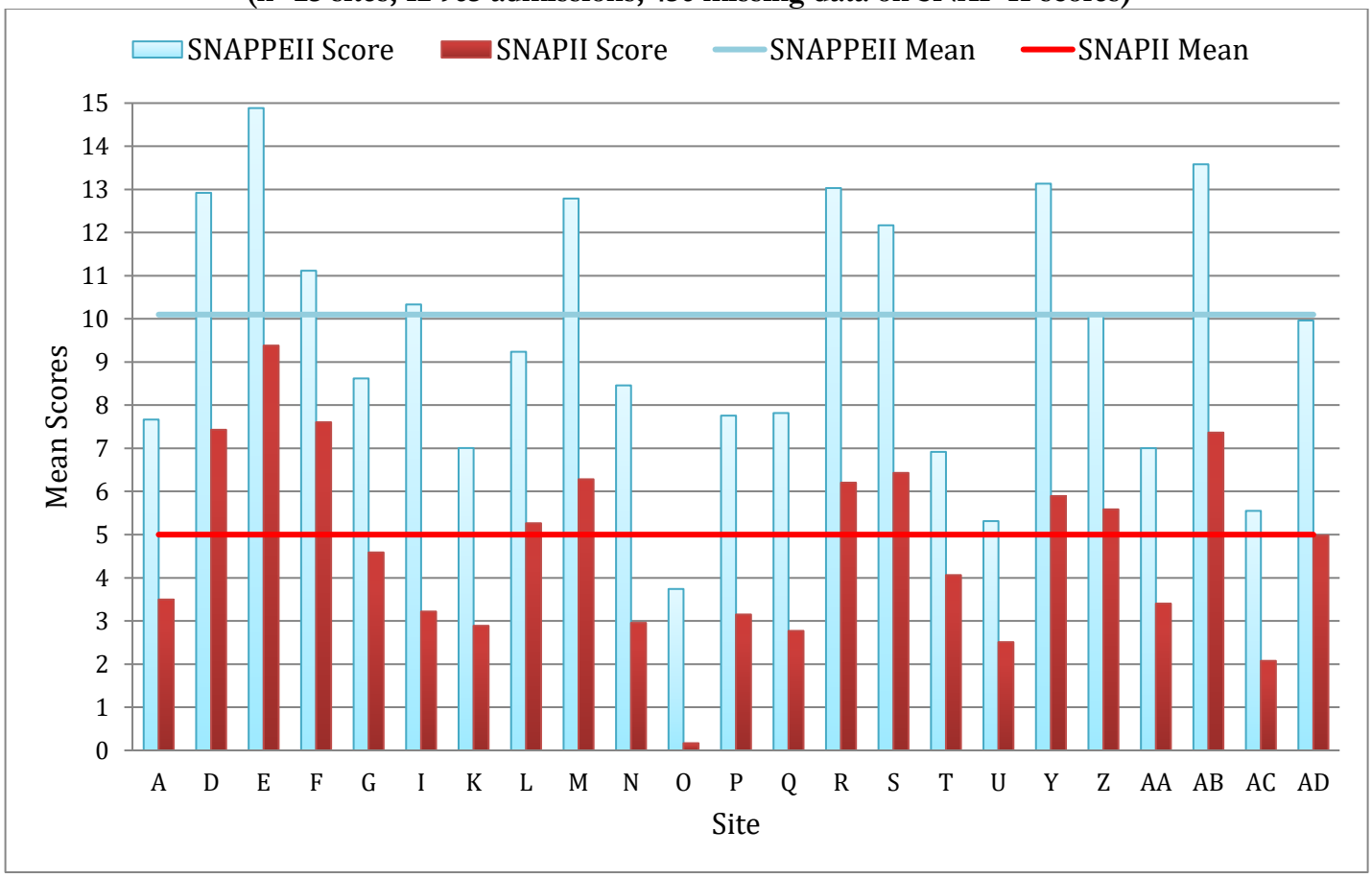
Presentation #1 (continued)
All admissions: Type of admissions: All Sites

Sites		Admission Status			Total
		Inborn	Outborn	Readmission	
a	Count	117	19	3	139
	%	84.2	13.7	2.2	(100.0)
b$^{\phi}$	Count	0	108	5	113
	%	0.0	95.6	4.4	(100.0)
c$^{\phi}$	Count	142	43	5	190
	%	74.7	22.6	2.6	(100.0)
d$^{\phi}$	Count	184	37	9	230
	%	80.0	16.1	3.9	(100.0)
e$^{\phi}$	Count	301	113	40	454
	%	66.3	24.9	8.8	(100.0)
f	Count	401	388	28	817
	%	49.1	47.5	3.4	(100.0)
g$^{\phi}$	Count	146	13	5	164
	%	89.0	7.9	3.1	(100.0)
h	Count	272	67	2	341
	%	79.8	19.7	0.6	(100.0)
i	Count	0	219	8	227
	%	0.0	96.5	3.5	(100.0)
j	Count	878	111	6	995
	%	88.2	11.2	0.6	(100.0)
k$^{\phi}$	Count	40	3	0	43
	%	93.0	7.0	0.0	(100.0)
L	Count	261	24	6	291
	%	89.7	8.3	2.1	(100.0)
m	Count	95	5	8	108
	%	88.0	4.6	7.4	(100.0)
n	Count	405	64	9	478
	%	84.7	13.4	1.9	(100.0)
o	Count	344	90	13	447
	%	77.0	20.1	2.9	(100.0)
p	Count	520	77	20	617
	%	84.3	12.5	3.2	(100.0)
q	Count	331	52	4	387
	%	85.5	13.4	1.0	(100.0)

Sites		Admission status			Total
		Inborn	Outborn	Readmission	
r$^{\phi}$	Count	247	38	6	291
	%	84.9	13.1	2.1	(100.0)
s	Count	323	112	3	438
	%	73.7	25.6	0.7	(100.0)
t	Count	143	2	2	147
	%	97.3	1.4	1.4	(100.0)
u	Count	1124	36	29	1189
	%	94.5	3.0	2.4	(100.0)
v	Count	330	55	5	390
	%	84.6	14.1	1.3	(100.0)
w	Count	0	835	51	886
	%	0.0	94.2	5.8	(100.0)
x	Count	363	274	14	651
	%	55.8	42.1	2.2	(100.0)
y	Count	297	48	3	348
	%	85.3	13.8	0.9	(100.0)
z$^{\phi}$	Count	99	24	0	123
	%	80.5	19.5	0.0	(100.0)
aa	Count	415	28	15	458
	%	90.6	6.1	3.3	(100.0)
ab	Count	742	145	12	899
	%	82.5	16.1	1.3	(100.0)
ac$^{\phi}$	Count	773	200	17	990
	%	78.1	20.2	1.7	(100.0)
ad	Count	440	151	8	599
	%	73.5	25.2	1.3	(100.0)
ae	Count	877	305	57	1239
	%	70.8	24.6	4.6	(100.0)
af	Count	645	219	8	872
	%	74.0	25.1	0.9	(100.0)
ag$^{\phi}$	Count	165	18	16	199
	%	82.9	9.1	8.0	(100.0)
Total	Count	11420	3923	417	15760
	%	72.5	24.9	2.6	(100.0)

COMMENTS: These analyses include 15 760 admissions to participating sites across the CNN during the period of January 1, 2021 to December 31, 2021. After adjusting for readmission, 14 651 neonates are represented. **Twenty-three sites collected data on all eligible admissions whereas ten 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=23 sites, 12 963 admissions, 436 missing data on SNAP-II scores)



Data collection status	Number of sites	Score	Mean	Std Dev	Q1	Median	Q3
Complete	**23**	**SNAPIIPE**	10.1	0.1	0	0	18
		SNAPII	5.0	0.1	0	0	7
Restricted	**10**	**SNAPIIPE**	14.6	0.3	0	9	23
		SNAPII	6.5	0.2	0	0	9

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
A	Mean	7.7	3.5	**Q**	Mean	7.8	2.8
	SEM	0.6	0.4		SEM	0.6	0.3
Bϕ	Mean	22.6	11.1	**R**	Mean	13.0	6.2
	SEM	1.0	0.6		SEM	0.6	0.4
Cϕ	Mean	19.3	7.0	**S**	Mean	12.2	6.4
	SEM	1.4	0.6		SEM	1.2	0.8
D	Mean	12.9	7.4	**T**	Mean	6.9	4.1
	SEM	0.5	0.3		SEM	0.7	0.4
E	Mean	14.9	9.4	**U**	Mean	5.3	2.5
	SEM	1.3	0.9		SEM	0.5	0.3
F	Mean	11.1	7.6	**V**ϕ	Mean	14.7	7.8
	SEM	0.8	0.5		SEM	1.3	0.9
G	Mean	8.6	4.6	**W**ϕ	Mean	14.6	6.5
	SEM	0.5	0.3		SEM	1.3	0.9
Hϕ	Mean	12.1	4.8	**X**ϕ	Mean	21.8	7.7
	SEM	1.3	0.8		SEM	1.9	1.2
I	Mean	10.3	3.2	**Y**	Mean	13.1	5.9
	SEM	0.5	0.2		SEM	0.6	0.3
Jϕ	Mean	13.0	6.2	**Z**	Mean	10.1	5.6
	SEM	0.9	0.5		SEM	0.5	0.3
K	Mean	7.0	2.9	**AA**	Mean	7.0	3.4
	SEM	0.7	0.4		SEM	0.5	0.3
L	Mean	9.2	5.3	**AB**	Mean	13.6	7.4
	SEM	0.4	0.3		SEM	0.6	0.4
M	Mean	12.8	6.3	**AC**	Mean	5.6	2.1
	SEM	0.7	0.4		SEM	0.9	0.5
N	Mean	8.5	3.0	**AD**	Mean	10.0	5.0
	SEM	0.6	0.3		SEM	0.7	0.4
O	Mean	3.7	0.2	**AE**ϕ	Mean	15.8	7.2
	SEM	0.8	0.1		SEM	1.5	0.8
P	Mean	7.8	3.1	**AF**ϕ	Mean	8.8	3.7
	SEM	0.7	0.4		SEM	0.5	0.3
				AGϕ	Mean	30.5	13.6
					SEM	3.4	2.0

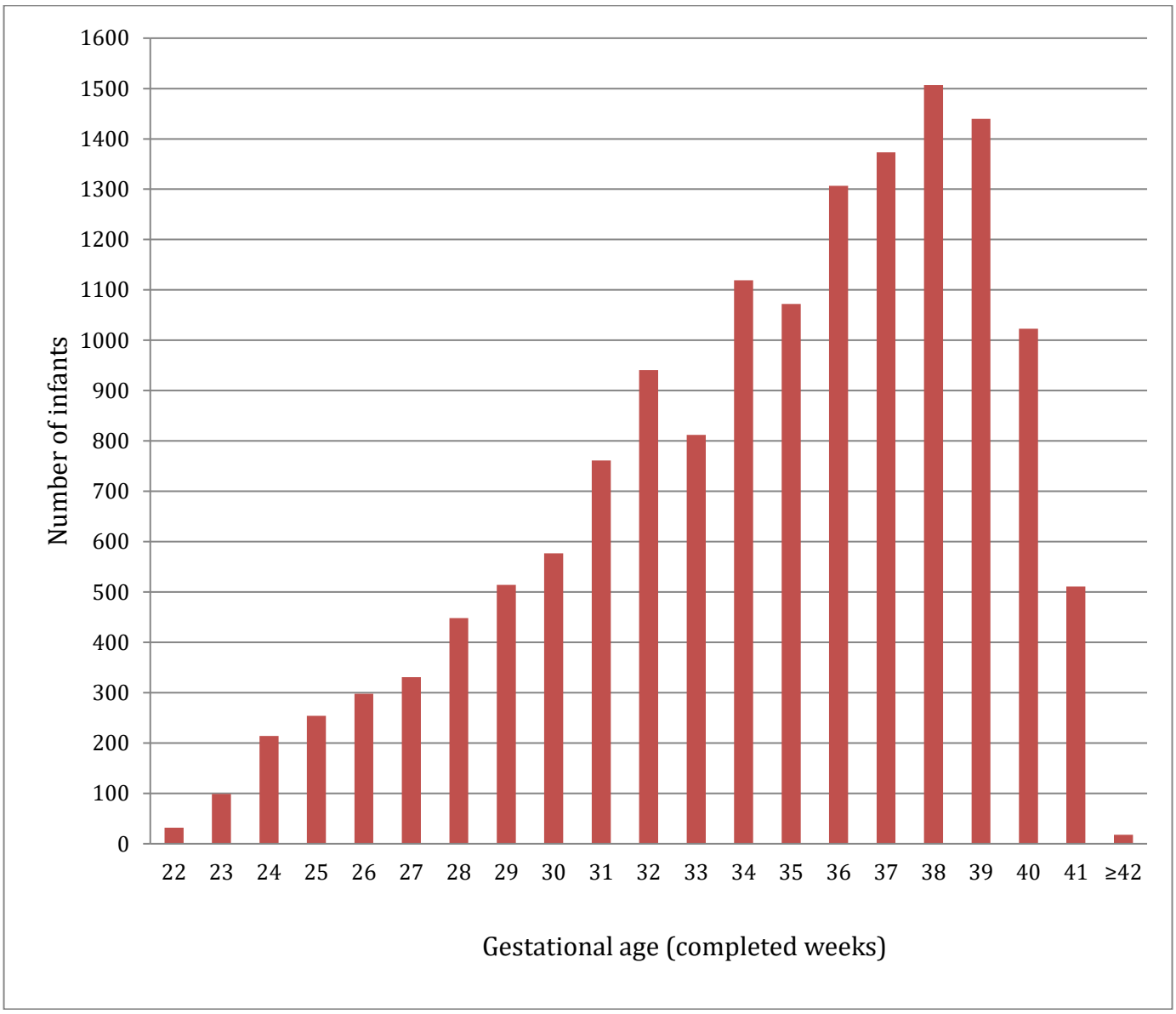
COMMENTS: These analyses include 15 760 admissions (499 missing data on SNAP scores) to participating all sites during the year 2021. Adjusting for readmission, these analyses represent 14 651 Neonates. **Twenty-three sites collected data on all eligible admissions whereas ten sites (marked by ϕ) collected data on a selected cohort of eligible admissions only.** These ten 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 ten sites and thus, the scores are not comparable with each other or with centers contributing complete data. These ten 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 14 651 eligible neonates admitted to 33 sites. 23 of these sites submitted complete data (n=12 109) on all eligible admitted neonates and 10 sites submitted data on a selected cohort of eligible admitted neonates (n=2 542).

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

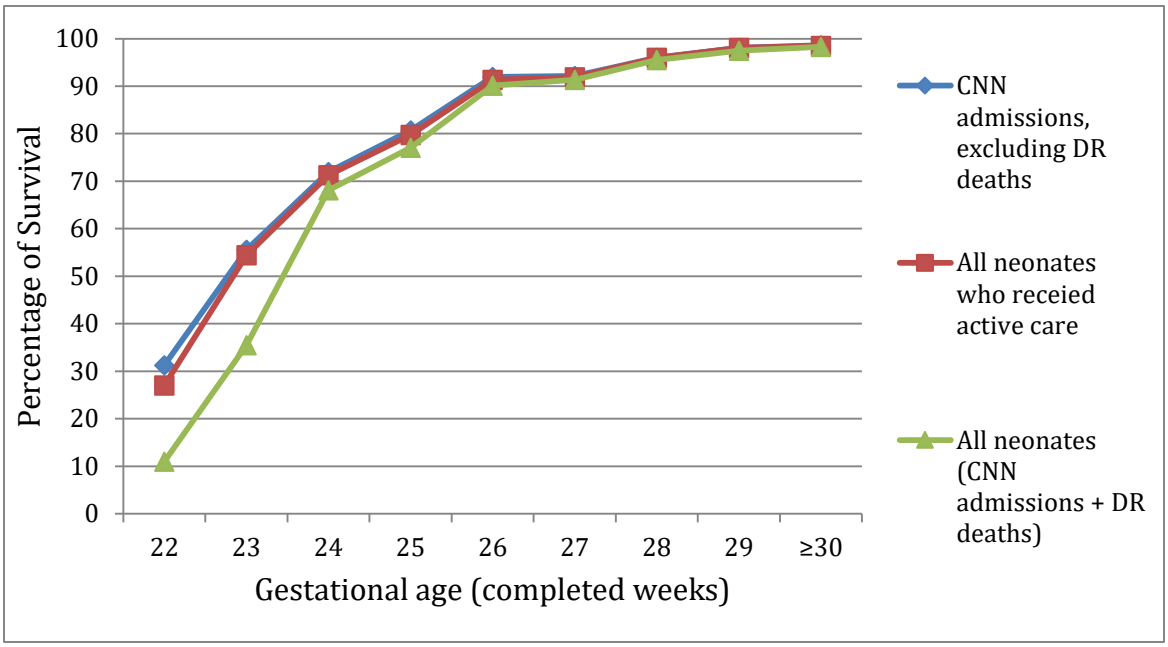


Presentation #3 (continued)
Gestational age distribution: All sites and all admitted neonates

GA in completed weeks at birth	Frequency	Percent	Cumulative percent
22	32	0.2	0.2
23	99	0.7	0.9
24	214	1.5	2.4
25	254	1.7	4.1
26	298	2.0	6.1
27	331	2.3	8.4
28	448	3.1	11.4
29	514	3.5	15.0
30	577	3.9	18.9
31	761	5.2	24.1
32	941	6.4	30.5
33	812	5.5	36.1
34	1119	7.6	43.7
35	1072	7.3	51.0
36	1307	8.9	59.9
37	1373	9.4	69.3
38	1507	10.3	79.6
39	1440	9.8	89.4
40	1023	7.0	96.4
41	511	3.5	99.9
≥42	18	0.1	100.0
Total included	14 651	100.0	
Total # of missing GA	0		
Total # of neonates	14 651		

COMMENTS: The GA distribution of neonates is shown here. Term babies (≥37 weeks) represent 40.1% of the total number of neonates. Twenty-three sites collected data on all eligible admissions whereas ten sites collected data on a selected cohort of eligible admissions.

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

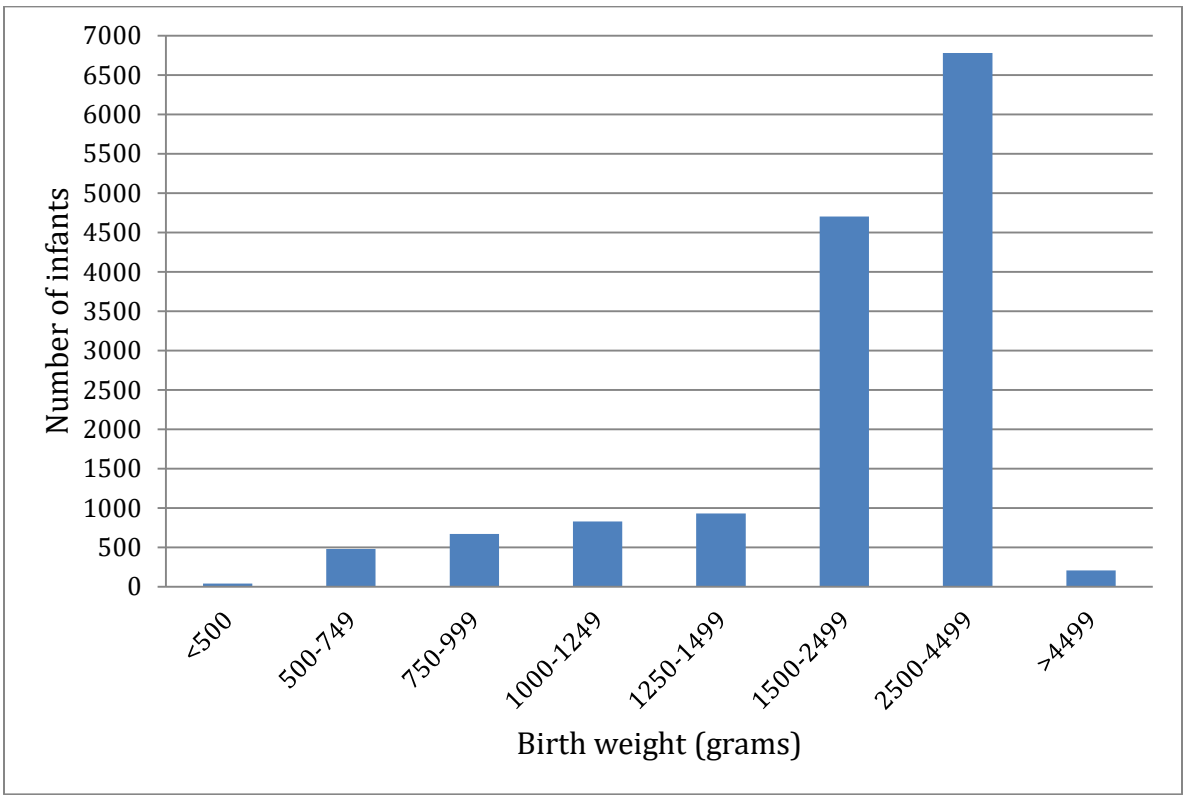


CNN admissions, excluding delivery room deaths					Delivery room deaths*		Total CNN admissions including delivery room deaths*				
GA (completed weeks)	**#of neonates**	**#of survivors**	**Percent survival among CNN admissions, excluding DR deaths**	**#of neonates who received comfort care**	**Palliative 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	32	10	31	0	54	5	91	54	37	27	11
23	99	55	56	1	53	3	155	54	101	54	35
24	214	154	72	0	10	2	226	10	216	71	68
25	254	205	81	0	9	3	266	9	257	80	77
26	298	274	92	0	4	2	304	4	300	91	90
27	331	305	92	0	2	1	334	2	332	92	91
28	448	430	96	0	2	0	450	2	448	96	96
29	514	504	98	0	3	0	517	3	514	98	97
≥30	12 461	12 289	99	4	26	19	12 506	30	12 476	99	98
Total included	14 651	14 226	97	5	163	35	14 849	168	14 681	97	96
Missing GA	0				3	0	3	3	0		
Total	**14 651**				**166**	**35**	**14 852**	**171**	**14 681**		

***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

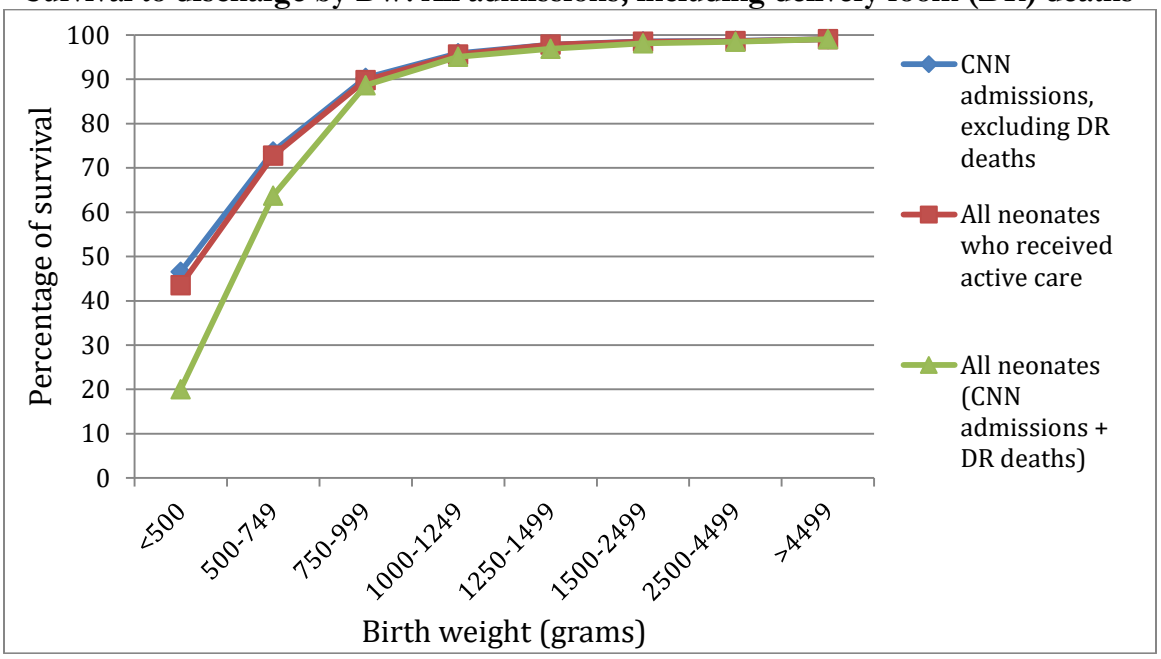


BW (grams)	Frequency	Percent from total number of neonates	Cumulative percent
<500	43	0.3	0.3
500-749	479	3.3	3.6
750-999	673	4.6	8.2
1000-1249	831	5.7	13.8
1250-1499	933	6.4	20.2
1500-2499	4 704	32.1	52.3
2500-4499	6 781	46.3	98.6
>4499	207	1.4	100.0
Total included	14 651	100.0	
Missing BW	0		
Total # of neonates	14 651		

COMMENTS: The BW distribution of neonates admitted to the CNN sites. Eighty percent weighed more than 1 500g at birth and 47.7% weighed more than 2 500g. Twenty-three sites collected data on all admissions whereas ten 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

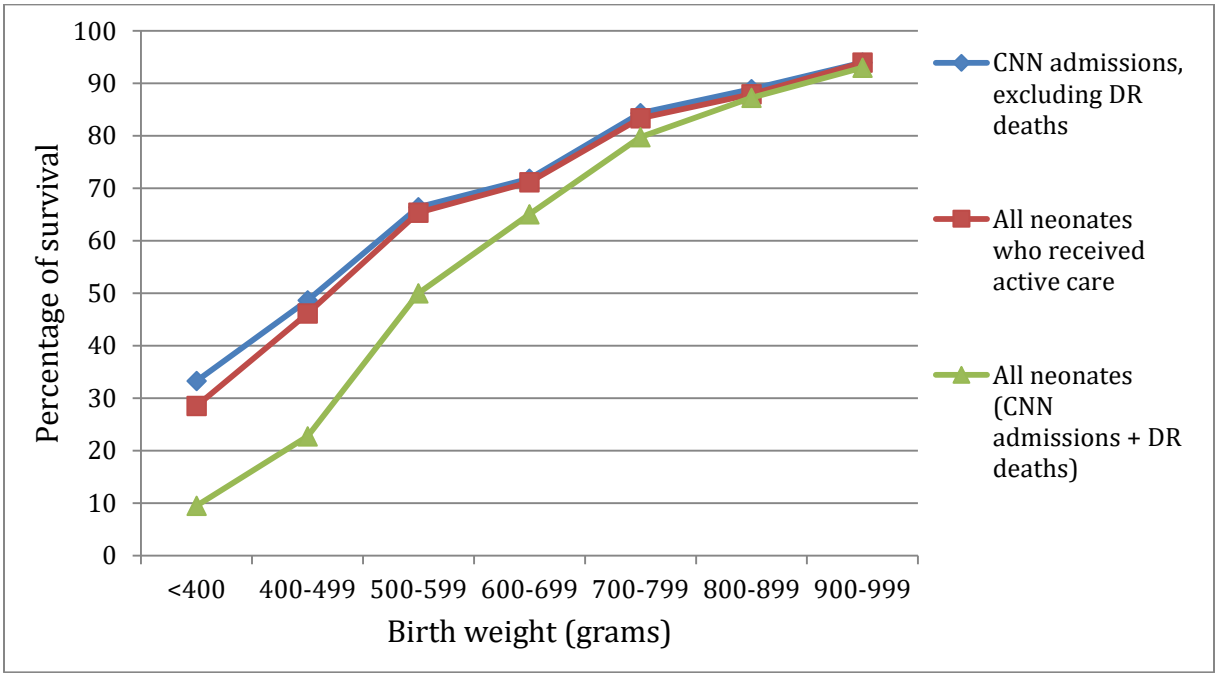


CNN Admissions, excluding delivery room deaths					Delivery room deaths*		Total CNN admissions + Delivery room deaths*				
BW (grams)	**#of neonates**	**# of survivors**	**Percent survival of CNN admissions, excluding DR deaths**	**# of neonates who received palliative care**	**Palliative care**	**Active 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	43	20	47	0	54	3	100	54	46	43	20
500-749	479	353	74	1	68	7	554	69	485	73	64
750-999	673	608	90	0	9	4	686	9	677	90	89
1000-1249	831	797	96	0	4	3	838	4	834	96	95
1250-1499	933	913	98	0	9	0	942	9	933	98	97
1500-2499	4 704	4 637	99	2	13	8	4 725	15	4 710	98	98
2500-4499	6 781	6 693	99	2	6	9	6 796	8	6 788	99	98
>4499	207	205	99	0	0	0	207	0	207	99	99
Total neonates included	14 651	14 226	97	5	163	34	14 848	168	14 680	97	96
Missing BW	0				3	1	4	3	1		
Total # of neonates	**14 651**				**166**	**35**	**14 852**	**171**	**14 681**		

***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	6	2	33	0	14	1	21	14	7	29	10
400-499	37	18	49	0	40	2	79	40	39	46	23
500-599	131	87	66	1	40	3	174	41	133	65	50
600-699	213	153	72	0	20	2	235	20	215	71	65
700-799	262	221	84	0	12	3	277	12	265	83	80
800-899	262	233	89	0	2	3	267	2	265	88	87
900-999	284	267	94	0	3	0	287	3	284	94	93
Total included	**1 195**	**981**	**82**	**1**	**131**	**14**	**1 340**	**132**	**1 208**	**81**	**73**

***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				**599**	**1077**	**2793**	**4310**	**5872**	**14651**
No prenatal care		301	N	10	23	45	79	74	231
			%	1.7	2.2	1.6	1.9	1.3	1.6
Marijuana/cannabis		146	N	33	81	204	336	389	1043
			%	5.6	7.6	7.4	7.9	6.7	7.1
Smoking		67	N	58	127	339	548	590	1662
			%	9.7	11.9	12.2	12.8	10.1	11.4
Maternal hypertension		790	N	53	234	678	981	738	2684
			%	9.2	22.2	25.3	23.6	13.7	19.4
Maternal diabetes		900	N	59	159	555	901	1033	2707
			%	10.5	15.4	20.9	21.9	19.2	19.7
Assisted pregnancy (ART)		2	N	75	111	278	359	254	1077
			%	12.5	10.3	10.0	8.3	4.3	7.4
Multiples		1	N	151	244	851	1131	164	2541
			%	25.2	22.7	30.5	26.2	2.8	17.3
$MgSO_4$ for neuroprotection		984	N	477	859	1956	668	47	4007
			%	82.0	82.3	73.8	16.3	0.9	29.3
Antenatal steroids	None	343	N	53	104	275	2525	5700	8657
			%	9.0	9.8	10.2	60.3	98.9	60.5
	Partial		N	205	290	715	424	5	1639
			%	34.8	27.4	26.4	10.1	0.1	11.5
	Complete		N	332	664	1716	1240	60	4012
			%	56.3	62.8	63.4	29.6	1.0	28.0
Mode of birth	Vaginal	24	N	249	337	915	1770	3206	6477
			%	41.6	31.3	32.9	41.1	54.7	44.3
	C/S		N	349	740	1870	2532	2659	8150
			%	58.4	68.7	67.2	58.9	45.3	55.7
Presentation	Vertex	1275	N	287	583	1817	3176	4711	10574
			%	49.4	56.9	69.3	79.3	91.6	79.1
	Breech		N	251	367	700	724	336	2378
			%	43.2	35.8	26.7	18.1	6.5	17.8
	Other		N	43	74	106	107	94	424
			%	7.4	7.2	4.0	2.7	1.8	3.2
Rupture of membranes	<24 h	1375	N	403	729	1952	3404	4767	11255
			%	71.0	72.3	76.1	85.2	92.7	84.8
	24h to 1wk		N	98	128	323	373	314	1236
			%	17.3	12.7	12.6	9.3	6.1	9.3
	>1 wk		N	67	152	289	217	60	785
			%	11.8	15.1	11.3	5.4	1.2	5.9

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				**599**	**1077**	**2793**	**4310**	**5872**	**14651**
Chorioamnionitis*		1383	N	254	308	410	317	574	1863
			%	44.5	29.9	15.7	7.9	11.4	14.0
Deferred cord clamping	≤ 29 sec	2234	N	45	52	122	105	116	440
			%	8.0	5.1	4.7	2.8	2.6	3.5
	30-59 sec		N	105	230	435	547	677	1994
			%	18.6	22.7	16.9	14.4	15.2	16.1
	≥60 sec		N	151	367	1299	2040	2005	5862
			%	26.8	36.2	50.4	53.8	44.9	47.2
	Yes, but timing unknown		N	4	7	59	101	199	370
			%	0.7	0.7	2.3	2.7	4.5	3.0
	No		N	259	359	663	1002	1468	3751
			%	45.9	35.4	25.7	26.4	32.9	30.2

*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

			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 ****
	Weeks						
Inborn	**22-28**	N	68	572	395	20	344
		%	4.7	39.8	27.5	1.4	23.9
	29-32	N	160	842	756	43	536
		%	6.7	35.3	31.7	1.8	22.5
Outborn	**22-28**	N	89	1	8	0	112
		%	37.4	0.4	3.4	0.0	47.1
	29-32	N	115	52	21	2	138
		%	28.4	12.8	5.2	0.5	34.1

*****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.

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

Singleton

			Deferred Cord clamping timing						Immediate Cord clamping	Unknown timing
			0-15 seconds	16-30 seconds	31-60 seconds	61-75 seconds	>75 seconds	Duration unknown		
	Weeks									
Inborn	**22-28**	N	25	150	493	7	12	5	385	12
		%	2.3	13.8	45.3	0.6	1.1	0.5	35.4	1.1
	29-32	N	32	164	959	34	22	31	337	28
		%	2.0	10.2	59.7	2.1	1.4	1.9	21.0	1.7
Outborn	**22-28**	N	4	20	27	1	1	0	82	56
		%	2.1	10.5	14.1	0.5	0.5	0.0	42.9	29.3
	29-32	N	7	23	60	3	7	7	91	137
		%	2.1	6.9	17.9	0.9	2.1	2.1	27.2	40.9

First twin

			Deferred Cord clamping timing						Immediate Cord clamping	Unknown timing
			0-15 seconds	16-30 seconds	31-60 seconds	61-75 seconds	>75 seconds	Duration unknown		
	Weeks									
Inborn	**22-28**	N	5	19	62	0	1	3	63	7
		%	3.1	11.9	38.8	0.0	0.6	1.9	39.4	4.4
	29-32	N	6	32	171	7	4	6	106	11
		%	1.8	9.3	49.9	2.0	1.2	1.8	30.9	3.2
Outborn	**22-28**	N	0	2	5	0	0	0	9	7
		%	0.0	8.7	21.7	0.0	0.0	0.0	39.1	30.4
	29-32	N	0	2	9	0	0	0	11	11
		%	0.0	6.1	27.3	0.0	0.0	0.0	33.3	33.3

Second twin

			Deferred Cord clamping timing						Immediate Cord clamping	Unknown timing
			0-15 seconds	16-30 seconds	31-60 seconds	61-75 seconds	>75 seconds	Duration unknown		
	Weeks									
Inborn	**22-28**	N	5	32	49	1	0	3	62	5
		%	3.2	20.4	31.2	0.6	0.0	1.9	39.5	3.2
	29-32	N	7	41	171	9	4	11	84	10
		%	2.1	12.2	50.7	2.7	1.2	3.3	24.9	3.0
Outborn	**22-28**	N	0	3	3	0	0	0	9	9
		%	0.0	12.5	12.5	0.0	0.0	0.0	37.5	37.5
	29-32	N	0	5	6	0	0	0	10	13
		%	0.0	14.7	17.7	0.0	0.0	0.0	29.4	38.2

Presentation #8a
Resuscitation details: GA < 31 weeks

Action taken			**GA at birth (completed weeks)**								
			≤23	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**Total**
Total			**131**	**214**	**254**	**298**	**331**	**448**	**514**	**577**	**2767**
No resuscitation needed/provided		N	0	0	0	1	0	9	6	22	38
		%	0.0	0.0	0.0	0.3	0.0	2.0	1.2	3.8	1.4
CPAP		N	16	93	119	197	247	356	426	479	1933
		%	12.2	43.5	47.0	66.1	74.9	79.5	82.9	83.0	69.9
PPV via mask		N	116	195	228	257	263	309	340	359	2067
		%	88.6	91.1	90.1	86.2	79.7	69.0	66.2	62.2	74.8
PPV via ETT		N	116	140	142	119	95	108	86	83	889
		%	88.6	65.4	56.1	39.9	28.8	24.1	16.7	14.4	32.2
Chest compression		N	7	15	17	17	8	10	7	12	93
		%	5.3	7.0	6.7	5.7	2.4	2.2	1.4	2.1	3.4
Epinephrine		N	6	6	5	5	7	5	4	6	44
		%	4.6	2.8	2.0	1.7	2.1	1.1	0.8	1.0	1.6
Unknown		N	0	0	2	4	1	3	1	0	11
		%	0.0	0.0	0.8	1.3	0.3	0.7	0.2	0.0	0.4
Any resuscitation provided*		N	130	213	251	293	328	433	503	542	2693
		%	99.2	99.5	99.2	98.3	99.4	96.7	97.9	93.9	97.4
Initial gas	Air	N	12	35	45	46	58	107	170	210	683
		%	9.2	16.4	17.7	15.4	17.5	23.9	33.1	36.4	24.7
	22-40% O_2	N	64	125	137	185	216	266	251	229	1473
		%	48.9	58.4	53.9	62.1	65.3	59.4	48.8	39.7	53.2
	41-70% O_2	N	7	12	14	12	10	11	20	38	124
		%	5.3	5.6	5.5	4.0	3.0	2.5	3.9	6.6	4.5
	71-99% O_2	N	2	4	1	4	4	4	2	4	25
		%	1.5	1.9	0.4	1.3	1.2	0.9	0.4	0.7	0.9
	100% O_2	N	36	25	34	28	19	23	28	21	214
		%	27.5	11.7	13.4	9.4	5.7	5.1	5.5	3.6	7.7
	Unknown/ Missing	N	10	13	23	23	24	37	43	75	248
		%	7.6	6.1	9.1	7.7	7.3	8.3	8.4	13.0	9.0
Maximum O_2 conc. during resus.	21%	N	0	1	2	2	0	7	12	25	49
		%	0.0	0.5	0.8	0.7	0.0	1.6	2.3	4.3	1.8
	22-40%	N	3	13	22	52	86	126	154	188	644
		%	2.3	6.1	8.7	17.5	26.0	28.1	30.0	32.6	23.3
	41-70%	N	11	30	33	55	64	99	124	114	530
		%	8.4	14.0	13.0	18.5	19.3	22.1	24.1	19.8	19.2
	>70%	N	110	162	186	177	169	185	196	186	1371
		%	84.0	75.7	73.2	59.4	51.1	41.3	38.1	32.2	49.6
	Missing	N	7	8	11	12	12	31	28	64	173
		%	5.3	3.7	4.3	4.0	3.6	6.9	5.5	11.1	6.3

* 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.

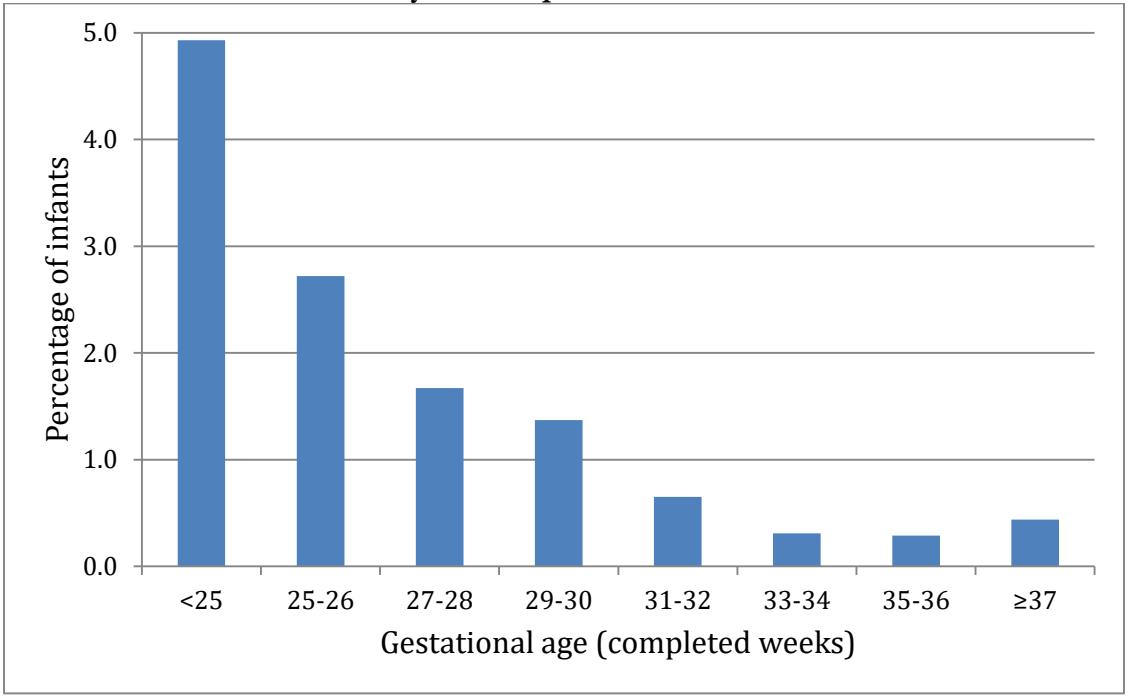
Presentation #8b
Resuscitation details: GA ≥ 31 weeks

Action taken			**GA at birth (completed weeks)**							
			31	**32**	**33**	**34**	**35**	**36**	**≥37**	**Total**
Total			**761**	**941**	**812**	**1119**	**1072**	**1307**	**5872**	**11884**
No resuscitation needed / provided		N	41	115	200	388	391	499	2107	3741
		%	5.4	12.2	24.6	34.7	36.5	38.2	35.9	31.5
CPAP		N	614	671	454	493	460	514	2358	5564
		%	80.8	71.3	55.9	44.1	42.9	39.3	40.2	46.8
PPV via mask		N	425	419	261	315	286	370	1827	3903
		%	55.9	44.5	32.1	28.2	26.7	28.3	31.1	32.9
PPV via ETT		N	74	54	31	51	41	68	414	733
		%	9.7	5.7	3.8	4.6	3.8	5.2	7.1	6.2
Chest compression		N	9	10	11	13	8	21	139	211
		%	1.2	1.1	1.4	1.2	0.8	1.6	2.4	1.8
Epinephrine		N	5	4	6	10	0	4	55	84
		%	0.7	0.4	0.7	0.9	0.0	0.3	0.9	0.7
Unknown		N	4	11	10	1	3	7	45	81
		%	0.5	1.2	1.2	0.1	0.3	0.5	0.8	0.7
Any resuscitation provided*		N	690	732	504	576	539	636	2935	6612
		%	90.8	77.8	62.1	51.5	50.3	48.7	50.0	55.7
Initial gas	Air	N	280	420	265	354	368	393	1897	3977
		%	36.8	44.6	32.6	31.6	34.3	30.1	32.3	33.5
	22-40% O_2	N	293	229	190	189	135	160	531	1727
		%	38.5	24.3	23.4	16.9	12.6	12.2	9.0	14.5
	41-70% O_2	N	33	39	24	27	23	31	142	319
		%	4.3	4.1	3.0	2.4	2.2	2.4	2.4	2.7
	71-99% O_2	N	4	5	2	3	7	5	29	55
		%	0.5	0.5	0.3	0.3	0.7	0.4	0.5	0.5
	100% O_2	N	30	33	40	56	42	61	309	571
		%	3.9	3.5	4.9	5.0	3.9	4.7	5.3	4.8
	Unknown/ Missing	N	121	215	291	490	497	657	2964	5235
		%	15.9	22.9	35.8	43.8	46.4	50.3	50.5	44.1
Maximum O_2 conc. during resus	21%	N	36	87	81	119	113	113	583	1132
		%	4.7	9.3	10.0	10.6	10.5	8.7	9.9	9.5
	22-40%	N	280	267	188	208	198	217	770	2128
		%	36.8	28.4	23.2	18.6	18.5	16.6	13.1	17.9
	41-70%	N	164	193	111	130	109	103	448	1258
		%	21.6	20.5	13.7	11.6	10.2	7.9	7.6	10.6
	>70%	N	180	164	137	152	132	187	1004	1956
		%	23.7	17.4	16.9	13.6	12.3	14.3	17.1	16.5
	Missing	N	101	230	295	510	520	687	3067	5410
		%	13.3	24.4	36.3	45.6	48.5	52.6	52.2	45.5

* 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.

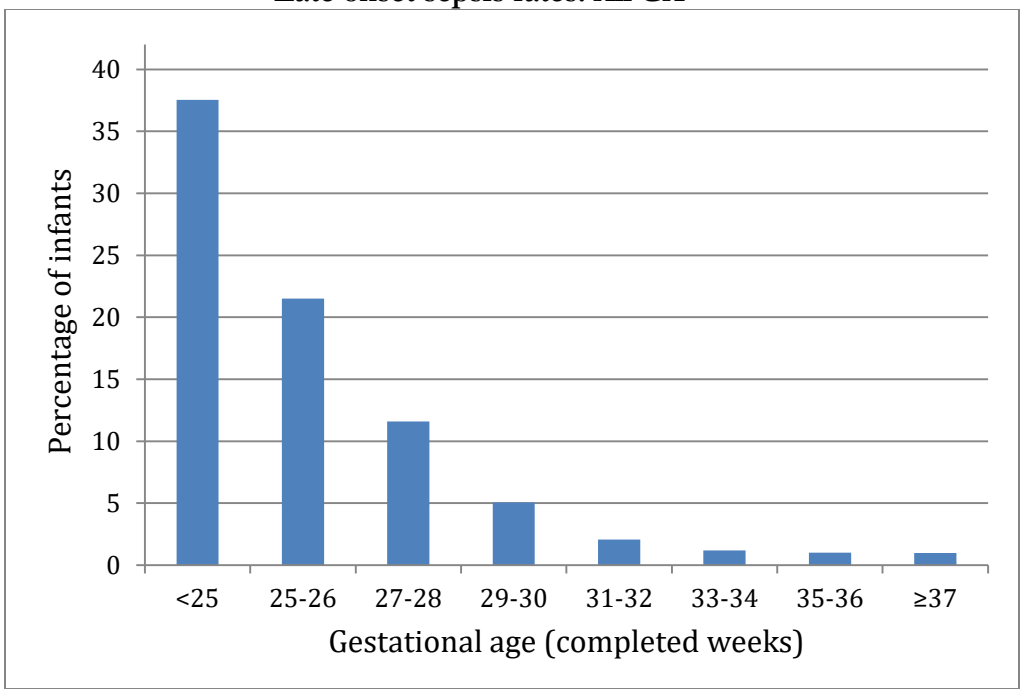
Presentation #9
Early onset sepsis rates: All GA



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	345	17	4.9	17	7	4	6
25-26	552	15	2.7	15	6	4	5
27-28	779	13	1.7	15	9	1	5
29-30	1091	15	1.4	16	6	3	7
31-32	1702	11	0.7	11	6	2	3
33-34	1931	6	0.3	6	3	1	2
35-36	2379	7	0.3	7	2	1	4
≥37	5872	26	0.4	26	3	9	14
Total neonates included	**14 651**	**110**	**0.8**	**113**	**42**	**25**	**46**
Missing	0						
Total # of neonates	**14 651**						

COMMENTS: Early onset sepsis is indicated by positive bacterial, viral or fungal culture in blood and/or cerebrospinal fluid, in the first two days after birth. In other category, top six organisms were: Bacillus (n=8), Streptococci (n=6), Viridans streptococci (n=5), Enterococci (n=5), Morganella (n=3), Staph aureus (n=3). 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 (n=21) was not counted as an early onset sepsis in this presentation.

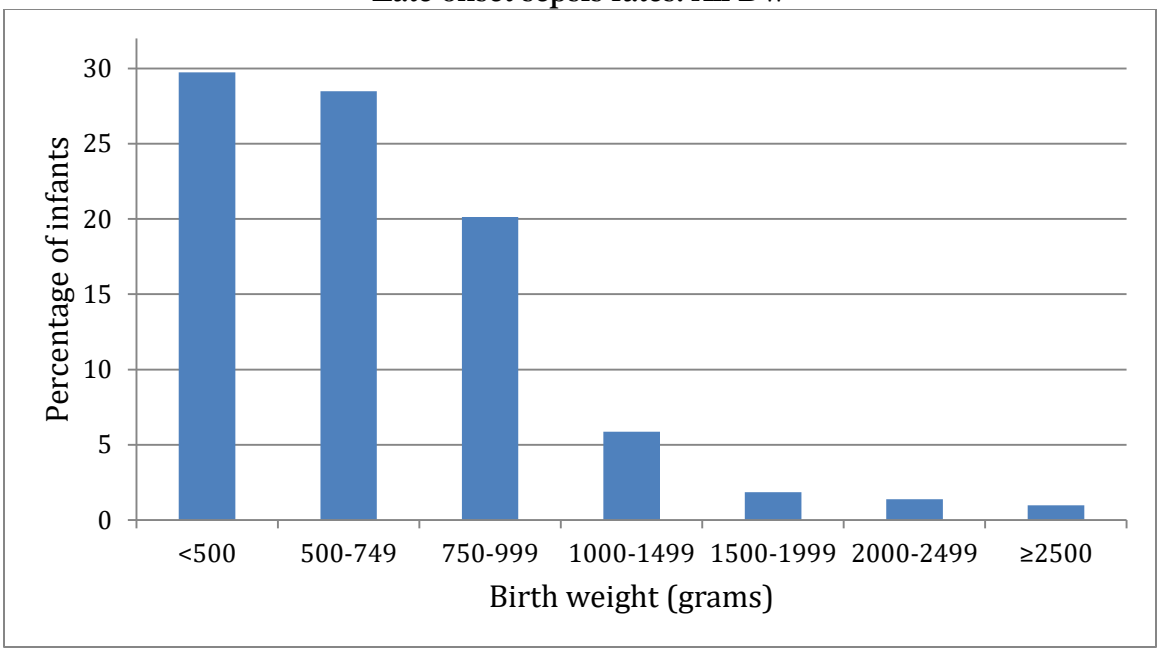
Presentation #10
Late onset sepsis rates: All GA



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	345	20	325	122	30	38	179	77	17	27	7	8	43
25-26	552	8	544	117	20	22	142	62	15	15	9	3	38
27-28	779	11	768	89	9	12	104	46	8	13	4	8	25
29-30	1 091	4	1 087	55	8	5	64	31	5	7	2	0	19
31-32	1 702	1	1 701	35	3	2	39	14	10	4	1	3	7
33-34	1 931	6	1 925	23	3	1	33	14	4	2	0	0	13
35-36	2 379	6	2 373	24	5	1	33	12	6	5	0	2	8
≥37	5 872	14	5 858	58	3	1	64	36	2	5	1	2	18
Total included	**14 651**	**70**	**14 581**	**523**	**81**	**4**	**658**	**292**	**67**	**78**	**24**	**26**	**171**
Missing	0												
Total # of neonates	**14 651**												

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=42), GBS (n=34), Enterococci (n=32), Bacillus (n=21) Enterobacter (n=12). Virus category includes Cytomegalovirus (n=20), Herpes simplex virus (n=5), Enterovirus (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	43	6	37	11	3	30	14	6	2	1	1	0	4
500-749	479	19	460	131	31	28	190	85	15	27	7	9	47
750-999	673	7	666	134	22	20	166	75	15	21	6	8	41
1000-1499	1 764	9	1 755	103	12	6	122	49	14	13	7	3	36
1500-1999	2 325	4	2 321	43	6	2	53	22	6	6	2	3	14
2000-2499	2 379	3	2 376	33	3	1	36	15	7	5	1	1	7
≥2500	6 988	22	6 966	68	4	1	77	40	8	5	0	2	22
Total included	**14 651**	**70**	**14 581**	**523**	**81**	**4**	**658**	**292**	**67**	**78**	**24**	**26**	**171**
Missing (BW)	0												
Total # of neonates	**14 651**												

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=42), GBS (n=34), Enterococci (n=32), Bacillus (n=21) Enterobacter (n=12). Virus category includes Cytomegalovirus (n=20), Herpes simplex virus (n=5), Enterovirus (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				599	1077	1091	1702	4310	5872	14651
Prophylactic	Indomethacin	2	N	79	73	3	0	0	2	157
			%	13.2	6.8	0.3	0.0	0.0	0.0	1.1
	Probiotics	2	N	400	764	740	910	545	101	3460
			%	66.8	70.9	67.8	53.5	12.7	1.7	23.6
RDS	Unknown	6	N	0	2	11	7	7	6	33
			%	0.0	0.2	1.0	0.4	0.2	0.1	0.2
	Uncertain		N	1	9	12	25	44	30	121
			%	0.2	0.8	1.1	1.5	1.0	0.5	0.8
	None		N	14	112	214	772	3591	5572	10275
			%	2.3	10.4	19.7	45.4	83.4	94.9	70.2
	Definite		N	584	954	852	898	665	263	4216
			%	97.5	88.6	78.2	52.8	15.4	4.5	28.8
Surfactant in first 30 min			N	119	86	34	14	15	0	268
			%	19.9	8.0	3.1	0.8	0.4	0.0	1.8
Surfactant in first 60 min			N	283	227	99	47	31	1	688
			%	47.3	21.1	9.1	2.8	0.7	0.0	4.7
Surfactant in first 120 min			N	393	372	198	110	62	9	1144
			%	65.6	34.5	18.2	6.5	1.4	0.2	7.8
Surfactant after 120 minutes			N	160	338	266	262	275	184	1485
			%	26.7	31.4	24.4	15.4	6.4	3.1	10.1
Surfactant at any time			N	553	710	464	372	337	193	2629
			%	92.3	65.9	42.5	21.9	7.8	3.3	17.9
Surfactant dose > 1	% out of surfactant at any time		N	273	246	91	43	27	31	711
			%	49.4	34.7	19.6	11.6	8.0	16.1	27.0
Method of surfactant (first dose only among the neonates who received surfactant)*	Endotracheal		N	637	686	359	277	273	181	2413
			%	85.3	77.3	70.0	70.3	78.0	87.4	77.9
	LISA/MIST		N	61	122	116	74	61	13	447
			%	8.2	13.7	22.6	18.8	17.4	6.3	14.4
	Other*		N	49	80	38	43	16	13	239
			%	6.6	9.0	7.4	10.9	4.6	6.3	7.7
Pneumothorax diagnosis		2	N	48	45	26	43	169	414	745
			%	8.0	4.2	2.4	2.5	3.9	7.1	5.1
Pneumothorax treatment**	No intervention		N	6	8	8	16	93	294	425
			%	12.5	17.8	30.8	37.2	55.0	71.0	57.1
	Needle drainage		N	28	21	13	18	52	81	213
			%	58.3	46.7	50.0	41.9	30.8	19.6	28.6
	Chest tube		N	32	31	14	24	50	67	218
			%	66.7	68.9	53.9	55.8	29.6	16.2	29.3
Seizures	Definite /suspected	7	N	35	30	26	23	75	374	563
			%	5.8	2.8	2.4	1.4	1.7	6.4	3.8

* "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				599	1077	1091	1702	4310	5872	14651
Operations	Thoracotomy	2	N	5	6	8	6	18	30	73
			%	0.8	0.6	0.7	0.4	0.4	0.5	0.5
	Laparotomy	2	N	42	44	17	32	94	119	348
			%	7.0	4.1	1.6	1.9	2.2	2.0	2.4
	Ostomy		N	6	6	1	5	8	13	39
			%	1.0	0.6	0.1	0.3	0.2	0.2	0.3
	Reservoir/Drain	2	N	22	18	6	8	5	6	65
			%	3.7	1.7	0.6	0.5	0.1	0.1	0.4
	VP shunt	2	N	8	16	6	9	6	5	50
			%	1.3	1.5	0.6	0.5	0.1	0.1	0.3
Gastro-intestinal perforation	Spontaneous	18	N	33	13	9	7	14	11	87
			%	5.5	1.2	0.8	0.4	0.3	0.2	0.6
	NEC related		N	28	11	3	6	4	3	55
			%	4.7	1.0	0.3	0.4	0.1	0.1	0.4
Acquired stricture		2	N	7	6	3	4	4	2	26
			%	1.2	0.6	0.3	0.2	0.1	0.0	0.2
Exchange transfusion		2	N	2	1	1	1	8	12	25
			%	0.3	0.1	0.1	0.1	0.2	0.2	0.2
Congenital anomaly*	None		N	382	761	884	1403	3532	4426	11388
			%	63.8	70.7	81.0	82.4	82.0	75.4	77.7
	Minor		N	204	276	163	231	476	849	2199
			%	34.1	25.6	14.9	13.6	11.0	14.5	15.0
	Major		N	13	40	44	68	302	597	1064
			%	2.2	3.7	4.0	4.0	7.0	10.2	7.3

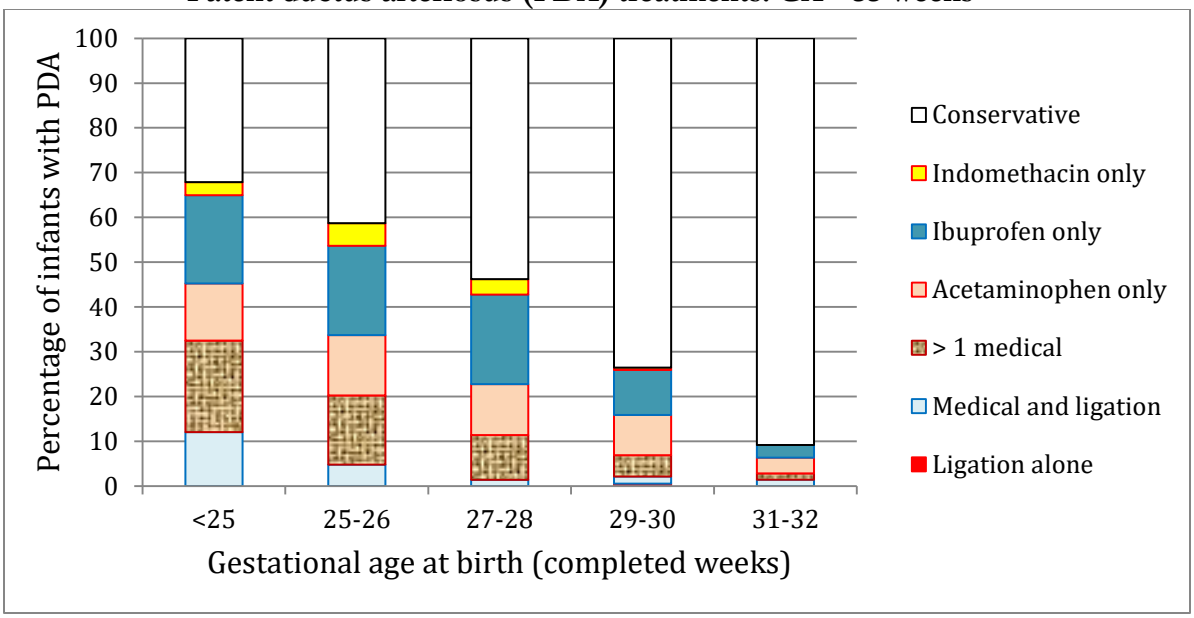
*A list of major anomalies can be found in the 2013 annual report, pages 124-127. It is available via the following link: http://www.canadianneonatalnetwork.org/Portal/LinkClick.aspx?fileticket=lreR0871sjA%3d&tabid=39

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 4 469 eligible very preterm neonates and 2 959 eligible VLBW neonates.

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



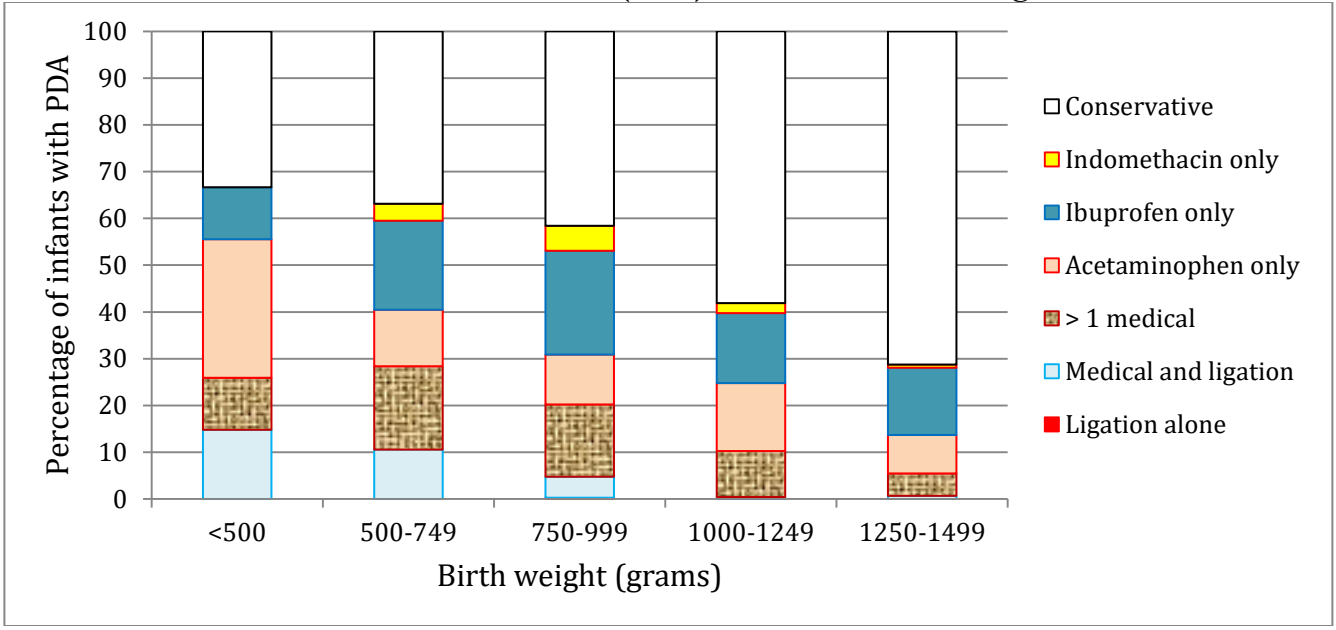
Birth GA (completed weeks)		Total	Missing data on PDA	PDA unknown	No PDA	Neonates with PDA	Treatment†						
							Conservative	Indo	Ibu	Acetaminophen	> 1 medical*	Medical and ligation#	Ligation alone
<25	**N**	345	0	7	64	274	88	8	54	35	56	33	0
	%						32%	3%	20%	13%	20%	12%	0%
25-26	**N**	552	0	3	193	356	147	18	71	48	55	17	0
	%						41%	5%	20%	13%	15%	5%	0%
27-28	**N**	779	0	4	485	290	156	10	58	33	29	4	0
	%						54%	3%	20%	11%	10%	1%	0%
29-30	**N**	1091	2	1	899	189	139	1	19	17	9	3	1
	%						74%	1%	10%	9%	5%	2%	1%
31-32	**N**	1702	1	4	1555	142	129	0	4	5	2	2	0
	%						91%	0%	3%	4%	1%	1%	0%
Total neonates included	**N**	4469	3	19	3196	1251	659	37	206	138	151	59	1
	%						53%	3%	16%	11%	12%	5%	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 59 Medical and ligation = surgical (31), device close (25), unknown (3)
Out of 1 Ligation alone = surgical (0), device closure (1)

COMMENTS: Specific reasons for treatment with indomethacin and frequency of repeat course of indomethacin 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



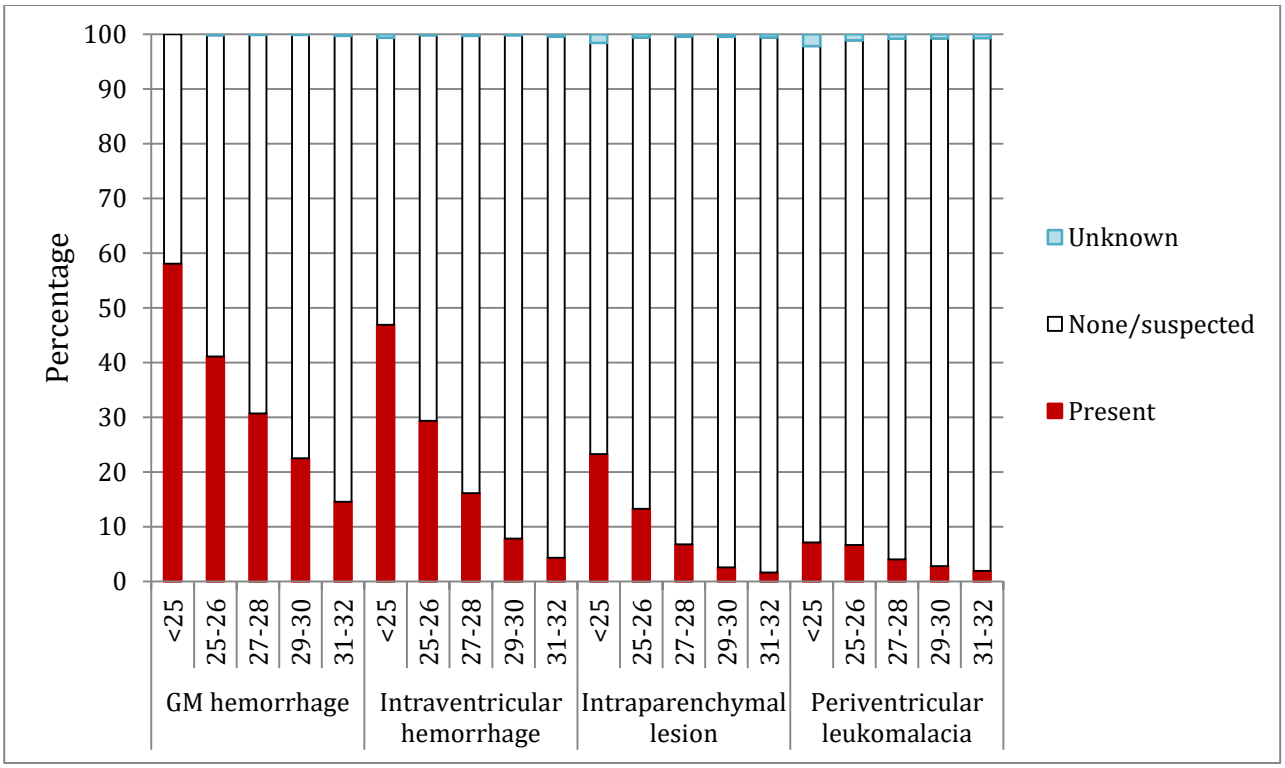
BW (grams)		Total	Missing data on PDA	PDA information unknown	No PDA	Neonates with PDA	Treatment†						
							Conservative	Indo	Ibu	Acetaminophen	> 1 medical*	Medical and ligation#	Ligation alone
<500	**N**	43	0	3	13	27	9	0	3	8	3	4	0
	%						33%	0%	11%	30%	11%	15%	0%
500-749	**N**	479	0	6	142	331	122	12	63	40	59	35	0
	%						37%	4%	19%	12%	18%	11%	0%
750-999	**N**	673	1	4	312	356	148	19	79	38	55	16	1
	%						42%	5%	22%	11%	15%	4%	0%
1000-1249	**N**	831	0	0	597	234	136	5	35	34	23	1	0
	%						58%	2%	15%	15%	10%	0%	0%
1250-1499	**N**	933	0	1	786	146	104	1	21	12	7	1	0
	%						71%	1%	14%	8%	5%	1%	0%
Total neonates included	**N**	2959	1	14	1850	1094	519	37	201	132	147	57	1
	%						47%	3%	18%	12%	13%	5%	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)

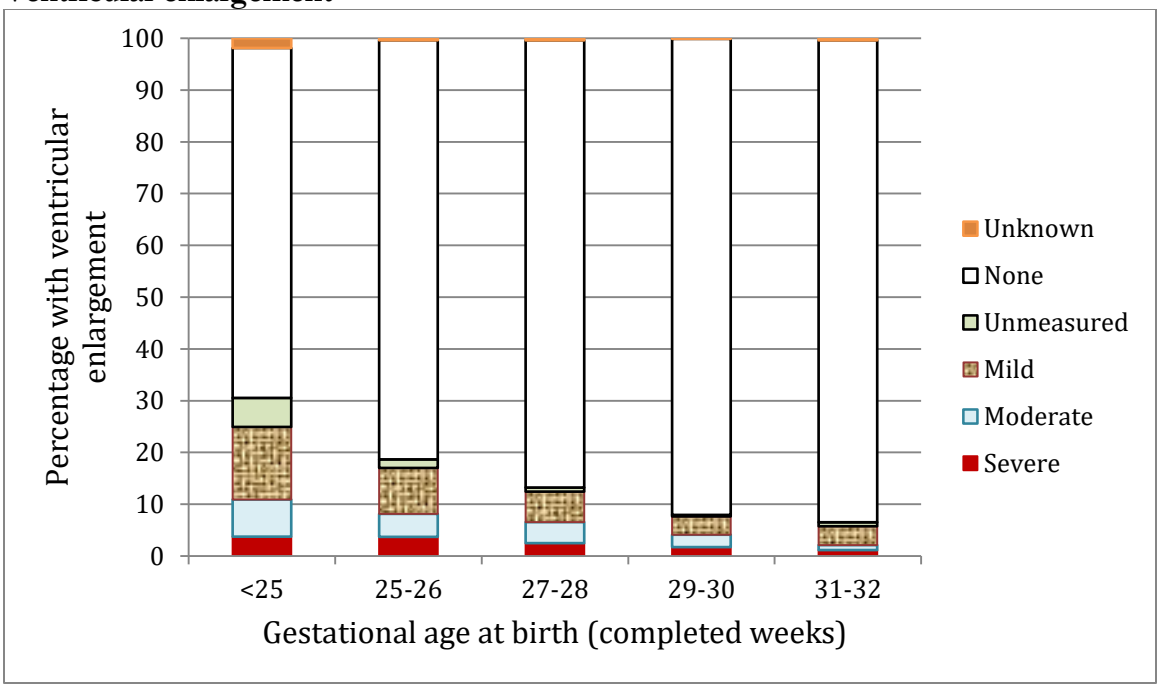
Out of 59 Medical and ligation = surgical (31), device close (25), unknown (3)
Out of 1 Ligation alone = surgical (0), device closure (1)

COMMENTS: Specific reasons for treatment with indomethacin and frequency of a repeat course of indomethacin 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



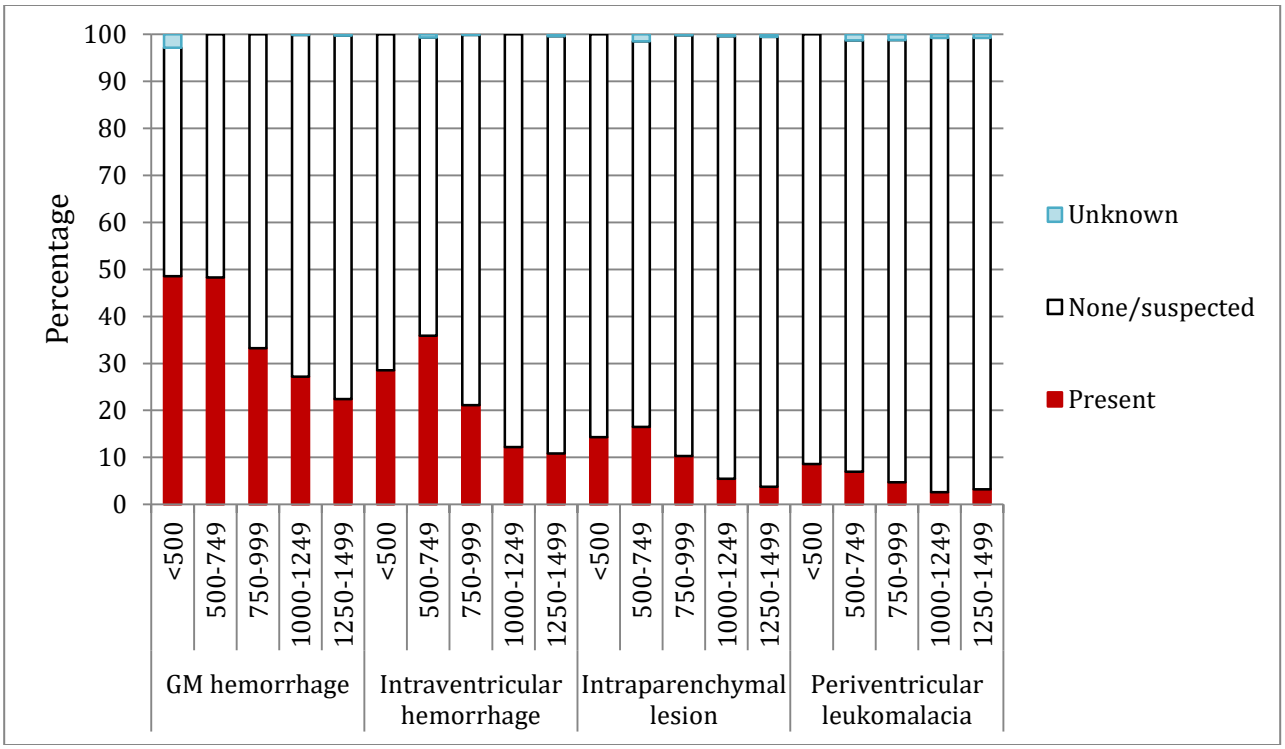
See page 137 for classifications of ventricular enlargement.

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

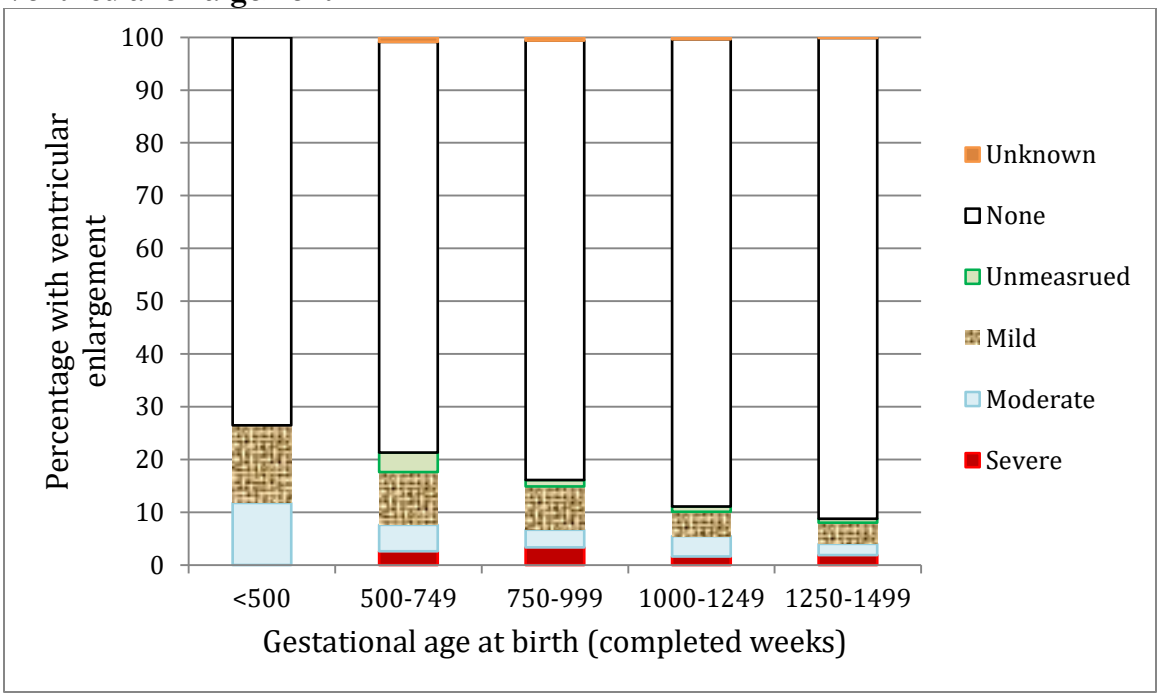
GA at birth (completed weeks)		Total	Neuro-imaging available	Neuroimaging findings																	
				GM hemorrhage			Intraventricular hemorrhage			Ventricular enlargement						Intraparenchymal lesion			Periventricular leukomalacia		
				Present	None/suspected	Unknown	Present	None/suspected	Unknown	Mild	Moderate	Severe	Unmeasured	None	Unknown	Present	None/suspected	Unknown	Present	None/suspected	Unknown
<25	N	345	322	187	135	0	151	169	2	45	23	12	18	217	6	75	242	5	23	292	7
	%			58%	42%	0%	47%	52%	1%	14%	7%	4%	6%	68%	2%	23%	75%	2%	7%	91%	2%
25-26	N	552	542	223	318	1	159	382	1	48	24	20	9	438	2	72	467	3	36	500	6
	%			41%	59%	0%	29%	70%	0%	9%	4%	4%	2%	81%	0%	13%	86%	1%	7%	92%	1%
27-28	N	779	768	236	531	1	124	642	2	45	31	19	6	660	3	52	712	3	31	730	6
	%			31%	69%	0%	16%	84%	0%	6%	4%	2%	1%	86%	0%	7%	93%	0%	4%	95%	1%
29-30	N	1091	1045	235	809	1	82	961	2	37	25	18	3	961	1	27	1013	5	29	1008	8
	%			22%	77%	0%	8%	92%	0%	4%	2%	2%	0%	92%	0%	3%	97%	0%	3%	96%	1%
31-32	N	1702	1045	152	890	3	45	996	4	38	10	12	8	971	4	17	1022	6	20	1018	7
	%			15%	85%	0%	4%	95%	0%	4%	1%	1%	1%	93%	0%	2%	98%	1%	2%	97%	1%
Total number of neonates	N	4469	3722	1033	2683	6	561	3150	11	213	113	81	44	3247	16	243	3456	22	139	3548	34
	%			28%	72%	0%	15%	85%	0%	6%	3%	2%	1%	87%	0%	7%	93%	1%	4%	95%	1%

Note: Neuroimaging findings were not mutually exclusive, i.e. one neonate may have had more than one finding.
See page 137 for classifications of ventricular enlargement.

Presentation #16
Neuroimaging findings: BW <1500g



Ventricular enlargement



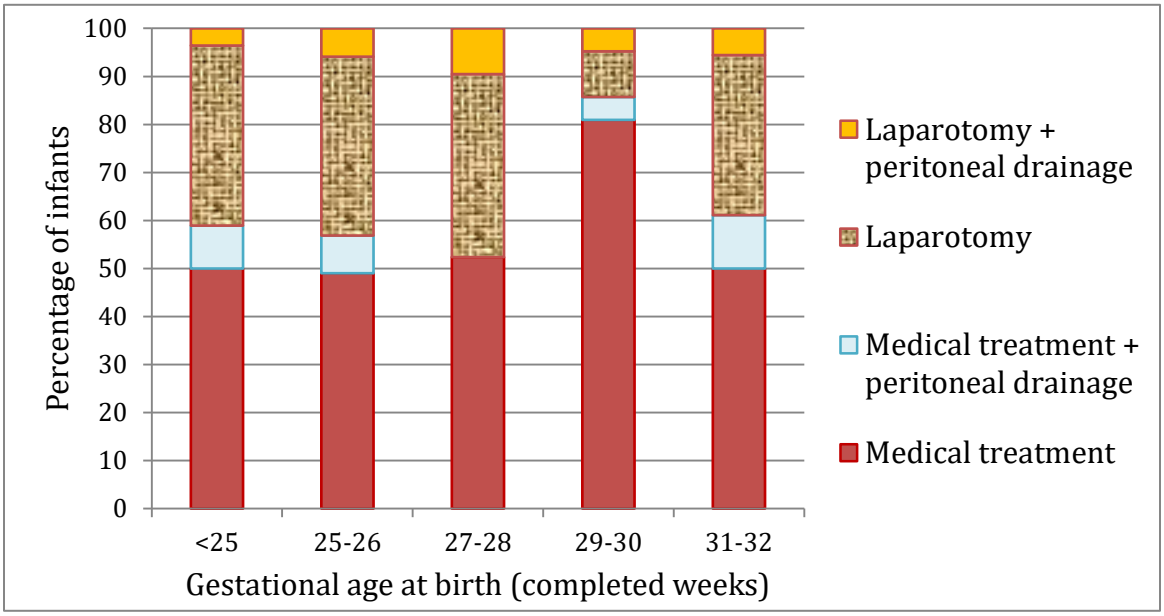
See page 137 for classifications of ventricular enlargement.

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	43	35	17	17	1	10	25	0	5	4	0	0	25	0	5	30	0	3	32	0
	%			49%	49%	3%	29%	71%	0%	15%	12%	0%	0%	74%	0%	14%	86%	0%	9%	91%	0%
500-749	N	479	460	222	238	0	165	292	3	46	23	12	17	358	4	76	377	7	32	422	6
	%			48%	52%	0%	36%	63%	1%	10%	5%	3%	4%	78%	1%	17%	82%	2%	7%	92%	1%
750-999	N	673	659	219	440	0	139	519	1	54	22	22	8	548	4	68	589	1	31	619	8
	%			33%	67%	0%	21%	79%	0%	8%	3%	3%	1%	83%	1%	10%	90%	0%	5%	94%	1%
1000-1249	N	831	805	219	585	1	98	707	0	37	31	13	8	711	3	44	758	3	21	778	6
	%			27%	73%	0%	12%	88%	0%	5%	4%	2%	1%	89%	0%	5%	94%	0%	3%	97%	1%
1250-1499	N	933	802	180	620	2	87	712	3	32	17	15	6	728	1	30	768	4	26	770	6
	%			22%	77%	0%	11%	89%	0%	4%	2%	2%	1%	91%	0%	4%	96%	1%	3%	96%	1%
Total neonates	N	2959	2761	857	1900	4	499	2255	7	174	97	62	39	2370	12	223	2522	15	113	2621	26
	%			31%	69%	0%	18%	82%	0%	6%	4%	2%	1%	86%	0%	8%	91%	1%	4%	95%	1%

Note: Neuroimaging findings were not mutually exclusive, i.e. one neonate may have more than one finding.
See page 137 for classifications of ventricular enlargement.

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



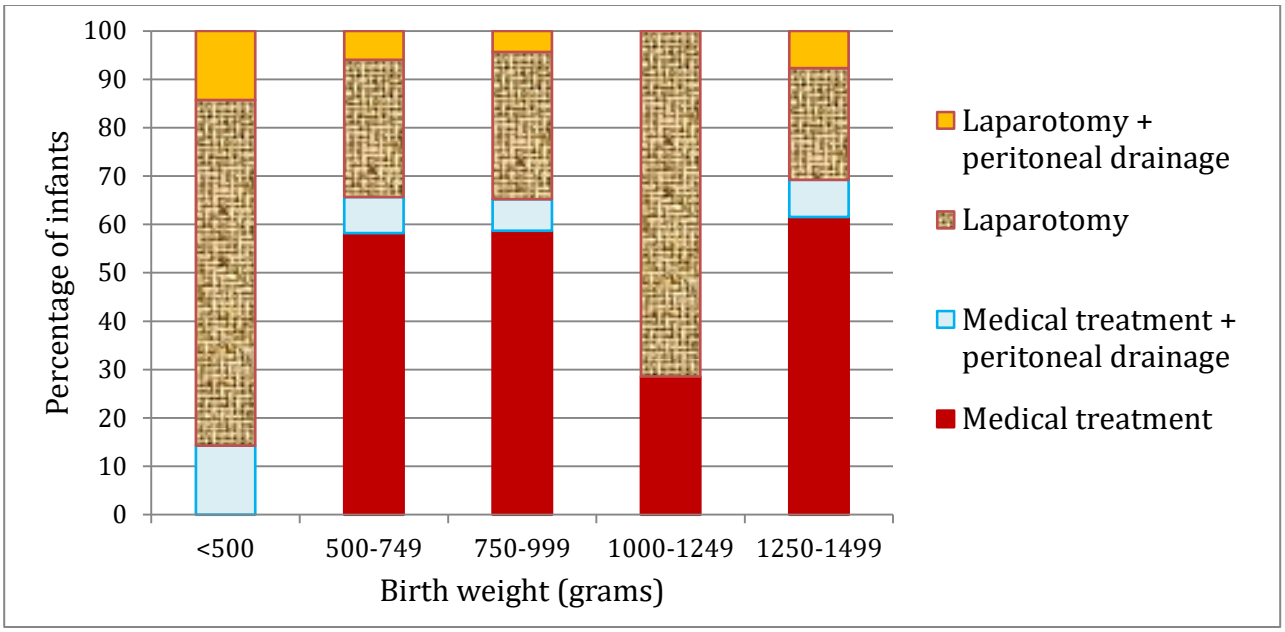
GA at birth (completed weeks)		Total number of neonates	Missing data on NEC	No NEC	NEC*	Neonates with necrotizing enterocolitis**				Death among infants with NEC**
						Medical treatment only	Medical + peritoneal drainage	Laparotomy	Peritoneal drainage + Laparotomy	
<25	N	345	0	289	56	28	5	21	2	17
	%			84%	16%	50%	9%	38%	4%	30%
25-26	N	552	0	501	51	25	4	19	3	19
	%			91%	9%	49%	8%	37%	6%	37%
27-28	N	779	2	756	21	11	0	8	2	6
	%			97%	3%	52%	0%	38%	10%	29%
29-30	N	1091	1	1069	21	17	1	2	1	5
	%			98%	2%	81%	5%	10%	5%	24%
31-32	N	1702	1	1683	18	9	2	6	1	6
	%			99%	1%	50%	11%	33%	6%	33%
Total number of neonates	N	4469	4	4298	167	90	12	56	9	53
	%			96%	4%	54%	7%	34%	5%	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 GA > 33 weeks:
GA 33 - 36 weeks: 29 neonates (0.7%)
GA ≥ 37 weeks: 11 neonates (0.2%)

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



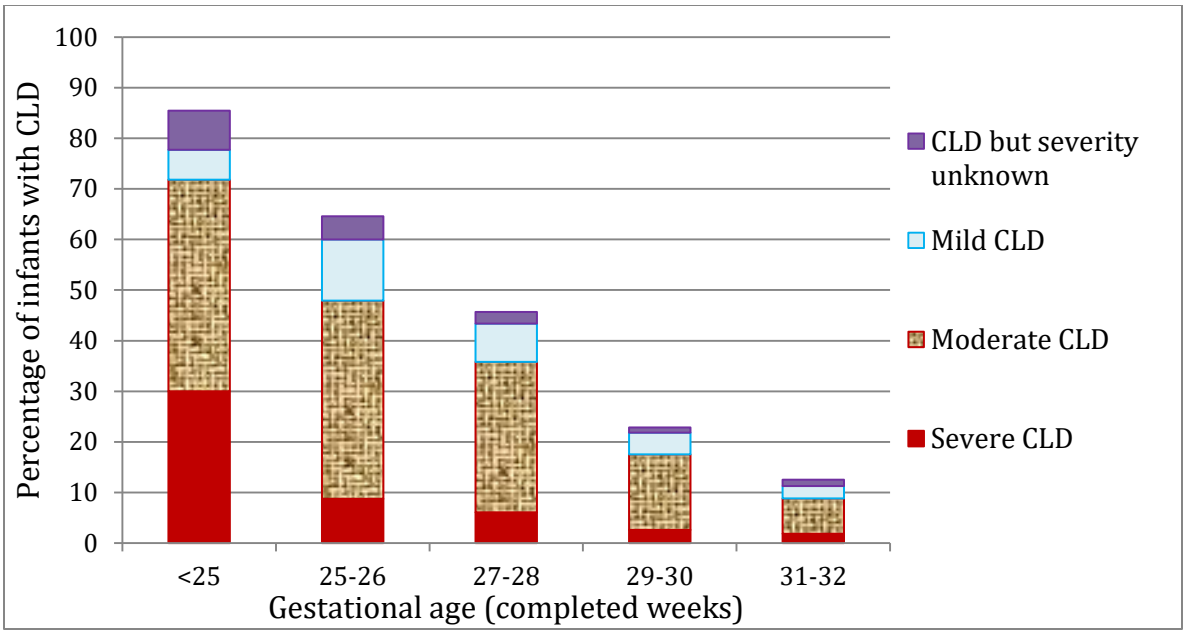
Birth weight (grams)		Total number of neonates	Missing data on NEC	No NEC	NEC*	Neonates with necrotizing enterocolitis**				Death among infants with NEC**
						Medical treatment only	Medical + peritoneal drainage	Laparotomy	Peritoneal drainage + laparatomy	
<500	N	43	0	36	7	0	1	5	1	3
	%			84%	16%	0%	14%	71%	14%	43%
500-749	N	479	0	412	67	39	5	19	4	21
	%			86%	14%	58%	7%	28%	6%	31%
750-999	N	673	3	624	46	27	3	14	2	14
	%			93%	7%	59%	7%	30%	4%	30%
1000-1249	N	831	0	817	14	4	0	10	0	5
	%			98%	2%	29%	0%	71%	0%	36%
1250-1499	N	933	0	920	13	8	1	3	1	3
	%			99%	1%	62%	8%	23%	8%	23%
Total number of neonates	N	2959	3	2809	147	78	10	51	8	46
	%			95%	5%	53%	7%	35%	5%	31%

*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: 46 neonates (1.0%)
BW ≥ 2500g: 14 neonates (0.2%)

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

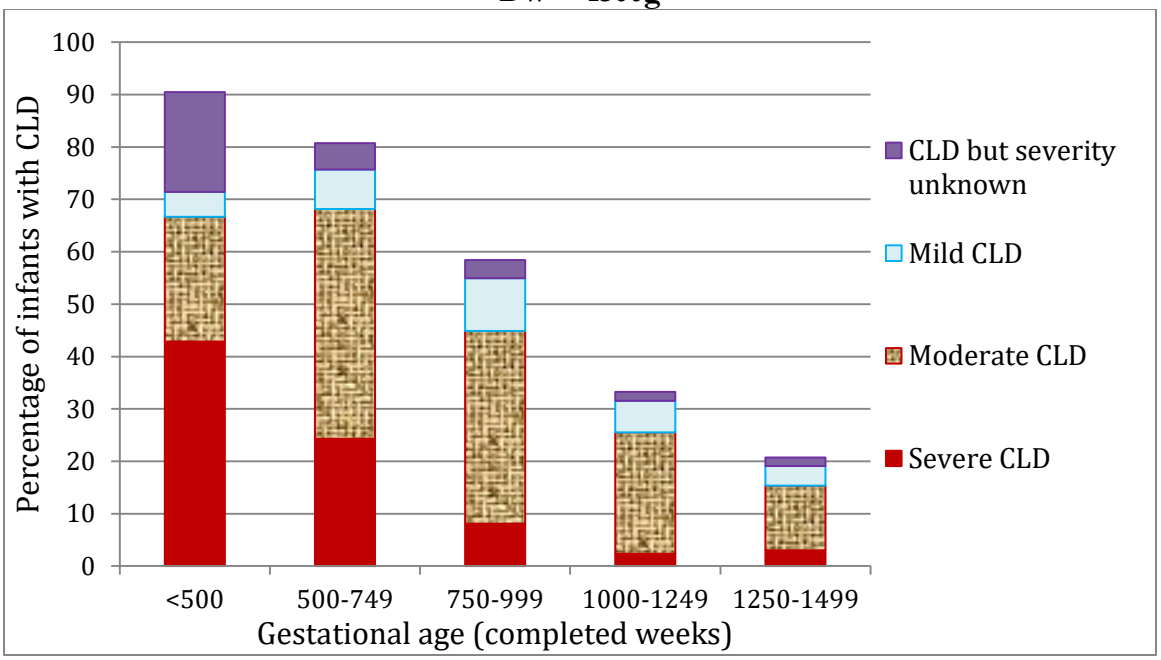


GA	Total number of neonates	Number of neonates who died before 36 weeks PMA	Number of surviving neonates whose respiratory support is unknown*	CLD from**	Number of neonates with known results	Number of neonates with severe CLD, N (%)	Number of neonates with moderate CLD, N (%)	Number of neonates with mild CLD, N (%)	Number of neonates with CLD but severity unknown, N (%)	Number of neonates without CLD, N (%)
<25	345	125	0	36w	191	58 (30)	81 (42)	12 (6)	15 (8)	25 (13)
				Disch	29	8 (28)	11 (38)	1 (3)	2 (7)	7 (24)
25-26	552	71	1	36w	357	34 (10)	156 (44)	42 (12)	19 (5)	106 (30)
				Disch	123	8 (7)	32 (26)	16 (13)	3 (2)	64 (52)
27-28	779	39	0	36w	440	36 (8)	158 (36)	42 (10)	8 (2)	196 (45)
				Disch	300	9 (3)	62 (21)	14 (5)	9 (3)	206 (69)
29-30	1 091	17	2	36w	488	24 (5)	95 (19)	31 (6)	5 (1)	333 (68)
				Disch	584	4 (1)	65 (11)	15 (3)	6 (1)	494 (85)
31-32	1 702	17	9	36w	610	27 (4)	68 (11)	29 (5)	17 (3)	469 (77)
				Disch	1066	4 (0)	49 (5)	12 (1)	4 (0)	997 (94)
Total	4 469	269	12	36w	2086	179 (9)	558 (27)	156 (7)	64 (3)	1129 (54)
				Disch	2102	33 (2)	219 (10)	58 (3)	24 (1)	1768 (84)

COMMENTS: See pages 137-138 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



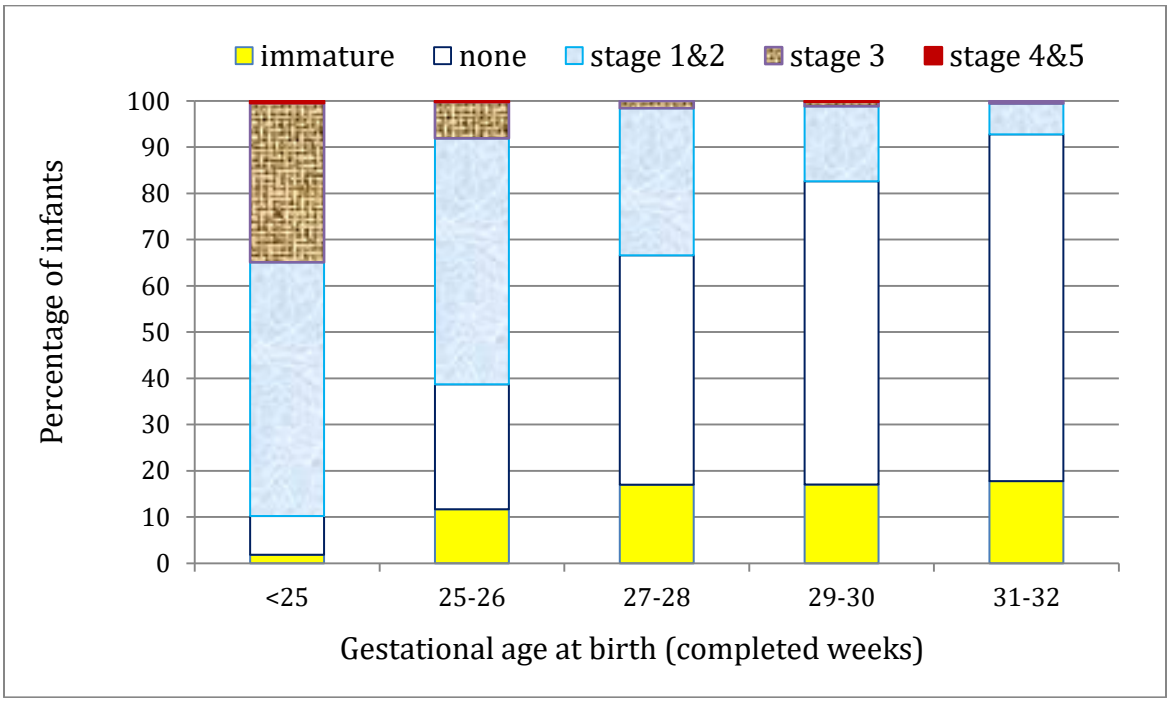
BW	Total number of neonates	Number of neonates who died before 36 weeks' PMA	Number of surviving neonates whose respiratory support is unknown*	CLD from**	Number of neonates with known results	Number of neonates with severe CLD, N (%)	Number of neonates with moderate CLD, N (%)	Number of neonates with mild CLD, N (%)	Number of neonates with CLD but severity unknown, N (%)	Number of neonates without CLD, N (%)
<500	43	22	0	36w	19	8 (42)	4 (21)	1 (5)	4 (21)	2 (11)
				Disch	2	1 (50)	1 (5)	0	0	0
500-749	479	120	1	36w	289	73 (25)	140 (48)	19 (7)	15 (5)	42 (15)
				Disch	69	14 (20)	17 (25)	8 (12)	3 (4)	27 (39)
750-999	673	67	0	36w	424	41 (10)	182 (43)	49 (12)	17 (4)	135 (32)
				Disch	182	8 (4)	41 (23)	12 (7)	4 (2)	117 (64)
1000-1249	831	65	2	36w	415	17 (4)	113 (27)	31 (7)	4 (1)	250 (60)
				Disch	349	1 (0)	64 (18)	15 (4)	9 (3)	260 (75)
1250-1499	933	130	2	36w	368	20 (5)	58 (16)	22 (6)	10 (3)	258 (70)
				Disch	433	4 (1)	41 (9)	8 (2)	3 (1)	377 (87)
Total	2 959	404	5	36w	1 515	159 (11)	497 (33)	122 (8)	50 (3)	687 (45)
				Disch	1 035	28 (3)	164 (16)	43 (4)	19 (2)	781 (75)

COMMENTS: See pages 137-138 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

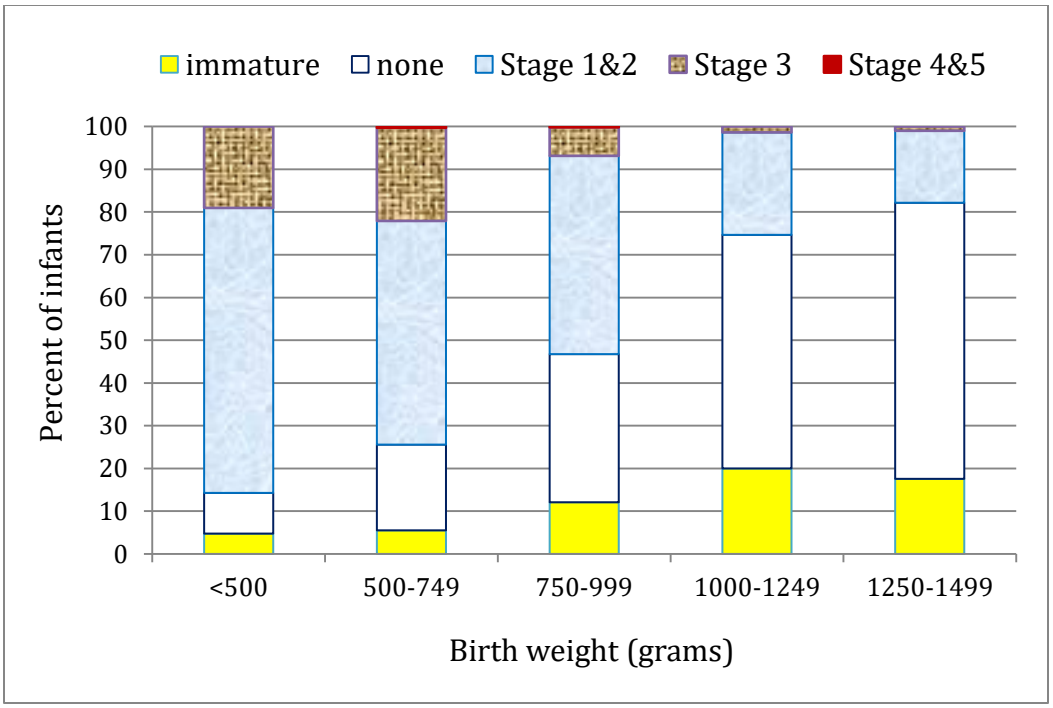


GA (completed weeks)		Total number of neonates	Number of neonates alive at 6 weeks of age	Number of neonates with known eye examination results	Retinopathy of prematurity*				
					Immature	None	Stages 1 & 2	Stage 3	Stages 4 & 5
<25	N	345	230	215	4	18	118	74	1
	%				2%	8%	55%	34%	0%
25-26	N	552	485	470	55	127	250	37	1
	%				12%	27%	53%	8%	0%
27-28	N	779	742	635	108	315	202	10	0
	%				17%	50%	32%	2%	0%
29-30	N	1 091	1 074	616	105	404	100	6	1
	%				17%	66%	16%	1%	0%
31-32	N	1 702	1 683	180	32	135	12	1	0
	%				18%	75%	7%	1%	0%
Total neonates included	N	4 469	4 214	2 116	304	999	682	128	3
	%				14%	47%	32%	6%	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



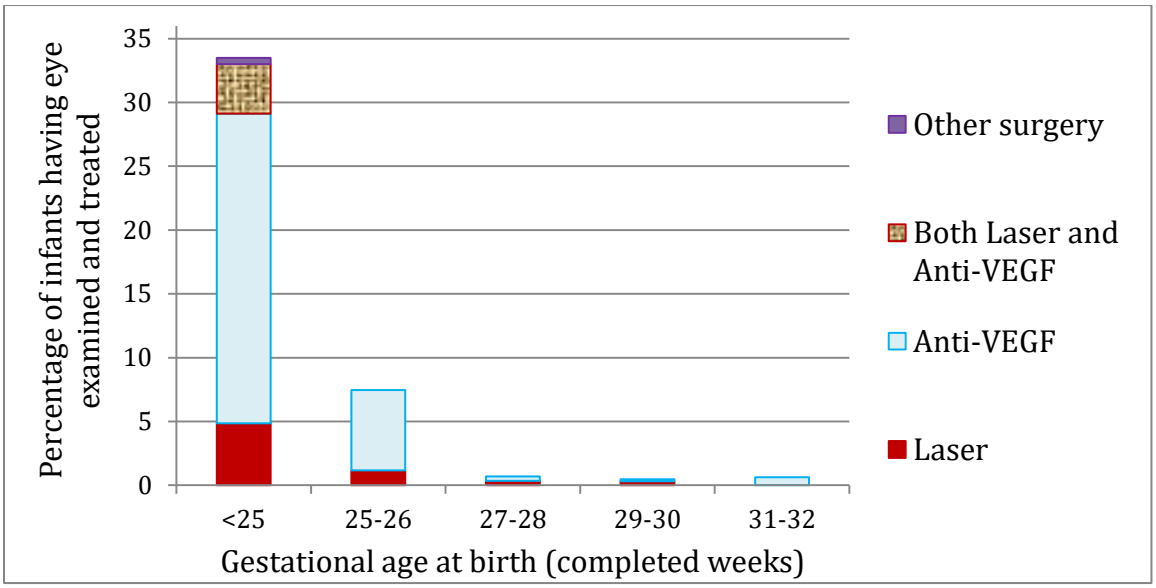
BW (grams)		Total number of neonates	Number of neonates alive at 6 weeks of age	Number of neonates with known eye examination results	Retinopathy of prematurity*				
					Immature	None	Stages 1 & 2	Stage 3	Stages 4 & 5
<500	N	43	22	21	1	2	14	4	0
	%				5%	10%	67%	19%	0%
500-749	N	479	369	344	19	69	180	75	1
	%				6%	20%	52%	22%	0%
750-999	N	673	613	554	67	192	257	37	1
	%				12%	35%	46%	7%	0%
1000-1249	N	831	802	580	116	317	139	8	0
	%				20%	55%	24%	1%	0%
1250-1499	N	933	921	404	71	261	68	4	0
	%				18%	65%	17%	1%	0%
Total neonates included	N	2959	2727	1903	274	841	658	128	2
	%				14%	44%	35%	7%	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

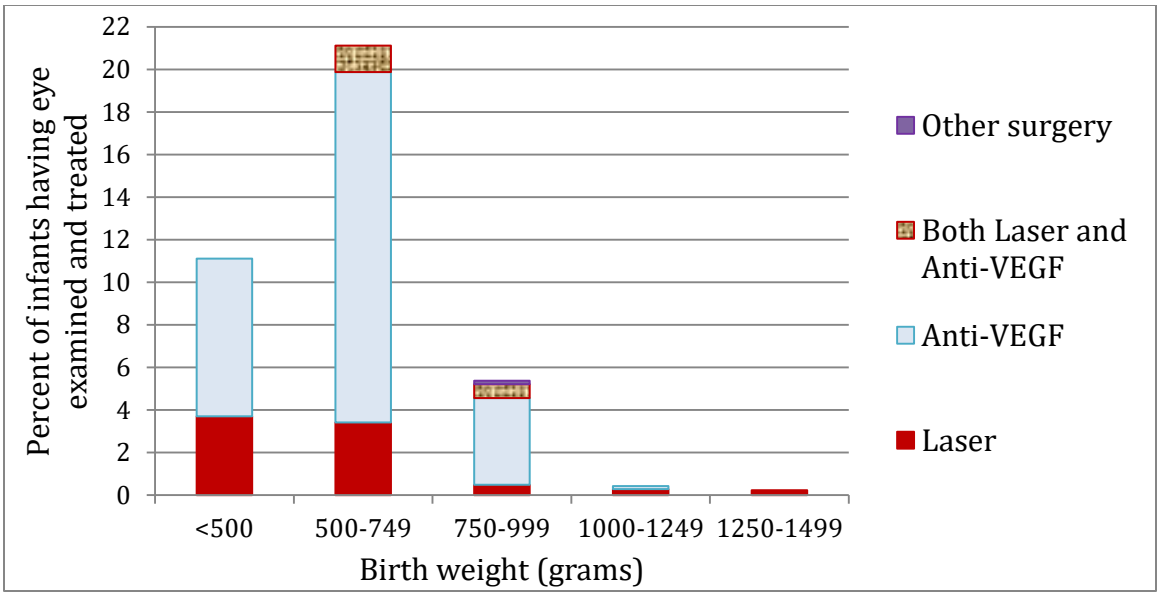


Birth GA (completed weeks)		Total number of neonates	Number of neonates with known eye examination results	Therapy for retinopathy of prematurity (ROP)*	Therapy for ROP			
					Laser	Anti-VEGF	Both Laser and Anti-VEGF	Other surgery**
<25	N	345	215	68	10	50	8	1
	%			33%				
25-26	N	552	470	33	5	27	0	0
	%			8%				
27-28	N	779	635	4	2	2	0	0
	%			1%				
29-30	N	1 091	616	3	2	1	0	0
	%			1%				
31-32	N	1 702	180	1	0	1	0	0
	%			1%				
Total neonates included	N	4 469	2 116	109	19	81	8	1
	%			5%				

***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	43	27	3	1	2	0	0
	%			11%				
500-749	N	436	322	68	11	53	4	0
	%			21%				
750-999	N	668	614	33	3	25	4	1
	%			5%				
1000-1249	N	731	703	3	2	1	0	0
	%			0%				
1250-1499	N	878	864	2	2	0	0	0
	%			0%				
Total neonates included	N	2756	2530	109	19	81	8	1
	%			4%				

***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	129	64 (50)	102 (79)	55 (84)	32 (52)	38 (33)	18 (14)	51 (40)
24	211	152 (72)	178 (84)	130 (86)	57 (39)	42 (21)	38 (18)	70 (33)
25	246	201 (82)	190 (77)	141 (71)	27 (15)	46 (19)	30 (12)	55 (22)
26	291	268 (92)	197 (68)	162 (60)	19 (9)	34 (12)	17 (6)	57 (20)
27	319	296 (93)	180 (56)	148 (50)	8 (4)	30 (10)	9 (3)	42 (13)
28	427	413 (97)	201 (47)	169 (41)	2 (1)	25 (6)	11 (3)	38 (9)
29	496	489 (99)	152 (31)	119 (24)	4 (2)	20 (4)	11 (2)	31 (6)
30	551	541 (98)	141 (26)	103 (19)	2 (1)	28 (5)	8 (1)	18 (3)
31	726	718 (99)	110 (15)	82 (11)	1 (1)	18 (3)	8 (1)	15 (2)
32	908	900 (99)	112 (12)	93 (10)	0	13 (3)	6 (1)	13(1)
Total neonates	4304	4042 (94)	1563 (36)	1202 (30)	152 (9)	294 (8)	156 (4)	390 (9)

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 sec or none	Missing	<36.5	36.5-37.2	>37.2	
xxxi	< 20	0.0	100.0	0.0	0.0	33.3	0.0	66.7	100.0	0.0	0.0	0.0
xxiv		93.8	6.3	0.0	37.5	43.8	56.3	0.0	26.7	66.7	6.7	6.3
xxxii		88.9	11.1	0.0	55.6	22.2	77.8	0.0	33.3	33.3	33.3	22.2
xvii		100.0	0.0	0.0	81.8	90.9	9.1	0.0	27.3	18.2	54.6	9.1
xxv		86.7	13.3	0.0	46.7	53.3	40.0	6.7	15.4	46.2	38.5	0.0
xi		87.5	12.5	0.0	50.0	68.8	31.3	0.0	31.3	62.5	6.3	0.0
ii		50.0	50.0	0.0	50.0	0.0	100.0	0.0	100.0	0.0	0.0	50.0
xx		82.4	17.7	0.0	64.7	47.1	52.9	0.0	0.0	93.8	6.3	5.9
iii	21-40	66.7	29.2	4.2	29.2	70.8	29.2	0.0	54.2	45.8	0.0	20.8
viii		87.2	12.8	0.0	23.1	61.5	38.5	0.0	26.3	63.2	10.5	2.6
xvi		92.0	8.0	0.0	28.0	88.0	12.0	0.0	20.8	58.3	20.8	8.0
xxx		82.8	17.2	0.0	34.5	55.2	41.4	3.5	10.3	58.6	31.0	10.3
xii		87.9	12.1	0.0	24.2	72.7	24.2	3.0	9.1	54.6	36.4	24.2
iv		90.9	9.1	0.0	42.4	48.5	51.5	0.0	12.1	54.6	33.3	27.3
i		80.0	20.0	0.0	25.7	60.0	40.0	0.0	20.6	61.8	17.7	25.7
xxiii		81.5	18.5	0.0	55.6	48.2	51.9	0.0	55.6	40.7	3.7	18.5
x		87.2	12.8	0.0	23.1	59.0	41.0	0.0	21.1	47.4	31.6	15.8
ix	41-80	80.5	19.5	0.0	46.3	22.0	78.1	0.0	65.7	22.9	11.4	14.6
vii		95.7	4.4	0.0	63.0	43.5	56.5	0.0	47.8	45.7	6.5	8.7
xxxiii		85.1	12.8	2.1	43.5	55.3	40.4	4.3	67.4	26.1	6.5	21.3
xxii		94.4	5.6	0.0	48.2	50.0	46.3	3.7	43.4	45.3	11.3	20.4
xxi		86.0	12.3	1.8	39.3	70.2	29.8	0.0	29.8	63.2	7.0	29.8
xxviii		81.8	13.6	4.6	41.9	68.2	27.3	4.6	9.3	67.4	23.3	14.3
v		85.5	14.5	0.0	40.6	44.9	39.1	15.9	49.3	46.4	4.4	27.5
xix		92.9	7.1	0.0	48.6	21.4	77.1	1.4	12.9	67.1	20.0	25.7
xxvi	> 80	80.9	12.8	6.4	45.7	63.8	35.1	1.1	36.9	46.4	16.7	16.0
xiii		59.2	40.8	0.0	34.0	63.1	36.9	0.0	21.6	54.9	23.5	9.7
vi		88.1	9.5	2.4	27.4	48.8	50.0	1.2	18.1	56.6	25.3	8.3
xxvii		90.7	9.3	0.0	40.0	64.3	35.7	0.0	39.9	44.2	15.9	8.6
xxix		92.8	7.2	0.0	43.1	60.5	39.5	0.0	18.0	59.9	22.2	16.2
Total CNN		85.4	13.7	0.9	40.4	56.0	42.2	1.8	29.8	52.4	17.9	15.6

*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	%	%	%	%	%	%
xxxi	< 20	33.3	33.3	100.0	33.3	0.0	100.0
xxxii		55.6	44.4	100.0	0.0	44.4	22.2
xvii		9.1	9.1	100.0	9.1	54.6	36.4
xxv		13.3	13.3	86.7	6.7	0.0	40.0
xi		31.3	31.3	93.8	0.0	31.3	25.0
ii		0.0	0.0	50.0	0.0	0.0	50.0
xxiv		37.5	37.5	93.8	56.3	31.3	12.5
xx		35.3	35.3	76.5	11.8	17.7	23.5
xvi	21-40	24.0	24.0	76.0	24.0	64.0	8.0
xxiii		18.5	18.5	70.4	0.0	0.0	44.4
viii		33.3	30.8	56.4	7.7	38.5	23.1
xxx		62.1	48.3	72.4	34.5	41.4	31.0
xii		42.4	36.4	72.7	0.0	51.5	12.1
iv		24.2	18.2	72.7	6.1	36.4	39.4
iii		29.2	16.7	95.8	8.3	20.8	33.3
i		31.4	25.7	97.1	2.9	22.9	34.3
x		28.2	25.6	84.6	18.0	53.9	10.3
ix	41-80	17.1	14.6	82.9	14.6	19.5	19.5
xxviii		20.5	15.9	93.2	11.4	59.1	13.6
vii		10.9	10.9	47.8	8.7	23.9	39.1
xxxiii		21.3	14.9	44.7	2.1	42.6	36.2
xxii		44.4	29.6	87.0	0.0	46.3	25.9
xxi		33.3	29.8	87.7	1.8	43.9	19.3
v		26.1	20.3	85.5	8.7	24.6	30.4
xix		24.3	22.9	88.6	8.6	55.7	14.3
xxvi	> 80	34.0	27.7	89.4	6.4	22.3	19.2
vi		8.3	6.0	94.1	3.6	51.2	16.7
xiii		24.3	21.4	77.7	1.0	62.1	4.9
xxvii		44.3	36.4	91.4	10.7	61.4	8.6
xxix		60.5	43.1	86.2	3.6	48.5	15.0
Total CNN		32.8	26.4	82.8	7.6	42.8	20.0

*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*
- 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 = 606)**					**26-28 weeks' GA (N = 1084)**				
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	606	82.1	74.3	50.1	18.3	5.3	38.6	25.4	11.9	7.8	3.3
Sites											
ii	< 6	100.0	NA	NA	NA	NA	100.0	0.0	0.0	0.0	0.0
xxxii		0.0	0.0	NA	NA	NA	33.3	0.0	0.0	0.0	0.0
xxx		66.7	66.7	66.7	0.0	0.0	10.3	0.0	3.6	3.6	0.0
xxxi		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
xviii		100.0	75.0	50.0	0.0	0.0	14.3	0.0	0.0	0.0	0.0
xvii		NA	NA	NA	NA	NA	45.5	27.3	10.0	10.0	0.0
xx		100.0	100.0	0.0	50.0	0.0	53.3	46.7	26.7	13.3	15.4
xi	6-10	83.3	50.0	40.0	40.0	0.0	50.0	20.0	0.0	0.0	0.0
xvi		50.0	25.0	25.0	0.0	0.0	29.2	25.0	14.3	9.5	0.0
xxiv		75.0	50.0	0.0	0.0	0.0	25.0	18.2	0.0	0.0	0.0
xii		100.0	85.7	57.1	14.3	0.0	32.1	25.0	10.7	7.1	0.0
xxv		100.0	62.5	71.4	16.7	0.0	42.9	57.1	0.0	0.0	0.0
iii		71.4	60.0	66.7	50.0	0.0	35.0	25.0	15.0	10.5	0.0
i	11-20	80.0	75.0	66.7	83.3	20.0	35.7	25.0	14.8	7.4	0.0
xxiii		100.0	100.0	100.0	100.0	0.0	60.0	50.0	10.5	5.3	0.0
iv		75.0	75.0	63.6	9.1	11.1	54.2	33.3	13.6	4.8	5.6
viii		81.3	75.0	27.3	30.0	0.0	48.5	36.4	9.7	3.2	0.0
xxxiii		100.0	100.0	75.0	18.8	0.0	50.0	42.9	25.7	11.4	0.0
xxviii		83.3	77.8	56.3	12.5	6.7	41.3	32.6	13.5	7.5	4.0
vii		94.4	81.3	55.6	28.6	0.0	48.6	41.2	9.7	9.7	0.0
x		87.5	64.3	22.2	0.0	0.0	29.2	16.7	9.1	0.0	0.0
xxii	20-35	77.3	81.8	33.3	6.3	6.3	37.8	22.2	13.6	4.7	0.0
ix		88.0	76.0	28.0	8.3	0.0	42.9	28.6	9.5	0.0	0.0
xxi		92.0	76.0	52.2	19.0	0.0	50.0	32.5	11.4	11.8	4.3
xix		84.4	64.3	56.5	9.1	5.6	37.3	20.0	23.7	18.9	15.8
v		80.6	82.1	58.3	21.7	4.3	59.5	35.0	5.3	2.6	0.0
xxvi	> 35	93.5	93.3	70.8	26.1	15.0	41.7	30.1	17.7	14.6	5.1
xiii		89.5	64.9	55.9	25.0	4.2	50.0	24.1	7.9	6.5	7.4
vi		100.0	86.8	66.7	30.3	17.9	57.9	35.7	28.9	20.0	6.3
xxvii		84.1	86.6	56.9	10.7	2.8	24.5	15.5	5.6	3.4	0.0
xxix		50.0	50.0	25.4	13.6	6.3	15.3	11.0	6.1	6.3	10.9

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***
A	100.0	85.7	77.8	100.0	100.0	100.0	100.0	100.0	99.2
Bϕ	61.5	90.9	100.0	95.3	95.8	0.0	100.0	95.3	93.0
Cϕ	57.9	92.0	92.3	94.6	100.0	NA	NA	NA	91.7
D	73.5	90.0	89.8	99.1	96.4	99.3	98.9	98.6	96.5
E	NA	100.0	88.9	100.0	100.0	100.0	100.0	97.6	98.5
F	0.0	88.9	80.0	100.0	100.0	100.0	100.0	98.3	98.0
G	42.9	37.5	94.1	92.0	98.1	100.0	100.0	99.4	98.2
Hϕ	100.0	100.0	92.3	100.0	100.0	NA	NA	NA	98.4
I	100.0	66.7	100.0	100.0	97.6	100.0	94.3	96.4	96.5
Jϕ	71.4	96.3	86.4	95.2	100.0	98.1	100.0	NA	96.8
K	0.0	58.8	90.0	100.0	97.1	100.0	98.7	99.4	96.8
L	56.8	88.6	86.1	98.5	100.0	97.7	97.1	99.6	96.9
M	76.3	91.0	100.0	96.2	100.0	98.9	98.9	100.0	96.6
N	66.7	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.3
O	NA	100.0	100.0	100.0	100.0	100.0	100.0	97.5	99.0
P	0.0	75.0	100.0	100.0	100.0	100.0	100.0	98.9	98.6
Q	33.3	80.0	94.1	92.3	97.6	100.0	100.0	100.0	97.9
R	42.9	89.3	96.9	93.3	100.0	97.2	98.1	98.8	97.4
S	NA	NA	NA	NA	100.0	91.7	95.0	94.7	94.7
T	25.0	100.0	90.9	100.0	100.0	100.0	98.6	99.3	98.2
U	60.0	100.0	90.0	93.3	100.0	100.0	99.1	99.1	98.4
Vϕ	40.0	75.0	95.5	97.9	100.0	88.2	100.0	83.3	92.8
Wϕ	60.0	88.9	87.5	95.5	100.0	97.1	0.0	100.0	94.3
Xϕ	NA	NA	NA	100.0	100.0	87.5	100.0	95.5	93.8
Y	60.0	82.8	89.3	97.8	98.9	98.4	93.4	97.3	95.4
Z	72.0	97.4	98.3	100.0	100.0	98.9	100.0	98.7	98.5
AA	33.3	81.0	100.0	100.0	97.6	100.0	100.0	100.0	98.4
AB	88.9	81.0	97.1	100.0	95.7	92.0	100.0	98.3	97.0
AC	0.0	100.0	NA	100.0	100.0	100.0	100.0	100.0	99.3
AD	93.3	88.9	100.0	100.0	98.4	100.0	100.0	99.3	98.8
AEϕ	54.5	84.6	100.0	100.0	100.0	NA	NA	NA	95.6
AFϕ	56.3	81.8	90.3	98.0	95.7	100.0	97.8	99.3	97.4
AGϕ	45.5	69.2	94.4	NA	NA	NA	NA	NA	73.8
Overall survival rate for GA**	63.5	86.8	94.4	97.8	98.6	98.8	98.6	98.7	97.1

These analyses included 14 651 neonates from 33 sites. **Twenty-three sites collected data on all eligible admissions whereas ten 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***
A	NA	100.0	85.7	80.0	100.0	100.0	100.0	99.2
Bϕ	NA	75.7	83.3	98.2	100.0	95.3	92.0	93.0
Cϕ	100.0	75.0	93.3	92.6	96.4	98.3	100.0	91.7
D	54.5	80.3	93.7	97.0	94.4	98.3	99.0	96.5
E	NA	100.0	100.0	87.5	100.0	100.0	98.1	98.5
F	NA	40.0	85.7	100.0	90.9	100.0	98.7	98.0
G	0.0	50.0	53.8	96.0	100.0	98.3	99.7	98.2
Hϕ	NA	100.0	100.0	96.6	95.7	100.0	100.0	98.4
I	100.0	100.0	100.0	91.7	100.0	96.7	96.4	96.5
Jϕ	NA	73.3	100.0	94.1	95.1	99.3	100.0	96.8
K	NA	20.0	60.0	100.0	100.0	98.8	99.5	96.8
L	25.0	62.5	89.6	93.2	98.0	98.9	99.1	96.9
M	62.5	83.6	95.9	98.6	100.0	98.5	99.2	96.6
N	NA	71.4	100.0	100.0	100.0	100.0	99.6	99.3
O	NA	NA	100.0	100.0	100.0	100.0	98.1	99.0
P	NA	33.3	100.0	100.0	100.0	98.1	99.5	98.6
Q	0.0	66.7	85.7	100.0	100.0	97.9	100.0	97.9
R	0.0	76.9	90.3	96.4	93.5	98.9	98.5	97.4
S	NA	NA	NA	NA	100.0	92.0	95.2	94.7
T	0.0	50.0	87.5	100.0	100.0	99.2	99.5	98.2
U	NA	80.0	83.3	83.3	100.0	98.4	99.2	98.4
Vϕ	0.0	71.4	78.6	95.7	95.1	98.8	87.8	92.8
Wϕ	0.0	63.6	94.1	94.1	100.0	97.3	100.0	94.3
Xϕ	NA	NA	NA	100.0	100.0	96.6	90.9	93.8
Y	100.0	62.5	85.3	93.5	96.4	98.1	96.4	95.4
Z	100.0	81.1	97.8	98.5	100.0	99.0	99.4	98.5
AA	0.0	66.7	88.2	90.3	100.0	100.0	100.0	98.4
AB	NA	69.2	93.1	96.2	100.0	96.6	98.6	97.0
AC	NA	0.0	100.0	100.0	100.0	100.0	100.0	99.3
AD	NA	88.9	94.4	100.0	97.1	100.0	99.4	98.8
AEϕ	50.0	80.0	88.9	100.0	100.0	100.0	100.0	95.6
AFϕ	66.7	63.6	86.4	97.1	95.3	97.7	99.6	97.4
AGϕ	NA	54.5	84.2	70.0	100.0	NA	NA	73.8
Overall survival rate for BW**	46.5	73.7	90.3	95.9	97.9	98.6	98.7	97.1

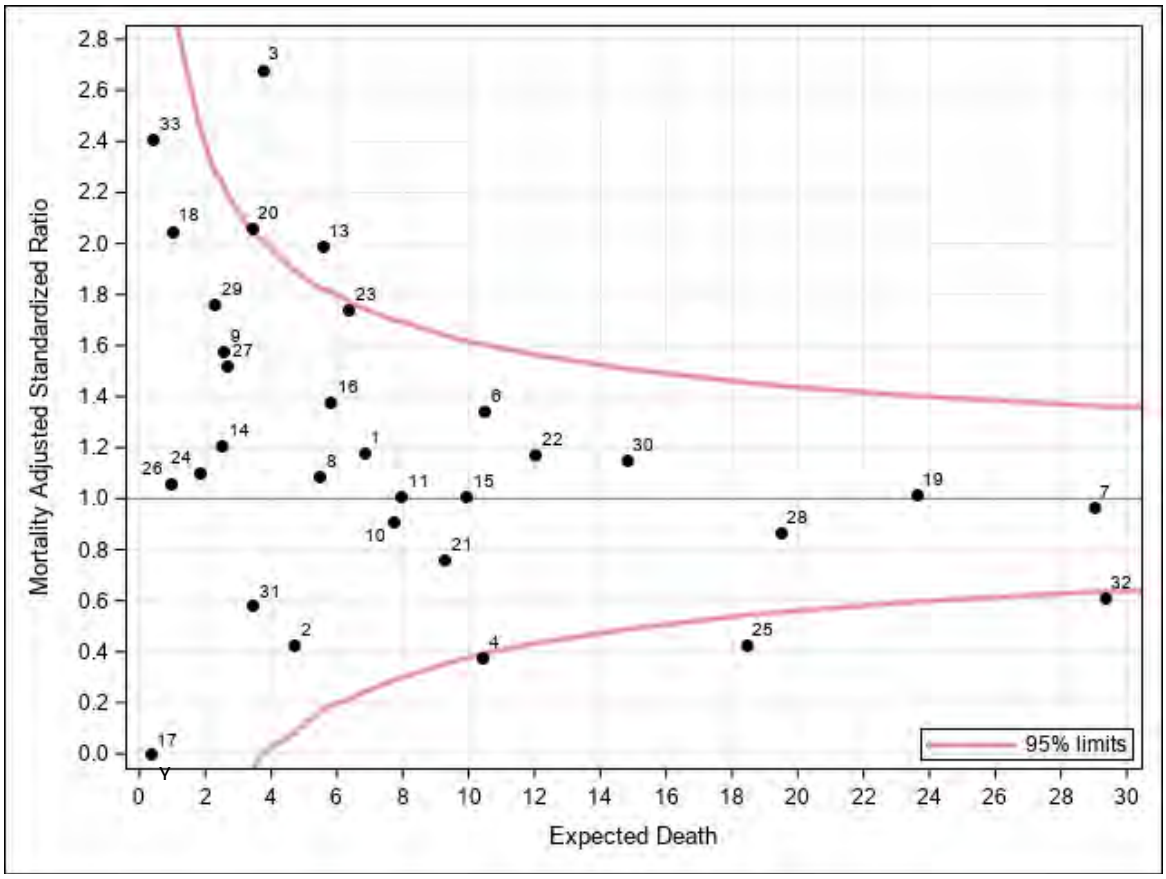
These analyses included 14 651 neonates from 33 sites. **Twenty-three sites collected data on all eligible admissions whereas ten sites (marked by ϕ) collected data on selected eligible admissions only.** ϕ Please note the data collection criteria were not the same for these eight sites, and thus their 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	116	8	6.8	1.2	0.5	2.3
2	102	2	4.7	0.4	0.0	1.5
3	78	10	3.7	2.7	1.3	4.9
4	155	4	10.4	0.4	0.1	1.0
6	176	14	10.5	1.3	0.7	2.2
7	390	28	29.0	1.0	0.6	1.4
8	108	6	5.5	1.1	0.4	2.4
9	58	4	2.5	1.6	0.4	4.0
10	166	7	7.7	0.9	0.4	1.9
11	213	8	7.9	1.0	0.4	2.0
13	103	11	5.5	2.0	1.0	3.6
14	76	3	2.5	1.2	0.2	3.5
15	150	10	9.9	1.0	0.5	1.9
16	140	8	5.8	1.4	0.6	2.7
17	14	0	0.3	0.0	.	11.5
18	29	2	1.0	2.1	0.2	7.4
19	293	24	23.6	1.0	0.7	1.5
20	94	7	3.4	2.1	0.8	4.2
21	148	7	9.3	0.8	0.3	1.6
22	179	14	12.0	1.2	0.6	2.0
23	41	11	6.3	1.7	0.9	3.1
24	60	2	1.8	1.1	0.1	4.0
25	321	8	18.5	0.4	0.2	0.9
26	35	1	0.9	1.1	0.0	5.9
27	61	4	2.6	1.5	0.4	3.9
28	292	17	19.5	0.9	0.5	1.4
29	48	4	2.3	1.8	0.5	4.5
30	206	17	14.8	1.1	0.7	1.8
31	121	2	3.4	0.6	0.1	2.1
32	313	18	29.3	0.6	0.4	1.0
33	12	1	0.4	2.4	0.0	13.4

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 5 and 12 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

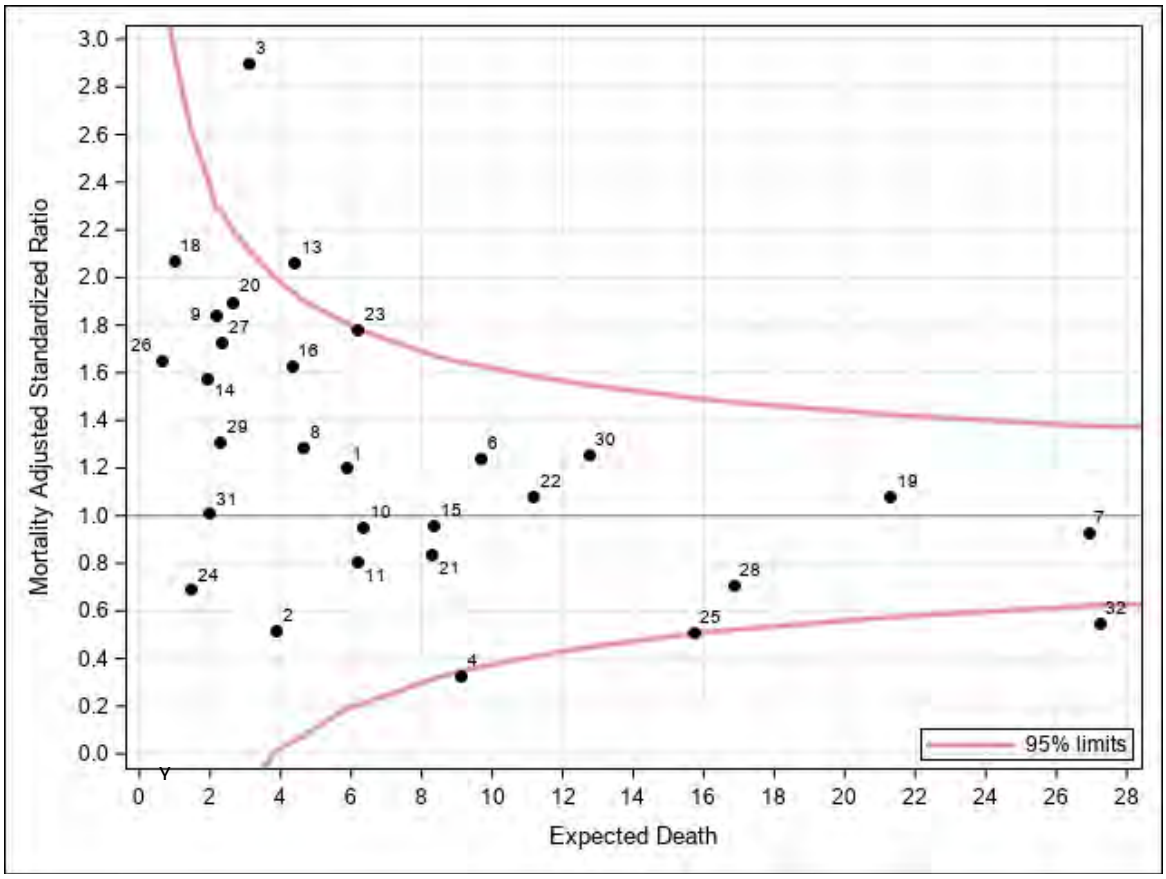
Explanation for Presentation 31b
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red 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	49	7	5.8	1.2	0.5	2.5
2	36	2	3.9	0.5	0.1	1.9
3	28	9	3.1	2.9	1.3	5.5
4	47	3	9.1	0.3	0.1	1.0
6	66	12	9.6	1.2	0.6	2.2
7	179	25	26.9	0.9	0.6	1.4
8	39	6	4.6	1.3	0.5	2.8
9	16	4	2.2	1.8	0.5	4.7
10	55	6	6.3	0.9	0.3	2.1
11	60	5	6.2	0.8	0.3	1.9
13	30	9	4.4	2.1	0.9	3.9
14	18	3	1.9	1.6	0.3	4.6
15	65	8	8.3	1.0	0.4	1.9
16	39	7	4.3	1.6	0.7	3.4
18	9	2	1.0	2.1	0.2	7.5
19	106	23	21.3	1.1	0.7	1.6
20	29	5	2.6	1.9	0.6	4.4
21	51	7	8.3	0.8	0.3	1.7
22	81	12	11.2	1.1	0.6	1.9
23	41	11	6.2	1.8	0.9	3.2
24	12	1	1.5	0.7	0.0	3.8
25	120	8	15.7	0.5	0.2	1.0
26	11	1	0.6	1.7	0.0	9.2
27	20	4	2.3	1.7	0.5	4.4
28	108	12	16.8	0.7	0.4	1.2
29	17	3	2.3	1.3	0.3	3.8
30	76	16	12.7	1.3	0.7	2.0
31	33	2	2.0	1.0	0.1	3.6
32	177	15	27.2	0.6	0.3	0.9

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 5, 12, 17, 33 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

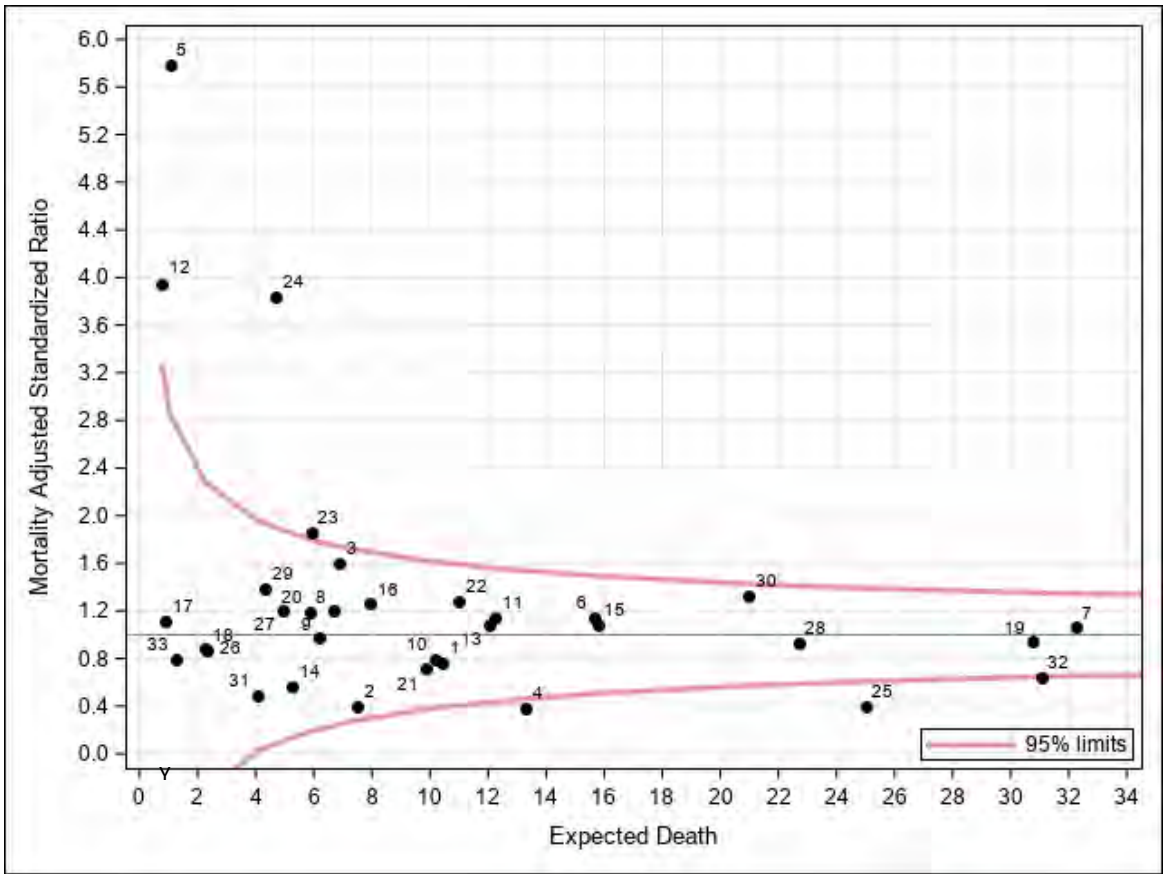
Site	Number of neonates	Number of deaths	Adjusted[#] expected number of deaths	Adjusted[#] standardized ratio	95% confidence interval (CI) for adjusted standardized ratio	
1	540	8	10.4	0.8	0.3	1.5
2	450	3	7.5	0.4	0.1	1.2
3	400	11	6.9	1.6	0.8	2.9
4	427	5	13.3	0.4	0.1	0.9
5	111	6	1.0	5.8	2.1	12.6
6	871	18	15.7	1.1	0.7	1.8
7	995	34	32.2	1.1	0.7	1.5
8	154	8	6.7	1.2	0.5	2.4
9	333	6	6.2	1.0	0.4	2.1
10	273	8	10.2	0.8	0.3	1.5
11	526	14	12.2	1.1	0.6	1.9
12	56	3	0.8	3.9	0.8	11.5
13	823	13	12.1	1.1	0.6	1.8
14	361	3	5.3	0.6	0.1	1.7
15	664	17	15.8	1.1	0.6	1.7
16	169	10	7.9	1.3	0.6	2.3
17	96	1	0.9	1.1	0.0	6.2
18	274	2	2.3	0.9	0.1	3.2
19	1106	29	30.8	0.9	0.6	1.4
20	367	7	5.9	1.2	0.5	2.4
21	148	7	9.8	0.7	0.3	1.5
22	179	14	11.0	1.3	0.7	2.1
23	41	11	5.9	1.9	0.9	3.3
24	514	18	4.7	3.8	2.3	6.1
25	927	10	25.0	0.4	0.2	0.7
26	128	2	2.3	0.9	0.1	3.2
27	325	6	5.0	1.2	0.4	2.6
28	343	21	22.7	0.9	0.6	1.4
29	419	6	4.3	1.4	0.5	3.0
30	721	28	21.0	1.3	0.9	1.9
31	121	2	4.1	0.5	0.1	1.8
32	587	20	31.1	0.6	0.4	1.0
33	138	1	1.3	0.8	0.0	4.4

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	%	%	%	%	%	%	%
P	< 40	6.5	3.6	10.0	17.2	3.2	12.9	32.3
S		0.0	40.0	.	60.0	0.0	0.0	60.0
AC		8.3	8.3	14.3	0.0	8.3	16.7	25.0
O		0.0	28.6	50.0	14.3	7.1	0.0	21.4
X		0.0	0.0	0.0	0.0	0.0	0.0	0.0
E		2.9	3.2	0.0	14.7	0.0	5.7	22.9
AG	41-80	26.2	19.5	16.7	74.2	7.1	23.8	83.3
U		8.3	10.5	0.0	22.7	0.0	2.1	29.2
F		8.5	14.9	0.0	22.2	3.4	13.6	30.5
T		6.4	9.1	3.1	15.3	1.6	3.2	23.8
I		2.9	7.3	0.0	48.3	8.7	10.1	58.0
A		3.9	4.8	4.9	22.7	2.6	3.9	28.2
K		13.8	19.3	2.9	14.5	6.3	6.3	33.8
Q	81-150	8.3	6.0	3.6	10.1	2.1	7.2	19.6
N		1.9	2.9	8.6	23.3	1.0	10.6	29.8
G		11.9	11.0	9.8	21.9	0.9	3.7	35.8
W		6.3	10.1	14.3	19.1	2.7	4.5	27.9
AA		7.6	4.9	23.5	23.6	2.5	16.0	32.8
H		1.6	4.6	1.6	28.3	2.5	8.2	34.4
V		5.6	5.9	9.2	22.1	3.5	9.0	29.9
R	151-300	6.5	15.3	5.1	25.0	4.6	13.1	36.0
AD		2.6	9.9	7.5	19.5	1.9	7.0	31.9
AE		4.4	5.9	10.5	77.0	8.2	8.2	79.3
J		4.6	5.0	11.3	43.0	1.7	9.8	49.1
C		8.3	14.4	12.5	27.0	4.4	11.6	38.1
AF		9.6	10.6	6.7	25.7	3.2	9.1	39.0
Y		8.3	8.6	18.5	39.1	5.1	15.3	51.4
AB		4.5	6.0	20.8	25.5	1.8	7.1	30.8
L	> 300	8.6	6.9	15.0	36.6	3.7	14.3	43.9
M		5.7	7.4	7.2	19.9	4.4	9.2	31.1
B		6.8	16.4	12.1	25.0	2.5	6.8	35.1
Z		2.7	7.7	9.4	40.1	3.4	4.3	44.5
D		7.8	7.5	4.9	42.9	6.9	12.0	50.5
Total CNN		6.5	8.8	8.6	30.8	3.7	9.4	39.7

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	%	%	%	%	%	%	%
E	< 15	9.1	9.1	0.0	30.0	0.0	9.1	45.5
AC		50.0	50.0	100.0	0.0	50.0	50.0	100.0
O		0.0	33.3	100.0	33.3	33.3	0.0	33.3
P		18.2	10.0	11.1	44.4	9.1	18.2	72.7
I		8.3	33.3	0.0	90.9	0.0	8.3	100.0
F	15-30	29.4	31.3	0.0	75.0	11.8	41.2	82.4
U		17.7	21.4	0.0	50.0	0.0	5.9	58.8
A		16.7	6.3	13.3	80.0	11.1	11.1	83.3
T		19.1	10.5	5.9	35.3	4.8	9.5	47.6
K		34.5	29.6	5.0	47.4	13.8	13.8	75.9
Q		16.7	13.3	8.0	28.0	6.7	13.3	43.3
G	31-50	31.3	16.7	19.1	54.6	3.1	12.5	75.0
H		6.1	3.1	3.3	61.3	3.0	21.2	69.7
N		5.6	2.9	12.1	51.4	2.8	27.8	61.1
V		18.0	10.3	18.2	43.8	7.7	20.5	56.4
W		15.4	15.4	23.1	51.5	7.7	10.3	66.7
AG		26.2	19.5	16.7	74.2	7.1	23.8	83.3
AD		6.3	14.6	15.6	46.7	6.3	16.7	66.7
AA		16.0	8.0	33.3	50.0	4.0	28.0	62.0
AE	51-100	13.0	7.7	14.3	97.9	16.7	18.5	98.2
J		10.7	9.1	30.4	78.0	3.6	21.4	85.7
AB		9.4	10.9	25.0	62.1	0.0	23.4	68.8
R		11.9	22.4	7.1	47.5	7.7	20.9	62.7
AF		20.3	14.7	12.3	58.9	7.3	21.7	75.4
Y		20.8	14.7	29.0	70.5	11.7	36.4	87.0
C		15.7	19.5	15.0	54.3	8.4	20.5	67.5
L	> 100	23.2	10.9	18.7	79.1	8.3	30.6	86.1
B		10.9	27.0	15.9	44.3	3.4	14.3	60.5
Z		7.3	13.2	11.0	75.4	8.9	7.3	80.5
M		8.4	10.3	8.0	31.1	7.3	14.5	46.9
D		14.4	12.4	6.0	66.7	12.3	22.5	74.3
Total CNN		14.5	14.3	12.8	58.1	7.7	19.6	70.2

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

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

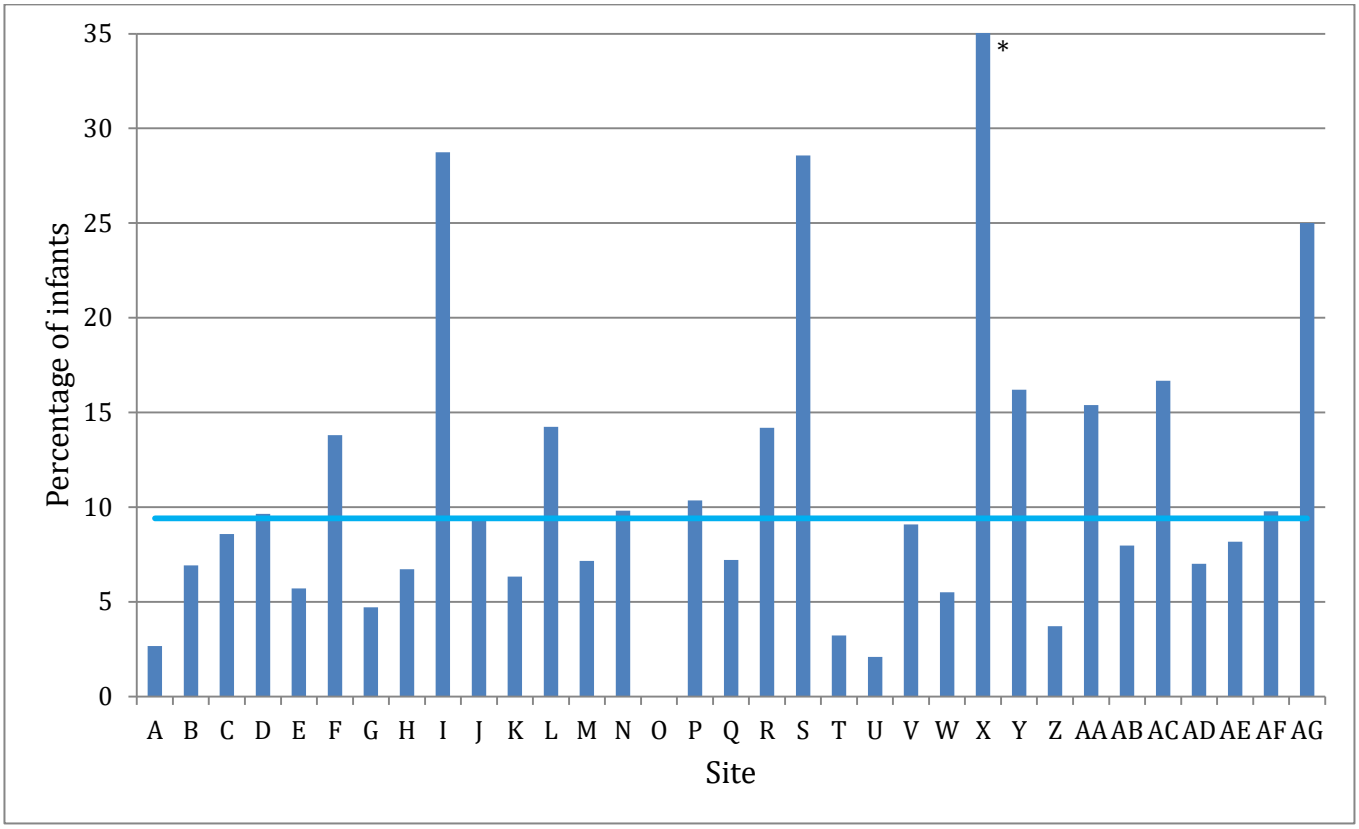
In presentations #34 and #35, late onset sepsis was attributed to the hospital where the first episode of sepsis was acquired. Each neonate was counted only once even if there were multiple episodes of infections.

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=4 425 neonates, 44 excluded due to death before 3 days of age)



Site	A	B	C	D	E	F	G	H	I	J	K	
%	2.7	6.9	8.6	9.6	5.7	13.8	4.7	6.7	28.7	9.5	6.3	
Site	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**V**	
%	14.2	7.2	9.8	0.0	10.3	7.2	14.2	28.6	3.2	2.1	9.1	
Site	**W**	**X**	**Y**	**Z**	**AA**	**AB**	**AC**	**AD**	**AE**	**AF**	**AG**	**CNN**
%	5.5	62.5	16.2	3.7	15.4	8.0	16.7	7.0	8.2	9.8	25.0	9.4

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).
*Site X's rate goes over the range of Y-axis in the plot. Refer to the table for the actual rate for site X.

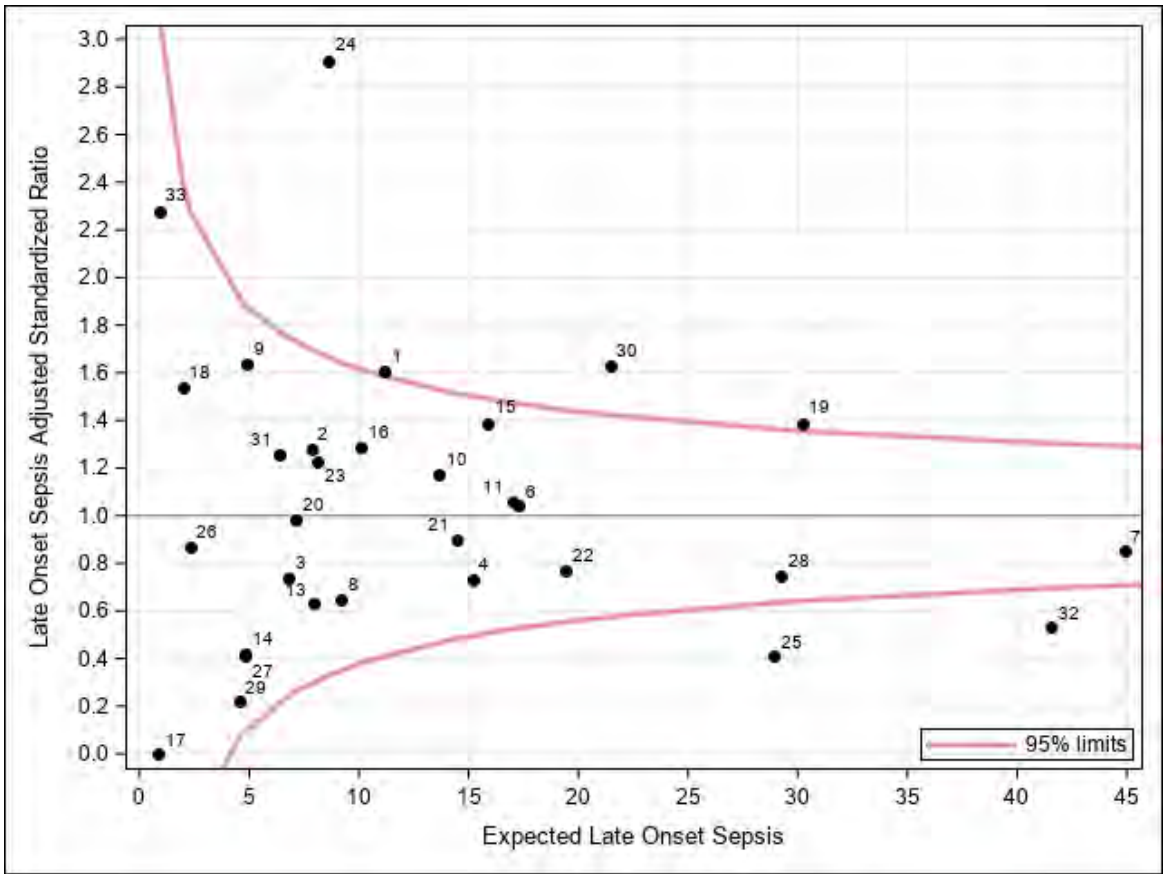
In presentations #34 and #35, late onset sepsis was attributed to the hospital where the first episode of sepsis was acquired. Each neonate was counted only once even if there were multiple episodes of infections.

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	117	18	11.2	1.6	1.0	2.5
2	102	10	7.8	1.3	0.6	2.4
3	79	5	6.8	0.7	0.2	1.7
4	157	11	15.2	0.7	0.4	1.3
6	184	18	17.3	1.0	0.6	1.6
7	394	38	44.9	0.8	0.6	1.2
8	109	6	9.2	0.7	0.2	1.4
9	58	8	4.9	1.6	0.7	3.2
10	168	16	13.6	1.2	0.7	1.9
11	226	18	17.0	1.1	0.6	1.7
13	106	5	7.9	0.6	0.2	1.5
14	75	2	4.8	0.4	0.0	1.5
15	155	22	15.9	1.4	0.9	2.1
16	143	13	10.1	1.3	0.7	2.2
17	14	0	0.8	0.0	.	4.3
18	29	3	1.9	1.5	0.3	4.5
19	295	42	30.2	1.4	1.0	1.9
20	97	7	7.1	1.0	0.4	2.0
21	159	13	14.5	0.9	0.5	1.5
22	175	15	19.4	0.8	0.4	1.3
23	40	10	8.1	1.2	0.6	2.3
24	87	25	8.6	2.9	1.9	4.3
25	324	12	28.9	0.4	0.2	0.7
26	35	2	2.3	0.9	0.1	3.2
27	62	2	4.8	0.4	0.0	1.5
28	318	22	29.3	0.8	0.5	1.1
29	48	1	4.5	0.2	0.0	1.2
30	216	35	21.4	1.6	1.1	2.3
31	119	8	6.4	1.3	0.5	2.5
32	307	22	41.6	0.5	0.3	0.8
33	12	2	0.9	2.3	0.3	8.2

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 5 and 12 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

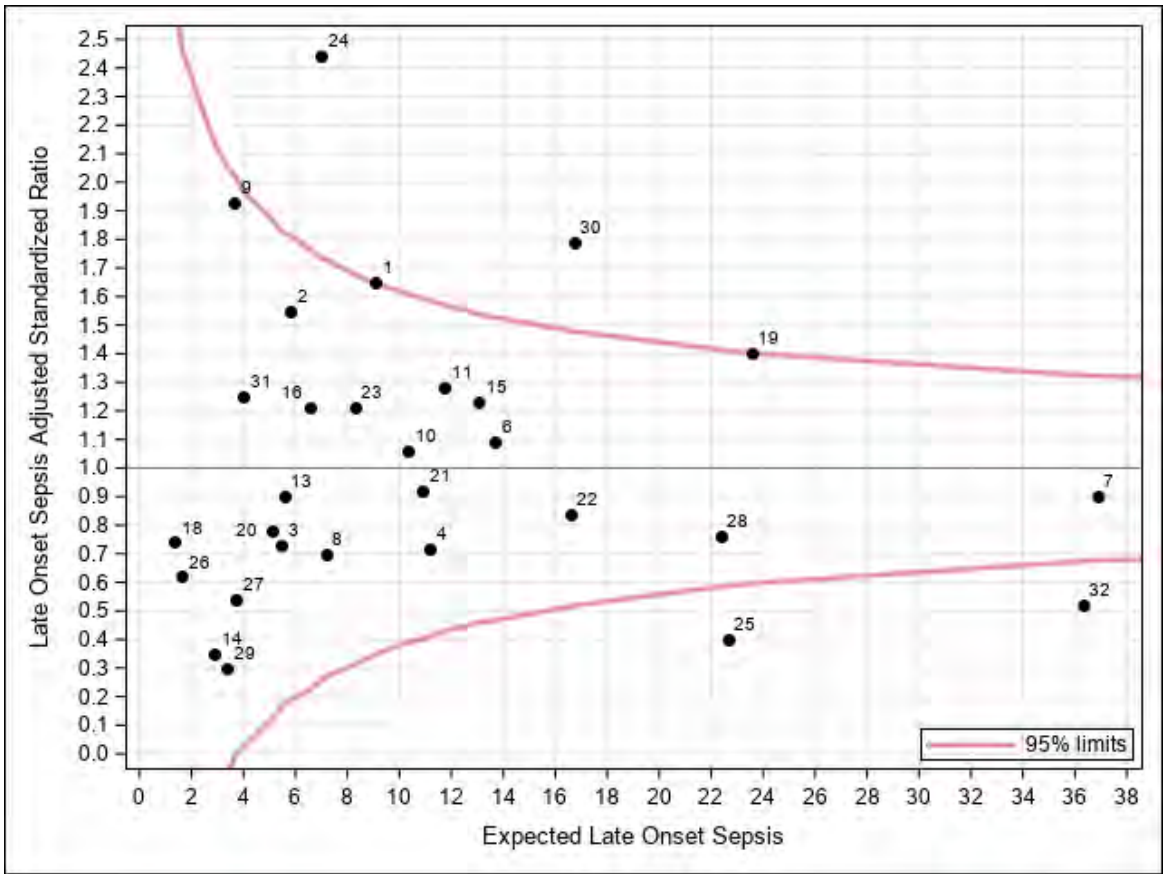
Site	Number of neonates	Number of NI	Adjusted# expected number of NI	Adjusted# standardized ratio	95% confidence interval (CI) for adjusted standardized ratio	
1	50	15	9.1	1.7	0.9	2.7
2	34	9	5.8	1.6	0.7	3.0
3	28	4	5.5	0.7	0.2	1.9
4	48	8	11.2	0.7	0.3	1.4
6	66	15	13.7	1.1	0.6	1.8
7	175	33	36.9	0.9	0.6	1.3
8	37	5	7.2	0.7	0.2	1.6
9	16	7	3.6	1.9	0.8	4.0
10	53	11	10.3	1.1	0.5	1.9
11	64	15	11.7	1.3	0.7	2.1
13	30	5	5.6	0.9	0.3	2.1
14	15	1	2.9	0.3	0.0	1.9
15	69	16	13.0	1.2	0.7	2.0
16	38	8	6.6	1.2	0.5	2.4
18	9	1	1.4	0.7	0.0	4.1
19	103	33	23.6	1.4	1.0	2.0
20	30	4	5.1	0.8	0.2	2.0
21	54	10	10.9	0.9	0.4	1.7
22	80	14	16.6	0.8	0.5	1.4
23	40	10	8.3	1.2	0.6	2.2
24	28	17	7.0	2.4	1.4	3.9
25	121	9	22.6	0.4	0.2	0.8
26	11	1	1.6	0.6	0.0	3.4
27	20	2	3.7	0.5	0.1	1.9
28	115	17	22.4	0.8	0.4	1.2
29	17	1	3.3	0.3	0.0	1.7
30	77	30	16.7	1.8	1.2	2.6
31	30	5	4.0	1.2	0.4	2.9
32	172	19	36.3	0.5	0.3	0.8

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 5, 12, 17, 33 were excluded from the analysis due to the small number of eligible neonates.

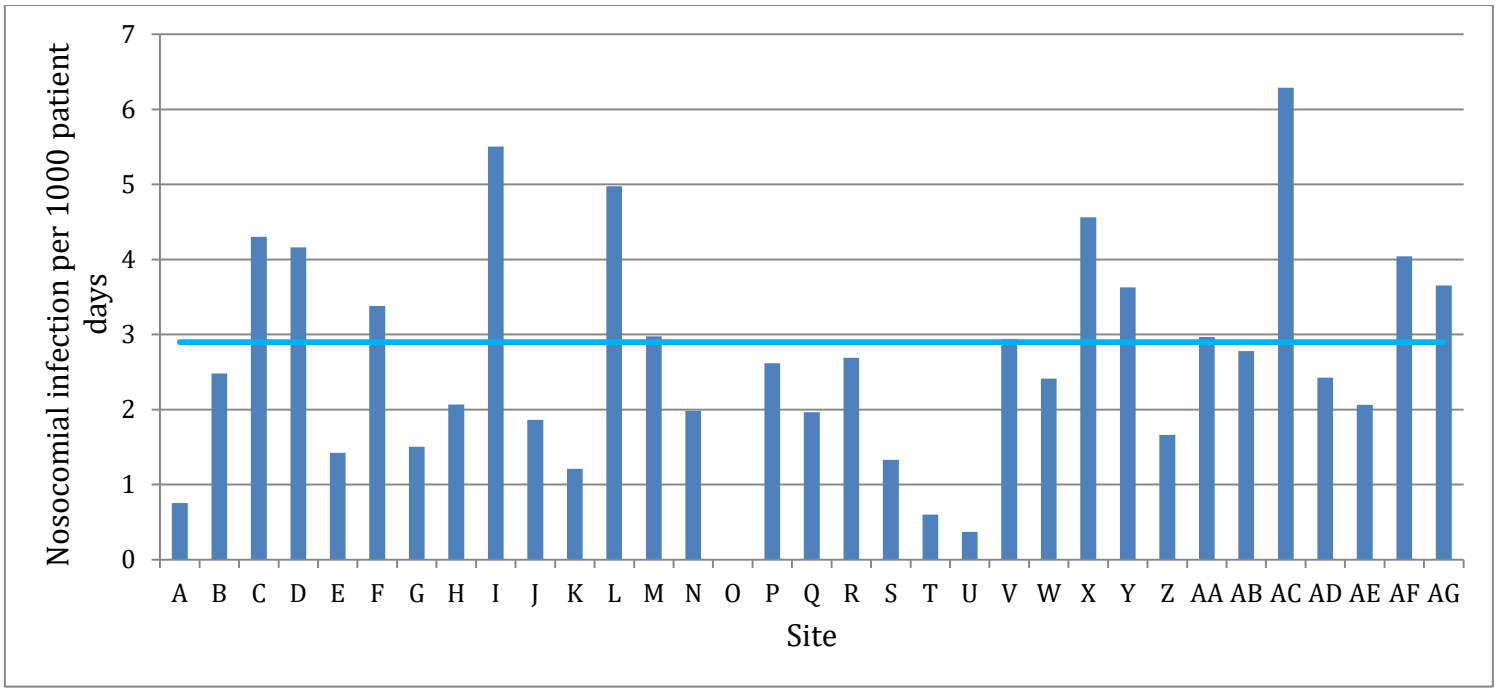
Presentation # 35d
Late onset sepsis: GA<29 weeks: Adjusted standardized ratios by site



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



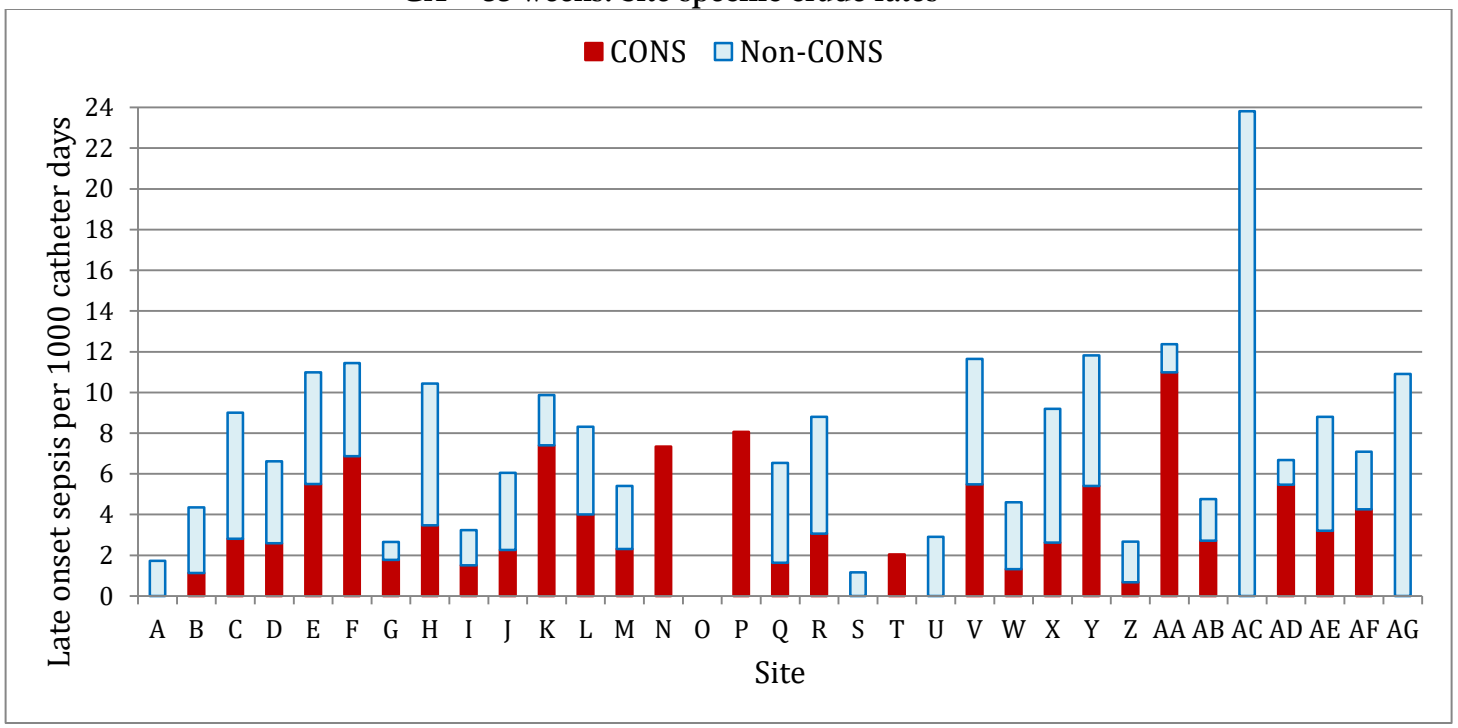
Site	Infections per 1000 patient days	Site	Infections per 1000 patient days	Site	Infections per 1000 patient days
A	0.8	**L**	5.0	**W**	2.4
B	2.5	**M**	3.0	**X**	4.6
C	4.3	**N**	2.0	**Y**	3.6
D	4.2	**O**	0.0	**Z**	1.7
E	1.4	**P**	2.6	**AA**	3.0
F	3.4	**Q**	2.0	**AB**	2.8
G	1.5	**R**	2.7	**AC**	6.3
H	2.1	**S**	1.3	**AD**	2.4
I	5.5	**T**	0.6	**AE**	2.1
J	1.9	**U**	0.4	**AF**	4.0
K	1.2	**V**	2.9	**AG**	3.7
				CNN	2.9

Total number of neonates = 4 469

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.

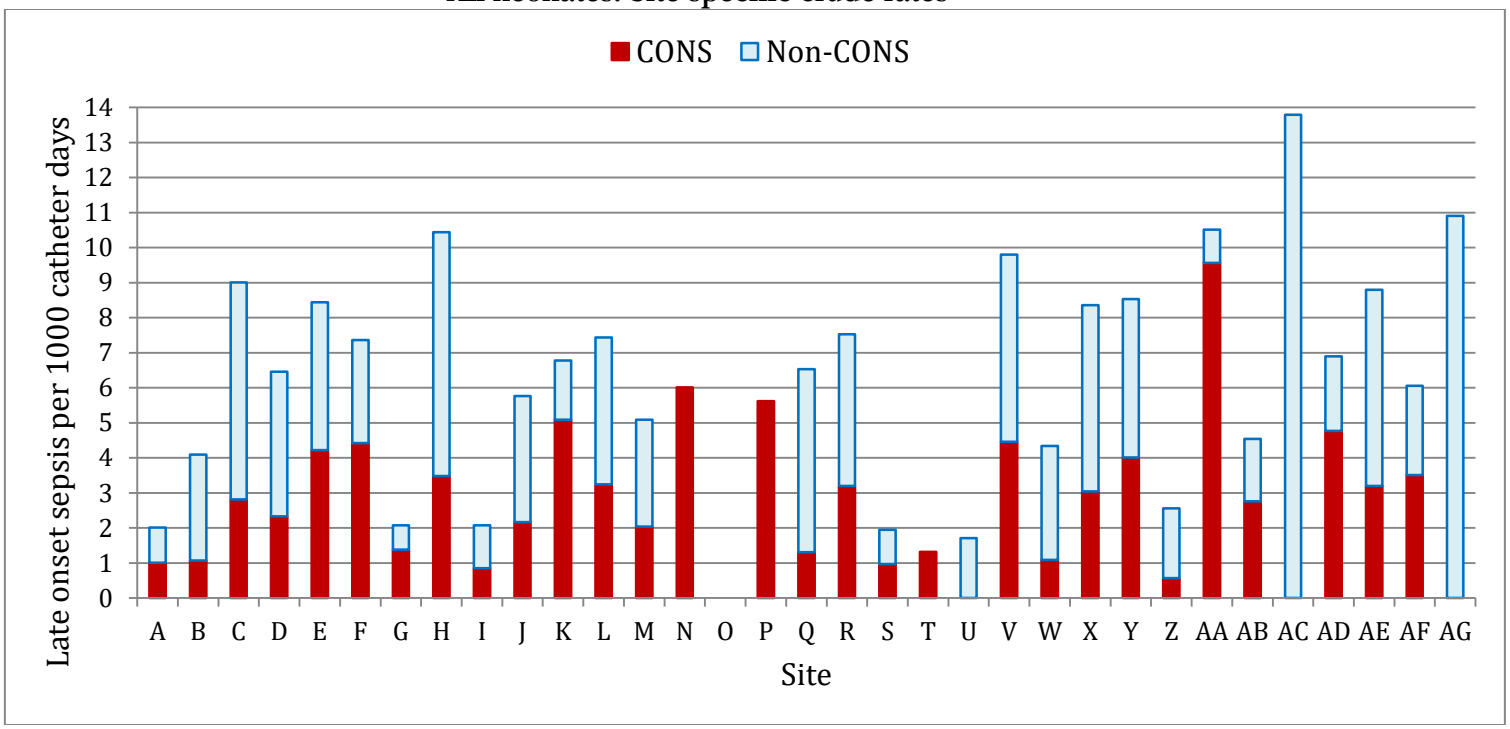
Presentation #37a
Central Line-Associated Bloodstream Infections per 1000 central line* days:
GA < 33 weeks: Site specific crude rates



Site	CLABSI**		Central line days	CLABSI per 1000 central line days		Site	CLABSI**		Central line days	CLABSI per 1000 central line days	
	CONS	Non-CONS		CONS	Non-CONS		CONS	Non-CONS		CONS	Non-CONS
A	0	1	577	0.0	1.7	**R**	8	15	2611	3.1	5.7
B	6	17	5277	1.1	3.2	**S**	0	1	863	0.0	1.2
C	5	11	1777	2.8	6.2	**T**	1	0	488	2.0	0.0
D	9	14	3476	2.6	4.0	**U**	0	1	344	0.0	2.9
E	1	1	182	5.5	5.5	**V**	8	9	1460	5.5	6.2
F	3	2	437	6.9	4.6	**W**	2	5	1521	1.3	3.3
G	2	1	1130	1.8	0.9	**X**	2	5	761	2.6	6.6
H	3	6	862	3.5	7.0	**Y**	16	19	2962	5.4	6.4
I	7	8	4625	1.5	1.7	**Z**	2	6	2992	0.7	2.0
J	6	10	2647	2.3	3.8	**AA**	8	1	728	11.0	1.4
K	3	1	405	7.4	2.5	**AB**	8	6	2938	2.7	2.0
L	13	14	3250	4.0	4.3	**AC**	0	2	84	0.0	23.8
M	6	8	2593	2.3	3.1	**AD**	9	2	1645	5.5	1.2
N	3	0	409	7.3	0.0	**AE**	4	7	1250	3.2	5.6
O	0	0	50	0.0	0.0	**AF**	9	6	2117	4.3	2.8
P	1	0	124	8.1	0.0	**AG**	0	7	642	0.0	10.9
Q	1	3	612	1.6	4.9	**CNN**	146	189	51839	2.8	3.6

*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

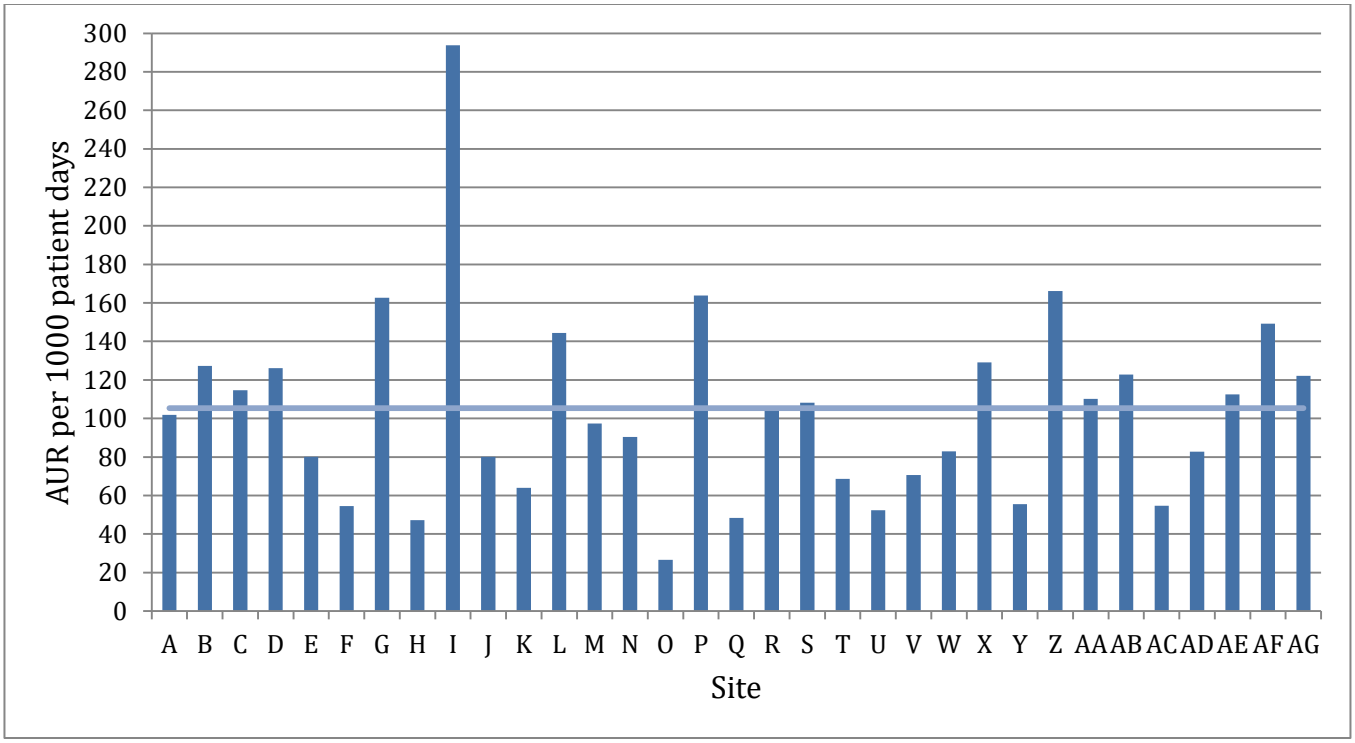


Site	CLABSI**		Central line days	CLABSI per 1000 central line days	
	CONS	Non-CONS		CONS	Non-CONS
A	1	1	993	1.0	1.0
B	6	17	5624	1.1	3.0
C	5	11	1777	2.8	6.2
D	9	16	3869	2.3	4.1
E	1	1	237	4.2	4.2
F	3	2	679	4.4	2.9
G	4	2	2898	1.4	0.7
H	3	6	862	3.5	7.0
I	7	10	8202	0.9	1.2
J	6	10	2775	2.2	3.6
K	3	1	590	5.1	1.7
L	17	22	5248	3.2	4.2
M	6	9	2949	2.0	3.1
N	3	0	499	6.0	0.0
O	0	0	122	0.0	0.0
P	1	0	178	5.6	0.0
Q	1	4	766	1.3	5.2

Site	CLABSI**		Central line days	CLABSI per 1000 central line days	
	CONS	Non-CONS		CONS	Non-CONS
R	14	19	4382	3.2	4.3
S	2	2	2057	1.0	1.0
T	1	0	758	1.3	0.0
U	0	1	584	0.0	1.7
V	10	12	2244	4.5	5.3
W	2	6	1843	1.1	3.3
X	4	7	1316	3.0	5.3
Y	24	27	5979	4.0	4.5
Z	2	7	3523	0.6	2.0
AA	10	1	1046	9.6	1.0
AB	14	9	5067	2.8	1.8
AC	0	2	145	0.0	13.8
AD	9	4	1886	4.8	2.1
AE	4	7	1250	3.2	5.6
AF	11	8	3137	3.5	2.6
AG	0	7	642	0.0	10.9
CNN	183	231	74127	2.5	3.1

*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*

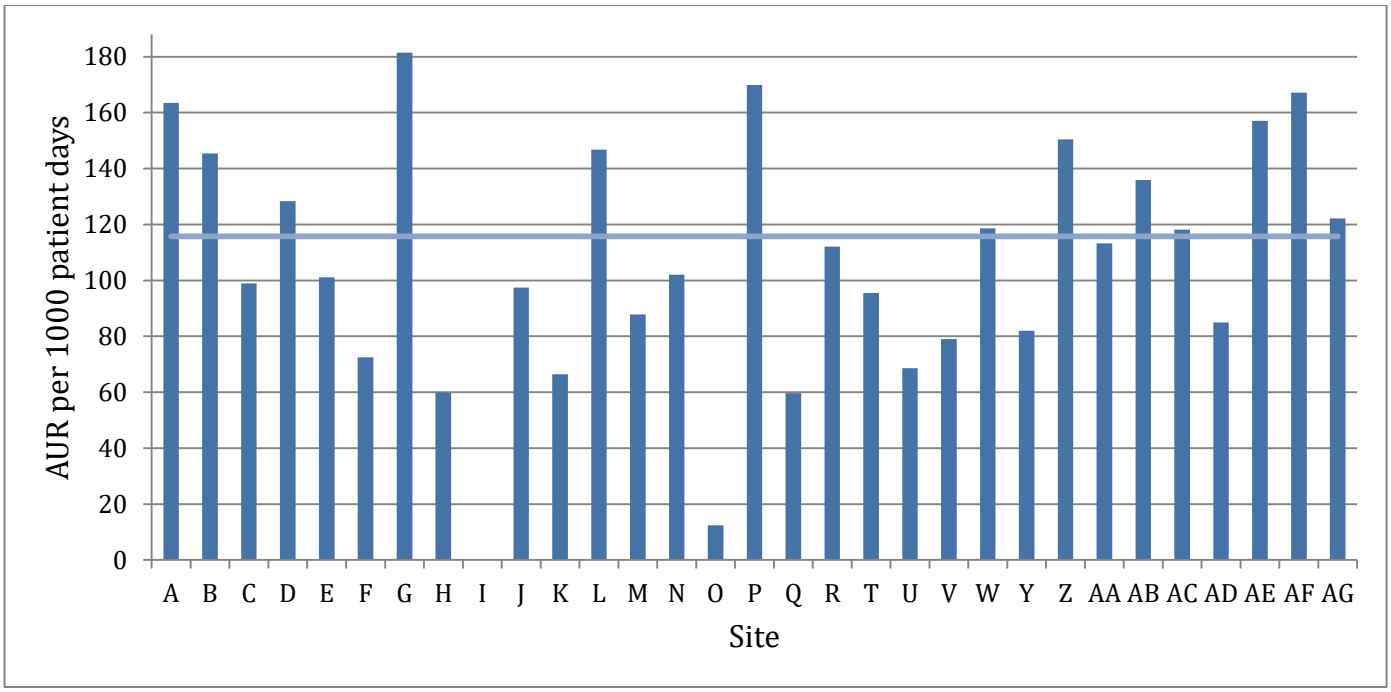


Site	Days of antimicrobial use per 1000 patient days	Site	Days of antimicrobial use per 1000 patient days	Site	Days of antimicrobial use per 1000 patient days
A	101.8	**L**	144.4	**W**	82.9
B	127.3	**M**	97.4	**X**	129.0
C	114.7	**N**	90.4	**Y**	55.5
D	126.1	**O**	26.5	**Z**	166.1
E	80.2	**P**	163.8	**AA**	110.2
F	54.5	**Q**	48.3	**AB**	122.8
G	162.6	**R**	105.2	**AC**	54.7
H	47.1	**S**	108.1	**AD**	82.8
I	293.5	**T**	68.6	**AE**	112.4
J	80.1	**U**	52.4	**AF**	149.2
K	64.0	**V**	70.6	**AG**	122.1
				CNN	105.3

*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*



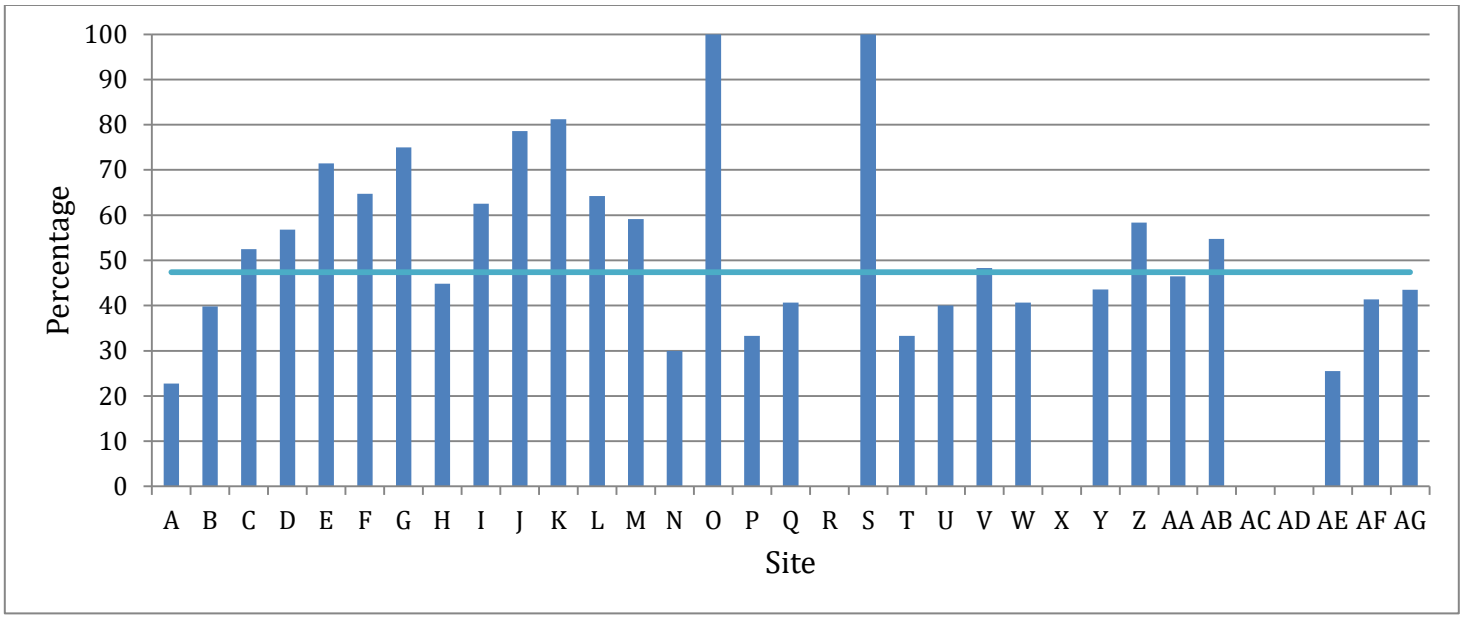
Site	Days of antimicrobial use per 1000 patient days	Site	Days of antimicrobial use per 1000 patient days	Site	Days of antimicrobial use per 1000 patient days
A	163.4	**L**	146.8	**W**	118.7
B	145.4	**M**	87.9	**Y**	82.0
C	98.9	**N**	102.0	**Z**	150.5
D	128.3	**O**	12.4	**AA**	113.2
E	101.1	**P**	169.8	**AB**	135.9
F	72.5	**Q**	59.6	**AC**	118.2
G	181.4	**R**	112.1	**AD**	85.0
H	59.9	**S**	95.5	**AE**	157.1
I	0.0	**T**	68.6	**AF**	167.2
J	97.5	**U**	79.0	**AG**	122.1
K	66.4	**V**	146.8	**CNN**	115.7

*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 S and X do not have any neonates with GA < 29.

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

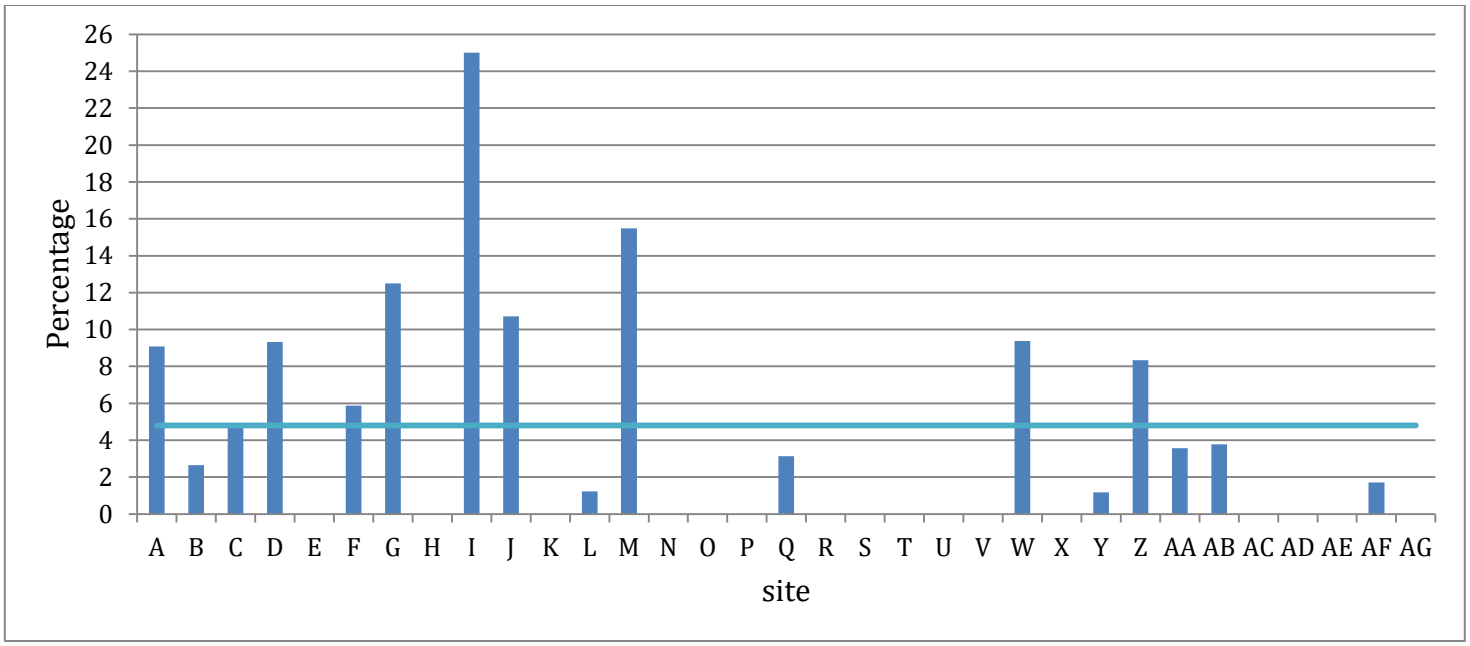
Presentation #40
Rate of treatment[#] for patent ductus arteriosus (PDA): GA<33 weeks who had PDA*:
Site specific crude rates



Site	Treatment[#] for PDA among neonates who had PDA (%)		Site	Treatment[#] for PDA among neonates who had PDA (%)
A	22.7		**R**	0.0
B	39.8		**S**	100.0
C	52.5		**T**	33.3
D	56.8		**U**	40.0
E	71.4		**V**	48.3
F	64.7		**W**	40.6
G	75.0		**X**	0.0
H	44.8		**Y**	43.5
I	62.5		**Z**	58.3
J	78.6		**AA**	46.4
K	81.3		**AB**	54.7
L	64.2		**AC**	0.0
M	59.2		**AD**	0.0
N	30.0		**AE**	25.5
O	100.0		**AF**	41.4
P	33.3		**AG**	43.5
Q	40.6		**CNN**	47.4

Total number of neonates who had PDA = 1 251
*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

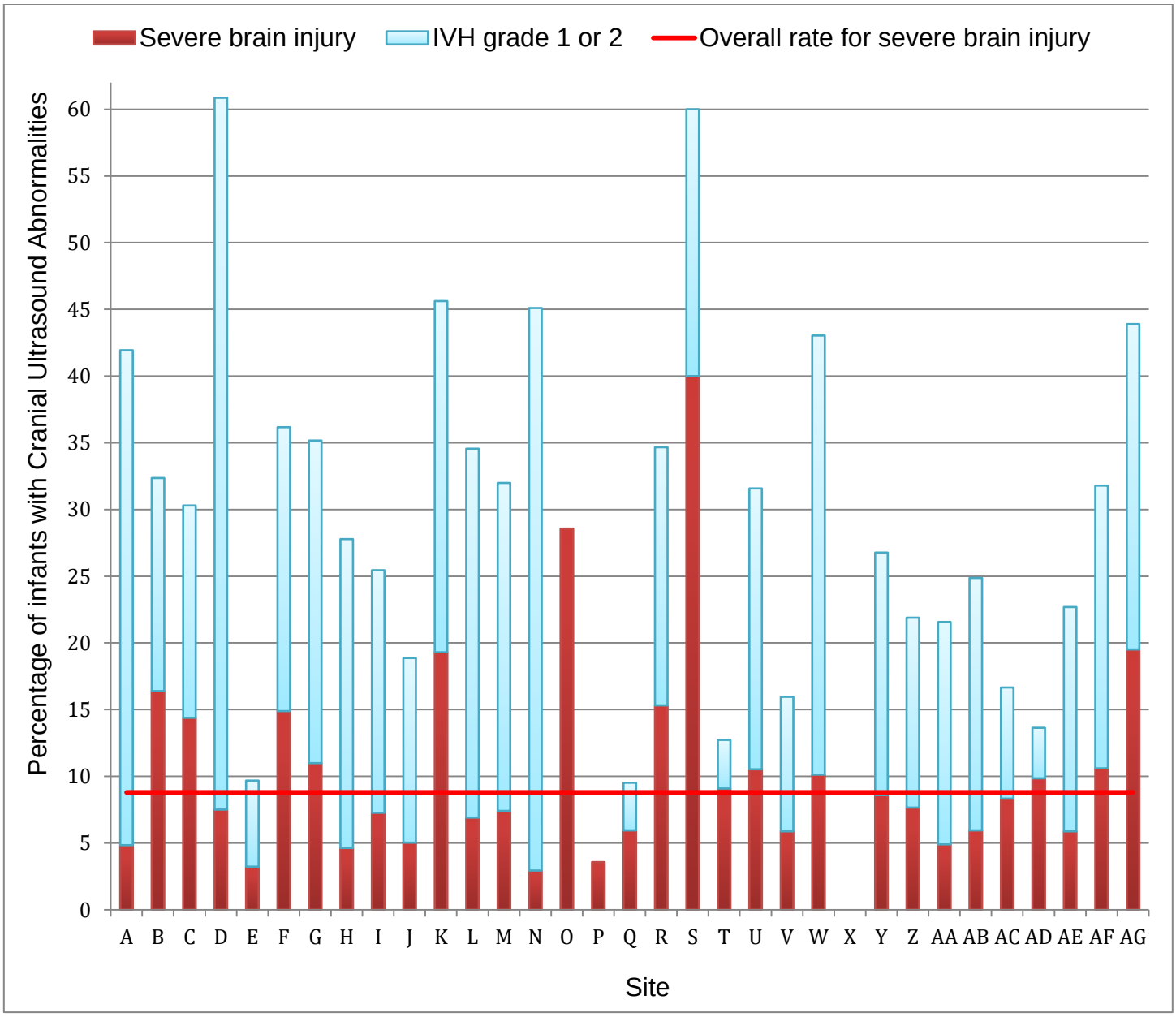


Site	Surgical ligation for PDA among neonates who had PDA (%)		Site	Surgical ligation for PDA among neonates who had PDA (%)
A	9.1		**R**	0.0
B	2.7		**S**	0.0
C	4.9		**T**	0.0
D	9.3		**U**	0.0
E	0.0		**V**	0.0
F	5.9		**W**	9.4
G	12.5		**X**	0.0
H	0.0		**Y**	1.2
I	25.0		**Z**	8.3
J	10.7		**AA**	3.6
K	0.0		**AB**	3.8
L	1.2		**AC**	0.0
M	15.5		**AD**	0.0
N	0.0		**AE**	0.0
O	0.0		**AF**	1.7
P	0.0		**AG**	0.0
Q	3.1		**CNN**	4.8

Total number of neonates who had PDA = 1 251

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

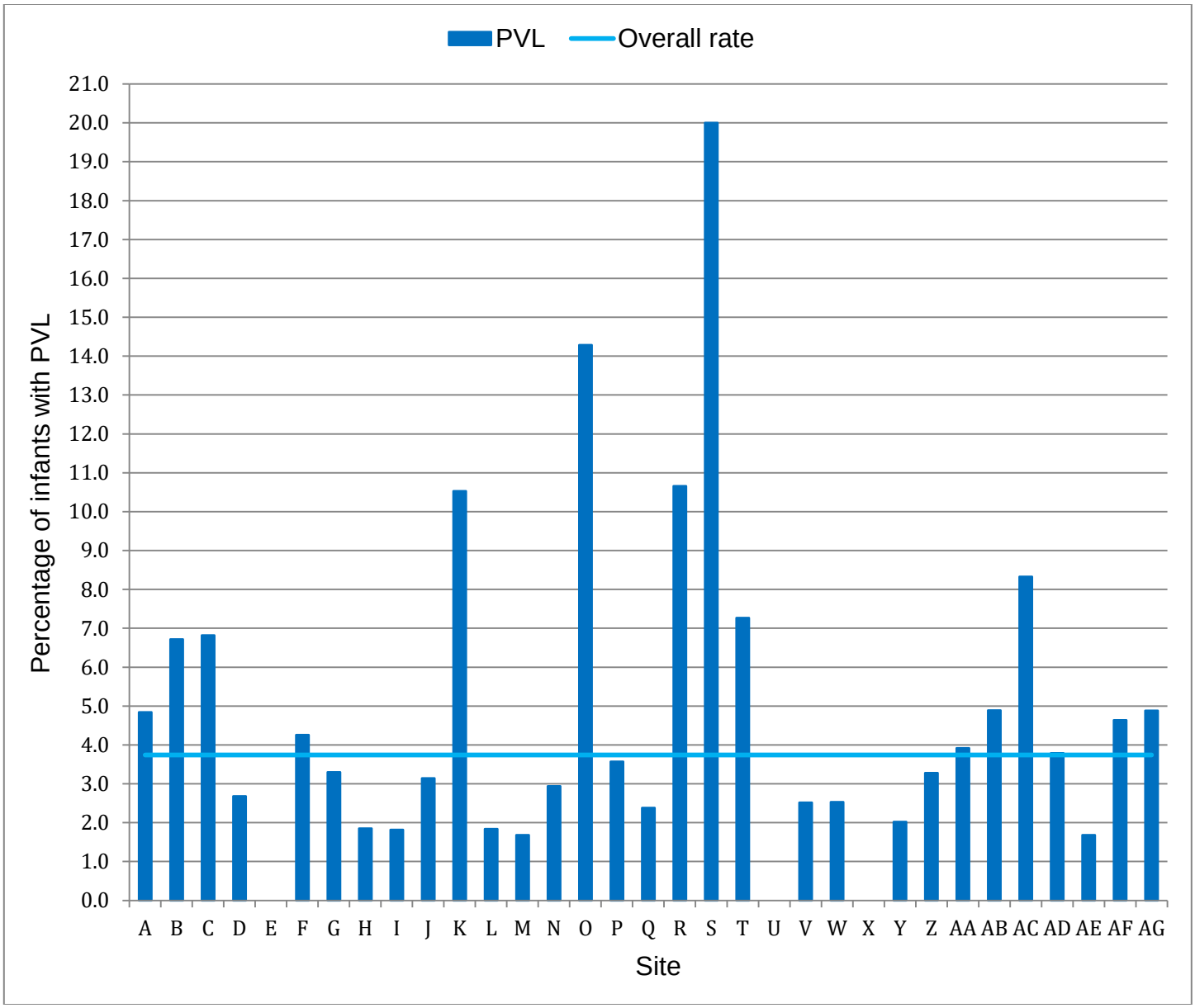
IVH grade 3 or 4 or PVL (severe brain injury) = Intraventricular hemorrhage **with** ventricular enlargement or persistent parenchymal echogenicity or periventricular leukomalacia

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	0.0	0.0	14.3	8.0	0.0	4.8
B	52.2	28.1	16.7	5.5	8.0	16.4
C	36.8	16.0	13.2	7.4	4.4	14.4
D	20.8	6.1	11.4	2.8	2.5	7.5
E	NA	0.0	11.1	0.0	0.0	3.2
F	33.3	37.5	20.0	14.3	0.0	14.9
G	33.3	28.6	5.9	8.3	8.1	11.0
H	0.0	0.0	4.0	10.3	2.1	4.6
I	0.0	100.0	16.7	0.0	0.0	7.3
J	0.0	14.8	4.8	4.9	1.6	5.0
K	0.0	46.7	10.0	12.5	7.1	19.3
L	13.3	14.3	5.6	4.8	1.9	6.9
M	18.9	7.7	8.2	2.7	4.3	7.4
N	20.0	0.0	0.0	4.2	2.3	2.9
O	NA	50.0	0.0	0.0	100.0	28.6
P	NA	25.0	0.0	0.0	0.0	3.6
Q	66.7	20.0	0.0	3.9	0.0	6.0
R	28.6	32.1	12.5	10.3	3.6	15.3
S	NA	NA	NA	NA	40.0	40.0
T	66.7	0.0	0.0	15.4	4.4	9.1
U	100.0	0.0	10.0	6.7	0.0	10.5
V	20.0	8.3	9.1	2.1	6.1	5.9
W	20.0	16.7	12.5	4.6	5.6	10.1
X	NA	NA	NA	0.0	0.0	0.0
Y	20.0	14.8	10.7	4.4	5.2	8.6
Z	30.4	7.9	10.0	4.3	2.4	7.7
AA	0.0	19.1	0.0	3.7	0.0	4.9
AB	22.2	14.3	5.9	4.8	1.7	6.0
AC	0.0	100.0	NA	0.0	0.0	8.3
AD	13.3	11.1	20.0	6.8	7.5	9.9
AE	18.2	7.7	3.6	5.7	3.1	5.9
AF	33.3	18.2	3.2	10.2	2.9	10.6
AG	50.0	23.1	0.0	NA	NA	19.5
Overall rate per GA group %**	25.2	16.1	8.6	5.4	3.5	8.8

Total number of neonates = 3 724
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	14.3	8.0	0.0	4.8
B	4.4	18.8	10.0	0.0	6.0	6.7
C	15.8	8.0	7.9	0.0	4.4	6.8
D	10.4	2.0	3.4	0.0	1.3	2.7
E	NA	0.0	0.0	0.0	0.0	0.0
F	0.0	12.5	0.0	7.1	0.0	4.3
G	0.0	0.0	5.9	4.2	2.7	3.3
H	0.0	0.0	0.0	6.9	0.0	1.9
I	0.0	33.3	0.0	0.0	0.0	1.8
J	0.0	3.7	4.8	4.9	1.6	3.1
K	0.0	20.0	10.0	6.3	7.1	10.5
L	0.0	5.7	2.8	1.6	0.0	1.8
M	2.7	0.0	2.7	2.7	0.0	1.7
N	20.0	0.0	0.0	4.2	2.3	2.9
O	NA	0.0	0.0	0.0	100.0	14.3
P	NA	25.0	0.0	0.0	0.0	3.6
Q	0.0	10.0	0.0	3.9	0.0	2.4
R	14.3	17.9	10.0	10.3	3.6	10.7
S	NA	NA	NA	NA	20.0	20.0
T	33.3	0.0	0.0	15.4	4.4	7.3
U	0.0	0.0	0.0	0.0	0.0	0.0
V	0.0	8.3	0.0	2.1	3.0	2.5
W	0.0	5.6	6.3	0.0	0.0	2.5
X	NA	NA	NA	0.0	0.0	0.0
Y	0.0	3.7	7.1	0.0	1.3	2.0
Z	21.7	0.0	3.3	2.9	0.0	3.3
AA	0.0	14.3	0.0	3.7	0.0	3.9
AB	11.1	14.3	6.1	3.2	1.7	4.9
AC	0.0	100.0	NA	0.0	0.0	8.3
AD	6.7	5.6	6.7	0.0	5.0	3.8
AE	0.0	0.0	3.6	0.0	3.1	1.7
AF	13.3	0.0	0.0	8.2	2.9	4.6
AG	10.0	7.7	0.0	NA	NA	4.9
Overall rate per GA group %**	7.1	6.6	4.0	2.8	1.9	3.7

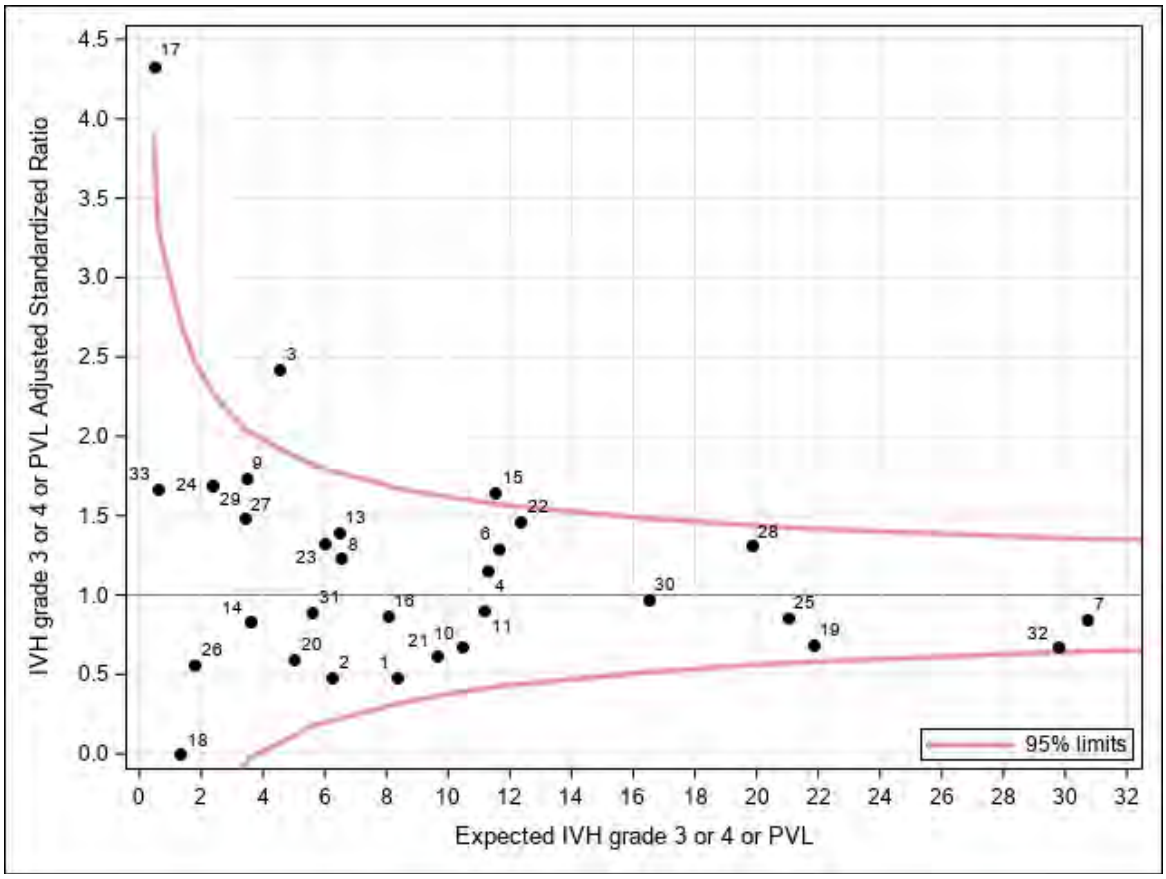
Total number of neonates = 3 724
Note that the proportion of neonates with neuroimaging data available varies by GA.
745 neonates were excluded due to neuroimaging data not available.
*Overall % = (number of neonates with PVL for site / total number of neonates for site) *100
**Overall % = (number of 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	116	100	4	8.4	0.5	0.1	1.2
2	102	100	3	6.3	0.5	0.1	1.4
3	78	56	11	4.5	2.4	1.2	4.3
4	155	130	13	11.3	1.2	0.6	2.0
6	176	141	15	11.7	1.3	0.7	2.1
7	390	355	26	30.7	0.8	0.6	1.2
8	108	77	8	6.5	1.2	0.5	2.4
9	58	46	6	3.4	1.7	0.6	3.8
10	166	153	7	10.4	0.7	0.3	1.4
11	213	174	10	11.2	0.9	0.4	1.6
13	103	86	9	6.4	1.4	0.6	2.7
14	76	60	3	3.6	0.8	0.2	2.4
15	150	121	19	11.5	1.7	1.0	2.6
16	140	116	7	8.0	0.9	0.3	1.8
17	14	7	2	0.5	4.3	0.5	15.6
18	29	26	0	1.3	0.0	.	2.8
19	293	210	15	21.8	0.7	0.4	1.1
20	94	81	3	5.0	0.6	0.1	1.7
21	148	113	6	9.7	0.6	0.2	1.4
22	179	130	18	12.4	1.5	0.9	2.3
23	41	40	8	6.0	1.3	0.6	2.6
24	60	47	4	2.4	1.7	0.5	4.3
25	321	268	18	21.0	0.9	0.5	1.4
26	35	31	1	1.8	0.6	0.0	3.1
27	61	53	5	3.4	1.5	0.5	3.4
28	292	208	26	19.8	1.3	0.9	1.9
29	48	38	4	2.4	1.7	0.5	4.3
30	206	188	16	16.5	1.0	0.6	1.6
31	121	107	5	5.6	0.9	0.3	2.1
32	313	295	20	29.8	0.7	0.4	1.0
33	12	12	1	0.6	1.7	0.0	9.3

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 5 and 12 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	49	49	4	6.1	0.7	0.2	1.7
2	36	35	1	3.9	0.3	0.0	1.4
3	28	26	8	3.3	2.4	1.0	4.8
4	47	47	7	7.9	0.9	0.4	1.8
6	66	65	10	8.9	1.1	0.5	2.1
7	179	177	21	23.9	0.9	0.5	1.3
8	39	39	6	5.0	1.2	0.4	2.6
9	16	15	4	2.0	2.0	0.5	5.0
10	55	54	5	6.9	0.7	0.2	1.7
11	60	60	6	6.8	0.9	0.3	1.9
13	30	28	4	3.9	1.0	0.3	2.6
14	18	16	1	1.9	0.5	0.0	2.9
15	65	65	15	8.8	1.7	0.9	2.8
16	39	39	4	4.8	0.8	0.2	2.1
18	9	8	0	0.7	0.0	.	5.0
19	106	99	11	17.0	0.6	0.3	1.2
20	29	29	3	3.1	1.0	0.2	2.9
21	51	50	4	7.0	0.6	0.2	1.5
22	81	80	15	10.7	1.4	0.8	2.3
23	41	40	8	5.9	1.3	0.6	2.7
24	12	12	4	1.3	3.0	0.8	7.8
25	120	118	15	15.2	1.0	0.6	1.6
26	11	11	1	1.0	1.0	0.0	5.6
27	20	18	2	2.2	0.9	0.1	3.4
28	108	104	23	15.0	1.5	1.0	2.3
29	17	14	3	1.4	2.1	0.4	6.2
30	76	74	11	12.0	0.9	0.5	1.6
31	33	32	1	2.8	0.4	0.0	2.0
32	177	173	16	24.7	0.6	0.4	1.1

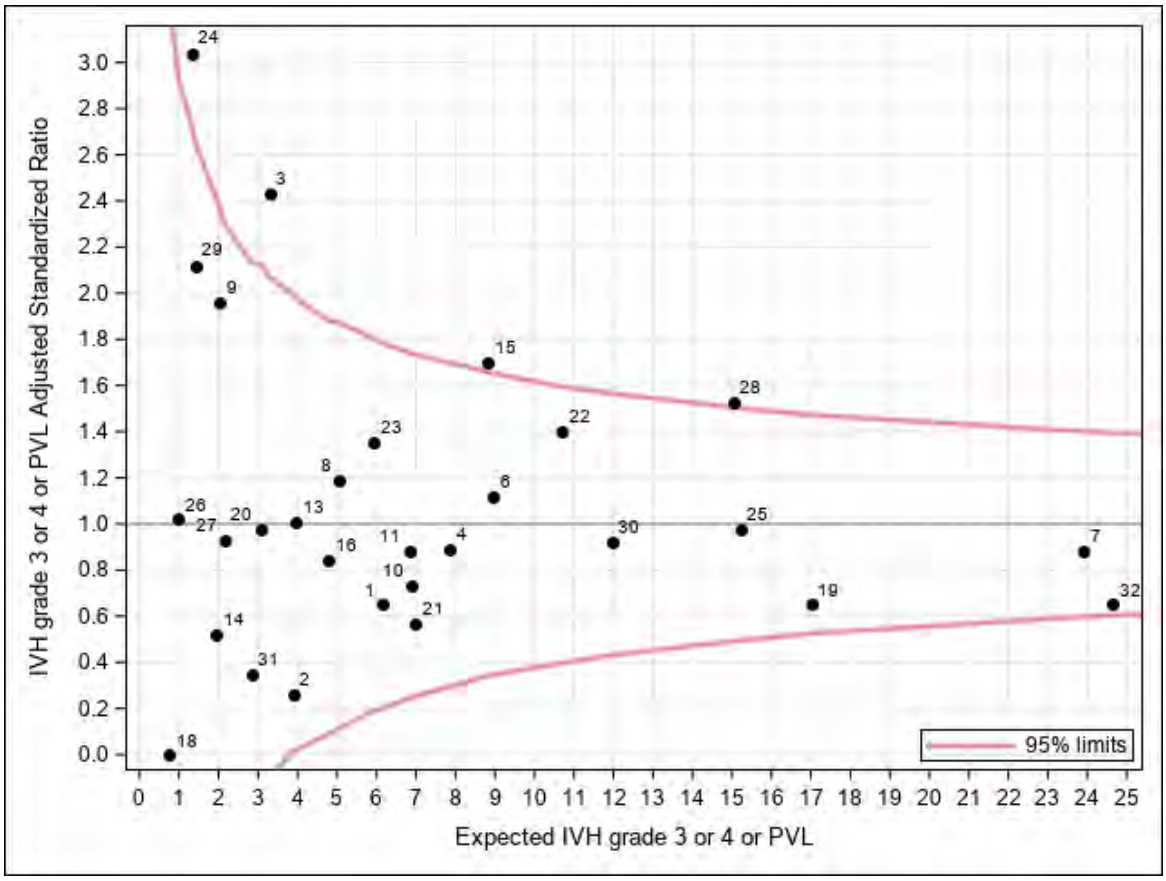
Numeric site codes were used in Presentations 44a-d and they may not correspond to other presentations in this report.

Neonates with major congenital anomalies are excluded.

The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.

Note: Sites 5, 12, 17, 33 were excluded from the analysis due to the small number of eligible neonates.

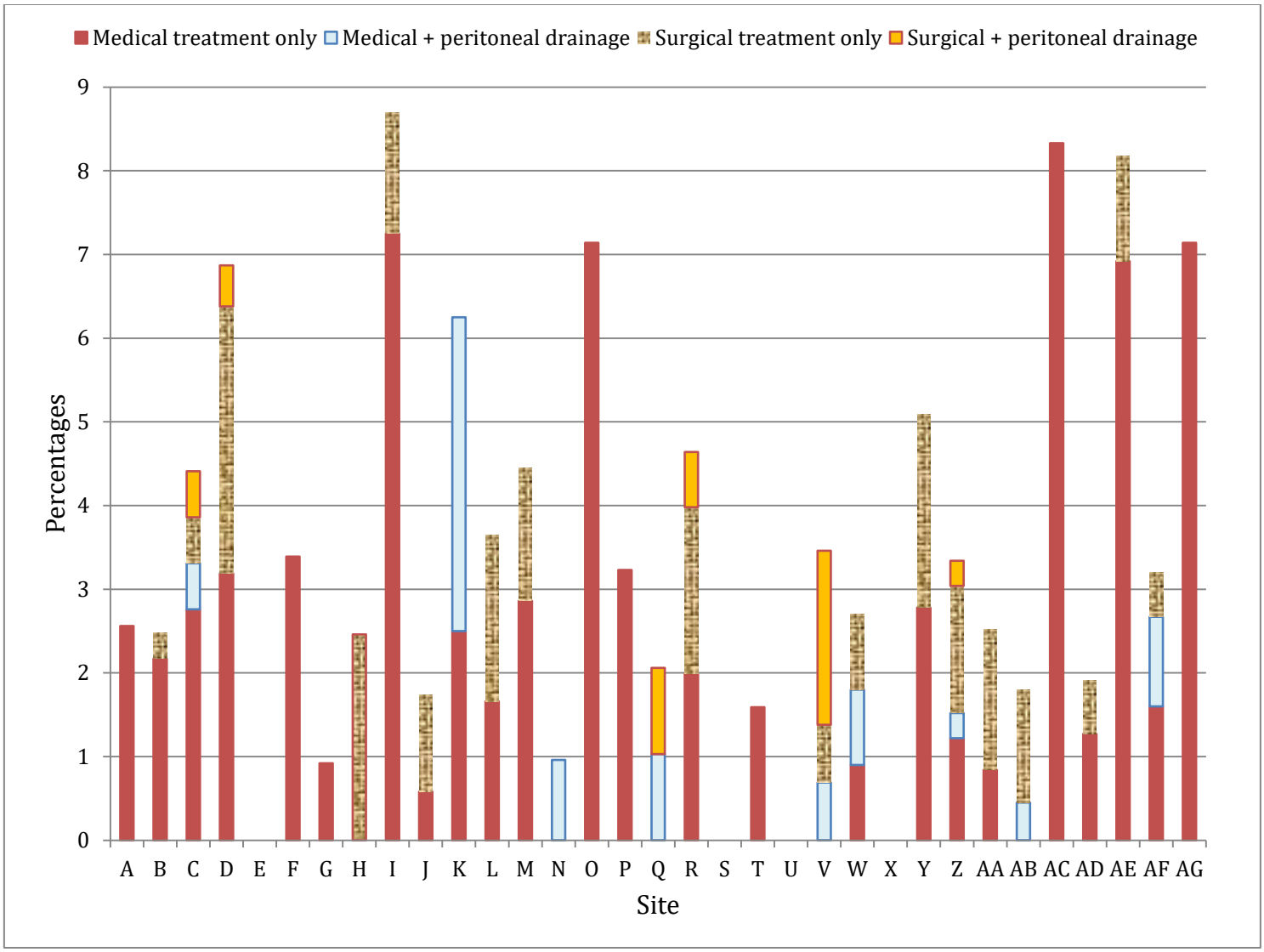
Presentation #44d
IVH grade 3 or 4 or PVL: GA<29 weeks: Adjusted standardized ratios by site



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	2.6	0.0	0.0	0.0	2.6
B	2.2	0.0	0.3	0.0	2.5
C	2.8	0.6	0.6	0.6	4.4
D	3.2	0.0	3.2	0.5	6.9
E	0.0	0.0	0.0	0.0	0.0
F	3.4	0.0	0.0	0.0	3.4
G	0.9	0.0	0.0	0.0	0.9
H	0.0	0.0	2.5	0.0	2.5
I	7.3	0.0	1.5	0.0	8.7
J	0.6	0.0	1.2	0.0	1.7
K	2.5	3.8	0.0	0.0	6.3
L	1.7	0.0	2.0	0.0	3.7
M	2.9	0.0	1.6	0.0	4.5
N	0.0	1.0	0.0	0.0	1.0
O	7.1	0.0	0.0	0.0	7.1
P	3.2	0.0	0.0	0.0	3.2
Q	0.0	1.0	0.0	1.0	2.1
R	2.0	0.0	2.0	0.7	4.6
S	0.0	0.0	0.0	0.0	0.0
T	1.6	0.0	0.0	0.0	1.6
U	0.0	0.0	0.0	0.0	0.0
V	0.0	0.7	0.7	2.1	3.5
W	0.9	0.9	0.9	0.0	2.7
X	0.0	0.0	0.0	0.0	0.0
Y	2.8	0.0	2.3	0.0	5.1
Z	1.2	0.3	1.5	0.3	3.3
AA	0.8	0.0	1.7	0.0	2.5
AB	0.0	0.5	1.4	0.0	1.8
AC	8.3	0.0	0.0	0.0	8.3
AD	1.3	0.0	0.6	0.0	1.9
AE	6.9	0.0	1.3	0.0	8.2
AF	1.6	1.1	0.5	0.0	3.2
AG	7.1	0.0	0.0	0.0	7.1
Total	2.0	0.3	1.3	0.2	3.7

COMMENTS: These analyses include 4 465 neonates from 33 sites.

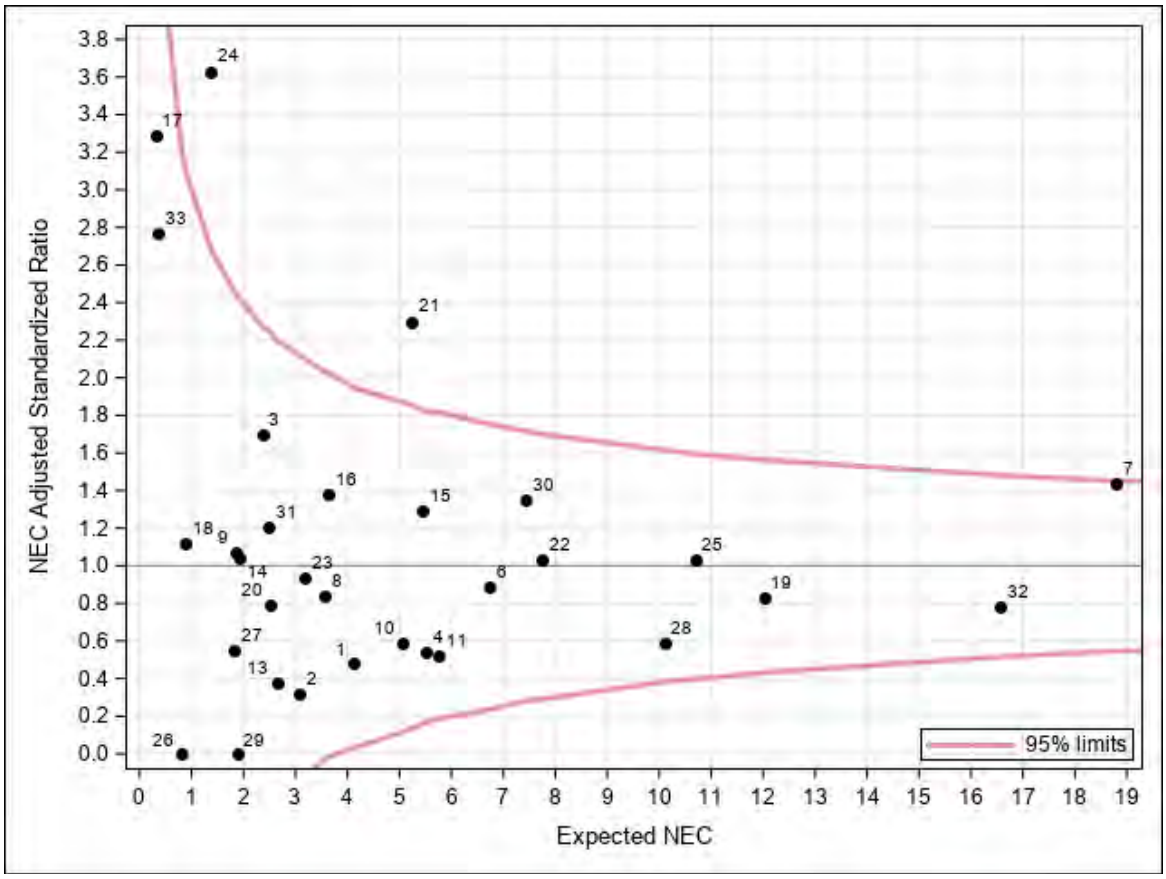
Presentation #46a

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	116	2	4.1	0.5	0.1	1.7
2	102	1	3.1	0.3	0.0	1.8
3	78	4	2.4	1.7	0.5	4.3
4	155	3	5.5	0.5	0.1	1.6
6	176	6	6.7	0.9	0.3	1.9
7	390	27	18.8	1.4	0.9	2.1
8	108	3	3.6	0.8	0.2	2.5
9	58	2	1.9	1.1	0.1	3.9
10	166	3	5.1	0.6	0.1	1.7
11	211	3	5.8	0.5	0.1	1.5
13	103	1	2.6	0.4	0.0	2.1
14	76	2	1.9	1.0	0.1	3.8
15	149	7	5.4	1.3	0.5	2.7
16	140	5	3.6	1.4	0.4	3.2
17	14	1	0.3	3.3	0.0	18.3
18	29	1	0.9	1.1	0.0	6.3
19	293	10	12.0	0.8	0.4	1.5
20	94	2	2.5	0.8	0.1	2.9
21	148	12	5.2	2.3	1.2	4.0
22	179	8	7.8	1.0	0.4	2.0
23	41	3	3.2	0.9	0.2	2.8
24	60	5	1.4	3.6	1.2	8.5
25	321	11	10.7	1.0	0.5	1.8
26	35	0	0.8	0.0	.	4.6
27	61	1	1.8	0.5	0.0	3.1
28	292	6	10.1	0.6	0.2	1.3
29	48	0	1.9	0.0	.	2.0
30	206	10	7.4	1.3	0.6	2.5
31	121	3	2.5	1.2	0.2	3.5
32	313	13	16.6	0.8	0.4	1.3
33	12	1	0.4	2.8	0.0	15.4

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 5 and 12 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	49	1	3.3	0.3	0.0	1.7
2	36	1	2.3	0.4	0.0	2.5
3	28	3	1.8	1.7	0.3	4.8
4	47	3	4.3	0.7	0.1	2.0
6	66	5	5.4	0.9	0.3	2.2
7	179	22	15.6	1.4	0.9	2.1
8	39	3	2.7	1.1	0.2	3.2
9	16	2	1.4	1.4	0.2	5.2
10	55	2	3.7	0.5	0.1	1.9
11	60	0	3.8	0.0	.	1.0
13	30	1	1.8	0.6	0.0	3.1
14	18	2	1.3	1.6	0.2	5.8
15	64	5	4.4	1.1	0.4	2.7
16	39	3	2.3	1.3	0.3	3.7
18	9	1	0.6	1.8	0.0	9.9
19	106	8	10.0	0.8	0.3	1.6
20	29	2	1.7	1.2	0.1	4.2
21	51	9	4.2	2.1	1.0	4.1
22	81	7	6.5	1.1	0.4	2.2
23	41	3	3.1	1.0	0.2	2.8
24	12	0	0.9	0.0	.	4.2
25	120	11	8.2	1.3	0.7	2.4
26	11	0	0.5	0.0	.	7.4
27	20	1	1.4	0.7	0.0	3.9
28	108	4	8.0	0.5	0.1	1.3
29	17	0	1.4	0.0	.	2.6
30	76	9	5.9	1.5	0.7	2.9
31	33	1	1.5	0.7	0.0	3.7
32	177	12	14.6	0.8	0.4	1.4

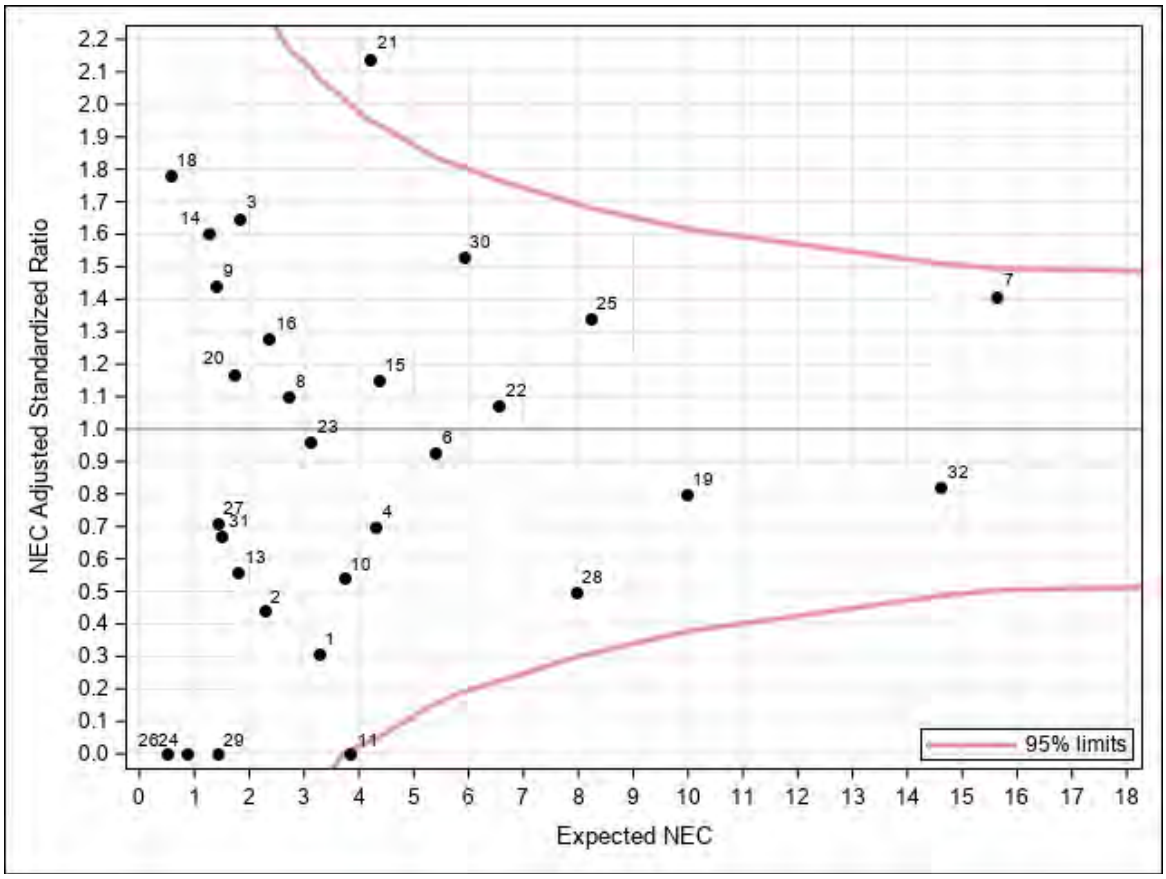
Numeric site codes were used in Presentations 46a-d and they may not correspond to other presentations in this report.

Neonates with major congenital anomalies are excluded.

The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.

Note: Sites 5, 12, 17, 33 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	83.3	71.4	8.0	8.6	22.7
B	81.3	50.0	31.7	22.2	8.9	25.0
C	90.9	65.2	36.1	16.7	1.6	27.0
D	86.1	73.3	54.3	29.4	21.1	42.9
E	NA	50.0	25.0	10.0	7.1	14.7
F	NA	100.0	25.0	21.4	0.0	22.2
G	100.0	100.0	37.5	21.7	7.8	21.9
H	100.0	40.0	62.5	13.8	18.3	28.3
I	100.0	100.0	83.3	60.0	29.4	48.3
J	100.0	84.6	63.2	40.0	21.3	43.0
K	NA	60.0	33.3	6.3	0.0	14.5
L	100.0	81.3	63.6	28.8	11.8	36.6
M	55.2	31.2	21.6	9.3	1.7	19.9
N	100.0	83.3	33.3	12.5	6.8	23.3
O	NA	50.0	0.0	33.3	0.0	14.3
P	NA	66.7	33.3	11.1	0.0	17.2
Q	100.0	37.5	18.8	8.3	0.0	10.1
R	100.0	52.0	38.7	13.8	7.1	25.0
S	NA	NA	NA	NA	60.0	60.0
T	100.0	33.3	30.0	7.7	6.9	15.3
U	100.0	100.0	22.2	14.3	6.3	22.7
V	50.0	55.6	38.1	19.6	12.1	22.1
W	100.0	50.0	42.9	13.6	0.0	19.1
X	NA	NA	NA	0.0	0.0	0.0
Y	100.0	70.8	56.0	35.6	19.8	39.1
Z	100.0	94.6	55.9	36.5	11.5	40.1
AA	100.0	76.5	26.1	7.4	7.3	23.6
AB	100.0	50.0	58.8	14.9	9.9	25.5
AC	NA	0.0	NA	0.0	0.0	0.0
AD	64.3	43.8	33.3	8.9	7.8	19.5
AE	100.0	100.0	96.7	73.7	64.2	77.0
AF	55.6	68.4	53.6	18.4	3.0	25.7
AG	100.0	88.9	58.8	NA	NA	74.2
Overall CLD rate for GA group	85.5	64.6	45.7	22.9	12.5	30.8

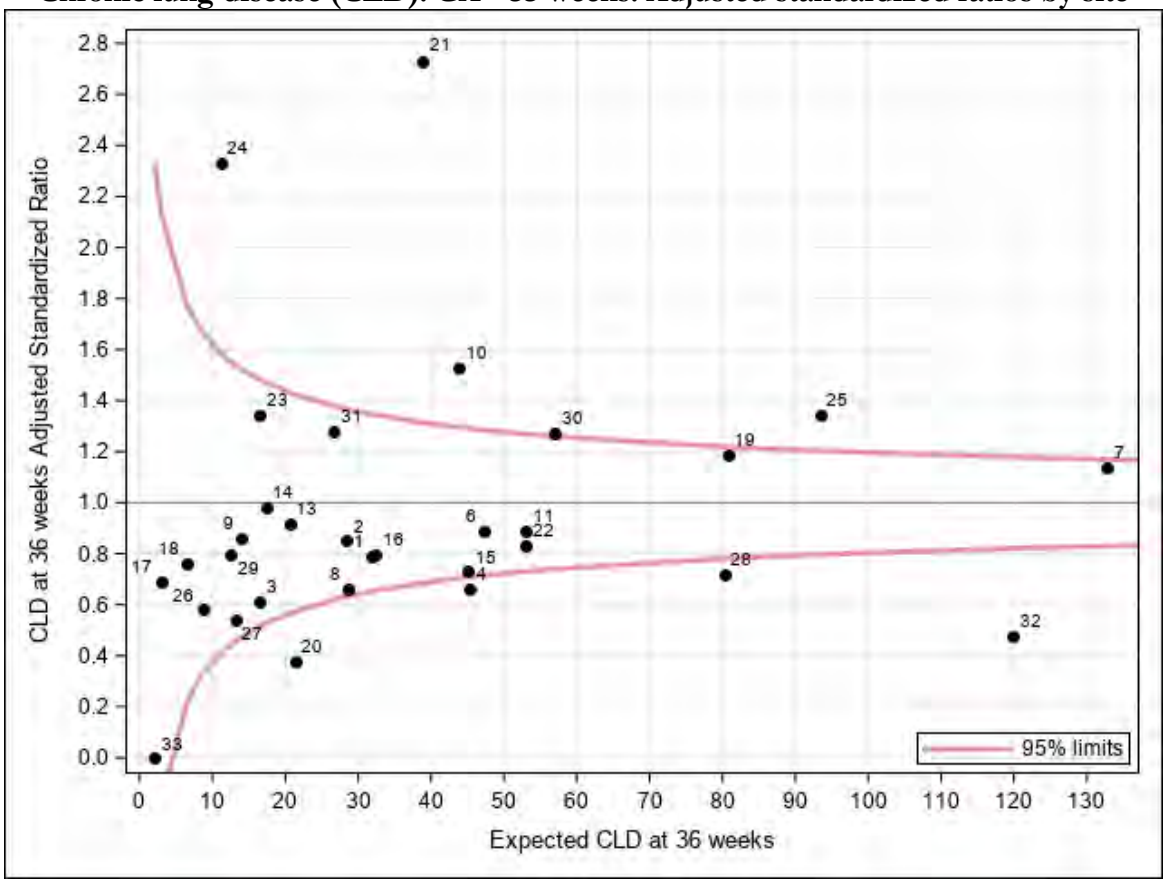
Total number of neonates = 4 188
281 neonates were excluded due to death prior to week 36 or first admission after week 36
NA = Data not available

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	116	108	25	31.8	0.8	0.5	1.2
2	102	101	24	28.4	0.8	0.5	1.3
3	78	68	10	16.5	0.6	0.3	1.1
4	155	152	30	45.3	0.7	0.4	0.9
6	176	164	42	47.2	0.9	0.6	1.2
7	390	365	151	132.9	1.1	1.0	1.3
8	108	102	19	28.7	0.7	0.4	1.0
9	58	54	12	14.0	0.9	0.4	1.5
10	166	159	67	43.8	1.5	1.2	1.9
11	213	207	47	53.0	0.9	0.7	1.2
13	103	92	19	20.5	0.9	0.6	1.4
14	76	73	17	17.3	1.0	0.6	1.6
15	150	141	33	45.1	0.7	0.5	1.0
16	140	132	26	32.3	0.8	0.5	1.2
17	14	14	2	2.9	0.7	0.1	2.5
18	29	27	5	6.6	0.8	0.2	1.8
19	293	271	96	80.8	1.2	1.0	1.5
20	94	87	8	21.3	0.4	0.2	0.7
21	148	141	106	38.9	2.7	2.2	3.3
22	179	166	44	53.0	0.8	0.6	1.1
23	41	30	22	16.5	1.3	0.8	2.0
24	60	51	26	11.2	2.3	1.5	3.4
25	321	313	125	93.4	1.3	1.1	1.6
26	35	34	5	8.7	0.6	0.2	1.3
27	61	57	7	13.1	0.5	0.2	1.1
28	292	273	58	80.2	0.7	0.5	0.9
29	48	44	10	12.6	0.8	0.4	1.5
30	206	188	72	56.9	1.3	1.0	1.6
31	121	119	34	26.7	1.3	0.9	1.8
32	313	295	58	119.9	0.5	0.4	0.6
33	12	11	0	2.1	0.0	.	1.8

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 5 and 12 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.

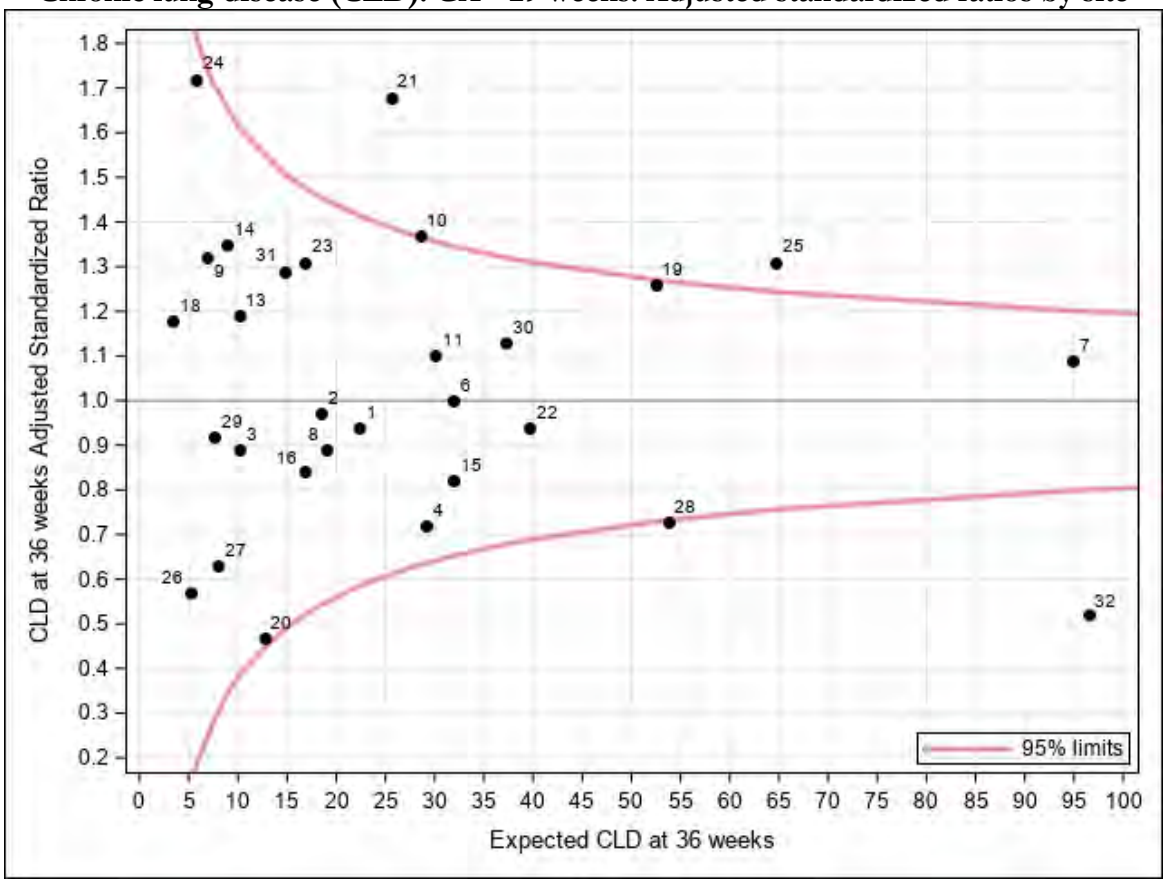
Presentation #48c
Chronic lung disease (CLD): GA <29 weeks: Adjusted standardized ratios by site

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	49	42	21	22.3	0.9	0.6	1.4
2	36	35	18	18.5	1.0	0.6	1.5
3	28	19	9	10.2	0.9	0.4	1.7
4	47	44	21	29.1	0.7	0.4	1.1
6	66	55	32	31.9	1.0	0.7	1.4
7	179	156	103	94.9	1.1	0.9	1.3
8	39	33	17	19.1	0.9	0.5	1.4
9	16	12	9	6.8	1.3	0.6	2.5
10	55	49	39	28.5	1.4	1.0	1.9
11	60	55	33	30.1	1.1	0.8	1.5
13	30	21	12	10.1	1.2	0.6	2.1
14	18	15	12	8.9	1.3	0.7	2.4
15	65	57	26	31.9	0.8	0.5	1.2
16	39	32	14	16.7	0.8	0.5	1.4
18	9	7	4	3.4	1.2	0.3	3.0
19	106	84	66	52.5	1.3	1.0	1.6
20	29	24	6	12.7	0.5	0.2	1.0
21	51	44	43	25.5	1.7	1.2	2.3
22	81	69	37	39.5	0.9	0.7	1.3
23	41	30	22	16.8	1.3	0.8	2.0
24	12	11	10	5.8	1.7	0.8	3.2
25	120	112	85	64.7	1.3	1.0	1.6
26	11	10	3	5.2	0.6	0.1	1.7
27	20	16	5	7.9	0.6	0.2	1.5
28	108	96	39	53.7	0.7	0.5	1.0
29	17	14	7	7.6	0.9	0.4	1.9
30	76	60	42	37.1	1.1	0.8	1.5
31	33	31	19	14.7	1.3	0.8	2.0
32	177	162	50	96.4	0.5	0.4	0.7

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 5, 12, 17, 33 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



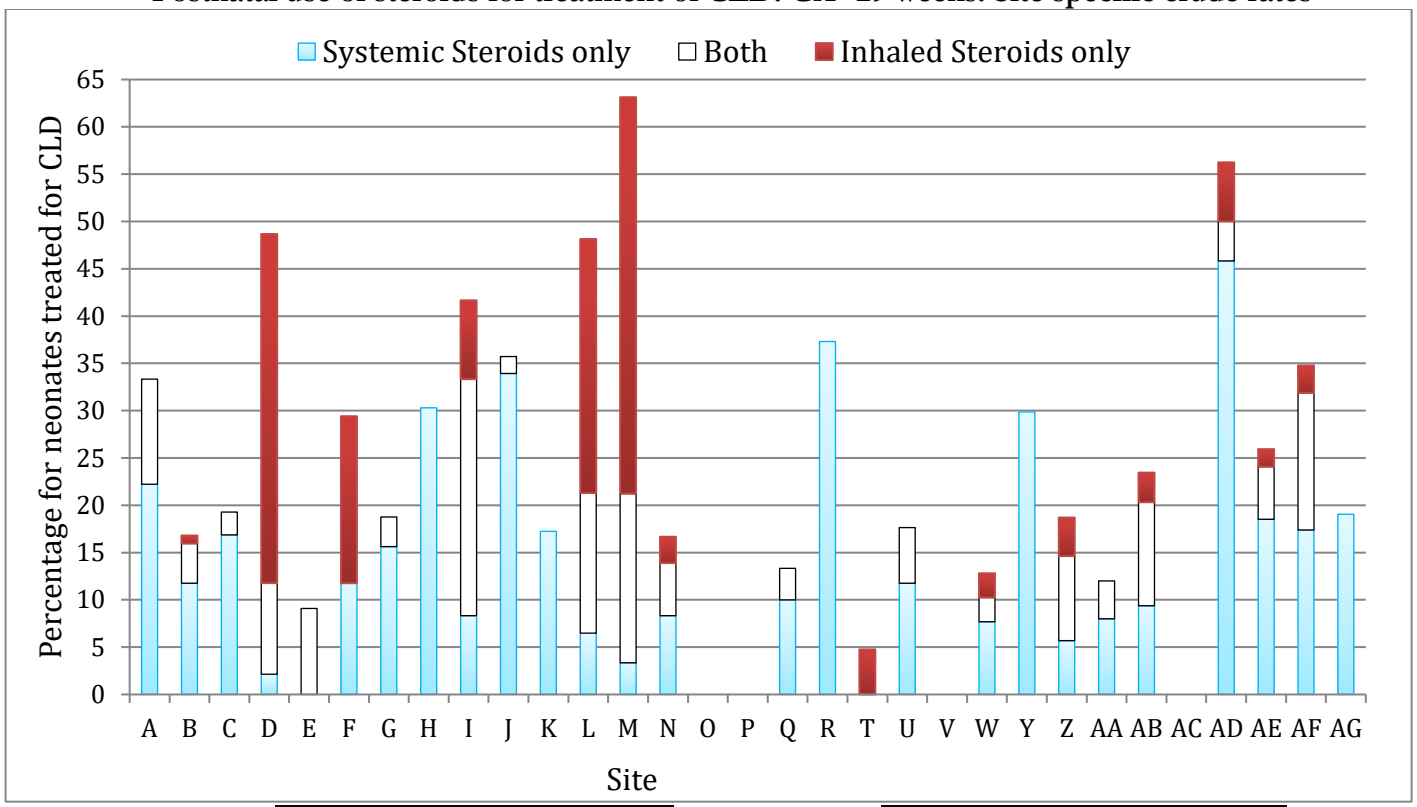
Explanation for Presentation 48c
Column 1: Numeric site codes
Column 2: Total number of neonates at each site (<29 weeks GA and no major anomaly)
Column 3: Number of eligible neonates at each site (<29 weeks GA and no major anomaly) who were actually used to fit the model
Column 4: Number of neonates 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	22.2	11.1	0.0
B	11.8	4.2	0.8
C	16.9	2.4	0.0
D	2.1	9.6	36.9
E	0.0	9.1	0.0
F	11.8	0.0	17.7
G	15.6	3.1	0.0
H	30.3	0.0	0.0
I	8.3	25.0	8.3
J	33.9	1.8	0.0
K	17.2	0.0	0.0
L	6.5	14.8	26.9
M	3.4	17.9	41.9
N	8.3	5.6	2.8
O	0.0	0.0	0.0
P	0.0	0.0	0.0

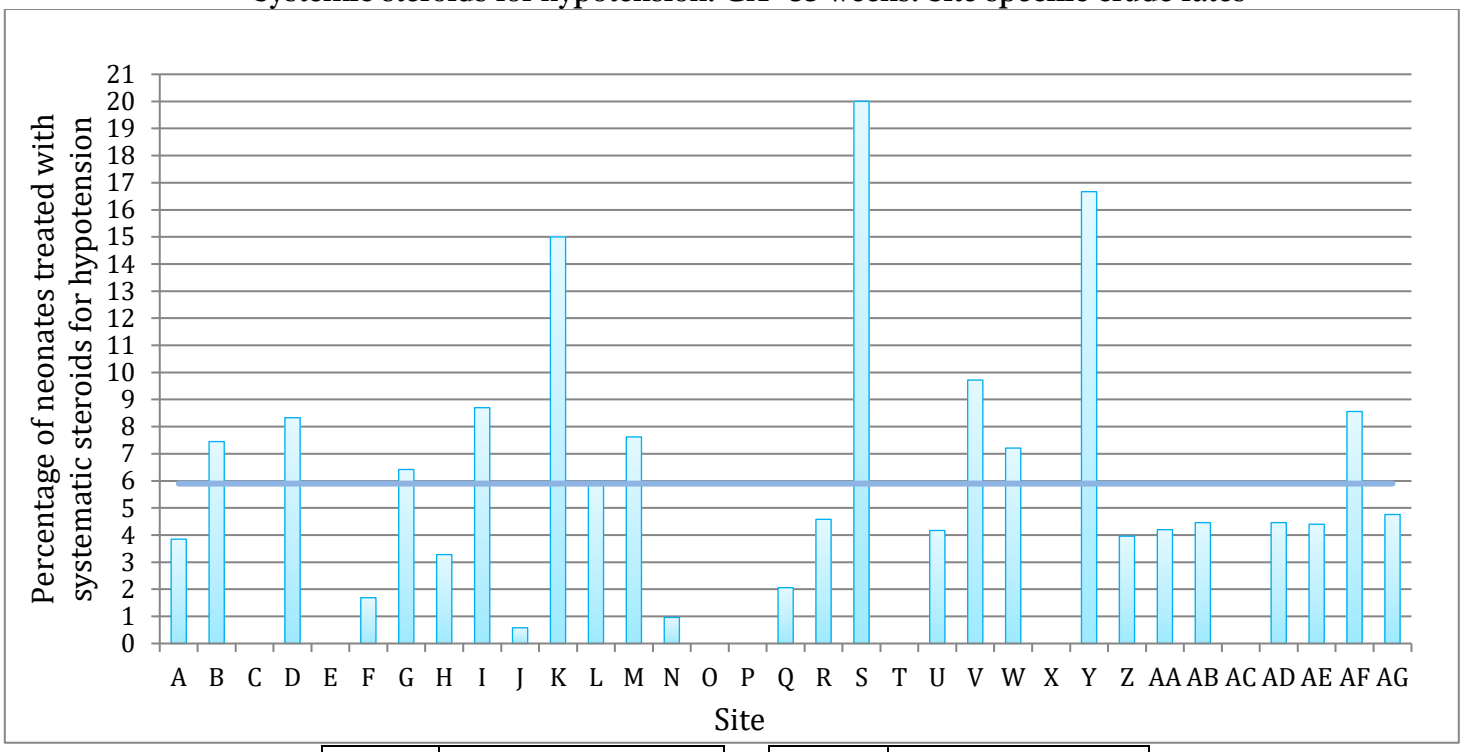
Site	Postnatal steroid use (%)		
	Systemic Steroids only	Both	Inhaled Steroids only
Q	10.0	3.3	0.0
R	37.3	0.0	0.0
T	0.0	0.0	4.8
U	11.8	5.9	0.0
V	0.0	0.0	0.0
W	7.7	2.6	2.6
Y	29.9	0.0	0.0
Z	5.7	8.9	4.1
AA	8.0	4.0	0.0
AB	9.4	10.9	3.1
AC	0.0	0.0	0.0
AD	45.8	4.2	6.3
AE	18.5	5.6	1.9
AF	17.4	14.5	2.9
AG	19.1	0.0	0.0
Total	13.1	7.2	11.6

Total number of neonates = 1 676

† Percentage of neonates treated for CLD at each network site; results were attributed to the site of first admission; Sites S and X 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	3.9
B	7.5
C	0.0
D	8.3
E	0.0
F	1.7
G	6.4
H	3.3
I	8.7
J	0.6
K	15.0
L	6.0
M	7.6
N	1.0
O	0.0
P	0.0
Q	2.1

Site	Postnatal systemic steroids use for hypotension (%)
R	4.6
S	20.0
T	0.0
U	4.2
V	9.7
W	7.2
X	0.0
Y	16.7
Z	4.0
AA	4.2
AB	4.5
AC	0.0
AD	4.5
AE	4.4
AF	8.6
AG	4.8
Total	5.9

Total number of neonates = 4 469

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

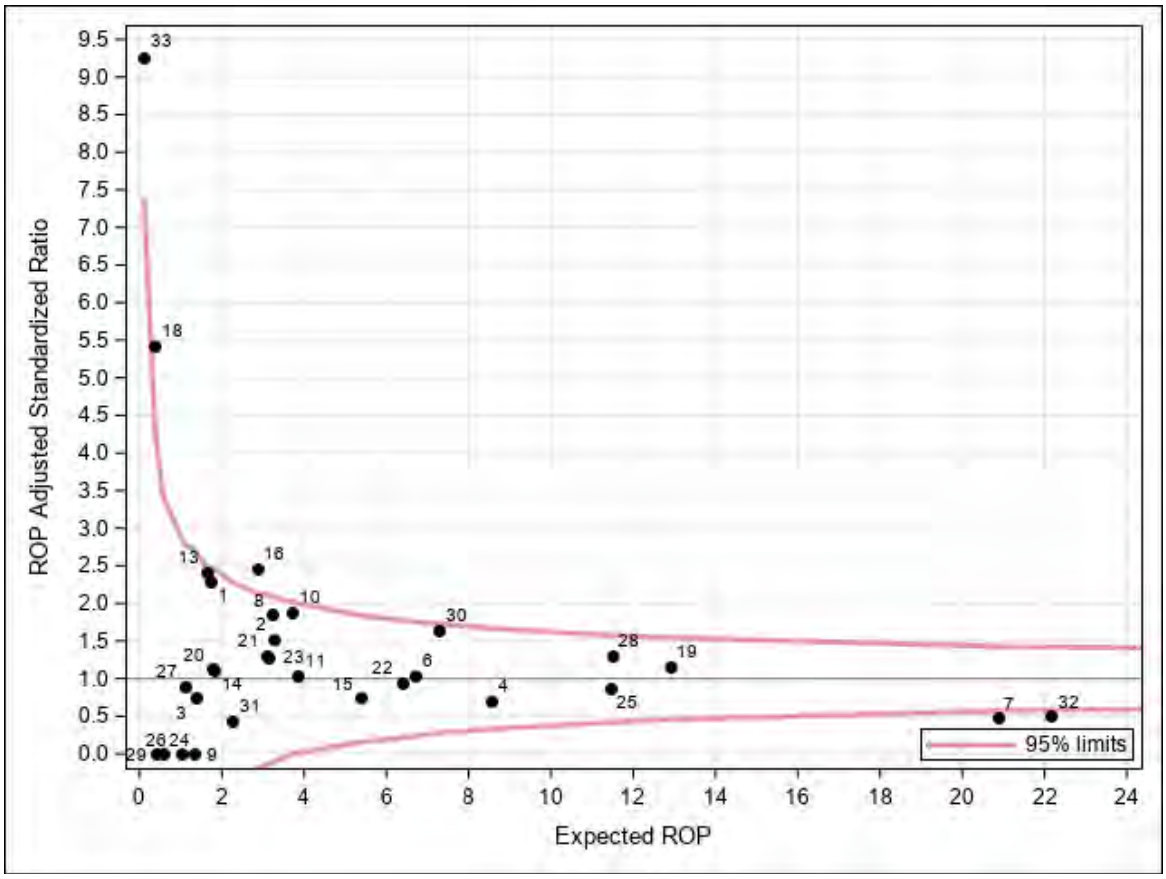
COMMENTS: Specific criteria for these treatments at each site were not documented here.

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	116	17	4	1.7	2.3	0.6	5.9
2	102	57	5	3.3	1.5	0.5	3.6
3	78	35	1	1.4	0.7	0.0	4.1
4	155	93	6	8.6	0.7	0.3	1.5
6	176	99	7	6.7	1.0	0.4	2.1
7	390	195	10	20.9	0.5	0.2	0.9
8	108	40	6	3.2	1.9	0.7	4.0
9	58	29	0	1.3	0.0	.	2.8
10	166	61	7	3.7	1.9	0.8	3.9
11	213	20	4	3.8	1.0	0.3	2.7
13	103	37	4	1.7	2.4	0.7	6.2
14	76	39	2	1.8	1.1	0.1	4.0
15	150	78	4	5.4	0.7	0.2	1.9
16	140	83	7	2.8	2.5	1.0	5.1
18	29	18	2	0.4	5.4	0.6	19.6
19	293	97	15	12.9	1.2	0.7	1.9
20	94	54	2	1.8	1.1	0.1	4.1
21	148	37	4	3.1	1.3	0.3	3.3
22	179	47	6	6.4	0.9	0.3	2.1
23	41	23	4	3.1	1.3	0.3	3.3
24	60	8	0	1.0	0.0	.	3.6
25	321	103	10	11.5	0.9	0.4	1.6
26	35	17	0	0.4	0.0	.	8.7
27	61	30	1	1.1	0.9	0.0	5.0
28	292	110	15	11.5	1.3	0.7	2.1
29	48	32	0	0.6	0.0	.	6.4
30	206	63	12	7.3	1.7	0.9	2.9
31	121	62	1	2.3	0.4	0.0	2.5
32	313	151	11	22.2	0.5	0.2	0.9
33	12	7	1	0.1	9.3	0.1	51.6

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 5, 12, 17 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	49	12	4	1.6	2.5	0.7	6.3
2	36	33	4	3.0	1.3	0.4	3.4
3	28	20	1	1.1	0.9	0.0	4.9
4	47	44	6	8.3	0.7	0.3	1.6
6	66	56	7	6.3	1.1	0.4	2.3
7	179	145	9	20.0	0.4	0.2	0.9
8	39	26	6	3.1	1.9	0.7	4.2
9	16	12	0	1.2	0.0	.	3.2
10	55	23	7	3.5	2.0	0.8	4.1
11	60	18	4	3.9	1.0	0.3	2.7
13	30	20	4	1.5	2.6	0.7	6.7
14	18	15	2	1.6	1.3	0.1	4.6
15	65	55	4	4.9	0.8	0.2	2.1
16	39	33	6	2.4	2.5	0.9	5.4
18	9	7	1	0.3	3.8	0.0	21.0
19	106	73	14	12.7	1.1	0.6	1.8
20	29	24	2	1.5	1.4	0.2	4.9
21	51	27	4	2.8	1.4	0.4	3.7
22	81	39	6	6.2	1.0	0.4	2.1
23	41	23	4	3.0	1.3	0.4	3.4
24	12	5	0	1.0	0.0	.	3.8
25	120	90	10	11.1	0.9	0.4	1.7
26	11	9	0	0.3	0.0	.	11.9
27	20	16	1	1.0	1.0	0.0	5.6
28	108	79	14	11.2	1.2	0.7	2.1
29	17	11	0	0.4	0.0	.	9.2
30	76	37	11	7.1	1.5	0.8	2.8
31	33	30	1	1.9	0.5	0.0	2.9
32	177	135	11	21.9	0.5	0.3	0.9

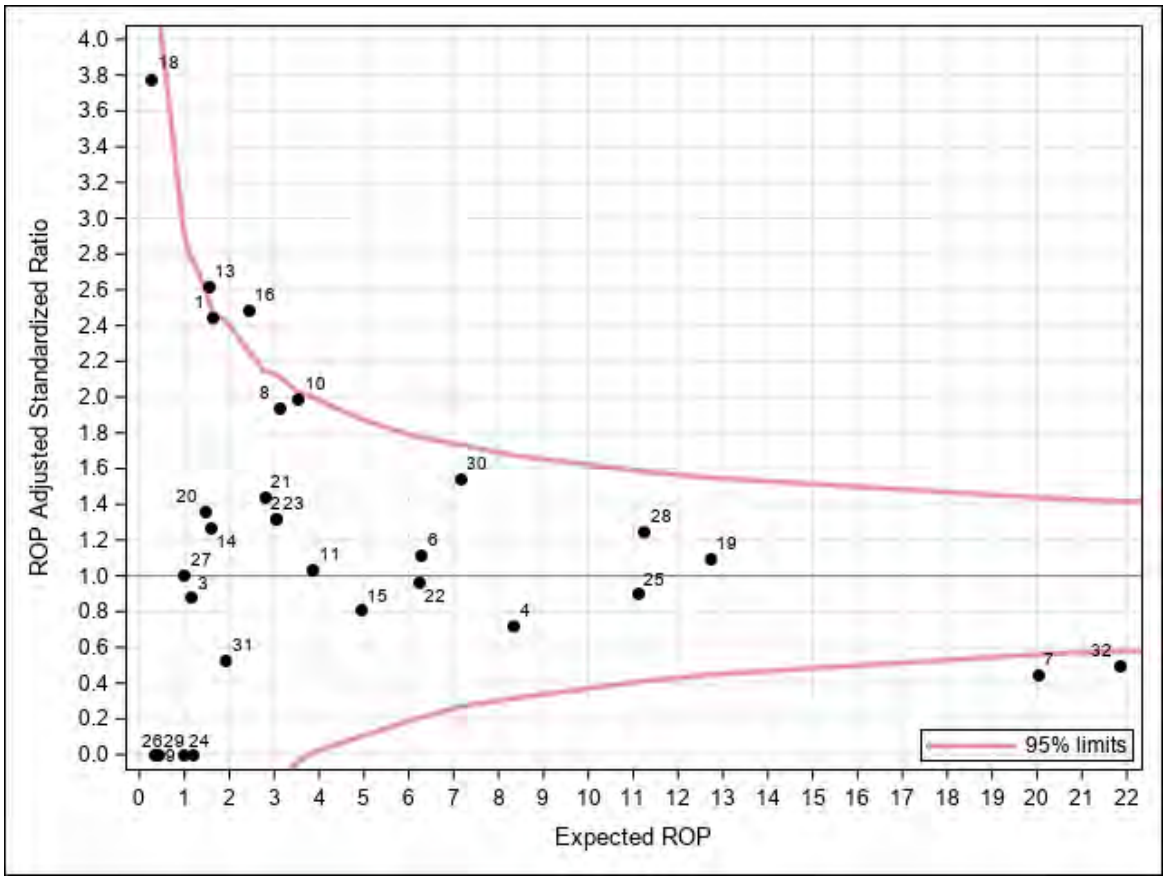
Numeric site codes were used in Presentations 50a-d and they may not correspond to other presentations in this report.

Neonates with major congenital anomalies are excluded.

The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.

Note: Sites 5, 12, 17, 33 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

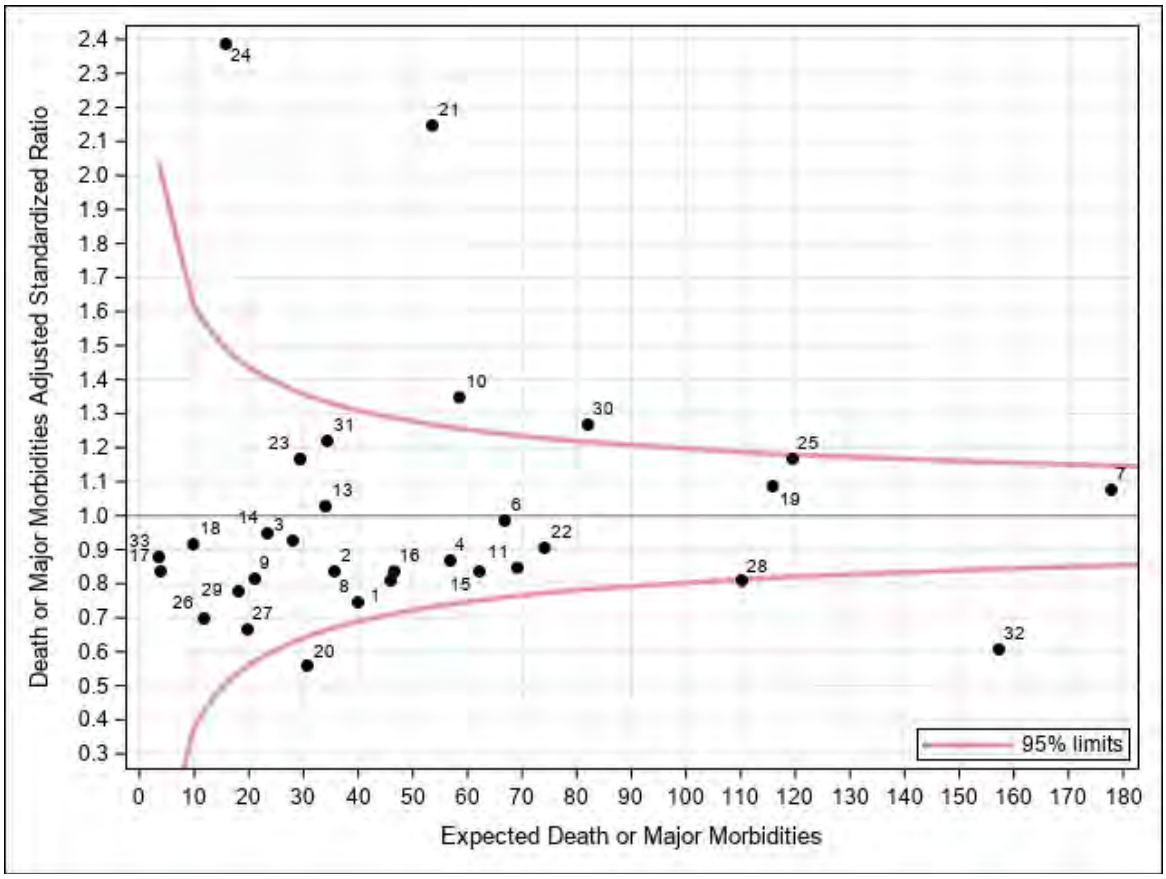
Site	Number of neonates	Number of neonates with mortality or major morbidities	Adjusted# expected number of neonates with mortality or major morbidities	Adjusted# standardized ratio	95% confidence interval for adjusted standardized ratio	
1	116	37	45.6	0.8	0.6	1.1
2	102	30	35.6	0.8	0.6	1.2
3	78	26	28.0	0.9	0.6	1.4
4	155	49	56.5	0.9	0.6	1.1
6	176	66	66.6	1.0	0.8	1.3
7	390	191	177.5	1.1	0.9	1.2
8	108	30	39.8	0.8	0.5	1.1
9	58	17	20.8	0.8	0.5	1.3
10	166	79	58.4	1.4	1.1	1.7
11	213	59	69.0	0.9	0.7	1.1
13	103	35	33.9	1.0	0.7	1.4
14	76	22	23.2	0.9	0.6	1.4
15	150	52	62.1	0.8	0.6	1.1
16	140	39	46.3	0.8	0.6	1.2
17	14	3	3.6	0.8	0.2	2.5
18	29	9	9.8	0.9	0.4	1.7
19	293	126	115.8	1.1	0.9	1.3
20	94	17	30.5	0.6	0.3	0.9
21	148	115	53.4	2.2	1.8	2.6
22	179	67	74.0	0.9	0.7	1.2
23	41	34	29.1	1.2	0.8	1.6
24	60	37	15.5	2.4	1.7	3.3
25	321	140	119.4	1.2	1.0	1.4
26	35	8	11.5	0.7	0.3	1.4
27	61	13	19.5	0.7	0.4	1.1
28	292	89	110.1	0.8	0.6	1.0
29	48	14	18.0	0.8	0.4	1.3
30	206	104	81.8	1.3	1.0	1.5
31	121	42	34.3	1.2	0.9	1.7
32	313	96	157.1	0.6	0.5	0.7
33	12	3	3.4	0.9	0.2	2.6

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 5 and 12 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	49	30	32.5	0.9	0.6	1.3
2	36	22	22.5	1.0	0.6	1.5
3	28	21	19.5	1.1	0.7	1.6
4	47	31	35.7	0.9	0.6	1.2
6	66	49	46.8	1.0	0.8	1.4
7	179	132	128.3	1.0	0.9	1.2
8	39	26	27.6	0.9	0.6	1.4
9	16	13	11.8	1.1	0.6	1.9
10	55	48	38.2	1.3	0.9	1.7
11	60	40	39.2	1.0	0.7	1.4
13	30	23	19.5	1.2	0.7	1.8
14	18	15	12.2	1.2	0.7	2.0
15	65	40	44.3	0.9	0.6	1.2
16	39	22	25.7	0.9	0.5	1.3
18	9	7	5.8	1.2	0.5	2.5
19	106	91	80.0	1.1	0.9	1.4
20	29	12	18.9	0.6	0.3	1.1
21	51	50	35.9	1.4	1.0	1.8
22	81	54	56.1	1.0	0.7	1.3
23	41	34	29.2	1.2	0.8	1.6
24	12	12	7.6	1.6	0.8	2.8
25	120	96	82.1	1.2	0.9	1.4
26	11	5	6.9	0.7	0.2	1.7
27	20	9	12.7	0.7	0.3	1.3
28	108	61	73.2	0.8	0.6	1.1
29	17	10	11.3	0.9	0.4	1.6
30	76	66	56.4	1.2	0.9	1.5
31	33	23	18.4	1.2	0.8	1.9
32	177	82	124.8	0.7	0.5	0.8

Major morbidity = IVH 3 or 4 or PVL or BPD or ROP >stage 2 or NEC or nosocomial sepsis

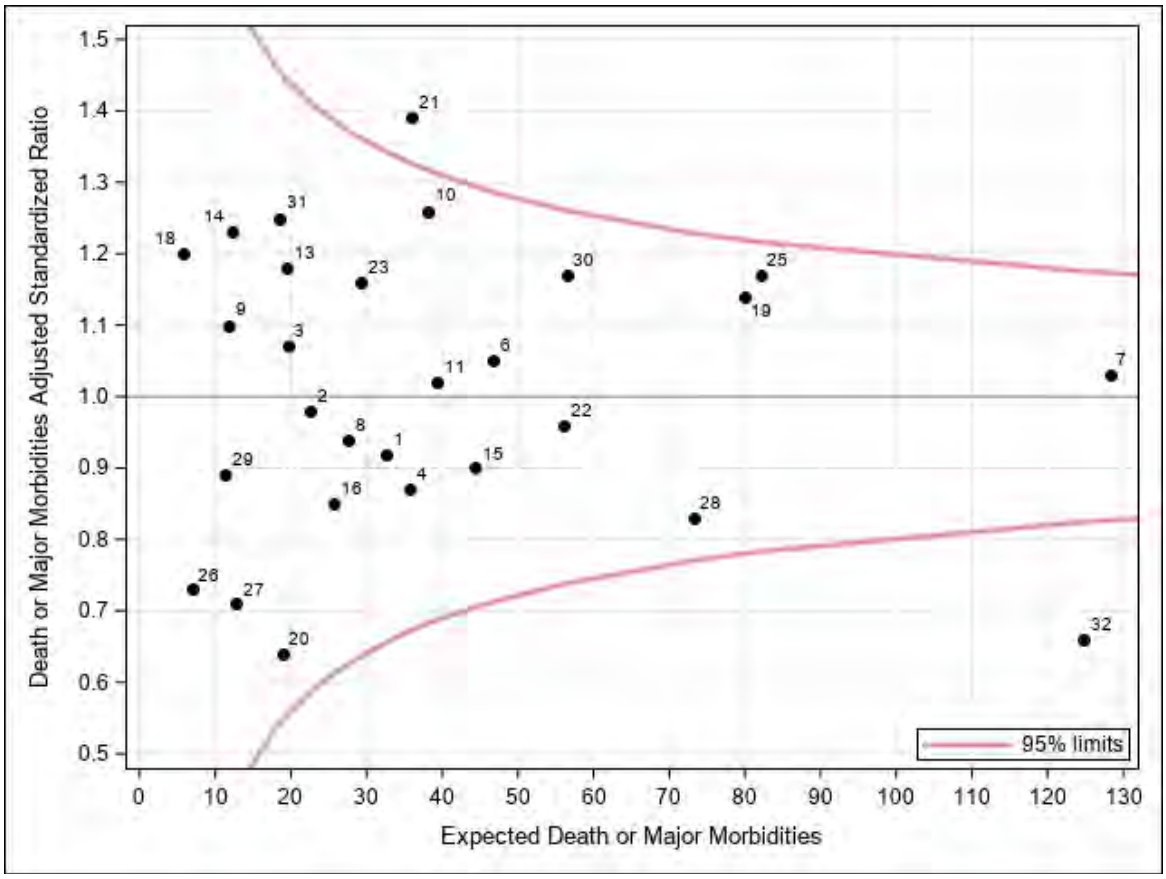
Numeric site codes were used in Presentations 51a-d and they may not correspond to other presentations in this report.

Neonates with major congenital anomalies were excluded.

The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.

Note: Sites 5, 12, 17, 33 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

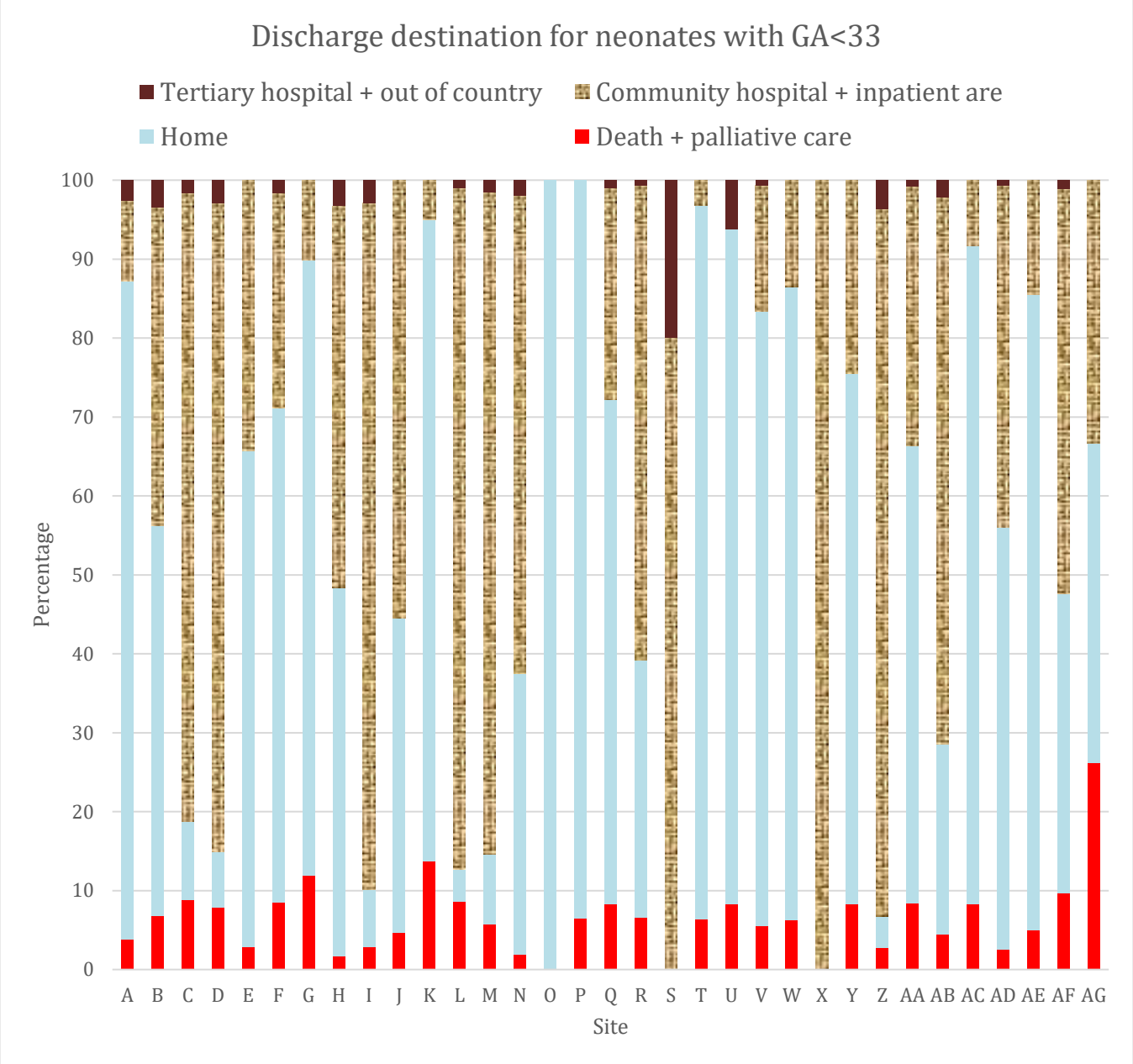
Presentation #52a

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	102	222	320	429	660	928	1237	3452	7350
	%	29.6	40.2	41.1	39.3	38.8	48.1	52.0	58.8	
Community hospital	N	62	180	351	569	893	707	505	559	3826
	%	18.0	32.6	45.1	52.2	52.5	36.6	21.3	9.5	
Tertiary hospital	N	15	17	11	14	13	30	43	200	343
	%	4.4	3.1	1.4	1.3	0.8	1.6	1.8	3.4	
Died	N	126	73	44	24	23	24	33	78	425
	%	36.5	13.2	5.7	2.2	1.4	1.2	1.4	1.3	
Palliative care (home/other institute)	N	0	0	1	1	1	0	5	14	22
	%	0.0	0.0	0.1	0.1	0.1	0.0	0.2	0.2	
Another inpatient area in site	N	38	59	52	54	112	242	554	1568	2679
	%	11.0	10.7	6.7	5.0	6.6	12.5	23.3	26.7	
Out of country discharge	N	2	1	0	0	0	0	0	0	3
	%	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	
Total neonates included	N	345	552	779	1091	1702	1931	2377	5871	14648
	%	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									14651

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	3.9	83.3	10.3	2.6
B	6.8	49.4	40.4	3.4
C	8.8	9.9	79.6	1.7
D	7.8	7.1	82.1	2.9
E	2.9	62.9	34.3	0.0
F	8.5	62.7	27.1	1.7
G	11.9	78.0	10.1	0.0
H	1.6	46.7	48.4	3.3
I	2.9	7.3	87.0	2.9
J	4.6	39.9	55.5	0.0
K	13.8	81.3	5.0	0.0
L	8.6	4.0	86.4	1.0
M	5.7	8.9	83.8	1.6
N	1.9	35.6	60.6	1.9
O	0.0	100.0	0.0	0.0
P	6.5	93.6	0.0	0.0
Q	8.3	63.9	26.8	1.0
R	6.5	32.7	60.1	0.7
S	0.0	0.0	80.0	20.0
T	6.4	90.5	3.2	0.0
U	8.3	85.4	0.0	6.3
V	5.6	77.8	16.0	0.7
W	6.3	80.2	13.5	0.0
X	0.0	0.0	100.0	0.0
Y	8.3	67.1	24.5	0.0
Z	2.7	4.0	89.6	3.7
AA	8.4	58.0	32.8	0.8
AB	4.5	24.1	69.2	2.2
AC	8.3	83.3	8.3	0.0
AD	2.6	53.5	43.3	0.6
AE	5.0	80.5	14.5	0.0
AF	9.6	38.0	51.3	1.1
AG	26.2	40.5	33.3	0.0
Total %	**6.6**	**38.8**	**53.0**	**1.6**
Total N	**293**	**1733**	**2370**	**73**

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	345	552	779	1091	1702	1931	2379	5872	14651
Number of neonates who survived and were discharged home directly from the NICU	**N**	**102**	**222**	**320**	**429**	**660**	**928**	**1237**	**3452**	**7350**
Oxygen	N	32	43	28	29	26	3	4	32	197
	%	31.4	19.4	8.8	6.8	3.9	0.3	0.3	0.9	2.7
Monitor	N	17	16	20	25	16	6	22	113	235
	%	16.7	7.2	6.3	5.8	2.4	0.7	1.8	3.3	3.2
Enterostomy	N	0	3	2	0	1	2	1	10	19
	%	0.0	1.4	0.6	0.0	0.2	0.2	0.1	0.3	0.3
Gavage	N	16	19	23	19	19	4	13	49	162
	%	15.7	8.6	7.2	4.4	2.9	0.4	1.1	1.4	2.2
Tracheostomy	N	1	0	0	0	0	2	1	2	6
	%	1.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1
Gastrostomy	N	7	2	7	4	7	4	1	12	44
	%	6.9	0.9	2.2	0.9	1.1	0.4	0.1	0.4	0.6
Ventilation	N	2	0	0	0	0	0	1	2	5
	%	2.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
CPAP	N	0	4	2	0	0	0	2	5	13
	%	0.0	1.8	0.6	0.0	0.0	0.0	0.2	0.1	0.2
Feeding status at discharge directly home										
Mother's own milk only	N	30	83	108	148	244	318	362	1088	2381
	%	29.4	37.4	33.8	34.5	37.0	34.3	29.3	31.5	32.4
Formula only	N	36	74	122	139	219	232	334	753	1909
	%	35.3	33.3	38.1	32.4	33.2	25.0	27.0	21.8	26.0
Mother's own milk and formula	N	36	64	85	135	189	375	537	1600	3021
	%	35.3	28.8	26.6	31.5	28.6	40.4	43.4	46.4	41.1

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**	78	320	86	36	520
	No	72	27	21	33	153
	Unknown	1	7	1	0	9
	Total	**151**	**354**	**108**	**69**	**682**

B. Reason for not receiving hypothermia treatment*

Reason	**Number**
Chromosomal anomalies	1
Major congenital anomalies	1
Weight < 2000g or GA < 35 weeks	29
Extreme condition	14
Head trauma or intracranial hemorrhage	5
Mild HIE	70
Unit policy	14
Health care team preference	5
Delayed transfer	18
Parental request	1
Unknown	21

*One neonate can have more than one reasons.

C. Time of admission

Time	**Number**
<6 hours from birth	450
6 – 12 hours from birth	173
>12 hours from birth	58
Total**	681

**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=520)

Characteristics	N		Results
Method	514	Selective head	3 (1%)
		Whole body cooling	511 (100%)
Target temperature	520	< 33^{0}C	3 (1%)
		33-34^{0}C	329 (63%)
		33.5-34.5^{0}C	84 (16%)
		34-35^{0}C	2 (0%)
		34.5-35.5^{0}C	1 (0%)
		Unknown	101 (19%)
Seizures at initiation	520		107 (21%)
Seizures at completion	520		0 (0%)
GA < 33 weeks	520		0 (0%)
Birthweight < 2000g	520		4 (1%)
During hypothermia	504	Hypotension	150 (30%)
	501	Thrombocytopenia	69 (14%)
	503	Coagulopathy	133 (26%)
	497	Persistent metabolic acidosis	61 (12%)
Death	520		38 (7%)
Discharge on palliation	520		8 (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**	23	5	1	9	44	82
	Stage 2	73	106	10	37	93	319
	Stage 3	3	6	55	8	9	81
	Unknown	1	4	0	16	17	38
	Total	100	121	66	70	163	520

*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)
Hypoxic Ischemic Encephalopathy
For neonates* who received hypothermia (N=520)

Characteristics		N	Mean (h)	SD (h)	Min (h)	1st Q (h)	Median (h)	3rd Q (h)	Max (h)	Outside of recommendation	Time taken to achieve target
Timing of hypothermia (in hours)**	**Initiation**	512	5.0	4.0	0.0	2.5	4.9	6.1	38.0	After 6 hours 138 (27%)	
	Age at re-warming	516	72.7	17.2	3.0	74.6	76.9	78.3	117.8	After 78 hours 151(29%)	Re-warming started >72 hours after initiation 212 (41%)
Temperature during hypothermia	**Lowest temp during hypothermia**	414	32.8	0.9	25.0	32.6	33.0	33.2	36.3	Lowest temp < 32.5C 186 (45%)	
	Highest temp during hypothermia	413	34.2	0.8	31.9	33.7	33.9	34.3	37.7	Highest temp > 35.5C 29 (7%)	

*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	
2010	27	9	73	172	270	333	388	371	480	611	678	788	4173
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

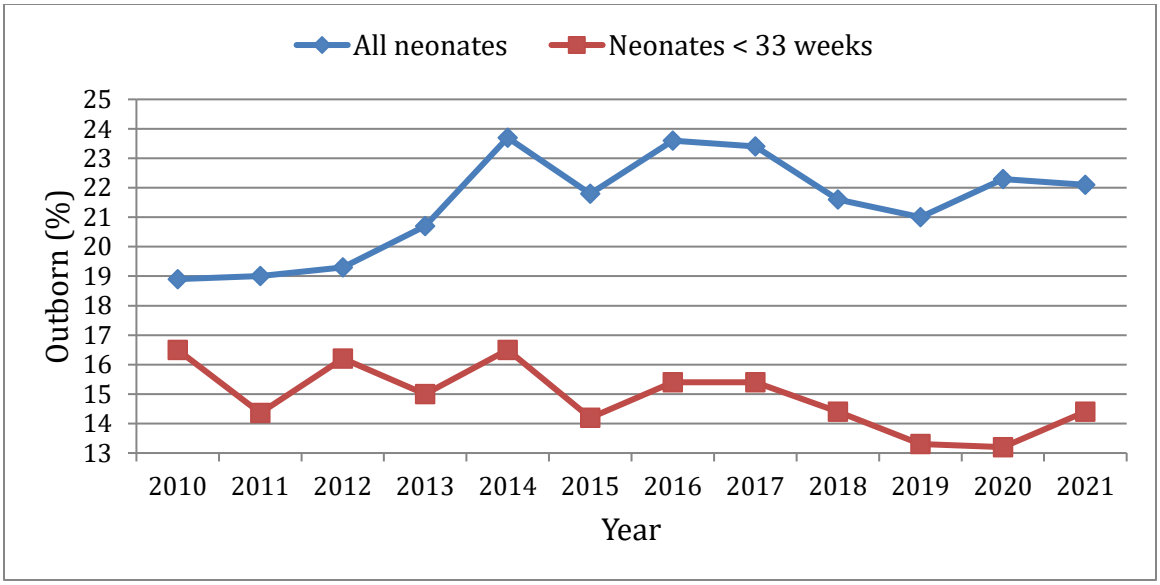
Number of neonates by admission year and birth weight

		Birth weight					Total
Year	Number of Sites	< 500	500 - 749	750 - 999	1000 – 1249	1250 – 1499	
2010	27	32	436	792	819	879	2958
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

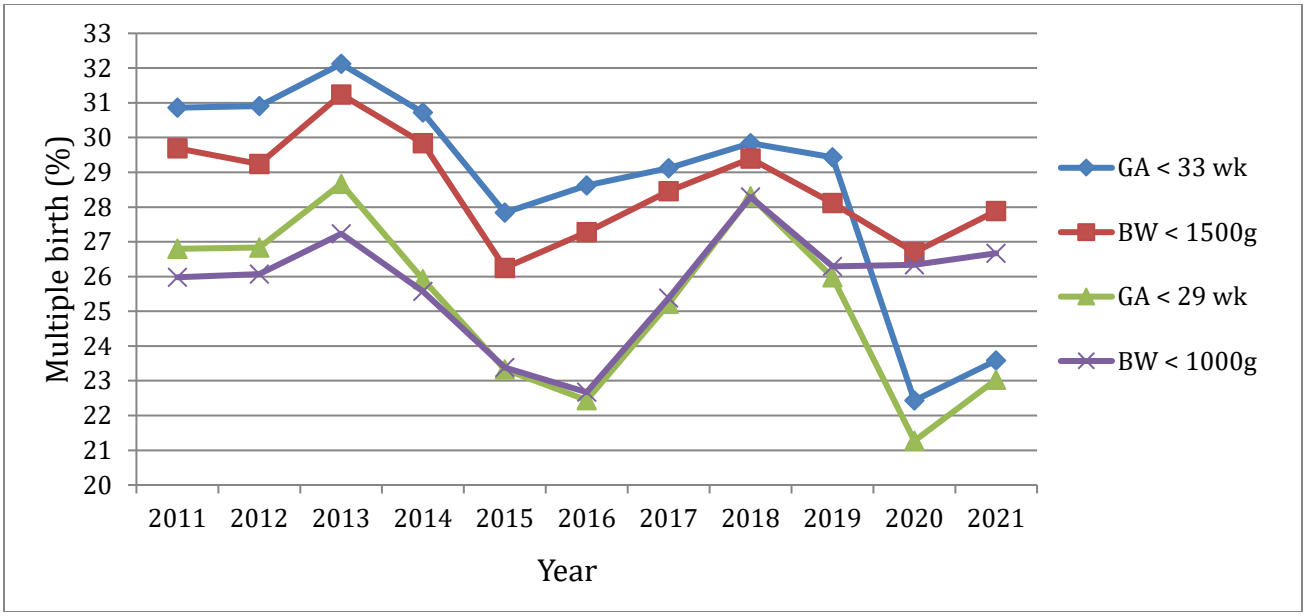
1. Neonates in the participating sites: Admission status:

		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 (%)**
2010	**27**	13 147	10 662 (81.1%)	2 485 (18.9%)	3 383	2 824 (83.5%)	559 (16.5%)
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%)

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

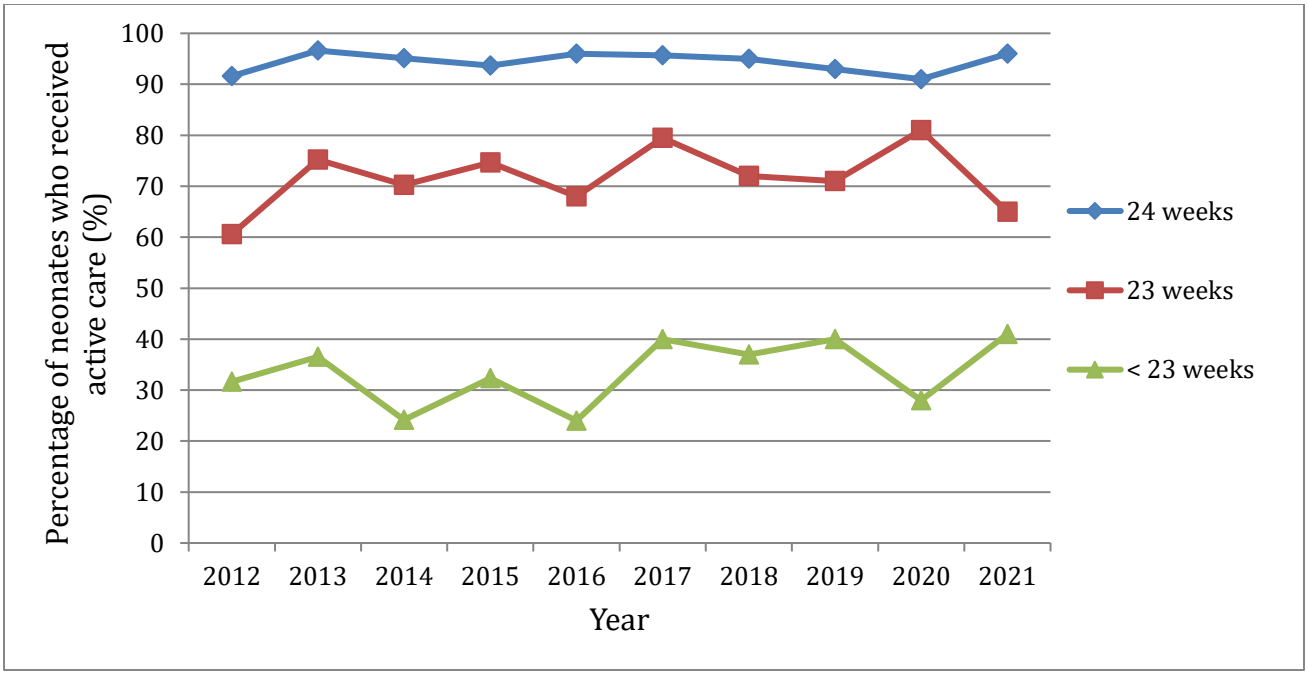


2. Multiple births



		2013	2014	2015	2016	2017	2018	2019	2020	2021
GA < 29 weeks	Total	1594	1671	1569	1667	1674	1780	1717	1556	1675
	Multiple	460	441	366	374	422	504	446	349	395
		(29%)	(26%)	(23%)	(22%)	(25%)	(28%)	(26%)	(22%)	(24%)
	Twin	398	415	321	345	375	466	415	316	364
	Higher-Order	62	26	45	29	47	38	31	33	31
GA < 33 weeks	Total	4262	4387	4030	4238	4358	4481	4445	4108	4468
	Multiple	1380	1356	1122	1213	1269	1337	1308	1097	1246
		(32%)	(31%)	(28%)	(29%)	(29%)	(30%)	(29%)	(27%)	(28%)
	Twin	1193	1229	996	1094	1156	1202	1191	1000	1112
	Higher-Order	187	127	126	119	113	135	117	97	134
BW < 1000g	Total	1115	1254	1126	1222	1194	1301	1217	1147	1194
	Multiple	306	329	264	277	303	368	320	244	275
		(27%)	(26%)	(23%)	(23%)	(25%)	(28%)	(26%)	(21%)	(23%)
	Twin	259	306	236	260	269	338	295	218	249
	Higher-Order	47	23	28	17	34	30	25	26	26
BW < 1500g	Total	2876	2980	2782	2867	2920	3085	2955	2756	2958
	Multiple	905	900	731	782	831	907	831	726	789
		(31%)	(30%)	(26%)	(27%)	(28%)	(29%)	(28%)	(26%)	(27%)
	Twin	769	802	634	703	747	812	757	656	706
	Higher-Order	136	98	97	79	84	95	74	70	83

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

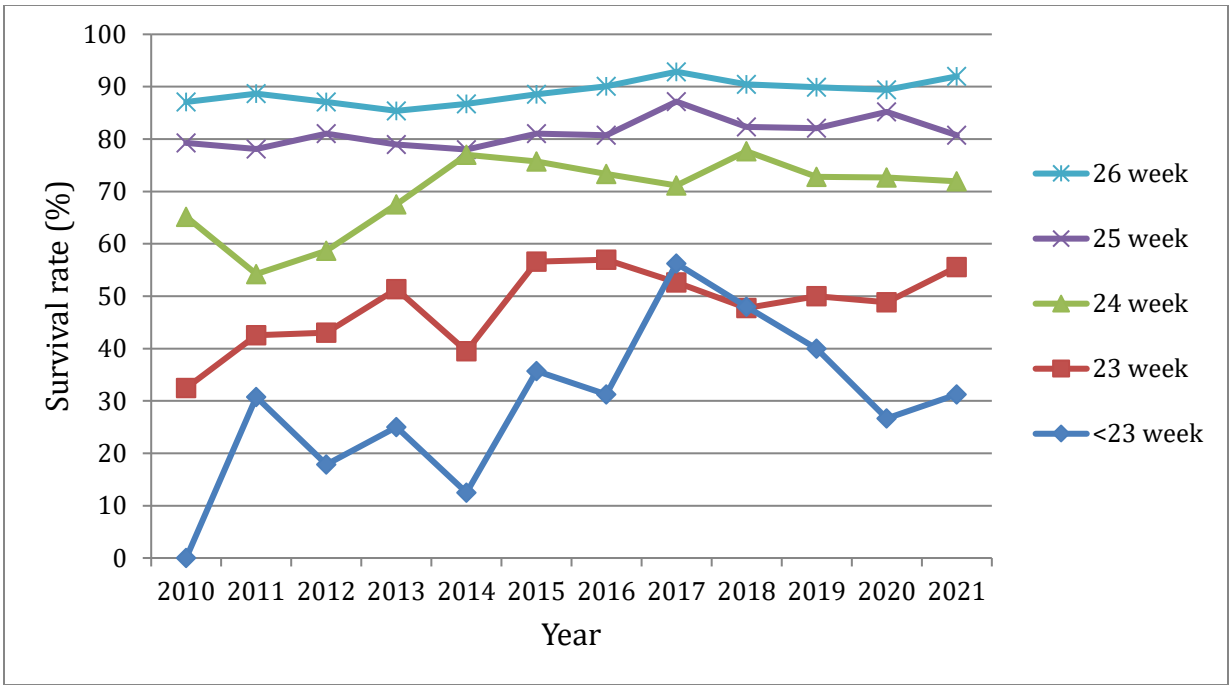


		2013	2014	2015	2016	2017	2018	2019	2020	2021
<23 weeks	Number of neonates who received active care *(a-c) +e*	23	14	22	16	26	35	35	18	37
	Total number of neonates including DR deaths *a+d+e*	63	58	68	67	65	95	88	64	91
	Percentage of neonates who received active care	37%	24%	32%	24%	40%	37%	40%	28%	41%
23 weeks	Number of neonates who received active care *(a-c) +e*	85	92	106	82	136	133	127	131	101
	Total number of neonates including DR deaths *a+d+e*	113	131	142	121	171	185	178	162	155
	Percentage of neonates who received active care	75%	70%	75%	68%	80%	72%	71%	81%	65%
24 weeks	Number of neonates who received active care *(a-c) +e*	200	233	178	217	221	224	224	199	216
	Total number of neonates including DR deaths *a+d+e*	207	245	190	227	231	235	240	218	226
	Percentage of neonates who received active care	97%	95%	94%	96%	96%	95%	93%	91%	96%

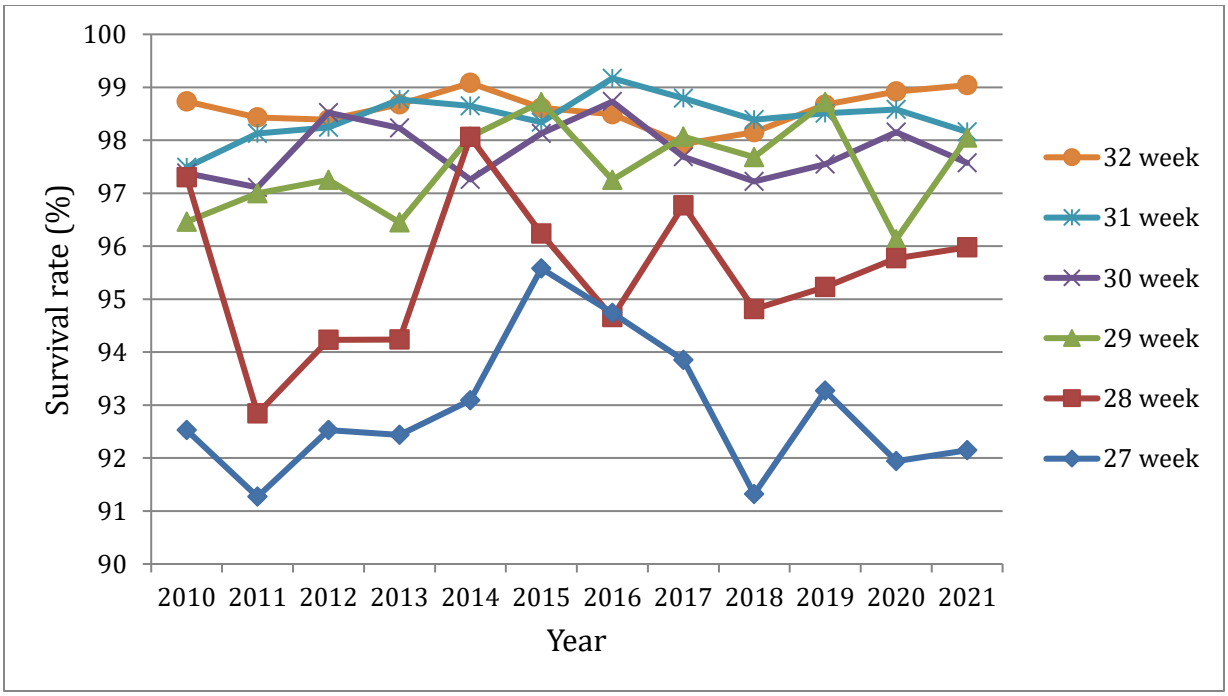
Note: Refer to presentation #4 for detailed breakdown of neonates by GA in 2021.
The alphabet notations used in the table above are carried from presentation #4.
Information should be interpreted with caution as not all sites provided data on delivery room deaths. Active care refers to infants who received cardiopulmonary resuscitation at birth.

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

a. 22-26 weeks' GA:

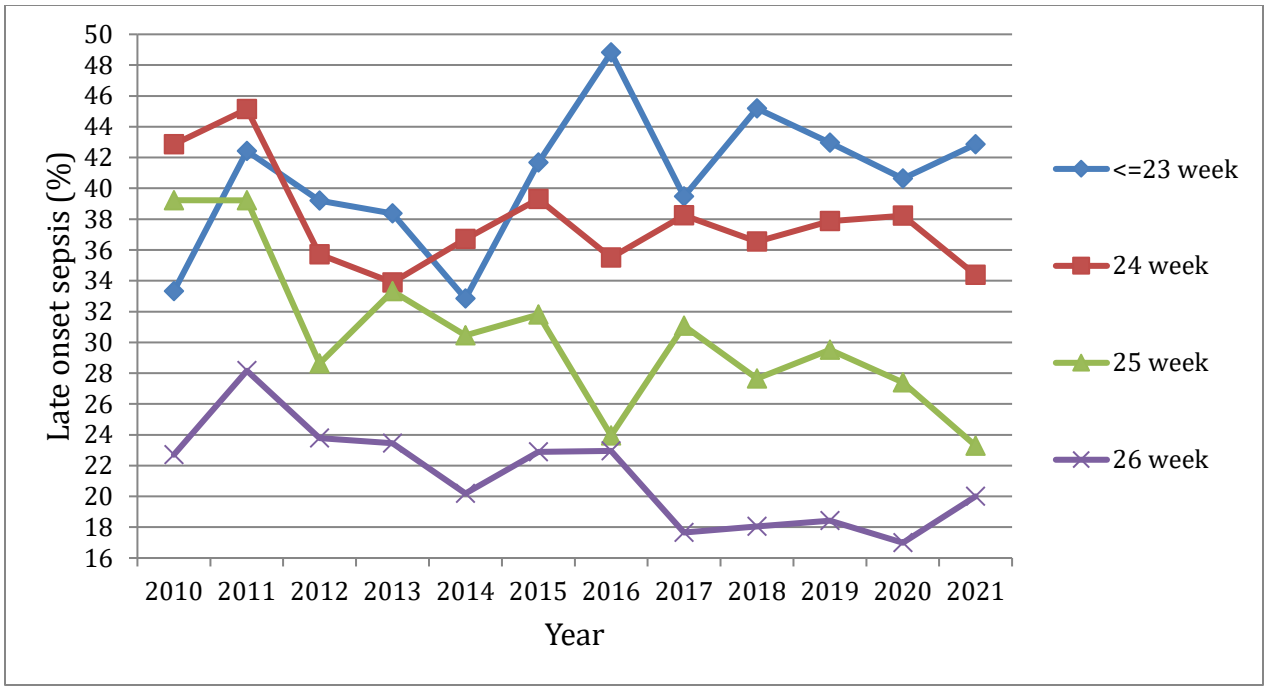


b. 27-32 weeks' GA:

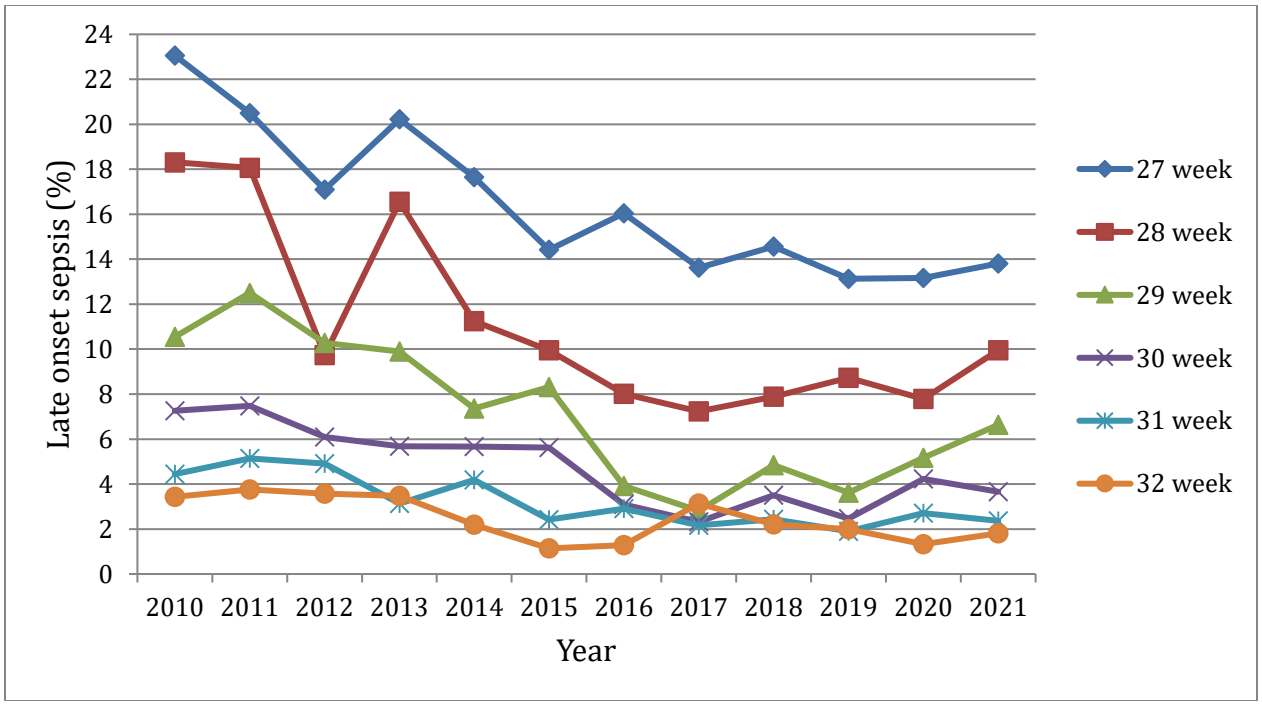


5. Late onset sepsis (with at least one infection) among neonates who survived beyond 2 days post birth

a. 23-26 weeks' GA:

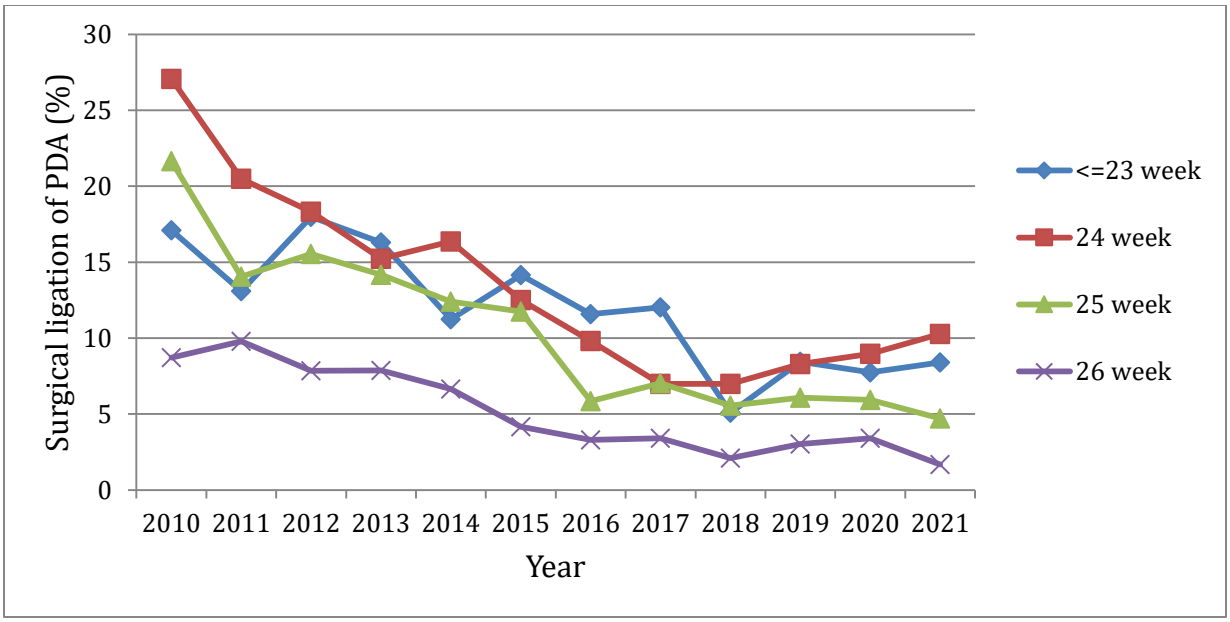


b. 27-32 weeks' GA:

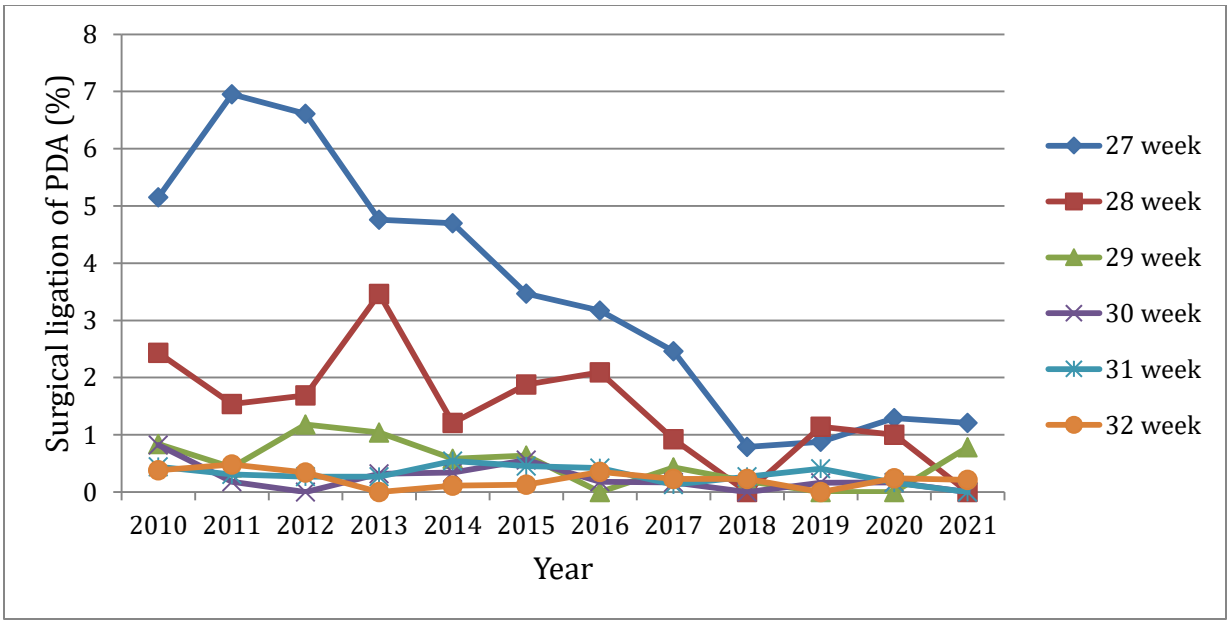


6. Surgical ligation or device closure of PDA among all neonates

a. 23-26 weeks' GA:

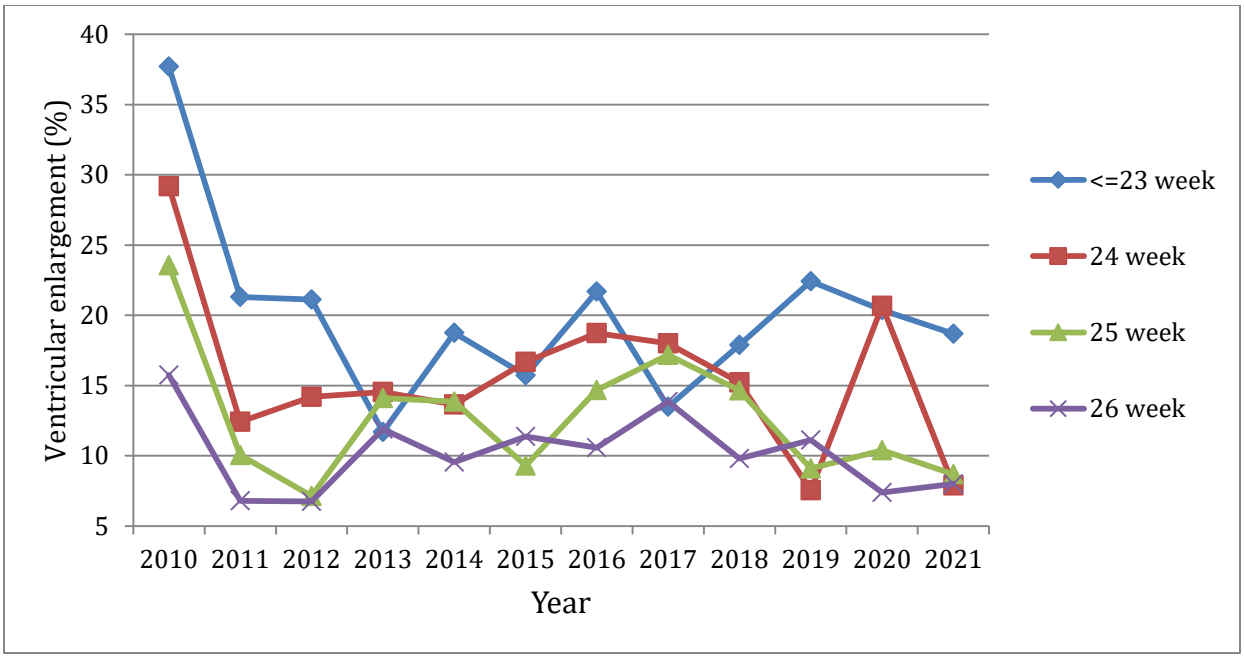


b. 27-32 weeks' GA:

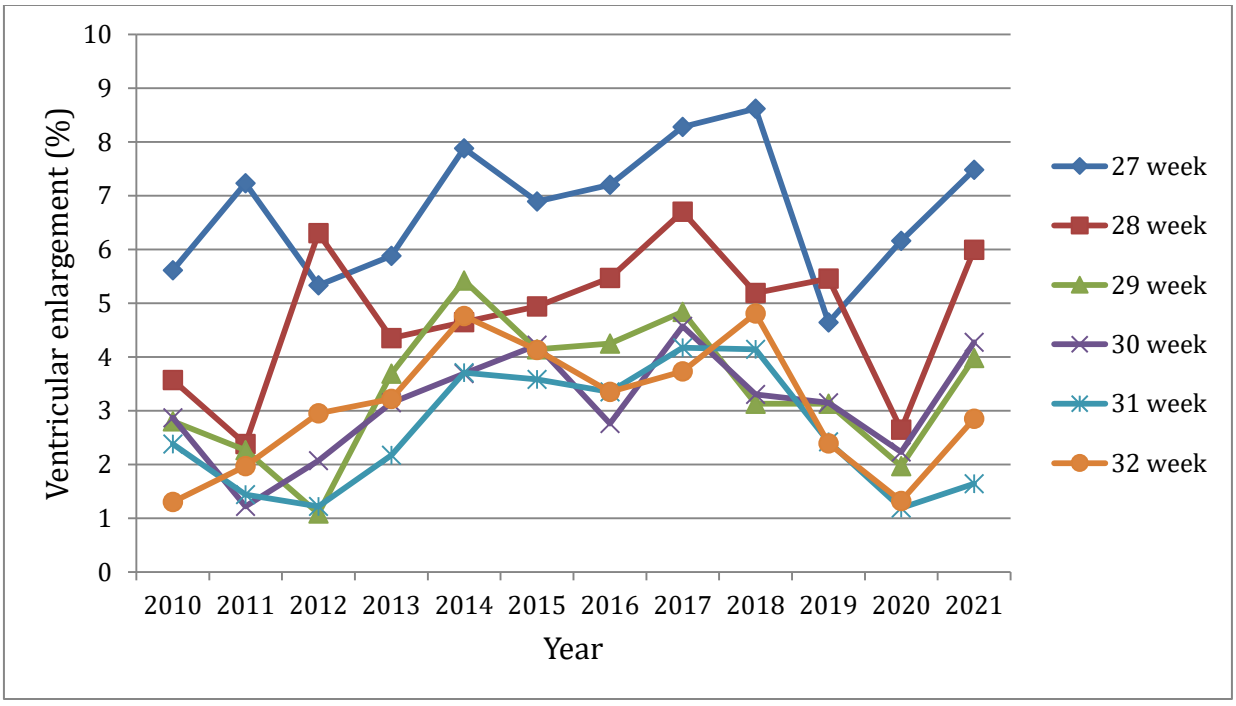


7. Ventricular enlargement (VE): (moderate and severe VE only; among neonates who received ultrasound exams)

a. 23-26 weeks' GA:

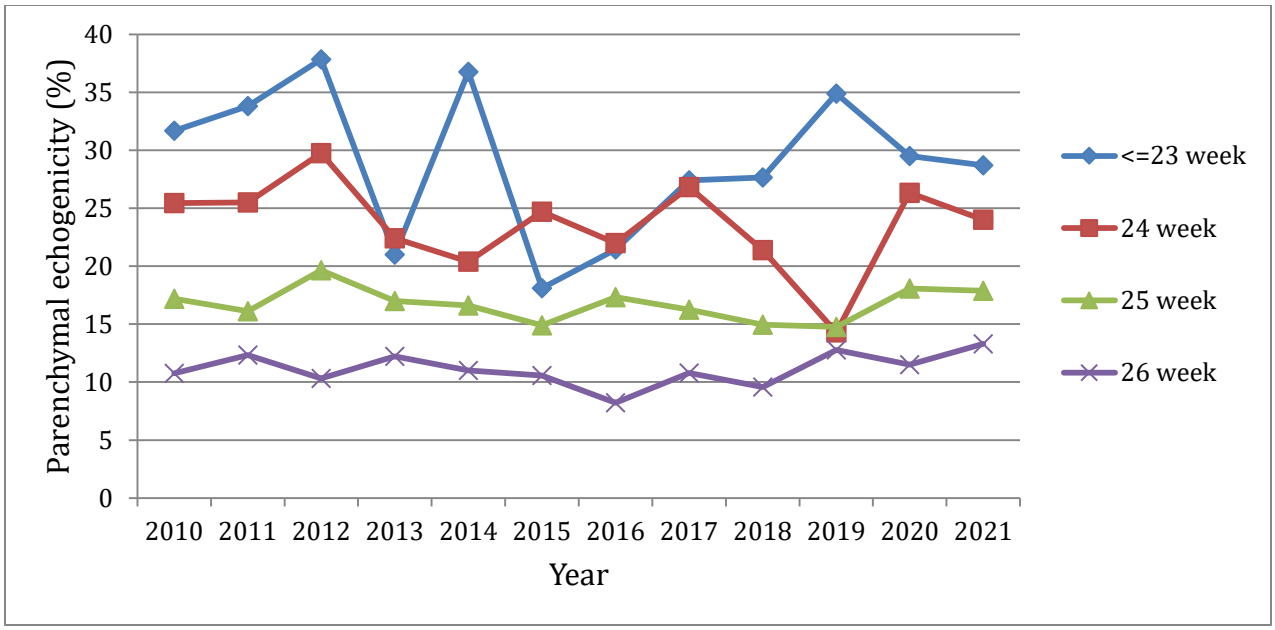


b. 27-32 weeks' GA:

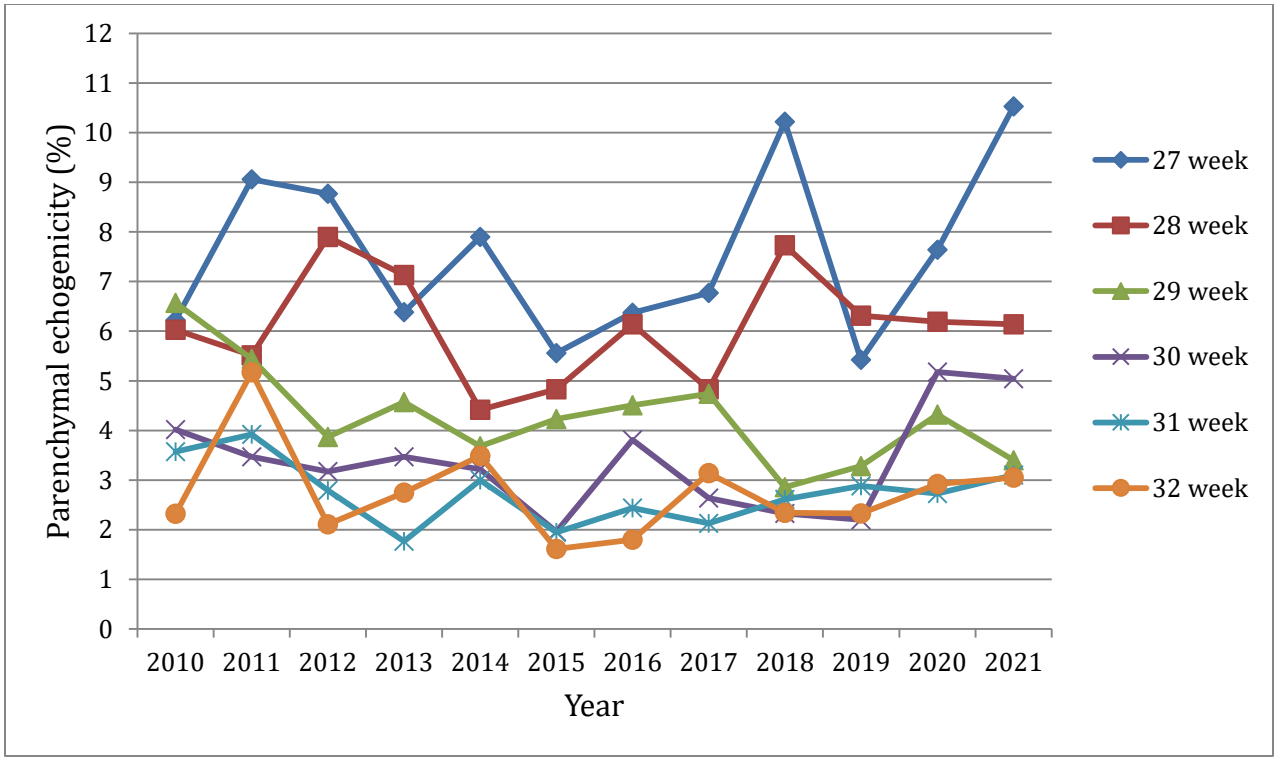


8. Parenchymal echogenicity (among neonates who received ultrasound exams)

a. 23-26 weeks' GA:

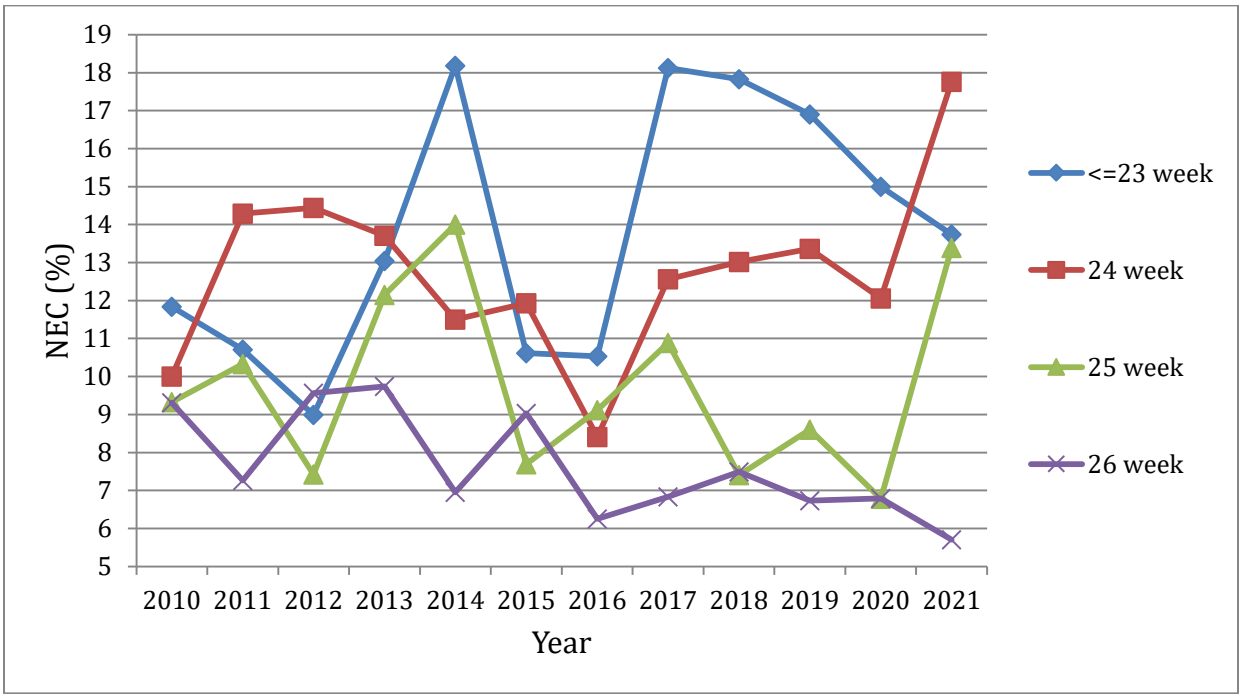


b. 27-32 weeks GA:

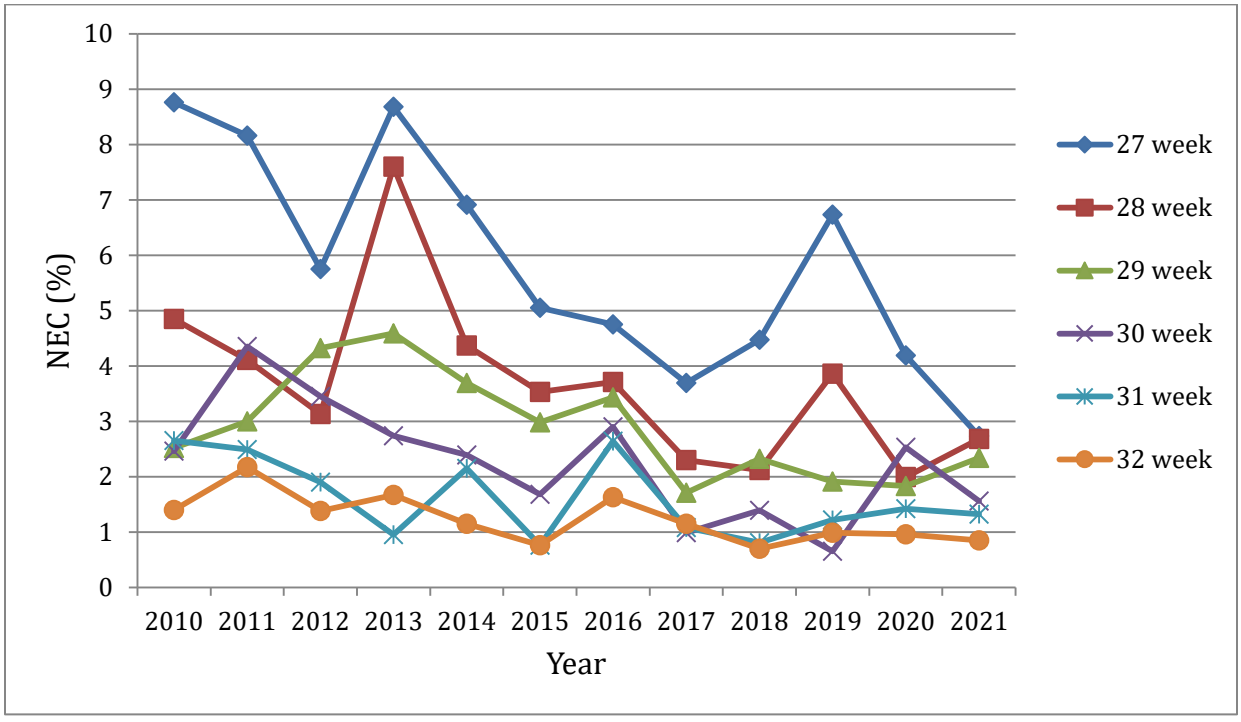


9. NEC:

a. 23-26 weeks' GA:

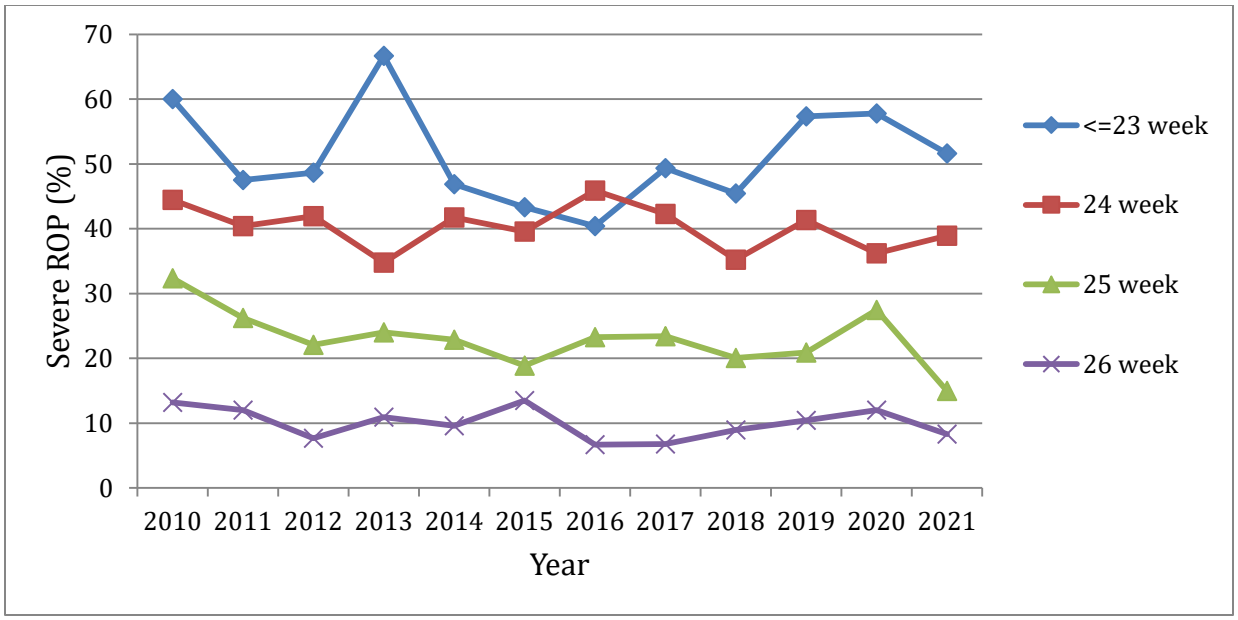


b. 27-32 weeks' GA:

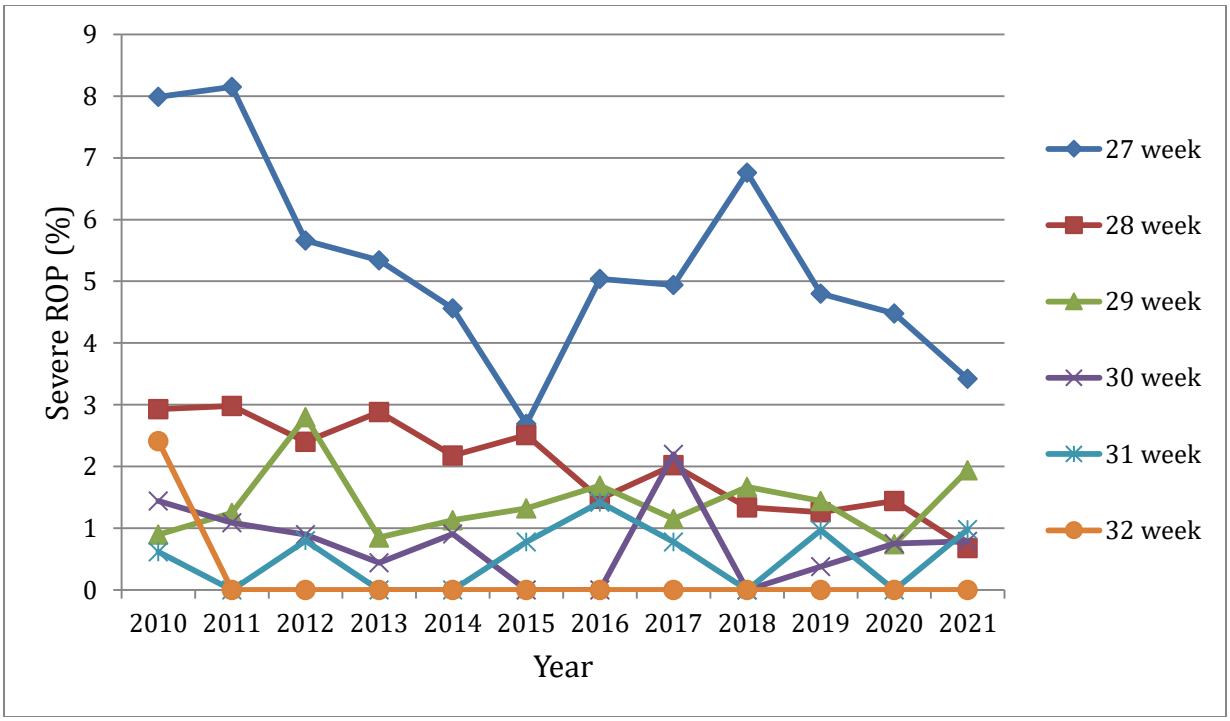


10. Severe ROP (≥ Stage 3 or ROP treatment) among neonates who received eye exams:

a. 23-26 weeks' GA:

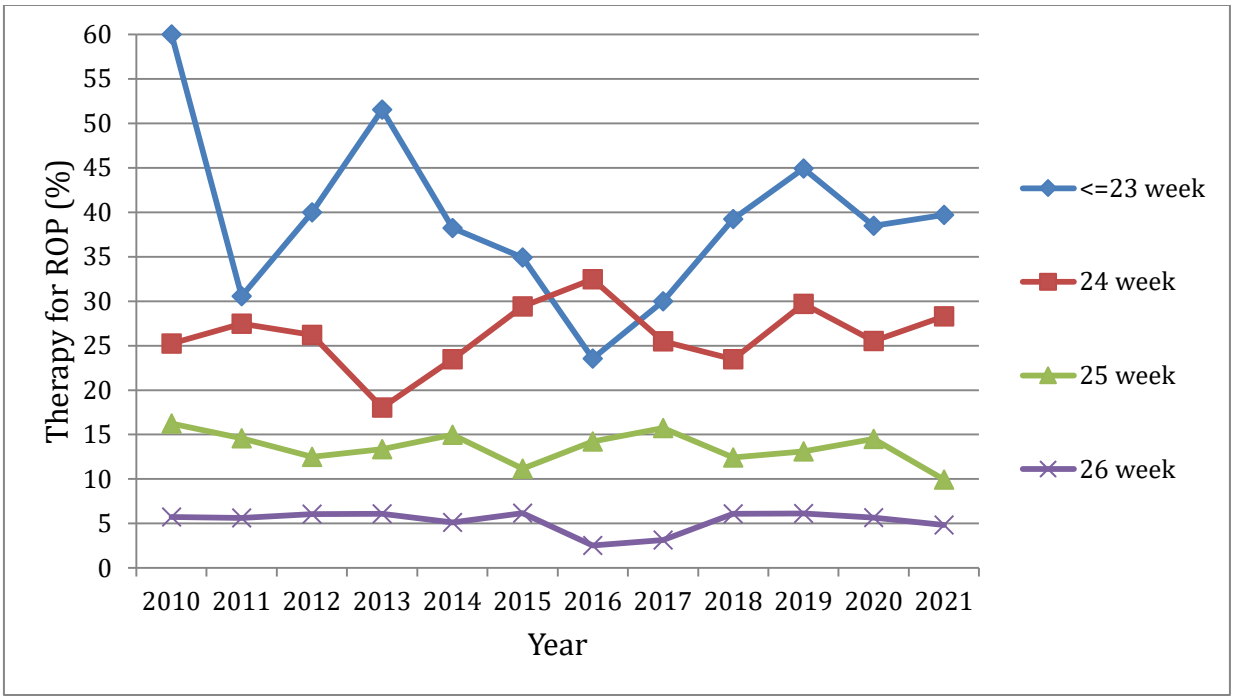


b. 27-32 weeks' GA:

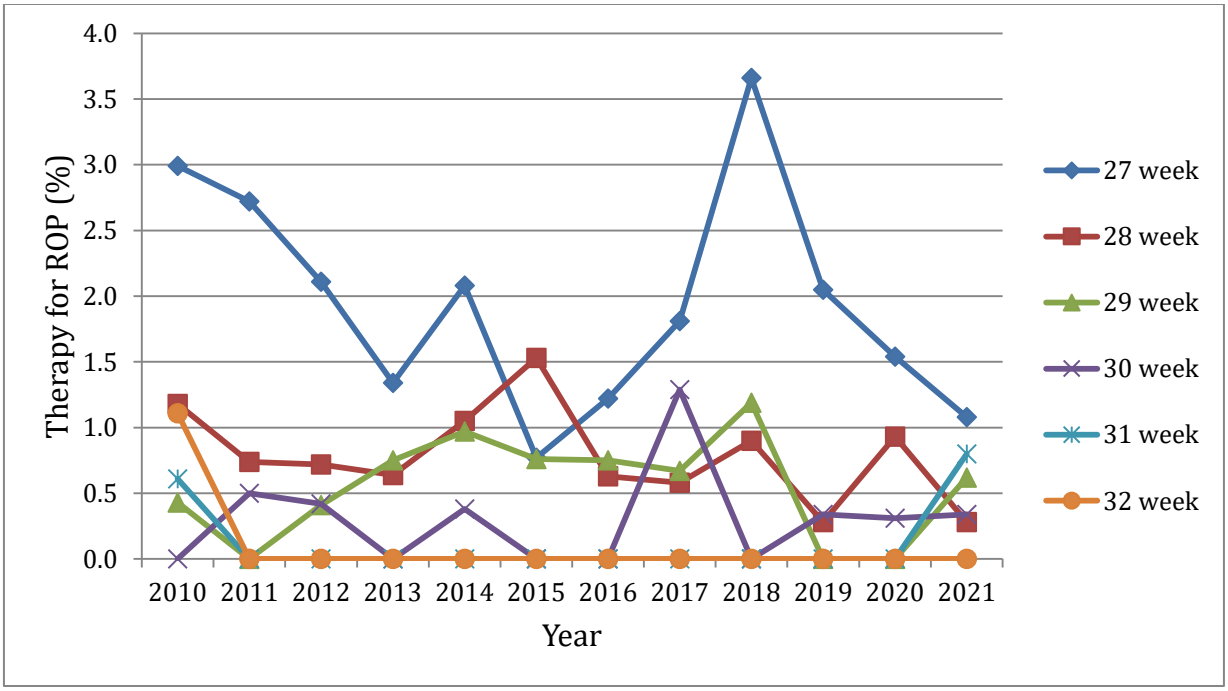


11. Therapy for ROP (among neonates who received eye exams)

a. 23-26 weeks' GA :

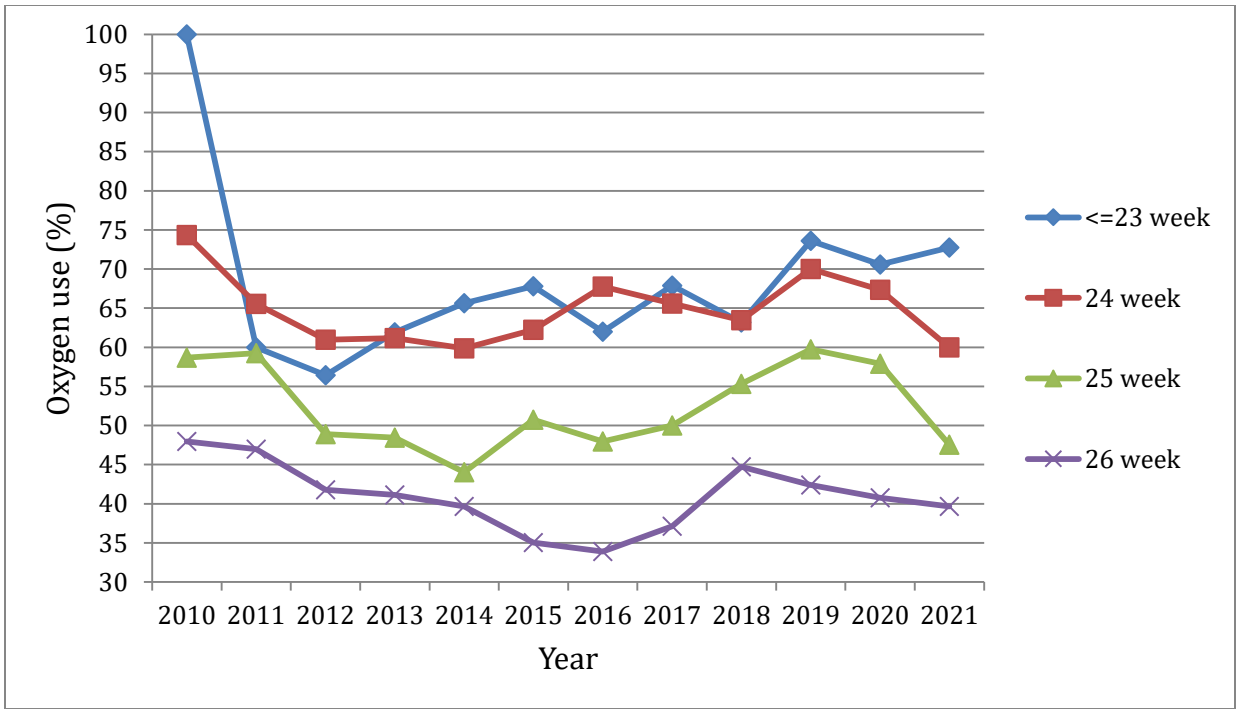


b. 27-32 weeks' GA:

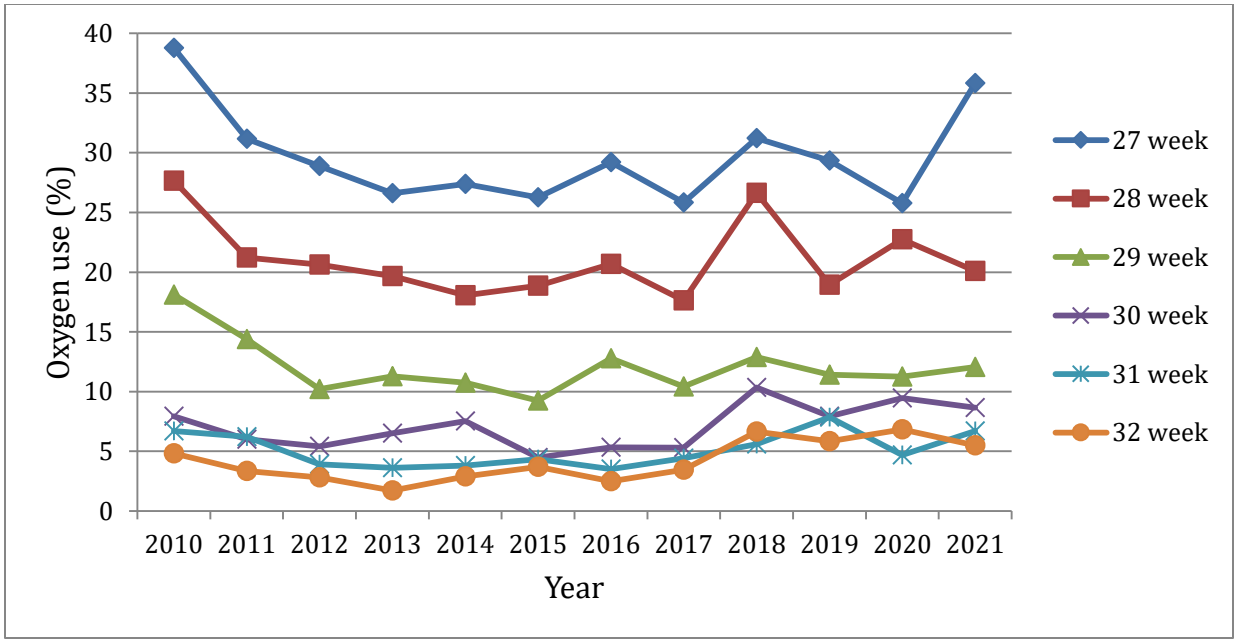


12a. Oxygen use at 36 weeks or at discharge:

a. 23-26 weeks' GA:

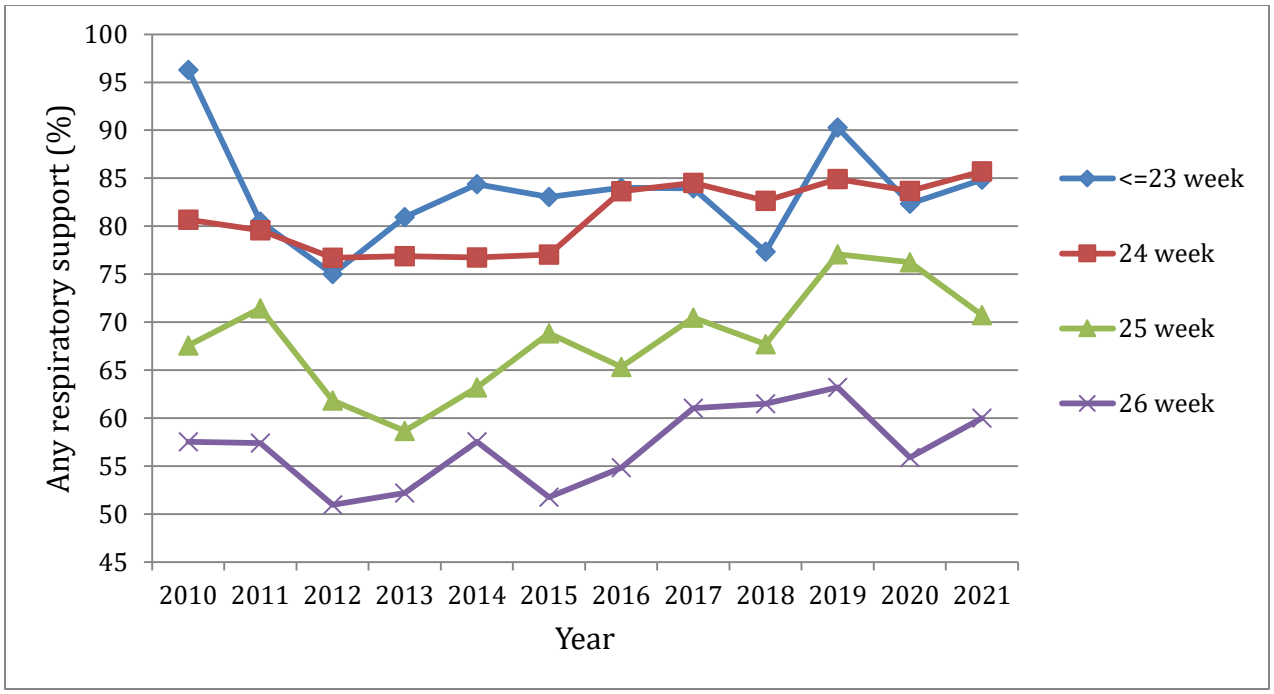


b. 27-32 weeks' GA:

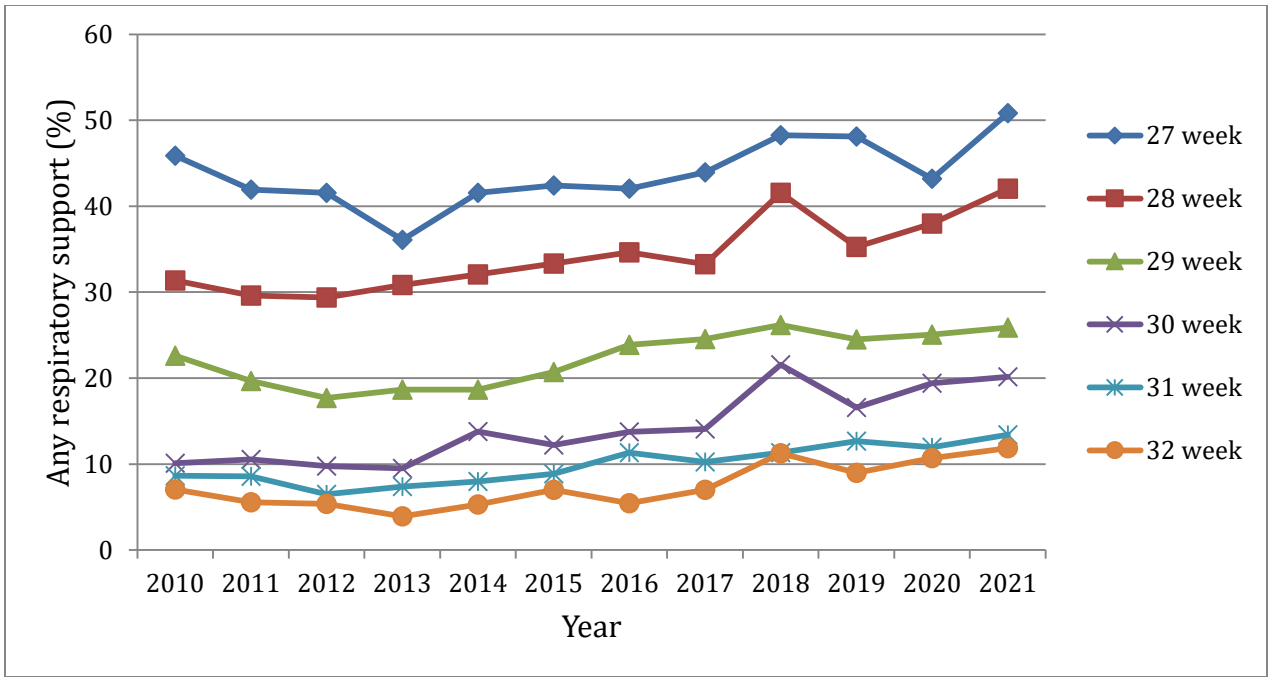


12b. Any respiratory support at 36 weeks or at discharge:

a. 23-26 weeks' GA:

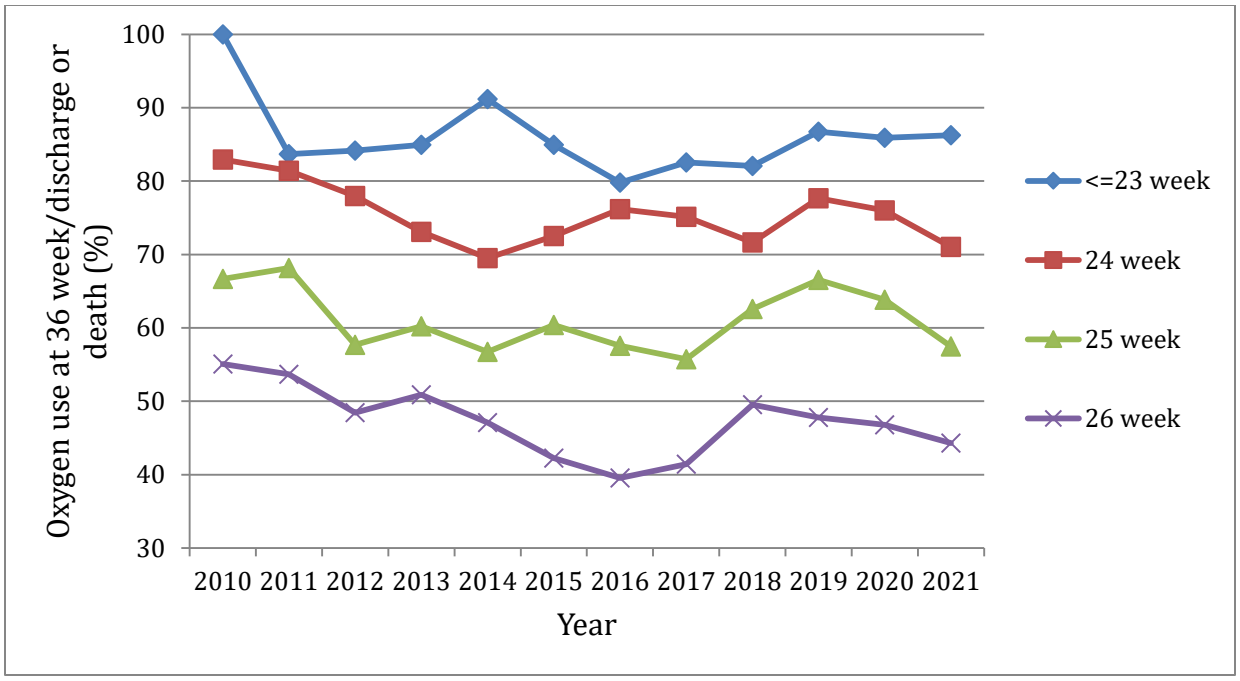


b. 27-32 weeks' GA:

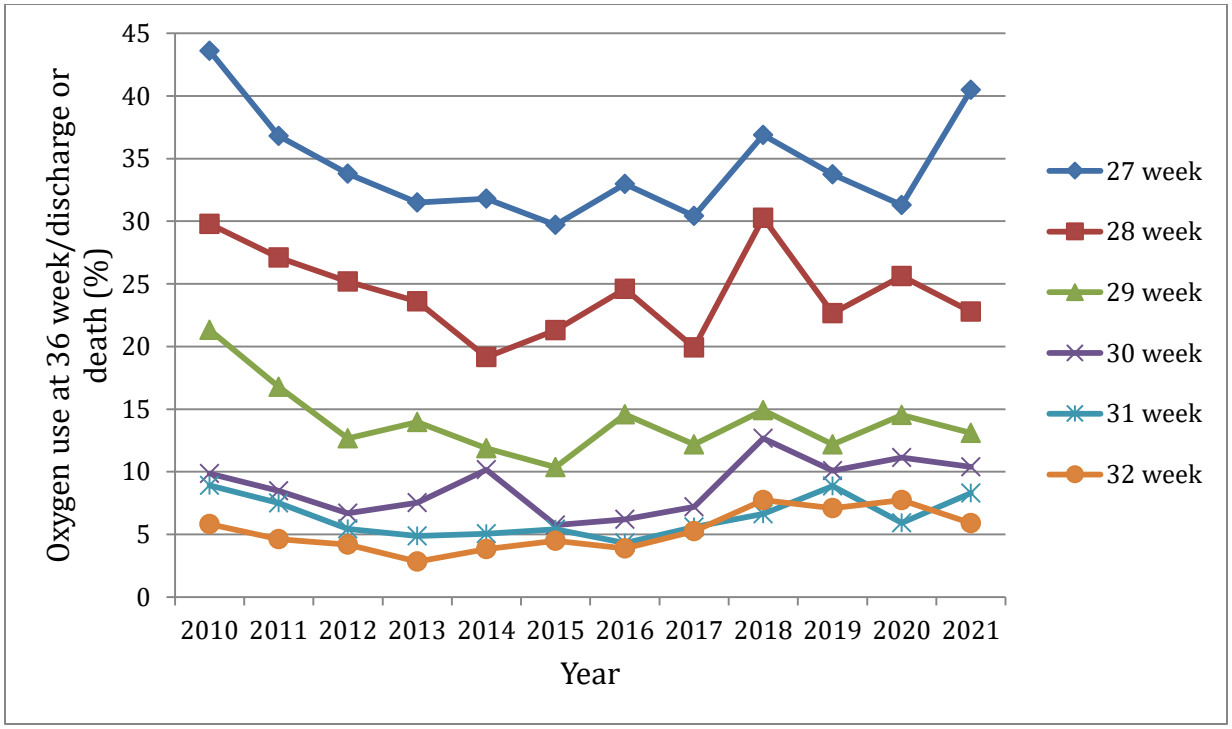


13a. Oxygen use at 36 weeks/discharge or death:

a. 23-26 weeks' GA:

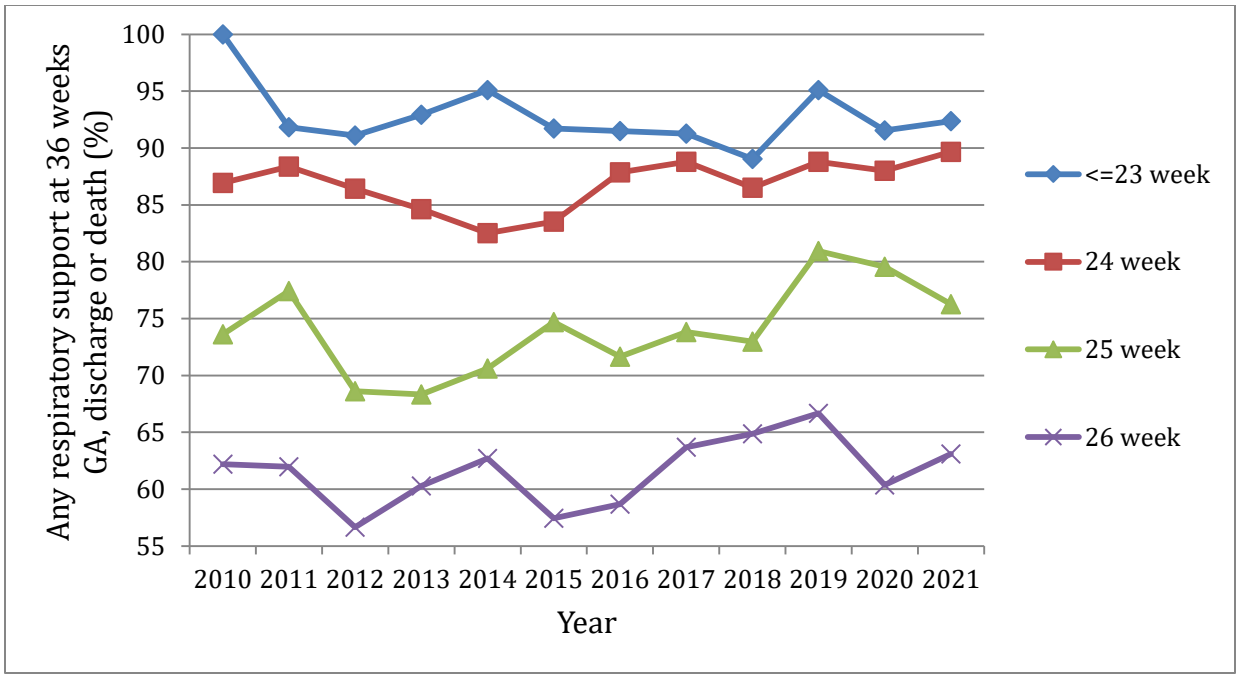


b. 27-32 weeks' GA:

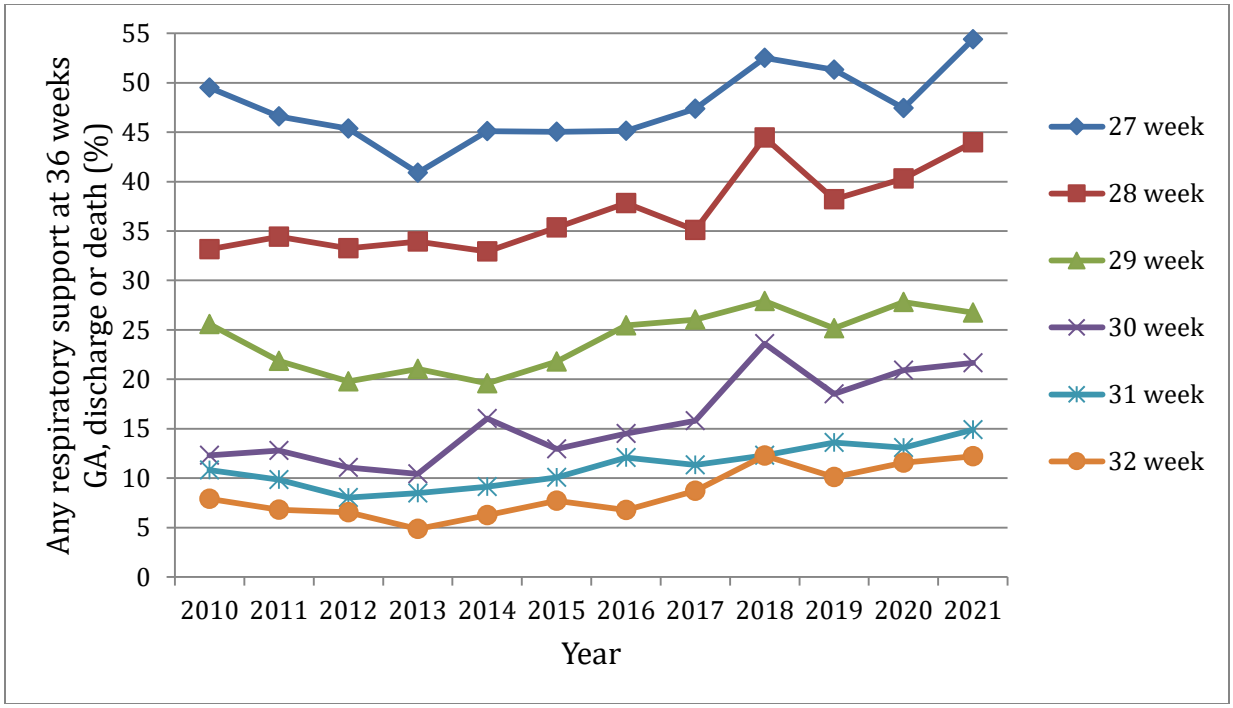


13b. Any respiratory support at 36 weeks/discharge or death:

a. 23-26 weeks' GA:

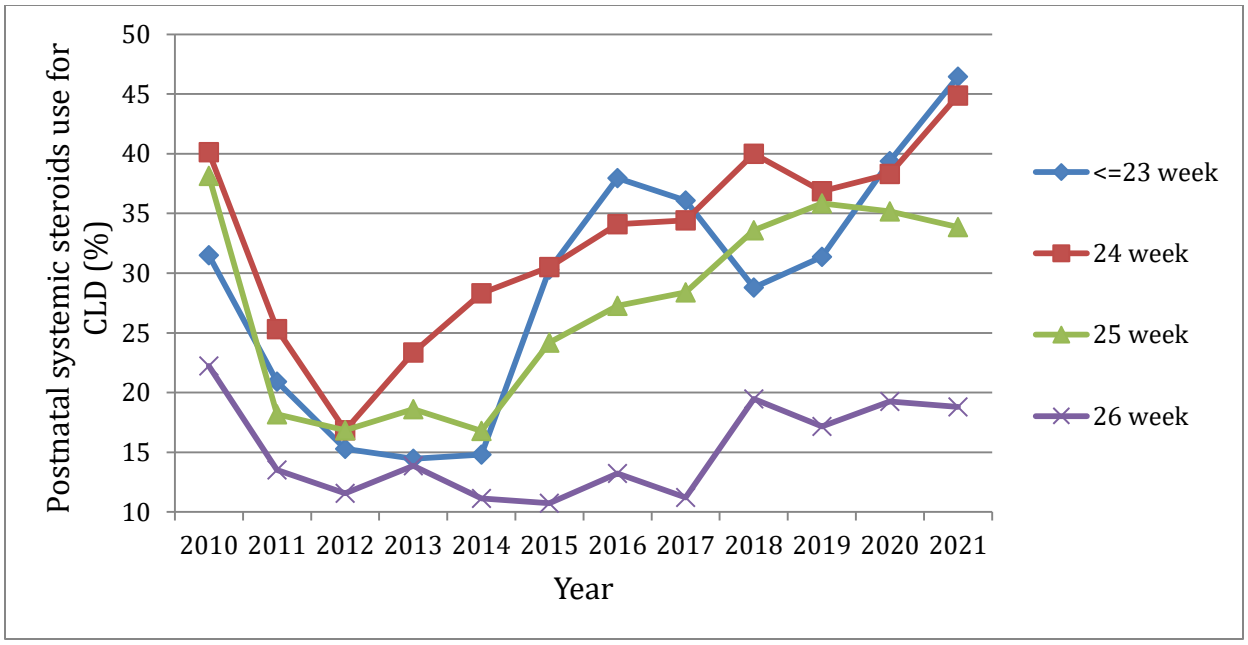


b. 27-32 weeks' GA:

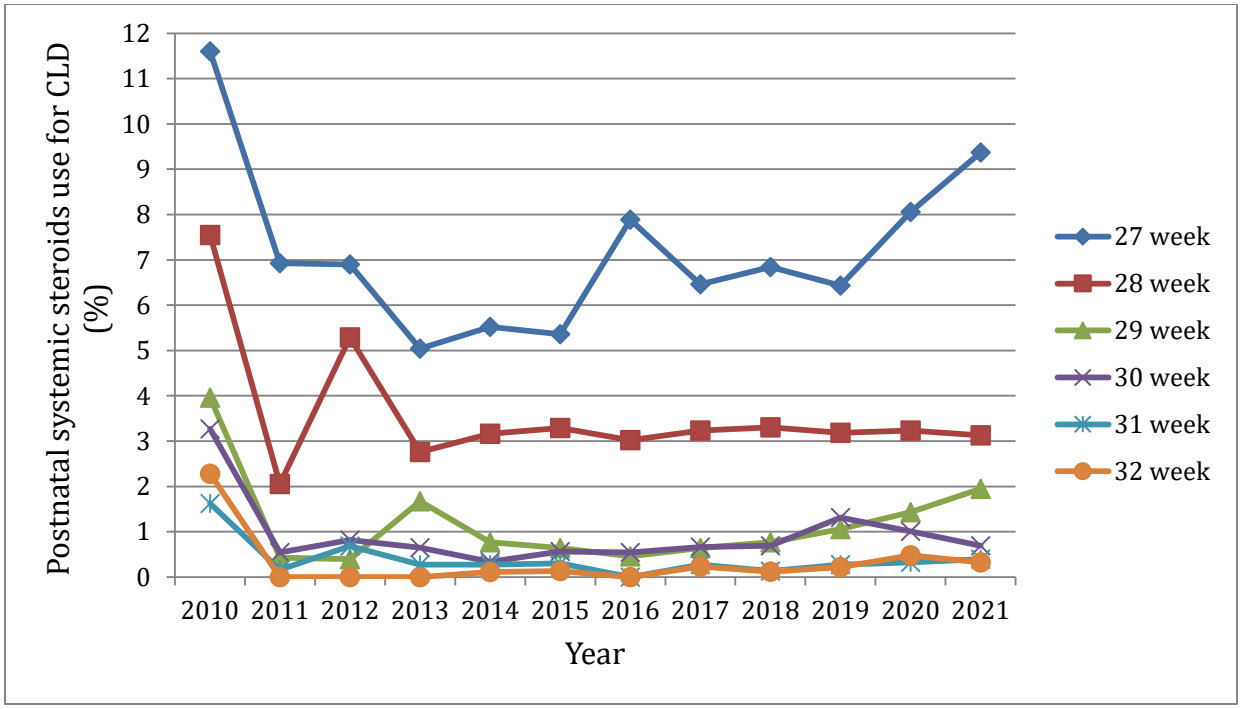


14. Postnatal systemic steroids use for chronic lung disease (CLD)

a. 23-26 weeks' GA:



b. 27-32 weeks' GA:

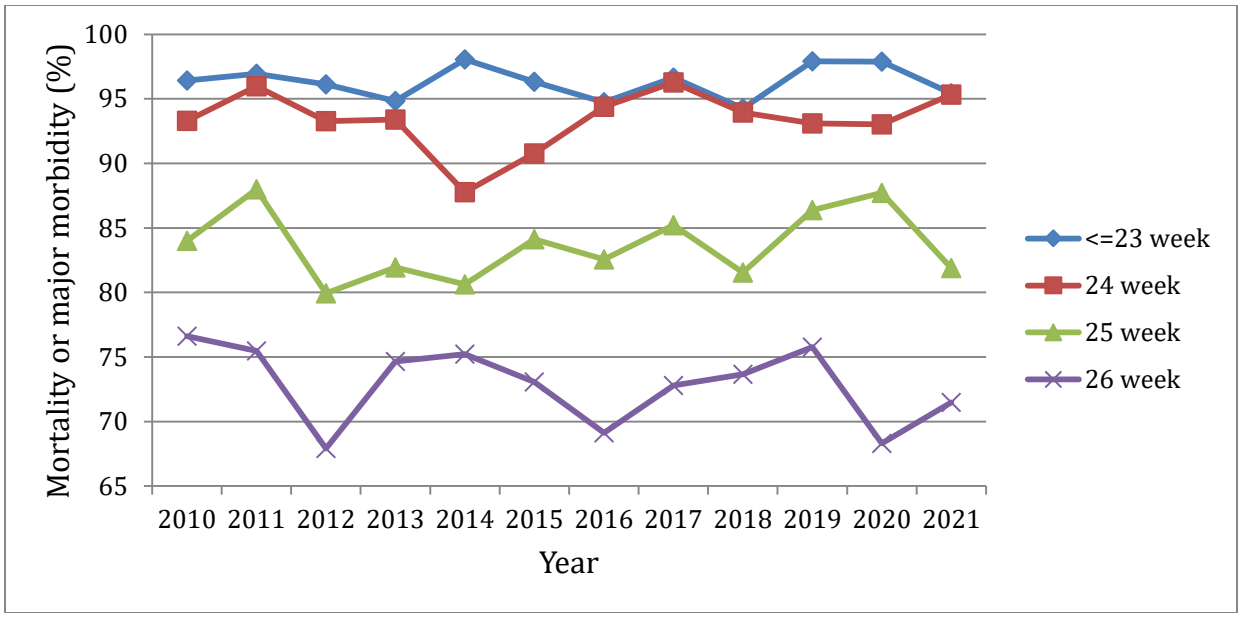


15. Mortality or major morbidity including CLD

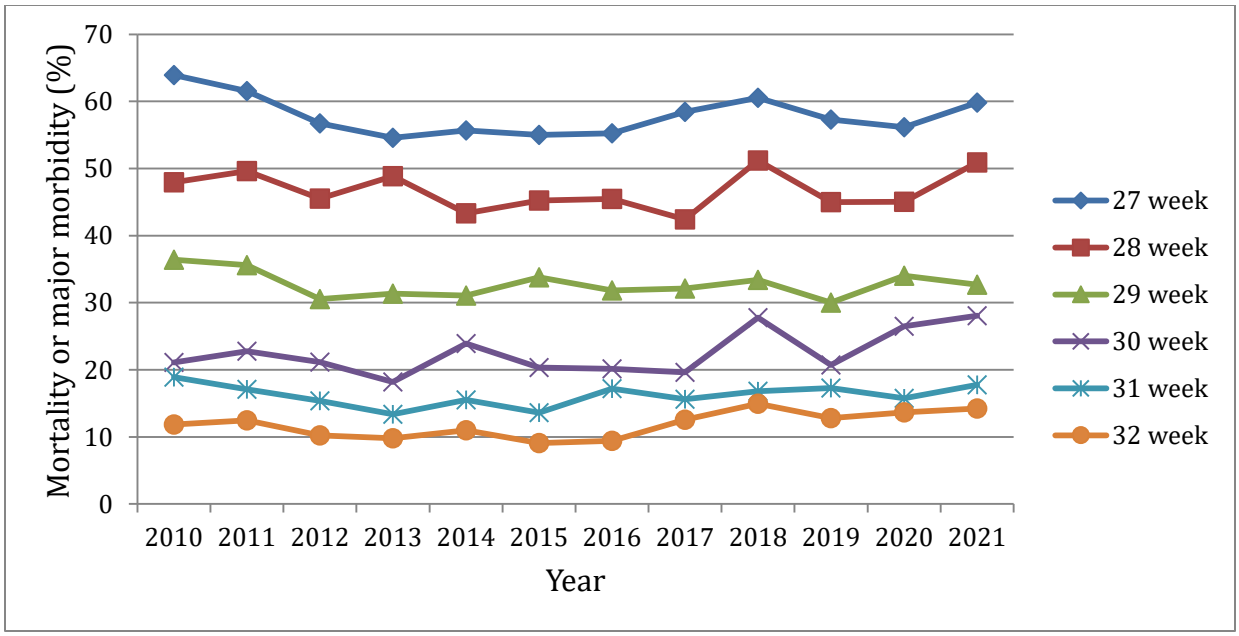
Major morbidity was counted as any one of the following:

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:

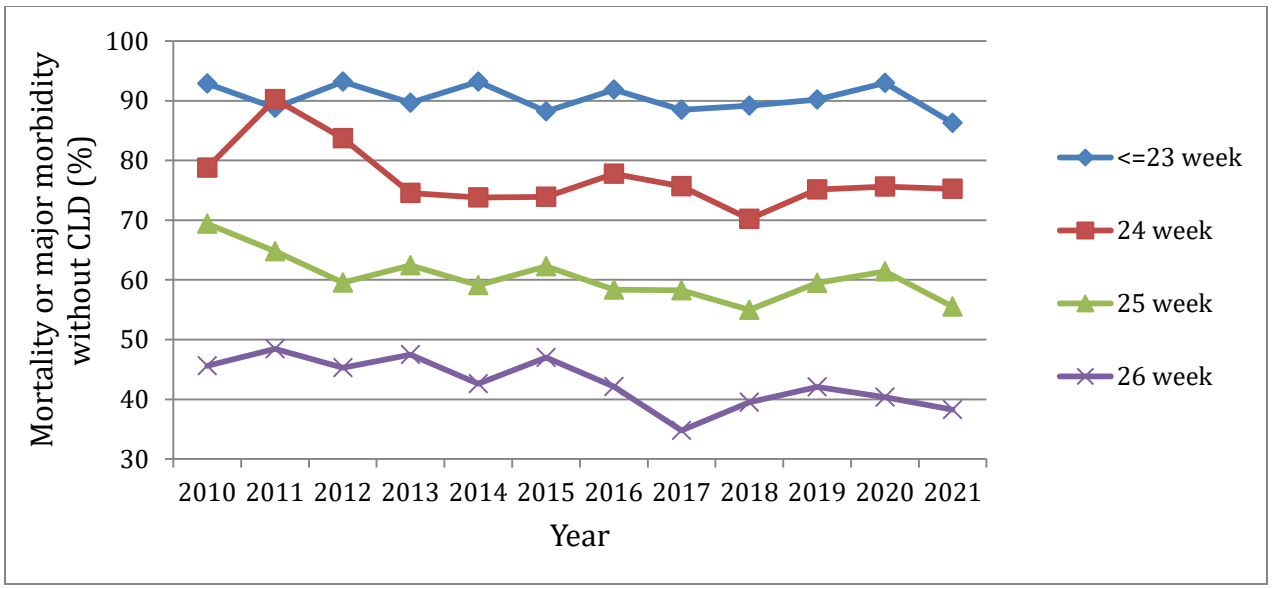


16. Mortality or major morbidity excluding CLD

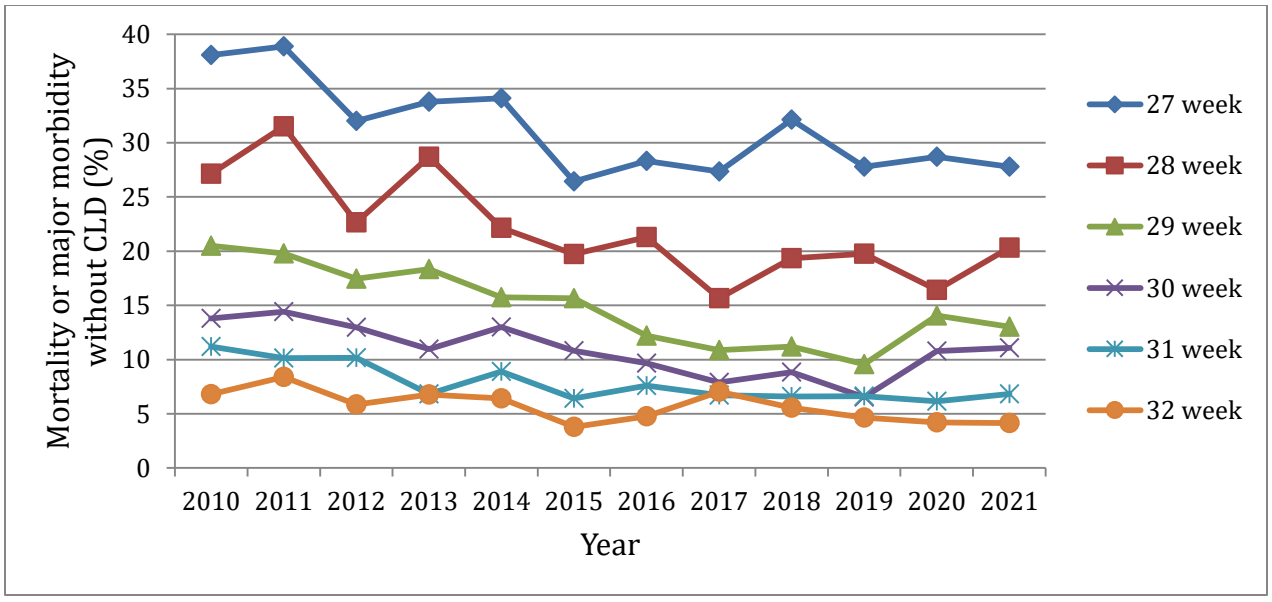
Major morbidity was counted as any one of the following:

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. 2021 CNN publications

Peer reviewed publications

1) Rios JD, Shah PS, Beltempo M, Louis D, Mukerji A, Premji S, Shah V, Lee SK, Pechlivanoglou P; Canadian Preterm Birth Network Investigators; Canadian Neonatal Network Investigators. Costs of Neonatal Intensive Care for Canadian Infants with Preterm Birth. J Pediatr. 2021 Feb;229:161-167.e12.
2) Melamed N, Murphy K, Barrett J, Asztalos E, McDonald SD, Yoon EW, Shah PS; on behalf of the Canadian Neonatal Network and Canadian Preterm Birth Network Investigators. Benefit of Antenatal Corticosteroids by Year of Birth Among Preterm Infants in Canada During 2003-2017: A Population-Based Cohort Study. BJOG. 2021 Feb;128(3):521-531.
3) Coshal H, Mukerji A, Lemyre B, Ng EH, Alvaro R, Ethier G, Yoon EW, Beltempo M, Shah PS. Characteristics and outcomes of preterm neonates according to number of doses of surfactant received. J Perinatol. 2021 Jan;41(1):39-46.
4) Zozaya C, Shah J, Pierro A, Zani A, Synnes A, Lee S, Shah PS on behalf of the Canadian Neonatal Network and the Canadian Neonatal Follow-Up Network Investigators. Neurodevelopmental and growth outcomes of extremely preterm infants with necrotizing enterocolitis or spontaneous intestinal perforation. J Pediatr Surg. 2021 Feb;56(2):309-316.
5) Gagliardi L, Rusconi F, Reichman B, Adams M, Modi N, Lehtonen L, Kusuda S, Vento M, Darlow BA, Bassler D, Isayama T, Norman M, Håkansson S, Lee SK, Lui K, Yang J, Shah PS on behalf of the International Network for Evaluating Outcomes of Neonates (iNeo) Investigators. Neonatal outcomes of extremely preterm twins by sex pairing: an international cohort study. Arch Dis Child Fetal Neonatal Ed. 2021 Jan;106(1):17-24.
6) Rizzolo A, Shah P, Bertelle V, Makary H, Ye X, Abenhain H, Piedboeuf B, and Beltempo M on behalf of Canadian Neonatal Network(CNN) and Canadian Preterm Birth Network (CPTBN) Investigators. Association of Timing of Birth with Mortality Among Preterm Infants Born in Canada. Journal of Perinatology. 2021 May; 41:2597-2606.
7) Roychoudhury S, Lodha A, Synnes A, Abou Mehrem A, Canning R, Banihani R, Beltempo M, Theriault K, Yang J, Shah PS, Soraisham A on behalf of the Canadian Neonatal Network, Canadian Preterm Birth Network and Canadian Neonatal Follow-Up Network Investigators. Neurodevelopmental Outcomes of Preterm Infants Conceived by Assisted Reproductive Technology. American Journal of Obstetrics & Gynecology. 2021 Sep;225(3):276.e1-276.e9.
8) Doucette S, Kelly E, Church P, Lee S, Shah V on behalf of Canadian Neonatal Network investigators and CNFUN Investigators and Steering Committee. Association of Inotrope Use with Neurodevelopmental Outcomes in Infants <29 Weeks Gestation: A Retrospective Cohort Study. J Matern Fetal Neonatal Med. 2021 Apr;1-9. [Epub ahead of print].
9) Puthattayil ZB , Luu TM, Beltempo M, Cross S, Pillay T, Ballantyne M, Synnes A, Shah PS, Daboval T, Canadian Neonatal Follow-Up Network. Risk factors for re-hospitalization following neonatal discharge of extremely preterm infants in Canada. Paediatr Child Health. April –May 2021;26(2):e96-e104.
10) Kandraju H. Kanungo J, Lee KS, Sibasis D, Adie M, Dorling J, Ye XY, Lee SK, Shah PS, Canadian Neonatal Network, Canadian Preterm Birth Network Investigators. Association of

Co-exposure of Antenatal Steroid and Prophylactic Indomethacin with Spontaneous Intestinal Perforation. J Pediatr. 2021 Aug;235:34-41.e1.

11) Mohammad K, Scott JM, Leijser L, Zein H, Afifi J, Piedboeuf B, Vries LS, Wezel-Meijler GV, Lee SK, Shah PS on behalf of the Canadian Neonatal Network and Canadian Preterm Birth Network Group on Neonatal Neurological Outcomes Improvement Investigators' Consensus Approach for Standardizing the Screening and Classification of Preterm Brain Injury Diagnosed With Cranial Ultrasound: A Canadian Perspective. Front Pediatr. 2021 Mar;9:618236.
12) Seaton SE, Draper ES, Adams M, Kusuda S, Håkansson S, Helenius K, Reichman B, Lehtonen L, Bassler D, Lee S,Vento M, Darlow BA, Rusconi F, Beltempo M, Isayama T, Norman M, Yang J, Shah P, Modi N. Variations in Neonatal Length of Stay of Extremely Preterm Babies: An International Comparison Between iNeo Networks. Journal of Pediatrics. 2021 Jun;233:26-32.e6.
13) Qureshi M, Shah PS, Abdelgadir D, Ye XY, Afifi J, Yuen R. Crossman SC, Taylor B, Mohammad K, Piedboeuf B, Aziz K, Canadian Neonatal Network Investigators. Gestational Age-Dependent Variations in Effects of Prophylactic Indomethacin on Brain Injury and Intestinal Injury. Journal of Pediatrics. 2021 Aug;235:26-33.e2.
14) Weisz DE, Yoon E, Dunn M, Emberley J, Mukerji A, Read B, Shah PS and the Canadian Neonatal Network Investigators. Duration of and Trends in Respiratory Support among Extremely Preterm Infants. Arch Dis Child Fetal Neonatal Ed. 2021 May;106(3):286-291.
15) Hiersch L, Shah PS, Khurshid F, Masse E, Murphy K, McDonald SD, Carson G, Barrett J, Melamed N on behalf of the Canadian Neonatal Network Investigators and the Canadian Preterm Birth Network Investigators. Mode of Delivery and Neonatal Outcomes in Extremely Preterm Vertex/Non-Vertex Twins of <28 weeks' Gestation: A Cohort Study. Am J Obstet Gynecol.2021 Jun;224(6):613.e1-613.e10.
16) Dharel D, Singhal N, Wood C, Cieslak Z, Bacchini F, Shah PS, Xiang YE, Alshaikh B, Canadian Neonatal Network and Canadian Preterm Birth Network Investigators. Rate and determinants of Mother's own milk feeding in infants born very preterm. The Journal of Pediatrics. 2021 Sep;236:21-27.e4.
17) Ting J, Robert A, Abou Mehrem A, Khurshid F, Drolet C, Monterrosa L, Yoon EW, Shah PS. Variability in Antimicrobial Use Among Infants Born at <33 Weeks' Gestational Age. Infect Control Hosp Epidemiol. 2021 Sep17:1-5. [Epub ahead of print].
18) Khurshid F. Coo H. Khalil A. Messiha J. Ting JY, Wong J, Shah PS. Comparison of multivariable logistic regression and machine learning models for predicting bronchopulmonary dysplasia or death in very preterm infants. Frontiers in Pediatrics 2021 Dec 7;9:759776.

Abstracts

1) Roychoudhury S, Lodha A, Synnes A, Ting J, Augustine S, Afifi J, Bizgu V, Shah PS, Soraisham A. Neurodevelopmental Outcomes of Extremely Preterm Infants with Late Onset Bacterial Sepsis According to Type of Bacteria. E-PAS 2021: EP-184.1530.
2) Hamid F. Beltempo M, Alshaikh B, Hasan SU, Rustogi D, Abou Mehrem A, Ng E, Kanungo J, Shah PS, Yusuf K. Effect of blood transfusion on outcomes of singleton preterm infants <29 weeks gestation born small for gestation and appropriate for gestational age. E-PAS 2021: EP-194.1692.

3) Styranko D. Shah PS, Xiang YY, Da Silva O, Piedboeuf B, Afifi J, El-Naggar W. Use of high initial Oxygen concentration for Delivery Room resuscitation is associated with increased mortality in extremely preterm infants. E-PAS 2021: EP-204.1835.
4) Debay A, Shah PS, Lodha A, Shivananda S, Redpath S, Seshi M, Dorling J, Lapointe A, Canning R, Strueby L, Beltempo M. Association of 24-hour In-house Neonatalogist Coverage with Outcomes of Extremely Preterm Infants. E-PAS 2021: EP-207.1873.
5) Yeung T. Rios JD, Khurshid F, Toye J, Ojah C, Beltempo M, Pechlivanoglou P, Shah PS. Trends in Costs for Extreme Preterm Care in Canada between Years 2010 to 2019. E-PAS 2021: 2910-HP-QA.220.
6) Beltempo M, Xiang YY, Synnes A, Piedboeuf B, Bacchini F, Shah PS. Regional variations in length of stay and readmission of preterm infants in Canada. E-PAS 2021: 2910-HP-QA.221.
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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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