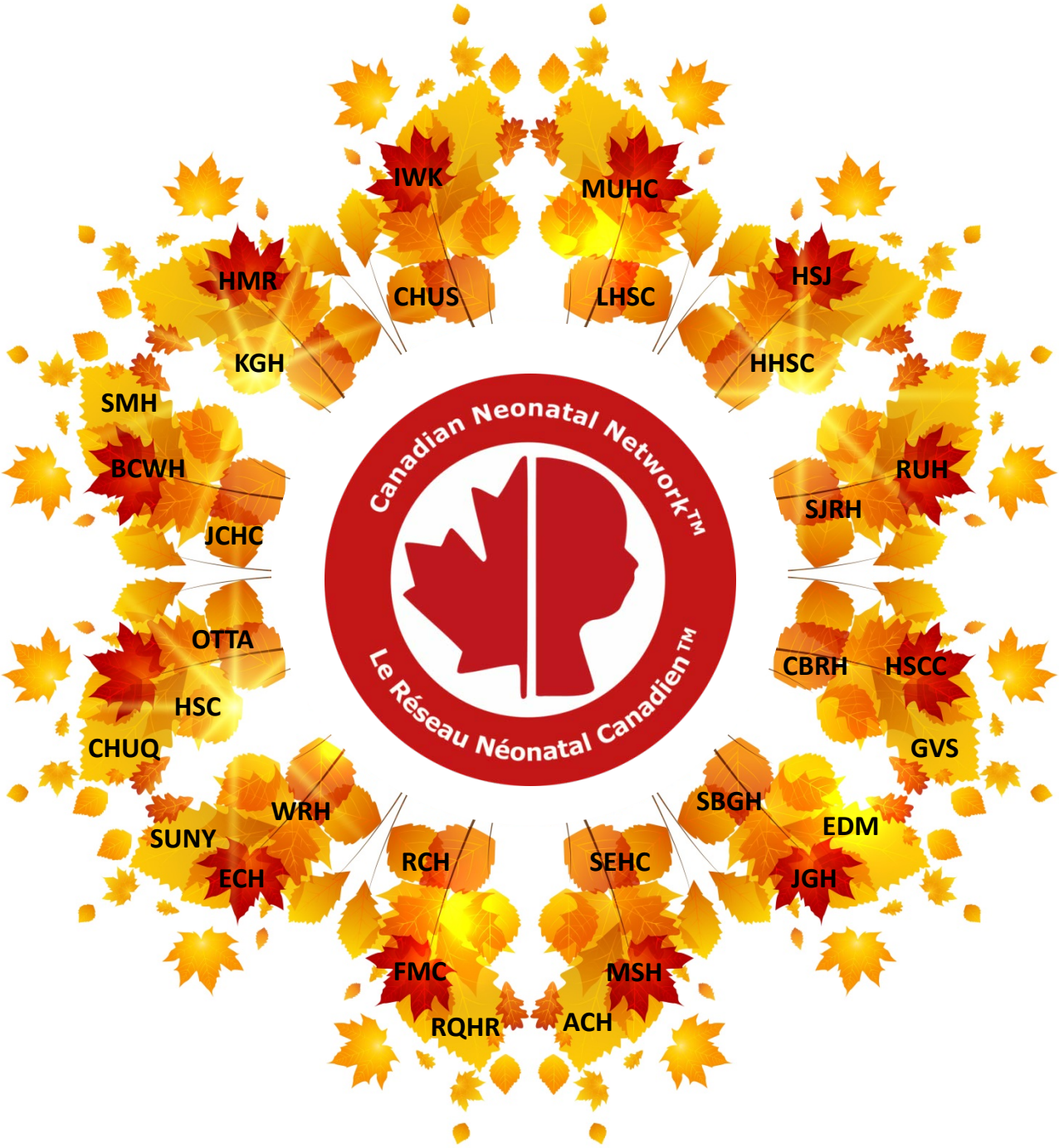

The Canadian Neonatal Network ™
Le Réseau Néonatal Canadien ™

Annual Report 2017 Rapport Annuel

Acknowledgements

This report is based upon data collected from 31 Canadian Health Care Organizations that were members of the Canadian Neonatal Network™ during the year 2017. 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 Canadian researchers who collaborate on research issues relating to neonatal care. The CNN was founded in 1995 by Dr. Shoo Lee. The CNN maintains a standardized neonatal database and provides unique opportunities for researchers to participate in collaborative projects on a national and international scale. Health care professionals, health services researchers, and health care administrators participate actively in clinical, epidemiologic, outcomes, health services, health policy and informatics research aimed at improving quality, effectiveness and efficiency of neonatal care. Research results are published in Network reports and in peer-reviewed journals.

Funding

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

Coordinating Centre of the CNN

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

Dr. Abhay Lodha, University of Calgary
Dr. Amit Mukerji, McMaster University
Dr. Prakesh Shah, University of Toronto (Chair)
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Participating CNN Sites and Site Investigators in 2017:

Victoria General Hospital, Victoria, British Columbia	Dr. Jaideep Kanungo
BC Women's Hospital, Vancouver, British Columbia	Dr. Joseph Ting
Royal Columbian Hospital, New Westminster, British Columbia	Dr. Zenon Cieslak
Surrey Memorial Hospital, Surrey, British Columbia	Dr. Rebecca Sherlock
Foothills Medical Centre, Calgary, Alberta	Dr. Wendy Yee
Alberta Children's Hospital, Calgary, Alberta	Dr. Carlos Fajardo
Royal Alexandra Hospital, Edmonton, Alberta & University of Alberta Hospital – Stollery Children's, Edmonton, Alberta	Dr. Khalid Aziz & Dr. Jennifer Toye
Royal University Hospital, Saskatoon, Saskatchewan	Dr. Koravangattu Sankaran & Dr. Sibasis Daspal
Regina General Hospital, Regina, Saskatchewan	Dr. Zarin Kalapesi & Dr. Jaya Bodani
Winnipeg Health Sciences Centre, Winnipeg, Manitoba	Dr. Mary Seshia
St. Boniface General Hospital, Winnipeg, Manitoba	Dr. Ruben Alvaro
Windsor Regional Hospital, Windsor, Ontario	Dr. Chuks Nwaesei
London Health Sciences Centre, London, Ontario	Dr. Orlando Da Silva
Hamilton Health Sciences, Hamilton, Ontario	Dr. Amit Mukerji
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Hospital for Sick Children, Toronto, Ontario	Dr. Kyong-Soon Lee
Sunnybrook Health Sciences Centre, Toronto, Ontario	Dr. Michael Dunn
Kingston General Hospital, Kingston, Ontario	Dr. Kimberly Dow
Children's Hospital of Eastern Ontario, Ottawa, Ontario & The Ottawa Hospital, Ottawa, Ontario	Dr. Brigitte Lemyre
Jewish General Hospital, Montréal, Québec	Dr. Ermelinda Pelausa
Hôpital Sainte-Justine, Montréal, Québec	Dr. Keith Barrington &

	Dr. Anie Lapointe
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Dr. Everett Chalmers Hospital, Fredericton, New Brunswick	Dr. Hala Makary
Saint John Regional Hospital, Saint John, New Brunswick	Dr. Cecil Ojah & Dr. Luis Monterrosa
Moncton Hospital, Moncton, New Brunswick	Dr. Rody Canning
IWK Health Centre, Halifax, Nova Scotia	Dr. Jehier Afifi
Cape Breton Regional Hospital, Sydney, Nova Scotia	Dr. Andrzej Kajetanowicz
Janeway Children's Health and Rehabilitation Centre, St. John's, Newfoundland	Dr. Akhil Deshpandey & Dr. Julie Emberley

Written & Prepared By:

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Cover page adapted by Priscilla Chan

Table of contents

A. Executive Summary

Inclusion summary:

This report from the Canadian Neonatal Network™ (CNN) is based on data from 31 tertiary NICU sites that contributed data in the year 2017. Admissions between January 1, 2017 and December 31, 2017 who were discharged by March 31, 2018 were included. Sixteen (16) infants who were admitted in 2016 but discharged after March 31, 2017 were also included in the 2017 report. Delivery room deaths, moribund neonates, and readmissions from 2016 were excluded.

Total number of eligible admissions to participating Canadian sites (See section D.1 for analyses)	15 798
Total number of eligible individual neonates (See section D.2. for analyses)	14 773
Total number of eligible very preterm (GA <33 weeks) neonates	4 358
Total number of eligible extremely preterm (GA <29 weeks) neonates (See section D.3. for analyses)	1 674
Total number of eligible very low birth weight (BW <1500 g) neonates (See section D.3. for analyses)	2 920

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 2017, seven (7) sites had resource limitations and were only able to contribute data from a subset of eligible neonates admitted to their NICUs. Each of these seven (7) sites included, at a minimum, all neonates born at less than 33 weeks' gestational age (GA). See page 3 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, #6 and #6b.
g. Presentations #4, #6 and #6b included delivery room deaths.
h. Neonates who were not admitted to participating NICUs were not included in this report.

Noteworthy findings:

a. 29 out of 31 sites collected data on delivery room deaths in 2017.

b. 23% of all admitted neonates were outborn neonates and 15% of neonates of <33 weeks' GA were admitted as outborn neonates.

c. The survival rate increased at lower GAs:
   i. At 22 weeks' GA, 14% of all neonates and 35% of neonates who received intensive care survived.
   ii. At 23 weeks' GA, 41% of all neonates and 51% of neonates who received intensive care survived.

d. The survival rate also increased at lower BWs:
   i. At 400-499g, 31% of all neonates and 47% of neonates who received intensive care survived.
   ii. At 500-599g, 53% of all neonates and 64% of neonates who received intensive care survived.

e. Among neonates <29 weeks' GA at birth:
   i. 94% received a partial or complete course of antenatal steroids.
   ii. 72% received MgSO4 for neuroprotection.
   iii. 51% received deferred cord clamping.
   iv. 27% were hypothermic (temperature $<36.5^{0}$C) on admission.
   v. 17% had an Apgar score of <5 at 5 minutes.
   vi. 93% received antibiotics at some time during their stay.
   vii. 36% were exclusively breast milk feeding at discharge and 23% were exclusively formula feeding at discharge.

f. A majority of neonates received <40% oxygen at the start of resuscitation.

g. Coagulase-Negative Staphylococcal infection accounted for 39% of late onset sepsis.

h. Surgical ligation for PDA was done in 80 neonates.

i. NEC rates were 4% in neonates <33 weeks' GA and 5% for VLBW neonates.

j. Stage 4 or 5 ROP was not observed in 2017.

k. Stage 3 ROP occurred in 8% of neonates <33 weeks' GA (5% required treatment) and in 9% of neonates <1500g BW (6% required treatment).

l. A total of 541 neonates were diagnosed with HIE and of whom 357 received hypothermia.

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 data	ROP treatment service?	PDA surgical service?
Victoria General Hospital	All eligible admissions	y	y	y	y	y
BC Women's Hospital	All eligible admissions	y	n	start in 2018	y	y
Royal Columbian Hospital	All eligible admissions	y	y	y	y	n
Surrey Memorial Hospital	All eligible admissions	y	y	y	n	n
Foothills Medical Centre	All eligible admissions	n	n/a	y	y	y
Alberta Children's Hospital	All eligible admissions	n	n/a	n/a	y	y
Royal Alexandra Hospital (Edmonton)*	< 33 weeks GA & HIE	y	y	y	y	n
University of Alberta Hospital - Stollery (Edmonton)*	All eligible admissions	n	n/a	n/a	n	y
Regina General Hospital	All eligible admissions	y	y	y	n	n
Royal University Hospital	< 33 weeks GA	n	n/a	n	n	y
Health Sciences Centre Winnipeg	All eligible admissions	y	y	y	y	y
St. Boniface General Hospital	All eligible admissions	n	n/a	y	y	y
Hamilton Health Sciences	All eligible admissions	y	n	y	y	y
London Health Sciences Centre	All eligible admissions	y	y	y	y	y
Windsor Regional Hospital	All eligible admissions	n	n/a	y	y	n
Hospital for Sick Children	All eligible admissions	n	n/a	n/a	y	y
Mount Sinai Hospital	All eligible admissions	y	y	y	n	n
Sunnybrook Health Sciences Centre	All eligible admissions	n	n/a	y	n	n
Children's Hospital of Eastern Ontario and the Ottawa Hospital**	< 33 weeks GA	y	y	y	y	y
Kingston General Hospital	All eligible admissions	y	y	y	y	y
Jewish General Hospital	All eligible admissions	y	y	y	y	n
Hôpital Sainte-Justine	All eligible admissions	y	n	y	y	y
Centre Hospitalier Universitaire de Quebec	< 33 weeks GA	y	n	y	y	y
Montreal Children's Hospital - MUHC	All eligible admissions	n	n/a	y	y	y
Centre Hospitalier Universitaire de Sherbrooke	< 33 weeks GA	y	n	y	n	n
Hôpital Maisonneuve-Rosemont	< 33 weeks GA	n	n/a	y	y	n
The Moncton Hospital	All eligible admissions	n	n/a	y	n	n
Dr. Everett Chalmers Hospital	All eligible admissions	n	n/a	y	n	n
Saint John Regional Hospital	All eligible admissions	n	n	y	n	n
Janeway Children's Health and Rehabilitation Centre	All eligible admissions	y	y	y	y	y
IWK Health Centre	< 37 weeks GA & HIE	y	y	y	y	y
Cape Breton Regional Hospital	All eligible admissions	n	n/a	y	n	n

* Royal Alexandra Hospital & University of Alberta Hospital transmit data as one site

** Children's Hospital of Eastern Ontario and the Ottawa 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, 2017 and December 31, 2017, and were discharged by March 31, 2018. 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. Sixteen (16) infants who were admitted in 2016 but discharged after March 31, 2017 were also included in the 2017 report. Delivery room deaths, moribund neonates, and readmissions from 2016 were excluded. A total of 14 773 patients accounted for 15 798 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 15 798 eligible admissions (including readmissions) to 31 sites. 24 of these sites submitted complete data (n=13 675) on all admissions and 7 sites submitted data on a selected admission cohort (n=2 123).

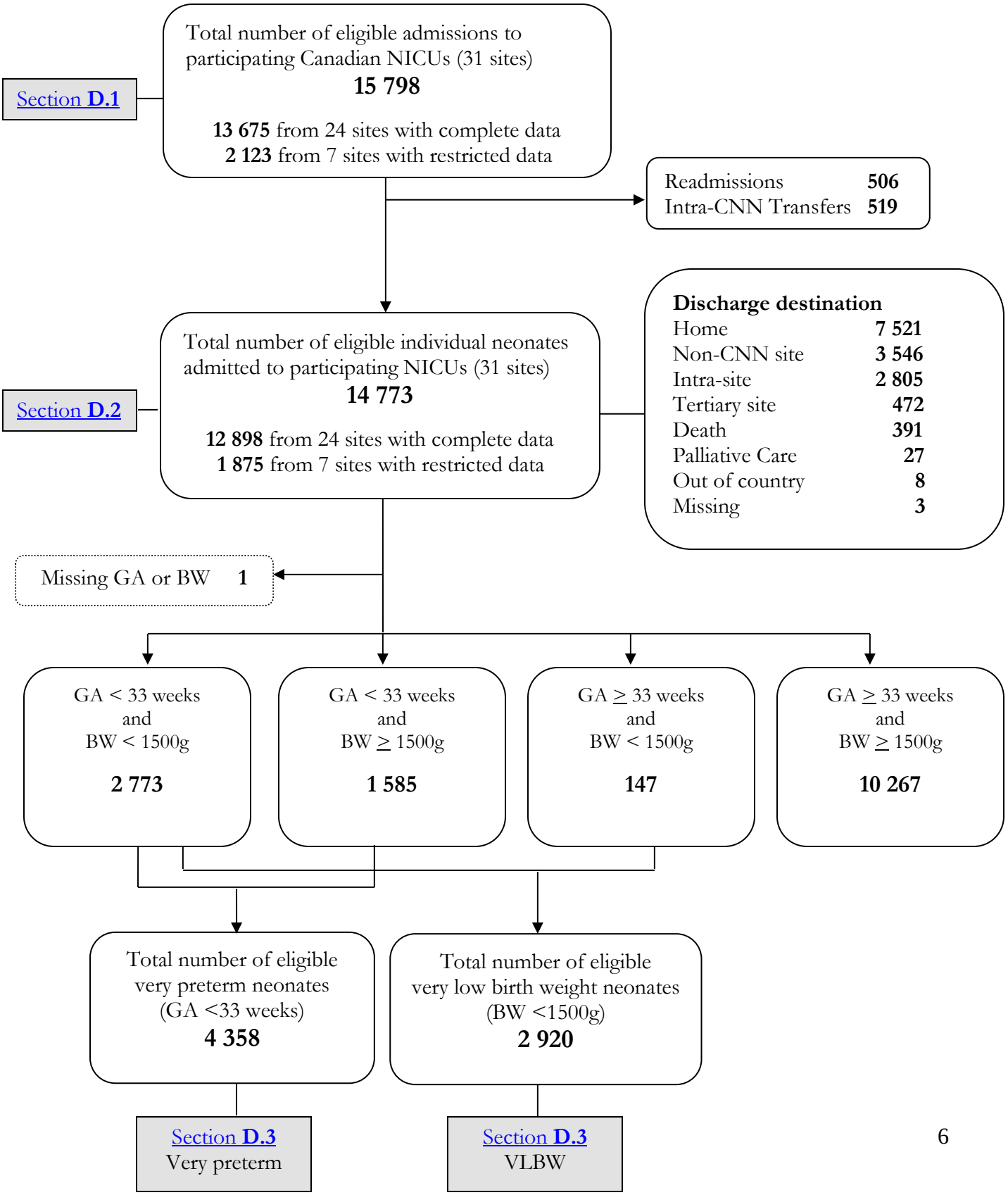
Section D.2. Analyses based on number of eligible neonates admitted to participating sites

These include data from 14 773 eligible neonates admitted to 31 sites. 24 of these sites submitted complete data (n=12 898) on all eligible admitted neonates and 7 sites submitted data on selected eligible admitted neonates (n=1 875).

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 4 358 eligible very preterm neonates and 2 920 eligible very low birth weight (VLBW) neonates.

Canadian Neonatal Network™ Database: Admissions between January 1, 2017 and December 31, 2017 who were discharged by March 31, 2018. Sixteen (16) infants who were admitted in 2016 but discharged after March 31, 2017 were also included in the 2017 report. Delivery room deaths, moribund neonates, and readmissions from 2016 were excluded.

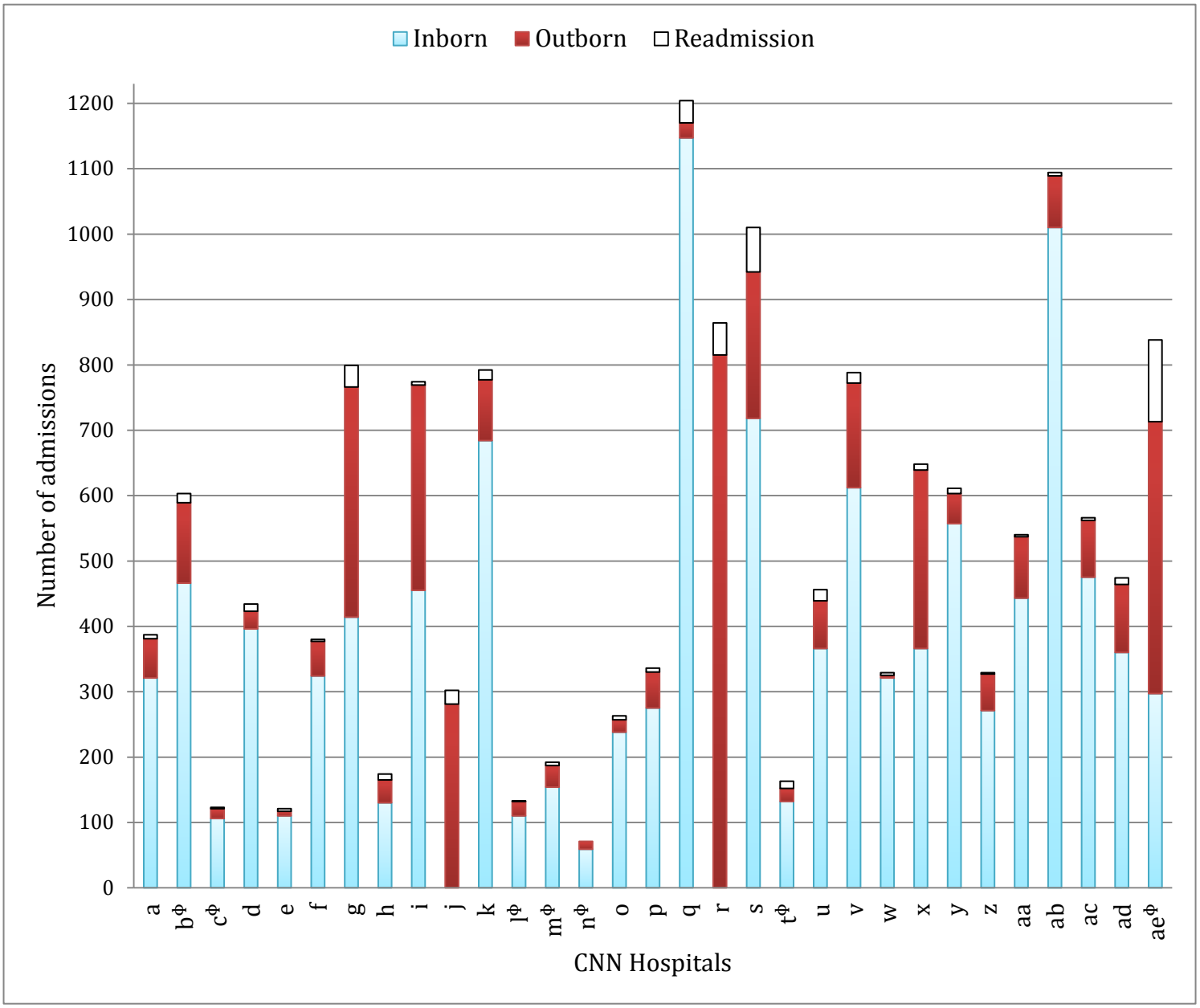


Section D.1

Analyses based on number of eligible admissions to participating sites

These include data from 15 798 eligible admissions (including readmissions) to 31 sites. 24 of these sites submitted complete data (n=13 675) on all admissions and 7 sites submitted data on a selected admission cohort (n=2 123).

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

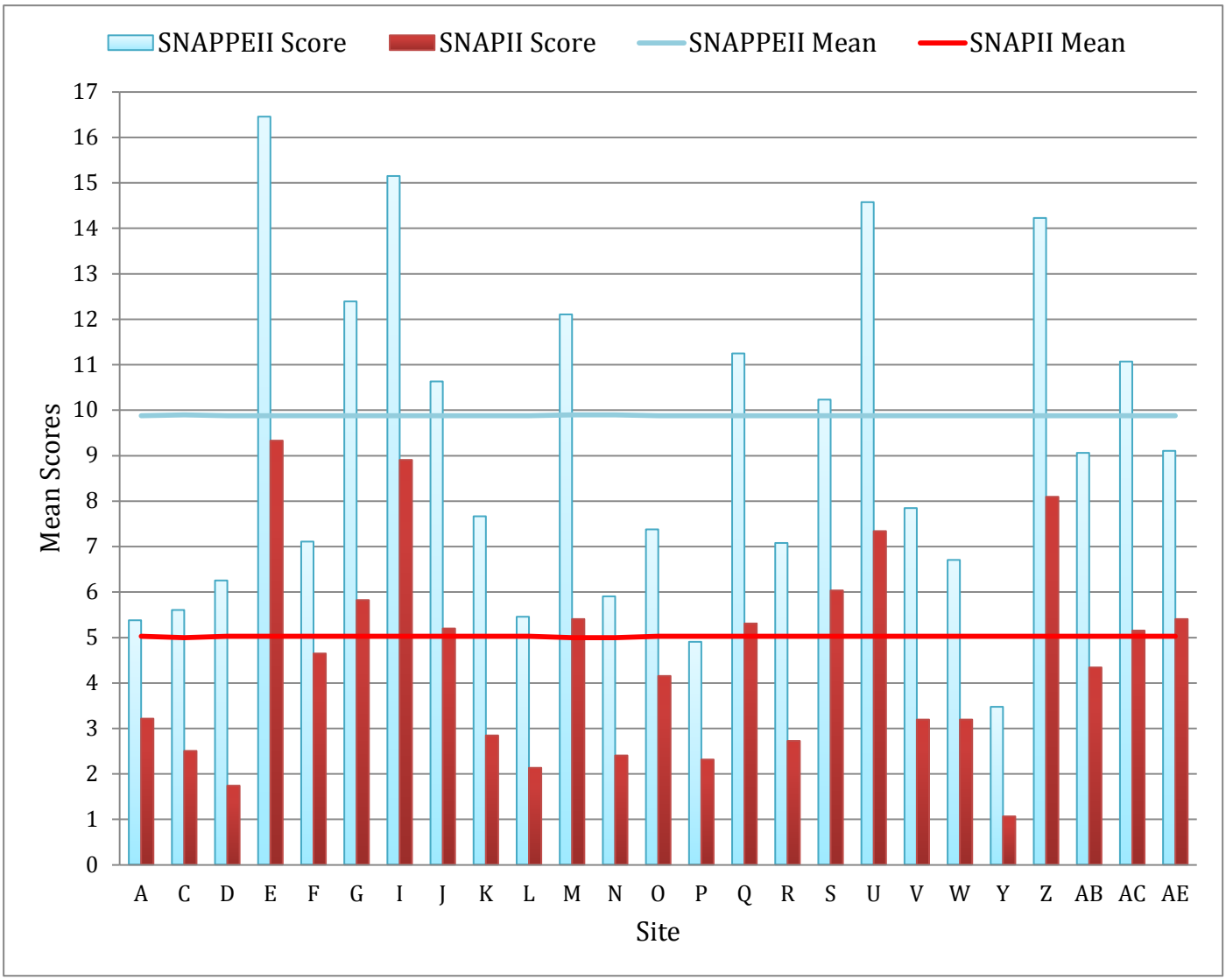
Sites		Admission Status			Total
		Inborn	Outborn	Readmission	
a	Count	321	60	6	387
	%	83.0	15.5	1.6	(100.0)
b$^{\phi}$	Count	466	123	14	603
	%	77.3	20.4	2.3	(100.0)
c$^{\phi}$	Count	106	15	2	123
	%	86.2	12.2	1.6	(100.0)
d	Count	396	27	11	434
	%	91.2	6.2	2.5	(100.0)
e	Count	110	7	4	121
	%	90.9	5.8	3.3	(100.0)
f	Count	324	53	3	380
	%	85.3	14.0	0.8	(100.0)
g	Count	414	352	33	799
	%	51.8	44.1	4.1	(100.0)
h	Count	130	35	9	174
	%	74.7	20.1	5.2	(100.0)
i	Count	455	314	5	774
	%	58.8	40.6	0.7	(100.0)
j	Count	0	281	21	302
	%	0.0	93.1	7.0	(100.0)
k	Count	684	93	15	792
	%	86.4	11.7	1.9	(100.0)
l$^{\phi}$	Count	110	22	1	133
	%	82.7	16.5	0.8	(100.0)
m$^{\phi}$	Count	154	33	5	192
	%	80.2	17.2	2.6	(100.0)
n$^{\phi}$	Count	59	12	0	71
	%	83.1	16.9	0.0	(100.0)
o	Count	238	19	6	263
	%	90.5	7.2	2.3	(100.0)
p	Count	275	55	6	336
	%	81.9	16.4	1.8	(100.0)

Sites		Admission status			Total
		Inborn	Outborn	Readmission	
q	Count	1147	23	34	1204
	%	95.3	1.9	2.8	(100.0)
r	Count	0	815	49	864
	%	0.0	94.3	5.7	(100.0)
s	Count	718	224	68	1010
	%	71.1	22.2	6.7	(100.0)
t$^{\phi}$	Count	132	20	11	163
	%	81.0	12.3	6.8	(100.0)
u	Count	366	73	17	456
	%	80.3	16.0	3.7	(100.0)
v	Count	612	160	16	788
	%	77.7	20.3	2.0	(100.0)
w	Count	321	4	4	329
	%	97.6	1.2	1.2	(100.0)
x	Count	366	273	9	648
	%	56.5	42.1	1.4	(100.0)
y	Count	557	46	8	611
	%	91.2	7.5	1.3	(100.0)
z	Count	271	56	2	329
	%	82.4	17.0	0.6	(100.0)
aa	Count	443	94	3	540
	%	82.0	17.4	0.6	(100.0)
ab	Count	1010	79	5	1094
	%	92.3	7.2	0.5	(100.0)
ac	Count	475	87	4	566
	%	83.9	15.4	0.7	(100.0)
ad	Count	360	104	10	474
	%	76.0	21.9	2.1	(100.0)
ae$^{\phi}$	Count	297	416	125	838
	%	35.4	49.6	14.9	(100.0)

Total number of admissions:	15 798
Inborn:	11 317 (71.6%)
Outborn:	3 975 (25.2%)
Readmission:	506 (3.2%)
Missing data on inborn/outborn status:	0 (0.0%)

COMMENTS: These analyses include 15 798 admissions to participating sites across Canada during the period of January 1, 2017 to December 31, 2017. After adjusting for readmission, 14 773 neonates are represented. **Twenty-four sites collected data on all eligible admissions whereas seven sites (marked by $^{\phi}$) collected data on selected cohort of eligible admissions only.** See page 3 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=24 sites, 13 675 admissions, 397 missing data on SNAP scores)



Data collection status	Number of sites	Score	Mean	Std Dev	Q1	Median	Q3
Complete	24	SNAPIIPE	9.9	0.1	0	0	18
		SNAPII	5.0	0.1	0	0	7
Restricted	7	SNAPIIPE	13.0	0.4	0	5	19
		SNAPII	6.2	0.2	0	0	9

Presentation #2 (continued)
All admissions: Admission illness severity scores (SNAP-II and SNAP-IIPE): All sites

Site		SNAP-IIPE	SNAP-II	Site		SNAP-IIPE	SNAP-II
A	Mean	5.4	3.2	**Q**	Mean	11.2	5.3
	SEM	0.5	0.3		SEM	0.9	0.6
Bϕ	Mean	15.2	7.3	**R**	Mean	7.1	2.7
	SEM	0.7	0.4		SEM	0.6	0.3
C	Mean	5.6	2.5	**S**	Mean	10.2	6.0
	SEM	0.5	0.3		SEM	0.5	0.3
D	Mean	6.2	1.7	**Tϕ**	Mean	17.6	7.6
	SEM	0.6	0.3		SEM	1.4	0.7
E	Mean	16.5	9.3	**U**	Mean	14.6	7.3
	SEM	0.7	0.5		SEM	0.6	0.4
F	Mean	7.1	4.6	**Vϕ**	Mean	7.8	3.2
	SEM	0.8	0.5		SEM	1.0	0.5
G	Mean	12.4	5.8	**W**	Mean	6.7	3.2
	SEM	0.6	0.4		SEM	0.5	0.3
Hϕ	Mean	13.4	5.4	**Xϕ**	Mean	13.0	7.1
	SEM	1.5	0.7		SEM	2.1	1.2
I	Mean	15.1	8.9	**Y**	Mean	3.5	1.1
	SEM	0.7	0.4		SEM	0.7	0.4
J	Mean	10.6	5.2	**Z**	Mean	14.2	8.1
	SEM	0.9	0.5		SEM	0.5	0.3
K	Mean	7.7	2.8	**AAϕ**	Mean	16.1	8.8
	SEM	0.5	0.3		SEM	1.4	0.9
L	Mean	5.5	2.1	**AB**	Mean	9.1	4.3
	SEM	0.5	0.3		SEM	0.6	0.4
M	Mean	12.1	5.4	**AC**	Mean	11.1	5.1
	SEM	0.6	0.4		SEM	1.1	0.6
N	Mean	5.9	2.4	**ADϕ**	Mean	8.7	4.1
	SEM	0.5	0.3		SEM	0.6	0.4
O	Mean	7.4	4.1	**AE**	Mean	9.1	5.4
	SEM	0.7	0.4		SEM	0.4	0.3
P	Mean	4.9	2.3				
	SEM	0.5	0.3				

COMMENTS: These analyses include 15 798 admissions (411 missing data on SNAP scores) to participating sites across Canada during the year 2017. Adjusting for readmission, these analyses represent 14 773 Neonates. **Twenty-four sites collected data on all eligible admissions whereas seven sites (marked by ϕ) collected data on a selected cohort of eligible admissions only.** These seven sites were not included in the Presentation #2 bar graph but were included in the Presentation #2 Table (above).

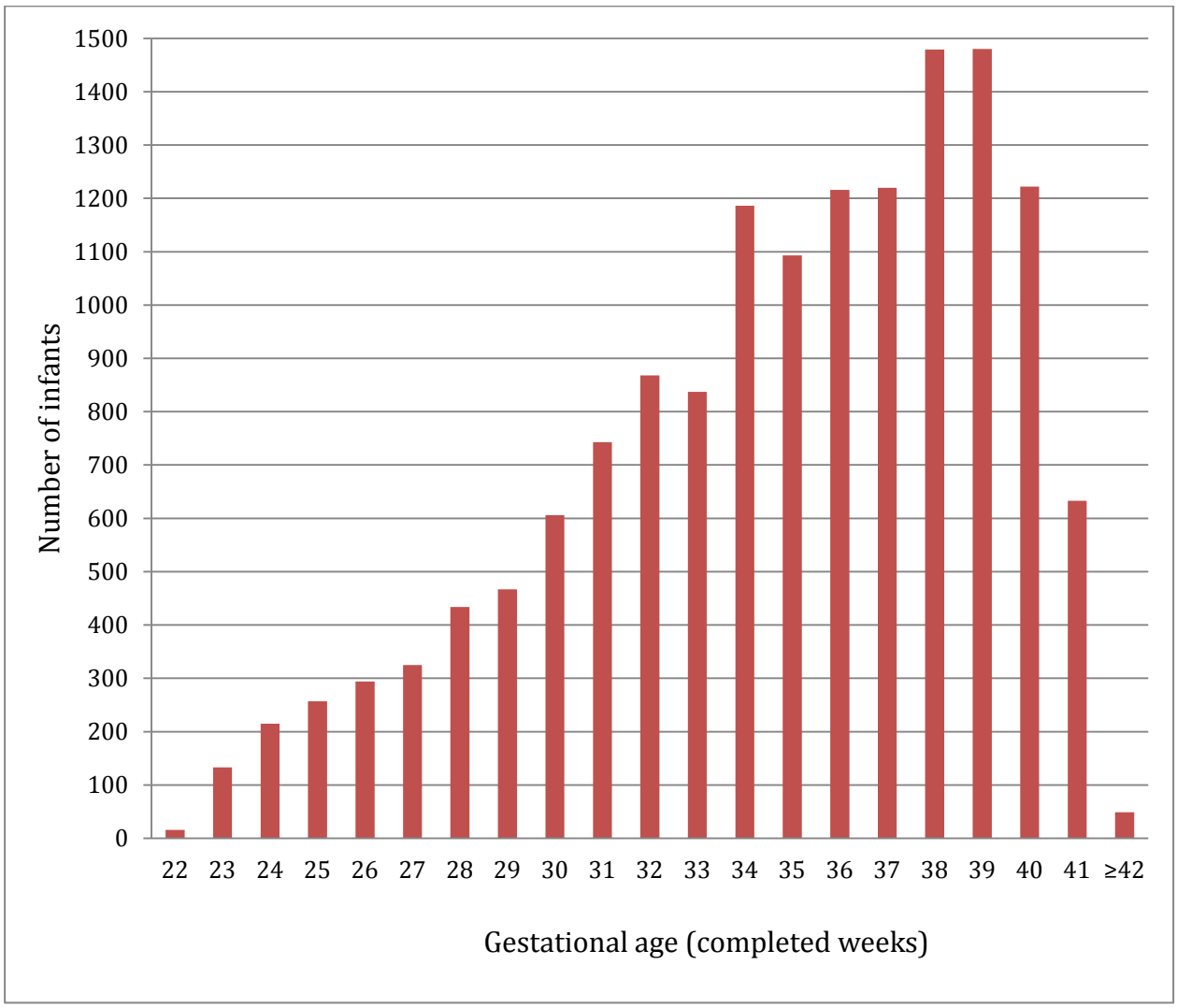
ϕ Please note that the criteria for entering neonates in the CNN dataset are not the same for these seven sites and thus, the scores are not comparable with each other or with centers contributing complete data. These seven sites may have included neonates at lower GAs and/or lower BWs; thus, their severity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

Section D.2

Analyses based on number of eligible neonates admitted to participating sites

These include data from 14 773 eligible neonates admitted to 31 sites. 24 of these sites submitted complete data (n=12 898) on all eligible admitted neonates and 7 sites submitted data on a selected cohort of eligible admitted neonates (n=1 875).

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

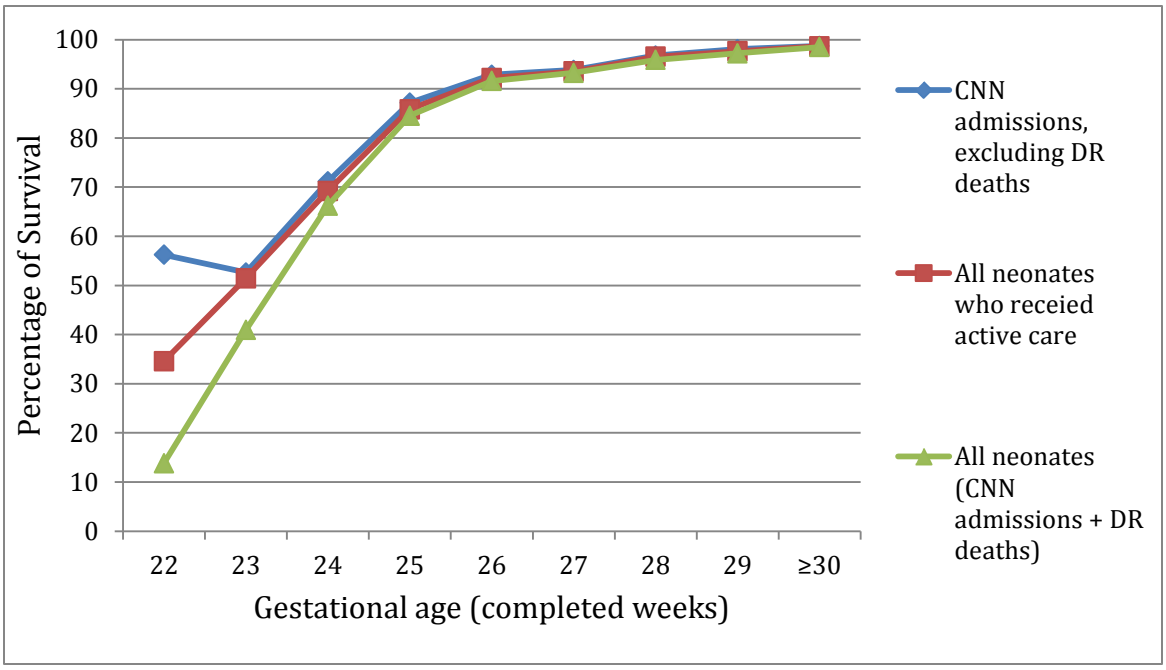


Presentation #3 (continued)
Gestational age distribution: All sites and all admitted neonates

GA in completed weeks at birth	Frequency	Percent	Cumulative percent
22	16	0.1	0.1
23	133	0.9	1.0
24	215	1.5	2.5
25	257	1.7	4.2
26	294	2.0	6.2
27	325	2.2	8.4
28	434	2.9	11.3
29	467	3.2	14.5
30	606	4.1	18.6
31	743	5.0	23.6
32	868	5.9	29.5
33	837	5.7	35.2
34	1 186	8.0	43.2
35	1 093	7.4	50.6
36	1 216	8.2	58.8
37	1 220	8.3	67.1
38	1 479	10.0	77.1
39	1 480	10.0	87.1
40	1 222	8.3	95.4
41	633	4.3	99.7
≥42	49	0.3	100.0
Total included	14 773	100.0	
Total # of missing GA	0		
Total # of neonates	14 773		

COMMENTS: The GA distribution of neonates is shown here. Term babies (≥37 weeks) represent 41.2% of the total number of neonates. Twenty-four sites collected data on all eligible admissions whereas seven sites collected data on a selected cohort of eligible admissions.

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

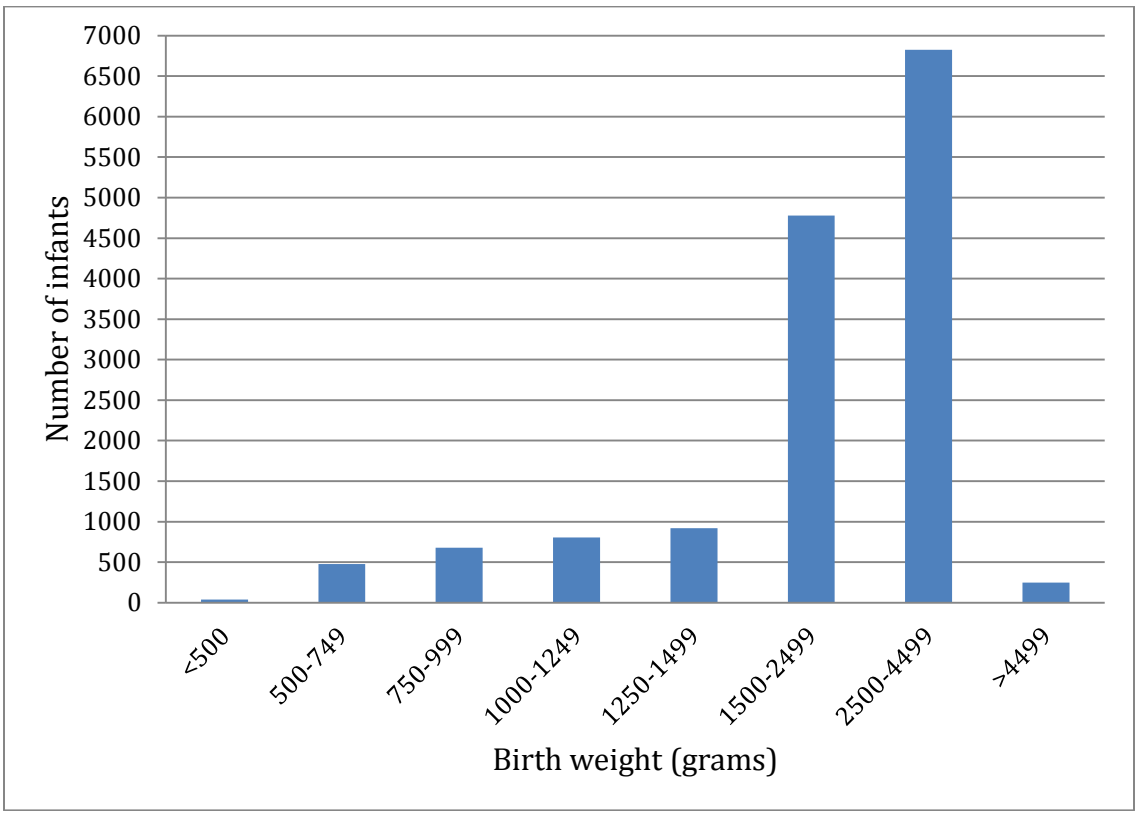


CNN admissions, excluding delivery room deaths					Delivery room deaths*		Total CNN admissions including delivery room deaths*				
GA (completed weeks)	**#of neonates**	**#of survivors**	**Percent survival among CNN admissions, excluding DR deaths**	**#of neonates who received palliative care**	**Palliative care**	**Active care ******	**Total**	**#of neonates who received palliative 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	16	9	56	0	39	10	65	39	26	35	14
23	133	70	53	1	34	4	171	35	136	51	41
24	215	153	71	0	10	6	231	10	221	69	66
25	257	224	87	0	4	4	265	4	261	86	85
26	294	273	93	0	2	2	298	2	296	92	92
27	325	305	94	0	1	1	327	1	326	94	93
28	434	420	97	0	3	1	438	3	435	97	96
29	467	458	98	0	2	2	471	2	469	98	97
≥30	12 632	12 470	99	3	17	11	12 660	20	12 640	99	98
Total included	14 773	14 382	97	4	112	41	14 926	116	14 810	97	96
Missing GA	0				2	0	2	2			
Total	**14 773**				**114**	**41**	**14 928**	**118**	**14 810**		

***Please note that delivery room deaths are *only included in Presentations #4, #6, 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. Capturing data for delivery room deaths is an ongoing process and not all sites contributed delivery room death data.

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

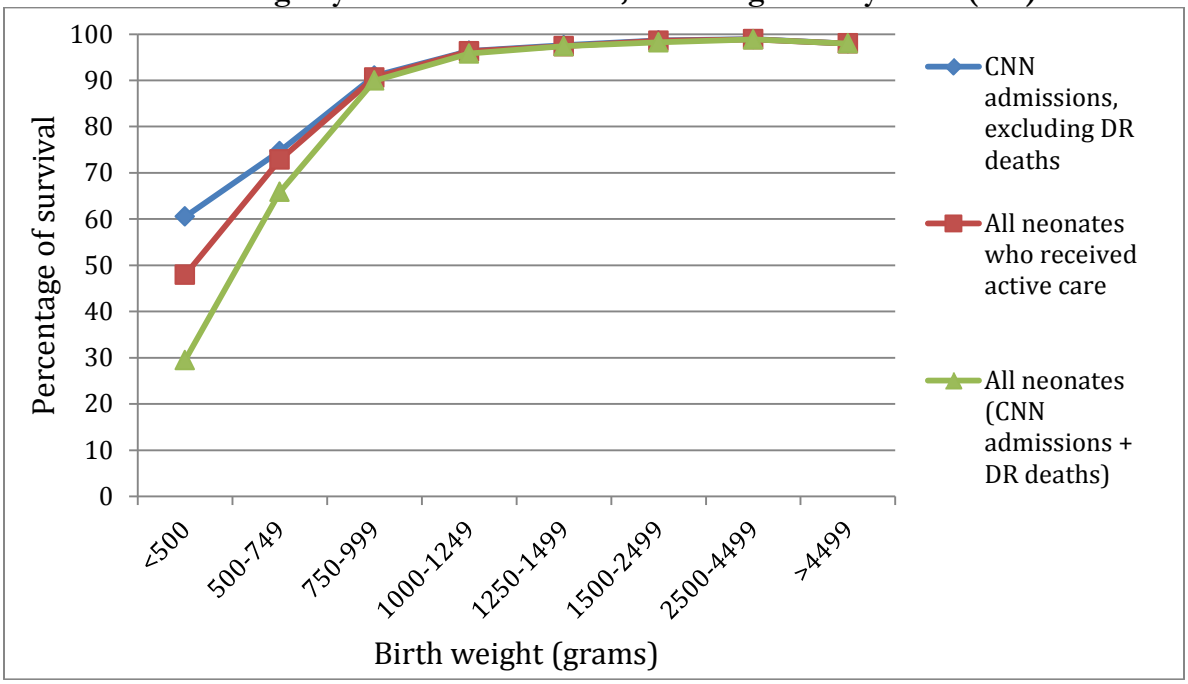


BW (grams)	Frequency	Percent from total number of neonates	Cumulative percent
<500	38	0.3	0.3
500-749	478	3.2	3.5
750-999	678	4.6	8.1
1000-1249	806	5.5	13.5
1250-1499	920	6.2	19.8
1500-2499	4 778	32.3	52.1
2500-4499	6 826	46.2	98.3
>4499	248	1.7	100.0
Total included	14 772	100.0	
Missing BW	1		
Total # of neonates	14 773		

COMMENTS: The BW distribution of neonates admitted to the CNN sites. Eighty percent weighed more than 1 500g at birth and 48% weighed more than 2 500g. Twenty-four sites collected data on all admissions whereas seven sites collected data on a selected cohort of eligible admissions only.

Presentation #6

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

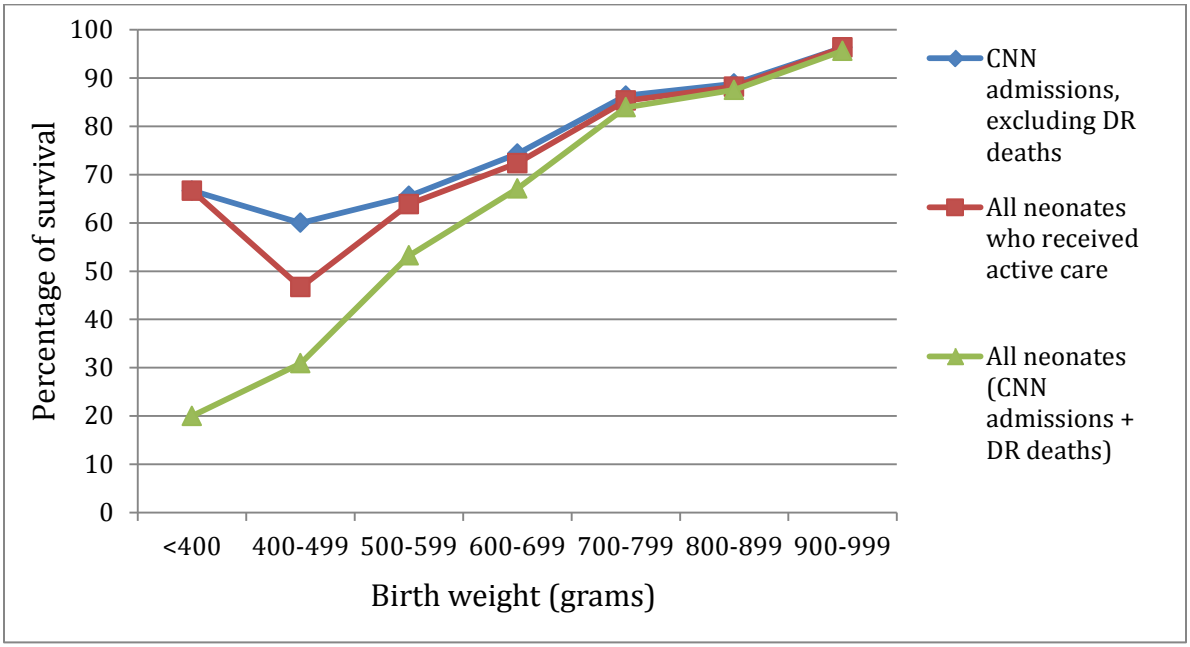


CNN Admissions, excluding delivery room deaths					Delivery room deaths*		Total CNN admissions + Delivery room deaths*				
BW (grams)	**#of neonates**	**# of survivors**	**Percent survival** of CNN admissions, excluding DR deaths	**# of neonates who received palliative care**	**Palliative care**	**Active 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	38	23	61	0	30	10	78	30	48	48	29
500-749	478	357	75	1	51	13	542	52	490	73	66
750-999	678	617	91	0	5	3	686	5	681	91	90
1000-1249	806	777	96	0	4	1	811	4	807	96	96
1250-1499	920	898	98	0	0	2	922	0	922	97	97
1500-2499	4 778	4 713	99	3	14	7	4 799	17	4 782	99	98
2500-4499	6 826	6 753	99	0	1	4	6 831	1	6 830	99	99
>4499	248	243	98	0	0	0	248	0	248	98	98
Total neonates included	14 772	14 381	97	4	105	40	14 917	109	14 808	97	96
Missing BW	1				9	1	11	9	2		
Total # of neonates	**14 773**				**114**	**41**	**14 928**	**118**	**14 810**		

***Please note that delivery room deaths are *only included in Presentations #4, #6 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. Capturing data for delivery room deaths is an ongoing process and not all sites contributed 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	3	2	67	0	7	0	10	7	3	67	20
400-499	35	21	60	0	23	10	68	23	45	47	31
500-599	151	99	66	0	31	4	186	31	155	64	53
600-699	222	165	74	1	17	7	246	18	228	72	67
700-799	242	209	86	0	4	3	249	4	245	85	84
800-899	269	239	89	0	2	2	273	2	271	88	88
900-999	272	262	96	0	2	0	274	2	272	96	96
Total included	**1 194**	**997**	**84**	**1**	**86**	**26**	**1 306**	**87**	**1 219**	**82**	**76**

***Please note that delivery room deaths are *only included in Presentations #4, #6 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. Capturing data for delivery room deaths is an ongoing process and not all sites contributed 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				**621**	**1053**	**2684**	**4332**	**6083**	**14773**
No prenatal care		510	N	23	56	136	65	74	354
			%	3.8	5.5	5.3	1.6	1.3	2.5
Illicit drug use		1	N	30	58	200	333	422	1043
			%	4.8	5.5	7.5	7.7	6.9	7.1
Smoking		1	N	57	127	404	570	730	1888
			%	9.2	12.1	15.1	13.2	12.0	12.8
Maternal hypertension		456	N	69	176	565	847	573	2230
			%	11.3	17.2	21.6	20.0	9.8	15.6
Maternal diabetes		427	N	46	127	486	884	959	2502
			%	7.9	12.5	18.6	20.9	16.3	17.4
Assisted pregnancy		1007	N	61	84	239	416	233	1033
			%	10.6	8.7	9.8	10.1	4.1	7.5
Multiples			N	137	285	847	1237	153	2659
			%	22.1	27.1	31.6	28.6	2.5	18.0
$MgSO_4$ for neuroprotection		484	N	419	688	1353	290	46	2796
			%	69.7	67.9	52.8	6.9	0.8	19.6
Prenatal steroids	None	250	N	82	101	343	2556	5872	8954
			%	13.4	9.7	13.0	60.2	98.2	61.7
	Partial		N	157	234	573	364	20	1348
			%	25.6	22.6	21.7	8.6	0.3	9.3
	Complete		N	375	702	1729	1325	90	4221
			%	61.1	67.7	65.4	31.2	1.5	29.1
Mode of birth	Vaginal	32	N	309	374	992	1995	3632	7302
			%	49.8	35.6	37.0	46.2	59.9	49.5
	C/S		N	311	678	1691	2325	2434	7439
			%	50.2	64.5	63.0	53.8	40.1	50.5
Presentation	Vertex	728	N	331	619	1803	3333	5347	11433
			%	54.9	61.5	70.9	80.7	92.8	81.4
	Breech		N	244	332	636	714	350	2276
			%	40.5	33.0	25.0	17.3	6.1	16.2
	Other		N	28	56	105	83	64	336
			%	4.6	5.6	4.1	2.0	1.1	2.4
Rupture of membranes	<24 h	648	N	449	756	2046	3611	5443	12305
			%	74.2	75.3	79.7	86.8	94.0	87.1
	24h to 1wk		N	91	145	304	390	337	1267
			%	15.0	14.4	11.9	9.4	5.8	9.0
	>1 wk		N	65	103	216	159	10	553
			%	10.7	10.3	8.4	3.8	0.2	3.9

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				**621**	**1053**	**2684**	**4332**	**6083**	**14773**
Chorioamnionitis*		4507	N	186	201	269	205	400	1261
			%	39.8	25.3	13.8	6.6	10.1	12.3
Delayed cord clamping	≤ 29 sec	3196	N	31	55	103	71	61	321
			%	5.7	5.9	4.6	2.0	1.4	2.8
	30-59 sec		N	99	182	427	425	336	1469
			%	18.2	19.5	19.2	12.1	7.7	12.7
	≥60 sec		N	93	279	763	1238	971	3344
			%	17.1	29.9	34.2	35.1	22.4	28.9
	Yes, but timing unknown		N	10	25	98	196	246	575
			%	1.8	2.7	4.4	5.6	5.7	5.0
	No		N	311	392	839	1598	2728	5868
			%	57.2	42.0	37.6	45.3	62.8	50.7

*Chorioamnionitis is defined as documented "suspected or confirmed clinical chorioamnionitis" in chart **or** presence of maternal fever and *either* leukocytosis *or* uterine tenderness.

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 before 1 week of birth **	Complete course but timing unknown ***	Partial course within last 24 hours ****
	Weeks						
Inborn	**22-28**	N	86	657	344	31	279
		%	6.0	46.1	24.2	2.2	19.6
	29-32	N	198	895	672	48	405
		%	8.8	39.6	29.7	2.1	17.9
Outborn	**22-28**	N	97	25	19	1	88
		%	38.8	10.0	7.6	0.4	35.2
	29-32	N	145	58	52	4	125
		%	34.3	13.7	12.3	1.0	29.6

*****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 delayed cord clamping: GA <33 weeks

Singleton

			Cord clamping attempted						Cord clamping not attempted	Unknown
			0-15 seconds	16-30 seconds	31-60 seconds	61-75 seconds	>75 seconds	Duration unknown		
	Weeks									
Inborn	**22-28**	N	19	130	365	3	10	18	430	75
		%	1.8	12.4	34.8	0.3	1.0	1.7	41.0	7.1
	29-32	N	27	136	631	9	26	54	453	159
		%	1.8	9.1	42.2	0.6	1.7	3.6	30.3	10.6
Outborn	**22-28**	N	2	9	22	0	0	8	90	71
		%	1.0	4.5	10.9	0.0	0.0	4.0	44.6	35.2
	29-32	N	0	10	42	0	6	7	102	175
		%	0.0	2.9	12.3	0.0	1.8	2.1	29.8	51.2

First twin

			Cord clamping attempted						Cord clamping not attempted	Unknown
			0-15 seconds	16-30 seconds	31-60 seconds	61-75 seconds	>75 seconds	Duration unknown		
	Weeks									
Inborn	**22-28**	N	3	20	48	0	0	1	72	17
		%	1.9	12.4	29.8	0.0	0.0	0.6	44.7	10.6
	29-32	N	3	39	128	0	5	18	116	41
		%	0.9	11.1	36.6	0.0	1.4	5.1	33.1	11.7
Outborn	**22-28**	N	0	2	2	0	0	0	11	8
		%	0.0	8.7	8.7	0.0	0.0	0.0	47.8	34.8
	29-32	N	0	2	6	0	0	0	9	19
		%	0.0	5.6	16.7	0.0	0.0	0.0	25.0	52.8

Second twin

			Cord clamping attempted						Cord clamping not attempted	Unknown
			0-15 seconds	16-30 seconds	31-60 seconds	61-75 seconds	>75 seconds	Duration unknown		
	Weeks									
Inborn	**22-28**	N	3	14	59	0	1	6	67	14
		%	1.8	8.5	36.0	0.0	0.6	3.7	40.9	8.5
	29-32	N	3	37	133	0	3	17	122	35
		%	0.9	10.6	38.0	0.0	0.9	4.9	34.9	10.0
Outborn	**22-28**	N	0	0	4	0	0	0	11	10
		%	0.0	0.0	16.0	0.0	0.0	0.0	44.0	40.0
	29-32	N	0	2	9	1	0	1	10	18
		%	0.0	4.9	22.0	2.4	0.0	2.4	24.4	43.9

Presentation #8a
Resuscitation details: GA < 31 weeks

Action taken			**GA at birth (completed weeks)**								
			≤23	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**Total**
Total			**149**	**215**	**257**	**294**	**325**	**434**	**467**	**606**	**2747**
No resuscitation needed/provided		N	0	0	2	1	2	8	11	46	70
		%	0.0	0.0	0.8	0.3	0.6	1.8	2.4	7.6	2.5
CPAP		N	35	88	147	175	221	313	344	415	1738
		%	23.5	40.9	57.2	59.5	68.0	72.1	73.7	68.5	63.3
PPV via mask		N	115	167	190	210	231	284	289	299	1785
		%	77.2	77.7	73.9	71.4	71.1	65.4	61.9	49.3	65.0
PPV via ETT		N	123	149	136	113	94	93	91	75	874
		%	82.6	69.3	52.9	38.4	28.9	21.4	19.5	12.4	31.8
Chest compression		N	9	9	12	17	9	12	10	12	90
		%	6.0	4.2	4.7	5.8	2.8	2.8	2.1	2.0	3.3
Epinephrine		N	3	6	6	8	3	6	5	2	39
		%	2.0	2.8	2.3	2.7	0.9	1.4	1.1	0.3	1.4
Unknown		N	1	0	5	2	3	2	5	5	23
		%	0.7	0.0	2.0	0.7	0.9	0.5	1.1	0.8	0.8
Any resuscitation provided*		N	144	214	249	288	319	416	437	518	2585
		%	96.6	99.5	96.9	98.0	98.2	95.9	93.6	85.5	94.1
Initial gas	Air	N	17	35	46	49	61	105	152	195	660
		%	11.4	16.3	17.9	16.7	18.8	24.2	32.6	32.2	24.0
	22-40% O_2	N	67	109	115	153	166	203	187	196	1196
		%	45.0	50.7	44.8	52.0	51.1	46.8	40.0	32.3	43.5
	41-70% O_2	N	8	20	26	17	25	20	22	27	165
		%	5.4	9.3	10.1	5.8	7.7	4.6	4.7	4.5	6.0
	71-99% O_2	N	2	0	4	2	4	5	3	2	22
		%	1.3	0.0	1.6	0.7	1.2	1.2	0.6	0.3	0.8
	100% O_2	N	37	28	27	24	25	25	19	35	220
		%	24.8	13.0	10.5	8.2	7.7	5.8	4.1	5.8	8.0
	Unknown/ Missing	N	18	23	39	49	44	76	84	151	484
		%	12.1	10.7	15.2	16.7	13.5	17.5	18.0	24.9	17.6
Maximum O_2 conc. during resus.	21%	N	0	0	1	4	1	8	12	24	50
		%	0.0	0.0	0.4	1.4	0.3	1.8	2.6	4.0	1.8
	22-40%	N	6	17	34	43	73	102	141	177	593
		%	4.0	7.9	13.2	14.6	22.5	23.5	30.2	29.2	21.6
	41-70%	N	8	37	42	64	73	98	93	98	513
		%	5.4	17.2	16.3	21.8	22.5	22.6	19.9	16.2	18.7
	>70%	N	124	145	150	144	138	162	136	136	1135
		%	83.2	67.4	58.4	49.0	42.5	37.3	29.1	22.4	41.3
	Missing	N	11	16	30	39	40	64	85	171	456
		%	7.4	7.4	11.7	13.3	12.3	14.8	18.2	28.2	16.6

* 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.

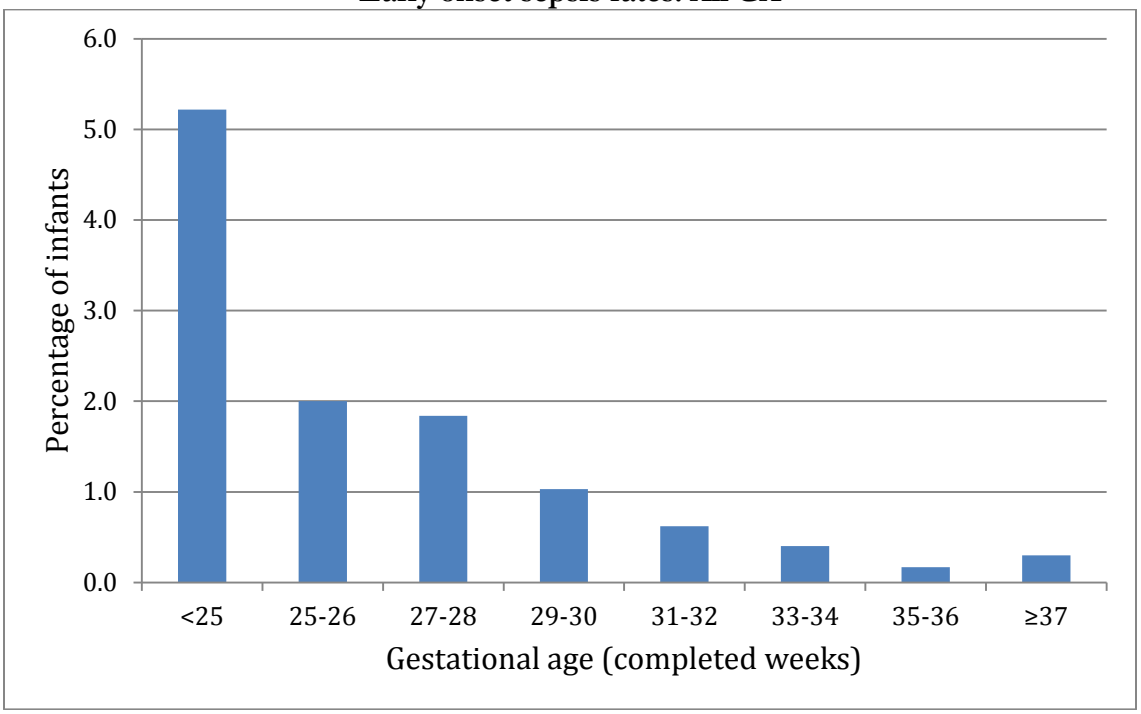
Presentation #8b
Resuscitation details: GA ≥ 31 weeks

Action taken			**GA at birth (completed weeks)**							
			31	**32**	**33**	**34**	**35**	**36**	**≥37**	**Total**
Total			**743**	**868**	**837**	**1186**	**1093**	**1216**	**6083**	**12026**
No resuscitation needed / provided		N	67	150	224	413	426	495	2423	4198
		%	9.0	17.3	26.8	34.8	39.0	40.7	39.9	34.9
CPAP		N	475	488	355	420	320	313	1483	3854
		%	63.9	56.2	42.4	35.4	29.3	25.7	24.4	32.1
PPV via mask		N	341	340	246	302	241	324	1694	3488
		%	45.9	39.2	29.4	25.5	22.1	26.6	27.9	29.0
PPV via ETT		N	61	61	41	37	30	58	434	722
		%	8.2	7.0	4.9	3.1	2.7	4.8	7.1	6.0
Chest compression		N	18	16	14	7	6	24	159	244
		%	2.4	1.8	1.7	0.6	0.6	2.0	2.6	2.0
Epinephrine		N	8	6	5	1	3	7	61	91
		%	1.1	0.7	0.6	0.1	0.3	0.6	1.0	0.8
Unknown		N	19	8	6	7	11	12	107	170
		%	2.6	0.9	0.7	0.6	1.0	1.0	1.8	1.4
Any resuscitation provided*		N	588	615	432	526	430	482	2441	5514
		%	79.1	70.9	51.6	44.4	39.3	39.6	40.1	45.9
Initial gas	Air	N	246	303	216	296	269	280	1341	2951
		%	33.1	34.9	25.8	25.0	24.6	23.0	22.1	24.5
	22-40% O_2	N	204	181	139	149	105	95	435	1308
		%	27.5	20.9	16.6	12.6	9.6	7.8	7.2	10.9
	41-70% O_2	N	35	24	21	25	14	24	103	246
		%	4.7	2.8	2.5	2.1	1.3	2.0	1.7	2.0
	71-99% O_2	N	6	1	3	3	5	4	13	35
		%	0.8	0.1	0.4	0.3	0.5	0.3	0.2	0.3
	100% O_2	N	28	41	22	46	28	38	233	436
		%	3.8	4.7	2.6	3.9	2.6	3.1	3.8	3.6
	Unknown/ Missing	N	224	318	436	667	672	775	3958	7050
		%	30.2	36.6	52.1	56.2	61.5	63.7	65.1	58.6
Maximum O_2 conc. during resus	21%	N	30	56	60	95	83	82	379	785
		%	4.0	6.5	7.2	8.0	7.6	6.7	6.2	6.5
	22-40%	N	220	215	154	172	168	146	646	1721
		%	29.6	24.8	18.4	14.5	15.4	12.0	10.6	14.3
	41-70%	N	113	114	88	101	54	87	298	855
		%	15.2	13.1	10.5	8.5	4.9	7.2	4.9	7.1
	>70%	N	141	138	101	129	102	120	824	1555
		%	19.0	15.9	12.1	10.9	9.3	9.9	13.6	12.9
	Missing	N	239	345	434	689	686	781	3936	7110
		%	32.2	39.8	51.9	58.1	62.8	64.2	64.7	59.1

* 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.

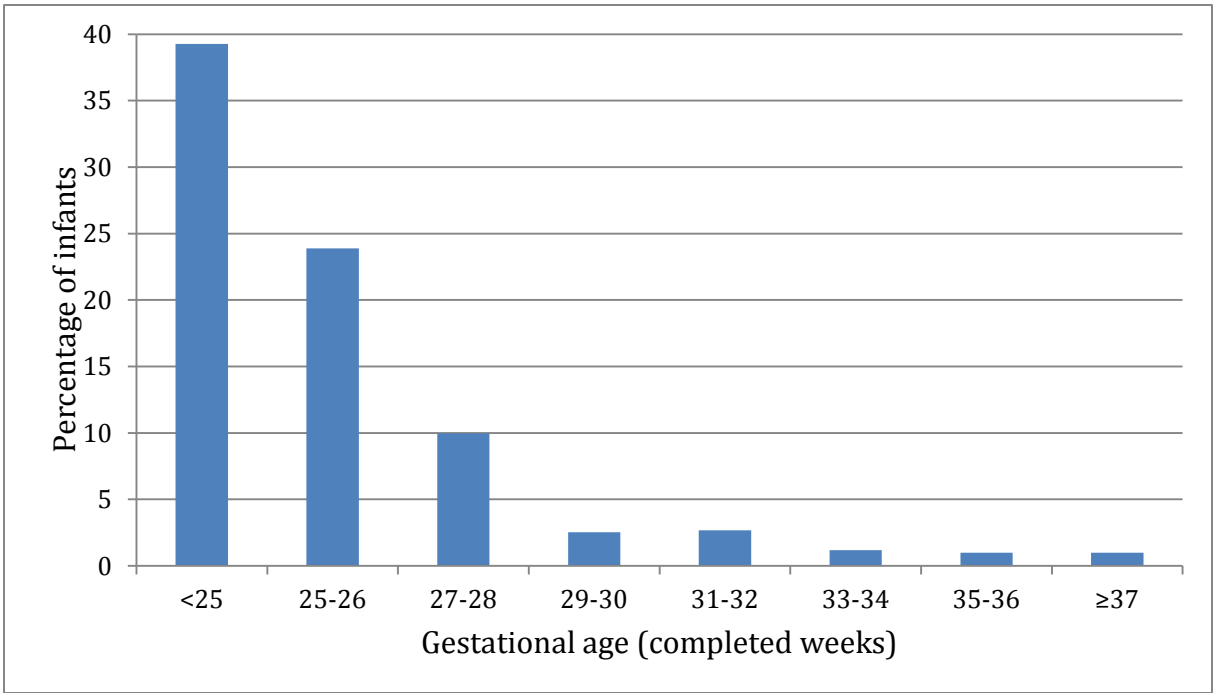
Presentation #9
Early onset sepsis rates: All GA



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	364	19	5.2	19	8	6	5
25-26	551	11	2.0	11	7	2	2
27-28	759	14	1.8	14	8	1	5
29-30	1 073	11	1.0	11	5	1	5
31-32	1 611	10	0.6	10	5	0	5
33-34	2 023	8	0.4	9	2	0	7
35-36	2 309	4	0.2	4	1	0	3
≥37	6 083	18	0.3	19	2	5	12
Total neonates included	**14 773**	**95**	**0.6**	**97**	**38**	**15**	**44**
Missing	0						
Total # of neonates	**14 773**						

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. Two neonates had two organisms isolated. In other category, top five organisms were: Streptococci other than GBS (n=11), Hemophilus influenza (n=7), Staph aureus (n=7), Enterococci (n=4), Cytomegalovirus (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.

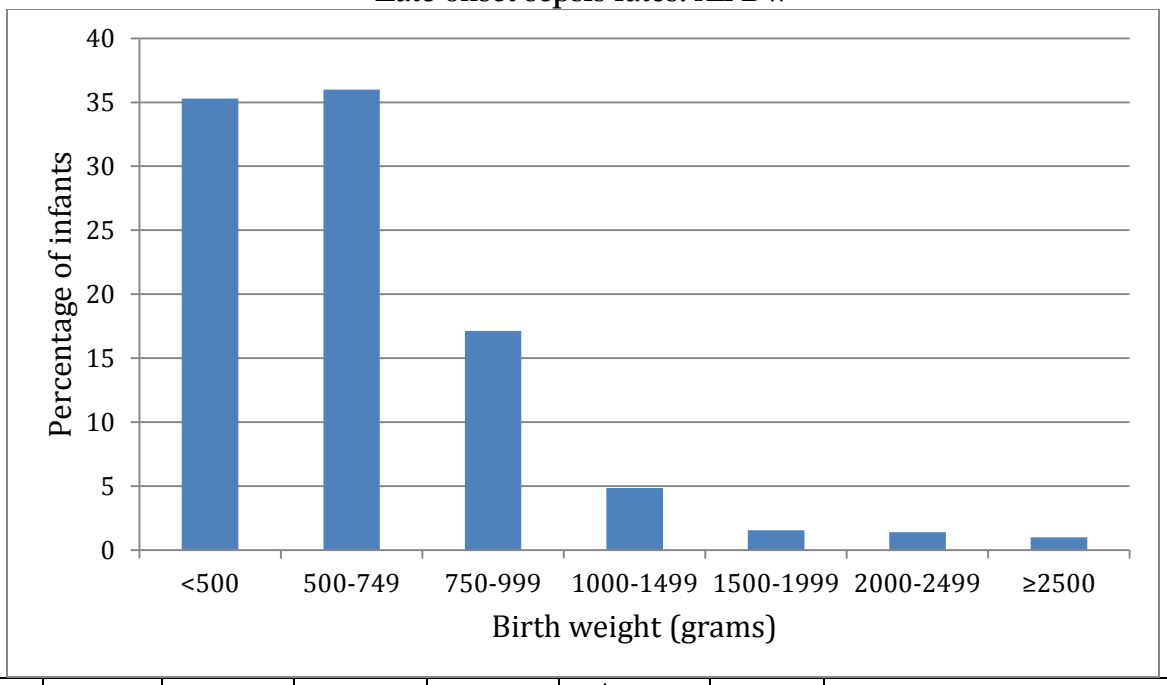
Presentation #10
Late onset sepsis rates: All GA



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	364	33	331	130	32	39	180	71	21	28	13	5	42
25-26	551	11	540	129	22	24	158	71	21	26	8	1	31
27-28	759	7	752	75	12	10	91	32	10	20	1	2	26
29-30	1 073	7	1 066	27	0	3	28	10	2	4	1	3	8
31-32	1 611	8	1 603	43	2	3	49	24	10	4	1	1	9
33-34	2 023	3	2 020	24	2	1	27	10	4	7	0	1	5
35-36	2 309	7	2 302	23	1	1	24	5	2	2	0	1	14
≥37	6 083	19	6 064	60	2	1	64	20	12	10	1	4	17
Total included	**14 773**	**95**	**14 678**	**511**	**73**	**3**	**621**	**243**	**82**	**101**	**25**	**18**	**152**
Missing	0												
Total # of neonates	**14 773**												

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=40), GBS (n=33), Enterococci (n=26), Enterobacter (n=20), Candida albicans (n=15).

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	38	4	34	12	4	35	11	7	4	2	3	1	3
500-749	478	28	450	162	38	36	208	86	18	42	11	3	56
750-999	678	12	666	114	23	17	155	64	20	20	8	4	29
1000-1499	1 726	13	1 713	83	2	5	122	34	13	18	0	1	21
1500-1999	2 334	9	2 325	36	2	2	33	15	7	4	2	2	10
2000-2499	2 444	11	2 433	34	1	1	32	13	8	6	0	2	9
≥2500	7 074	18	7 056	70	3	1	90	24	12	9	1	5	24
Total included	**14 772**	**95**	**14 677**	**511**	**73**	**3**	**651**	**243**	**82**	**101**	**25**	**18**	**152**
Missing (BW)	1												
Total # of neonates	**14 773**												

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 and transfer. Among other category, top 5 organisms were: Klebsiella (n=40), GBS (n=33), Enterococci (n=26), Enterobacter (n=20), Candida albicans (n=15).

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				621	1053	1073	1611	4332	6083	14773
Prophylactic	Indomethacin	2	N	190	66	4	5	1	1	267
			%	30.6	6.3	0.4	0.3	0.0	0.0	1.8
	Probiotics	2	N	345	591	534	619	265	46	2400
			%	55.6	56.1	49.8	38.4	6.1	0.8	16.2
RDS	Unknown	4	N	1	1	2	1	3	1	9
			%	0.2	0.1	0.2	0.1	0.1	0.0	0.1
	Uncertain		N	9	16	26	33	35	15	134
			%	1.5	1.5	2.4	2.1	0.8	0.3	0.9
	None		N	44	189	370	950	3748	5863	11164
			%	7.1	18.0	34.5	59.0	86.5	96.4	75.6
	Definite		N	567	846	674	627	546	202	3462
			%	91.3	80.4	62.9	38.9	12.6	3.3	23.4
Surfactant in first 30 min			N	118	70	27	13	7	4	239
			%	19.0	6.7	2.5	0.8	0.2	0.1	1.6
Surfactant in first 60 min			N	264	166	68	34	15	6	553
			%	42.5	15.8	6.3	2.1	0.4	0.1	3.7
Surfactant in first 120 min			N	372	274	139	68	43	17	913
			%	59.9	26.0	13.0	4.2	1.0	0.3	6.2
Surfactant at any time			N	529	615	379	306	279	163	2271
			%	85.2	58.4	35.3	19.0	6.4	2.7	15.4
Pneumothorax diagnosis		2	N	56	45	31	39	135	384	690
			%	9.0	4.3	2.9	2.4	3.1	6.3	4.7
Pneumothorax treatment**	Observation	2	N	17	12	6	16	67	263	381
			%	30.4	26.7	19.4	41.0	49.6	68.5	55.2
	Needle drainage	2	N	19	11	11	14	31	61	147
			%	33.9	24.4	35.5	35.9	23.0	15.9	21.3
	Chest tube	2	N	39	28	25	20	56	82	250
			%	69.6	62.2	80.6	51.3	41.5	21.4	36.2
Seizures	Definite /suspected	6	N	35	24	8	17	69	387	540
			%	5.6	2.3	0.8	1.1	1.6	6.4	3.7

** 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				621	1053	1073	1611	4332	6083	14773
Operations	Laparotomy	2	N	61	36	27	37	115	214	490
			%	9.8	3.4	2.5	2.3	2.7	3.5	3.3
	Thoracotomy	2	N	17	15	5	8	28	109	182
			%	2.7	1.4	0.5	0.5	0.7	1.8	1.2
	VP shunt	2	N	9	13	5	6	5	16	54
			%	1.5	1.2	0.5	0.4	0.1	0.3	0.4
Gastro-intestinal perforation	Spontaneous	116	N	34	20	4	7	11	13	89
			%	5.5	1.9	0.4	0.4	0.3	0.2	0.6
	NEC related		N	29	13	6	5	8	4	65
			%	4.7	1.2	0.6	0.3	0.2	0.1	0.4
Acquired stricture		2	N	5	5	1	4	9	0	24
			%	0.8	0.5	0.1	0.3	0.2	0.0	0.2
Acute bilirubin encephalopathy		2	N	1	0	0	1	3	2	7
			%	0.2	0.0	0.0	0.1	0.1	0.0	0.0
Exchange transfusion		2	N	0	0	0	2	5	13	20
			%	0.0	0.0	0.0	0.1	0.1	0.2	0.1
Congenital anomaly*	None		N	451	750	880	1349	3615	4480	11525
			%	72.6	71.2	82.0	83.7	83.5	73.7	78.0
	Minor		N	148	254	140	200	424	868	2034
			%	23.8	24.1	13.1	12.4	9.8	14.3	13.8
	Major		N	22	49	53	62	293	735	1214
			%	3.5	4.7	4.9	3.9	6.8	12.1	8.2

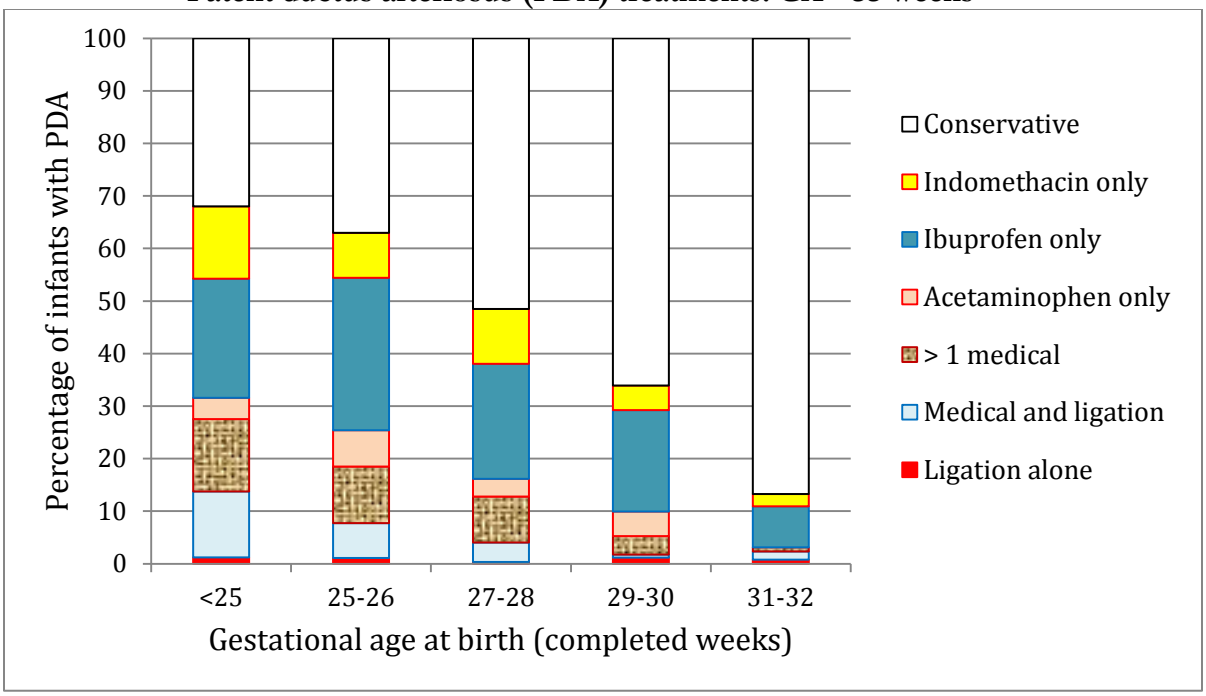
*A list of major anomalies can be found in the 2013 annual report, pages 124-127. It is available via the following link: http://www.canadianneonatalnetwork.org/Portal/LinkClick.aspx?fileticket=lreR0871sjA%3d&tabid=39

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 4 358 eligible very preterm neonates and 2 920 eligible VLBW neonates.

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

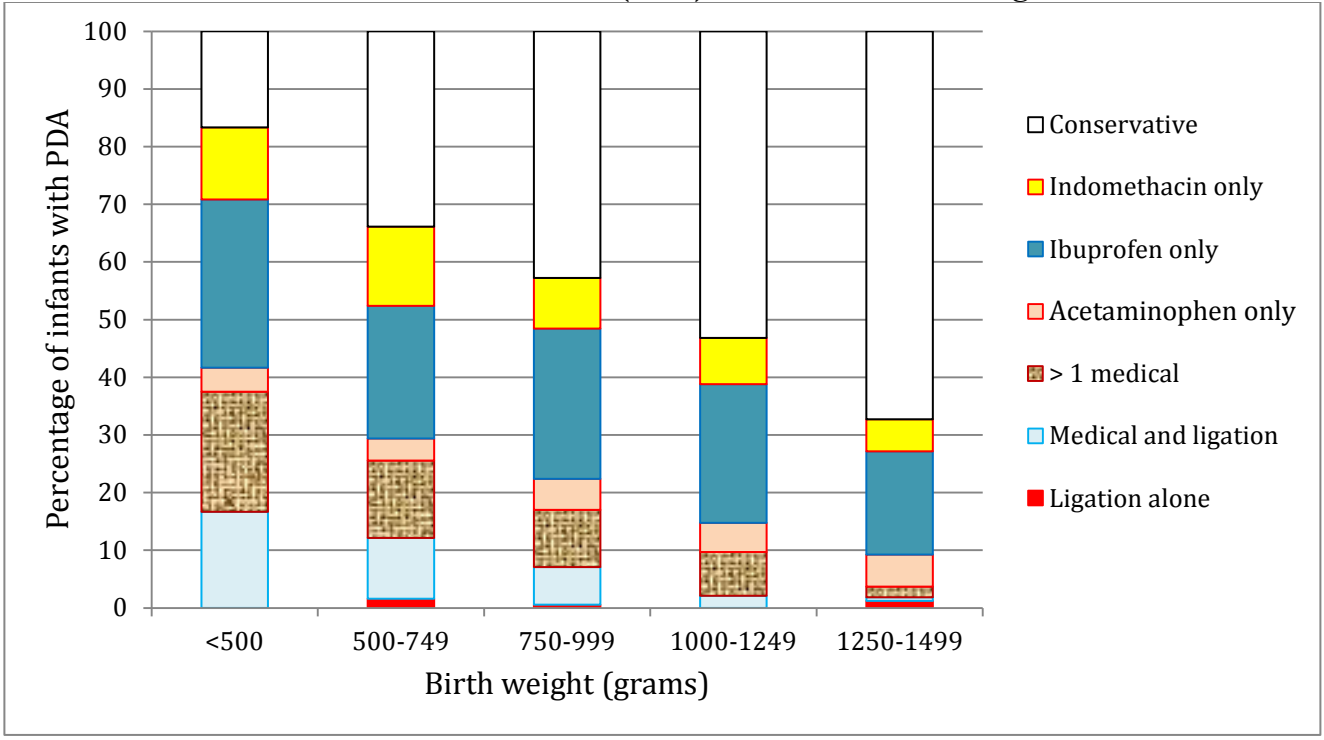


Birth GA (completed weeks)		Total	Missing data on PDA	PDA unknown	No PDA	Neonates with PDA	Treatment†						
							Conservative	Indo	Ibu	Acetaminophen	> 1 medical*	Medical and ligation#	Ligation alone
<25	**N**	364	0	11	106	247	79	34	56	10	34	31	3
	%						32%	14%	23%	4%	14%	13%	1%
25-26	**N**	551	2	5	182	362	134	31	105	25	39	24	4
	%						37%	9%	29%	7%	11%	7%	1%
27-28	**N**	759	0	2	460	297	153	31	65	10	26	11	1
	%						52%	10%	22%	3%	9%	4%	0%
29-30	**N**	1073	1	6	895	171	113	8	33	8	6	1	2
	%						66%	5%	19%	5%	4%	1%	1%
31-32	**N**	1611	0	2	1481	128	111	3	10	0	1	2	1
	%						87%	2%	8%	0%	1%	2%	1%
Total neonates included	**N**	4358	3	26	3124	1205	590	107	269	53	106	69	11
	%						49%	9%	22%	4%	9%	6%	1%

†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)

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

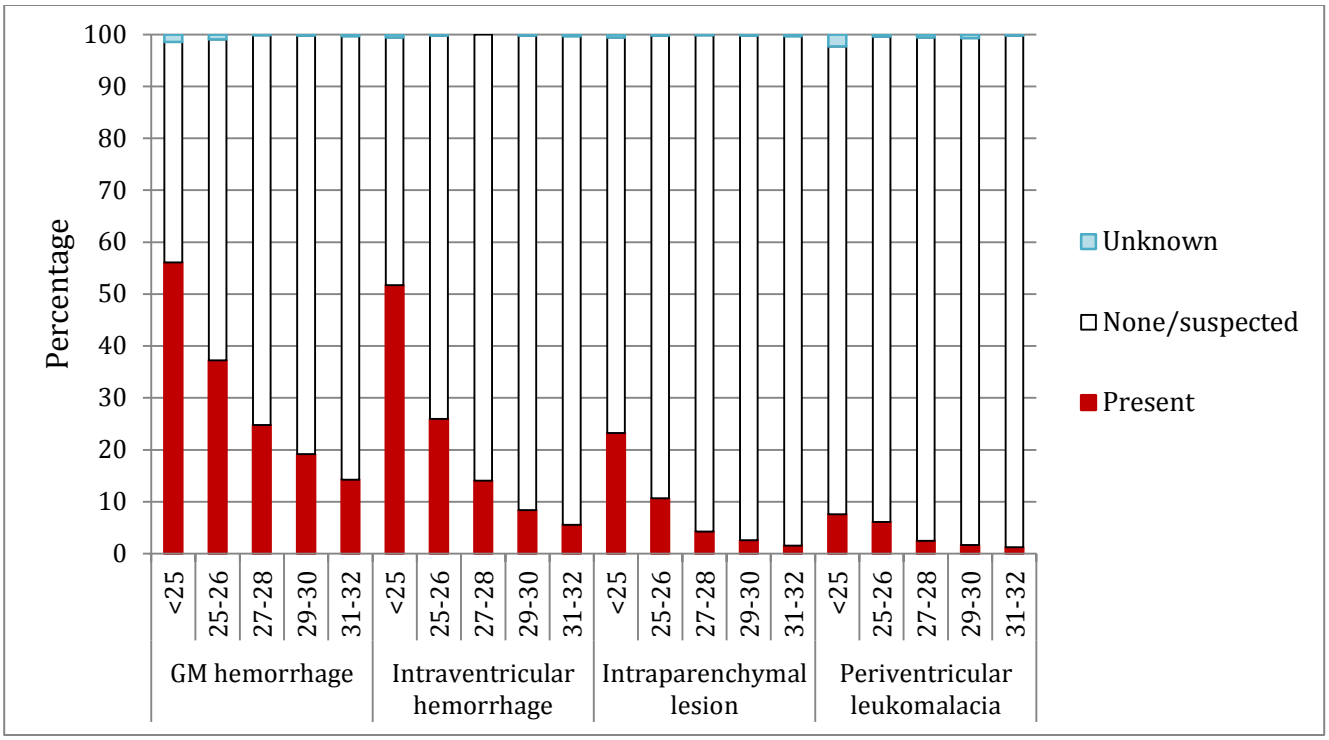


BW (grams)		Total	Missing data on PDA	PDA information unknown	No PDA	Neonates with PDA	Treatment†						
							Conservative	Indo	Ibu	Acetaminophen	> 1 medical*	Medical and ligation#	Ligation alone
<500	**N**	38	0	0	14	24	4	3	7	1	5	4	0
	%						17%	13%	29%	4%	21%	17%	0%
500-749	**N**	478	0	11	154	313	106	43	72	12	42	33	5
	%						34%	14%	23%	4%	13%	11%	2%
750-999	**N**	678	1	7	317	353	151	31	92	19	35	23	2
	%						43%	9%	26%	5%	10%	7%	1%
1000-1249	**N**	806	1	4	564	237	126	19	57	12	18	5	0
	%						53%	8%	24%	5%	8%	2%	0%
1250-1499	**N**	920	1	2	755	162	109	9	29	9	3	1	2
	%						67%	6%	18%	6%	2%	1%	1%
Total neonates included	**N**	2920	3	24	1804	1089	496	105	257	53	103	66	9
	%						46%	10%	24%	5%	9%	6%	1%

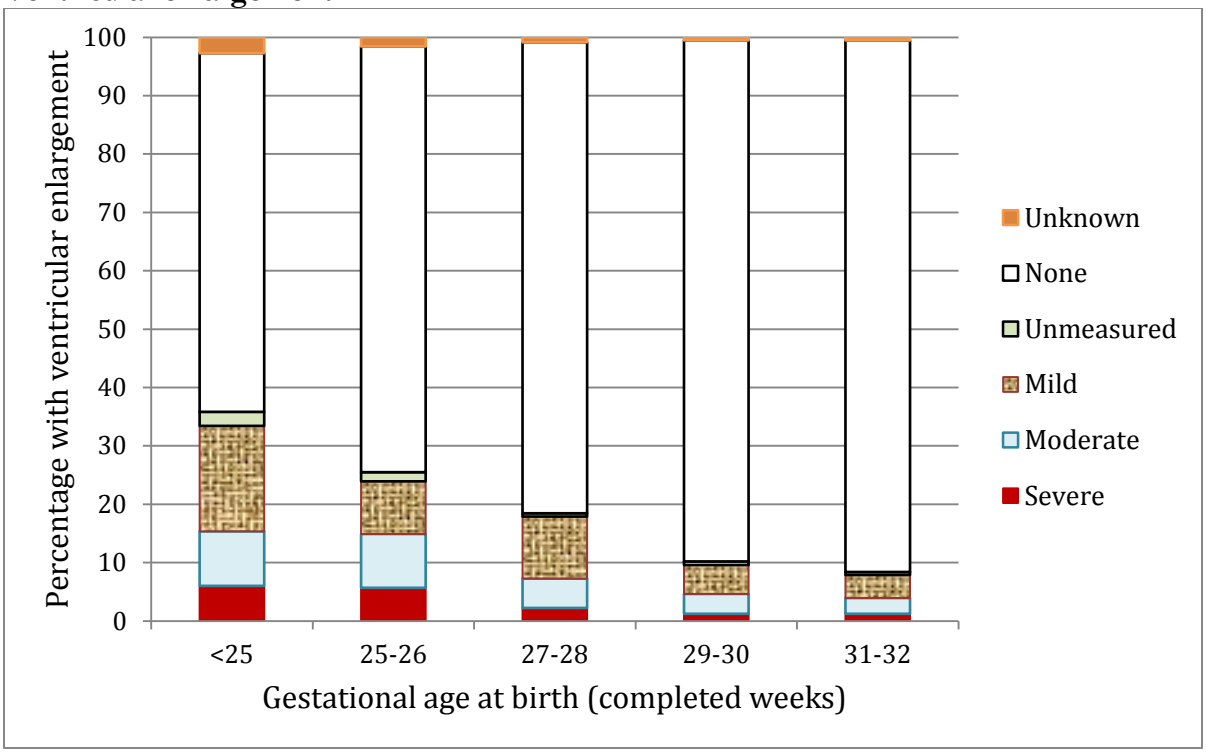
† The percentage of neonates receiving each PDA treatment was calculated using the total number of neonates diagnosed with PDA as the denominator.
*>1 medical = 2 or 3 of (Indomethacin or Ibuprofen or Acetaminophen)
#Medical and ligation = Ligation + at least one of the drugs (Indomethacin or Ibuprofen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

COMMENTS: Specific reasons for treatment with indomethacin and frequency of a 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 #15
Neuroimaging findings: GA <33 weeks



Ventricular enlargement



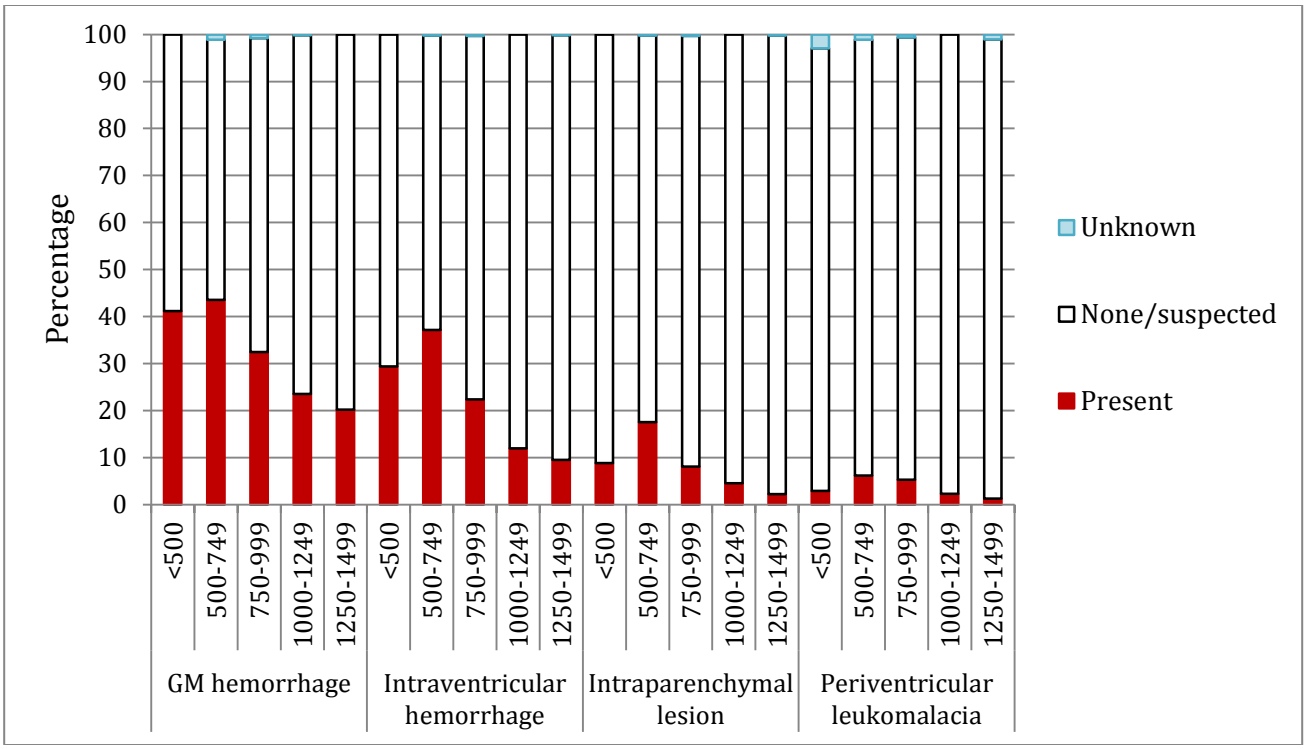
See page 126 for classifications of ventricular enlargement

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

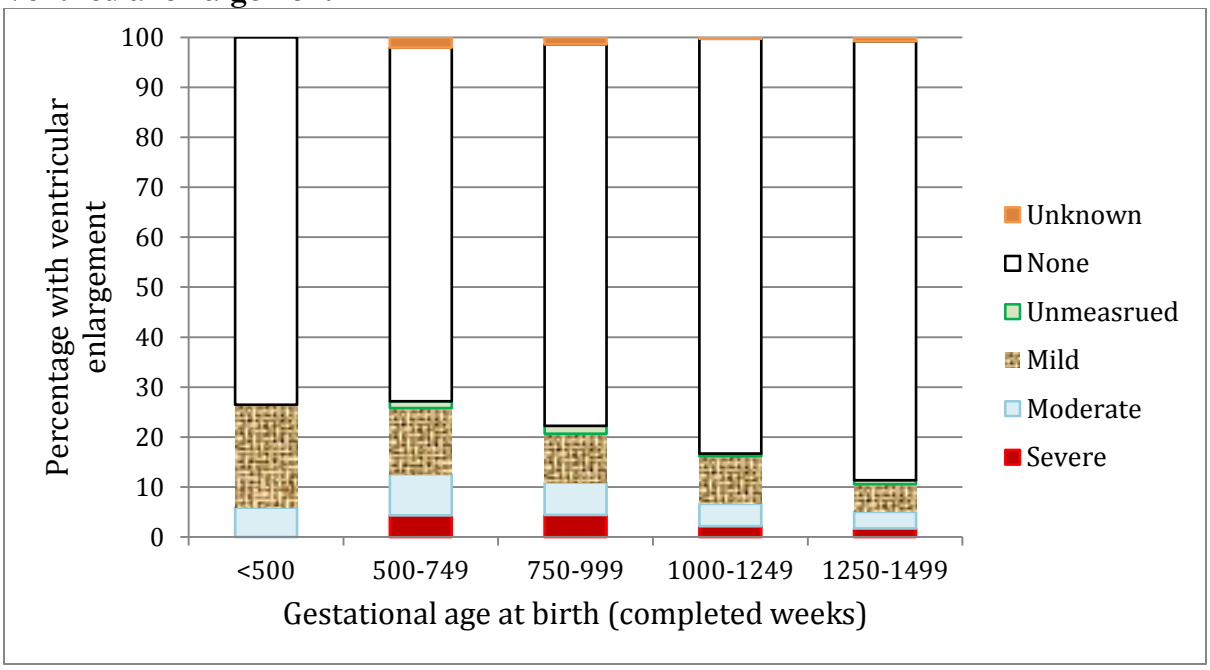
GA at birth (completed weeks)		Total	Neuro-imaging available	Neuroimaging findings																	
				GM hemorrhage			Intraventricular hemorrhage			Ventricular enlargement						Intraparenchymal lesion			Periventricular leukomalacia		
				Present	None/suspected	Unknown	Present	None/suspected	Unknown	Mild	Moderate	Severe	Unmeasured	None	Unknown	Present	None/suspected	Unknown	Present	None/suspected	Unknown
<25	N	364	344	193	146	5	178	164	2	60	31	20	8	204	9	80	262	2	26	310	8
	%			56%	42%	1%	52%	48%	1%	18%	9%	6%	2%	61%	3%	23%	76%	1%	8%	90%	2%
25-26	N	551	524	195	324	5	136	387	1	46	47	29	8	372	8	56	467	1	32	490	2
	%			37%	62%	1%	26%	74%	0%	9%	9%	6%	2%	73%	2%	11%	89%	0%	6%	94%	0%
27-28	N	759	726	180	545	1	102	624	0	76	36	16	4	577	6	31	694	1	18	704	4
	%			25%	75%	0%	14%	86%	0%	11%	5%	2%	1%	81%	1%	4%	96%	0%	2%	97%	1%
29-30	N	1073	976	187	787	2	82	892	2	48	33	12	6	866	5	25	949	2	16	953	7
	%			19%	81%	0%	8%	91%	0%	5%	3%	1%	1%	89%	1%	3%	97%	0%	2%	98%	1%
31-32	N	1611	978	139	836	3	54	921	3	38	26	12	5	878	5	15	960	3	12	964	2
	%			14%	85%	0%	6%	94%	0%	4%	3%	1%	1%	91%	1%	2%	98%	0%	1%	99%	0%
Total number of neonates	N	4358	3548	894	2638	16	552	2988	8	268	173	89	31	2897	33	207	3332	9	104	3421	23
	%			25%	74%	0%	16%	84%	0%	8%	5%	3%	1%	82%	1%	6%	94%	0%	3%	96%	1%

Note: Neuroimaging findings were not mutually exclusive, i.e. one neonate may have had more than one finding.
See page 126 for classifications of ventricular enlargement

Presentation #16
Neuroimaging findings: BW <1500g



Ventricular enlargement



See page 126 for classifications of ventricular enlargement

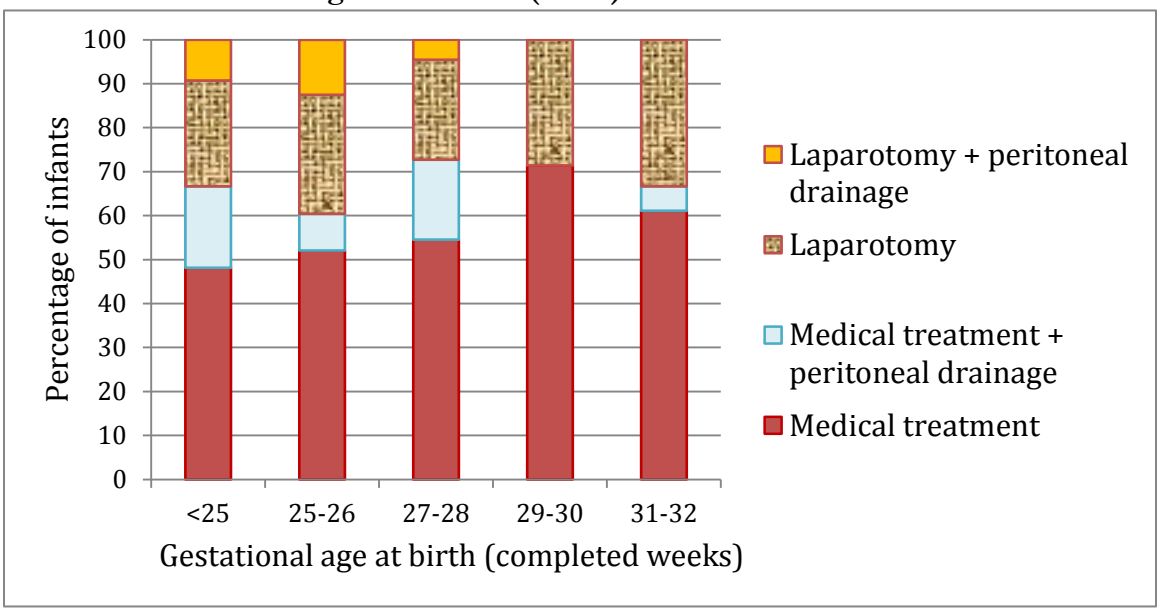
Presentation #16 (continued)
Neuroimaging findings: BW <1500g

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	38	34	14	20	0	10	24	0	7	2	0	0	25	0	3	31	0	1	32	1
	%			41%	59%	0%	29%	71%	0%	21%	6%	0%	0%	74%	0%	9%	91%	0%	3%	94%	3%
500-749	N	478	455	198	252	5	169	285	1	58	36	19	6	310	9	80	374	1	28	422	5
	%			44%	55%	1%	37%	63%	0%	13%	8%	4%	1%	71%	2%	18%	82%	0%	6%	93%	1%
750-999	N	678	644	209	430	5	144	498	2	62	41	28	10	484	9	52	590	2	34	606	4
	%			32%	67%	1%	22%	77%	0%	10%	6%	4%	2%	76%	1%	8%	92%	0%	5%	94%	1%
1000-1249	N	806	744	175	568	1	89	655	0	70	33	16	4	611	2	34	710	0	17	727	0
	%			24%	76%	0%	12%	88%	0%	10%	4%	2%	1%	83%	0%	5%	95%	0%	2%	98%	0%
1250-1499	N	920	766	155	611	0	73	692	1	42	25	13	6	665	6	17	747	2	10	748	8
	%			20%	80%	0%	10%	90%	0%	6%	3%	2%	1%	88%	1%	2%	98%	0%	1%	98%	1%
Total neonates	N	2920	2643	751	1881	11	485	2154	4	239	137	76	26	2095	26	186	2452	5	90	2535	18
	%			28%	71%	0%	18%	81%	0%	9%	5%	3%	1%	79%	1%	7%	93%	0%	3%	96%	1%

Note: Neuroimaging findings were not mutually exclusive, i.e. one neonate may had more than one findings.
See page 126 for classifications of ventricular enlargement

Presentation #17

Necrotizing enterocolitis (NEC) treatments: GA <33weeks



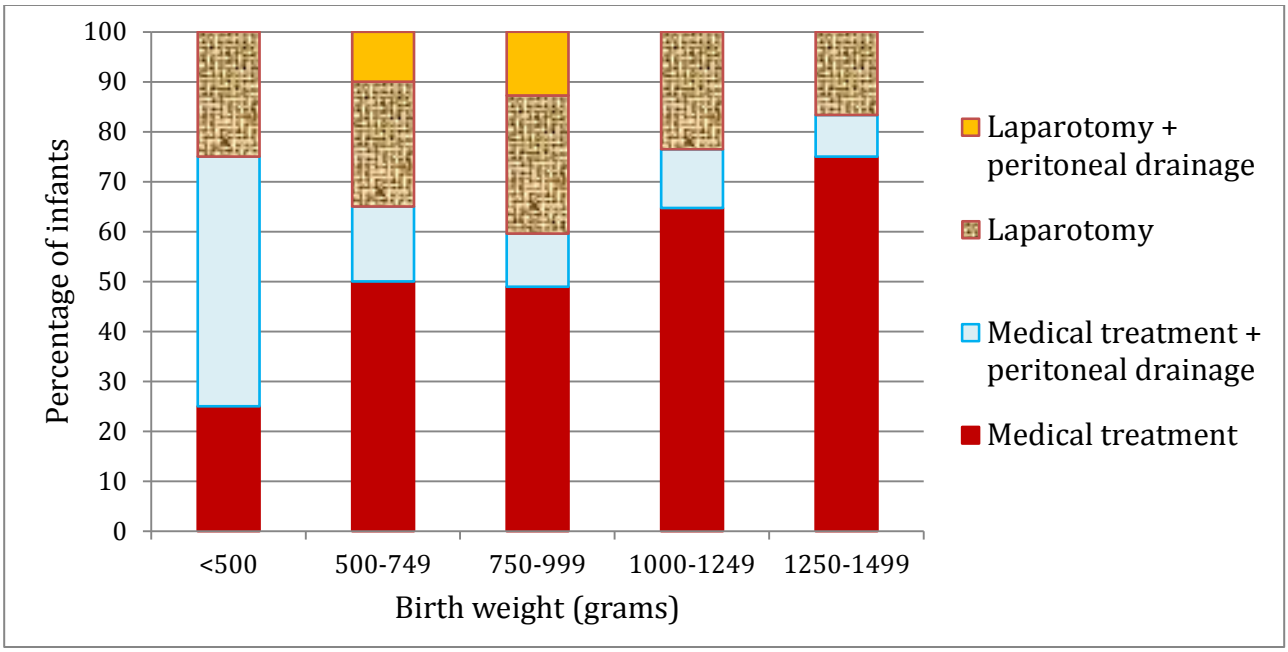
GA at birth (completed weeks)		Total number of neonates	Missing data on NEC	No NEC	NEC*	Neonates with necrotizing enterocolitis**				Death among infants with NEC**
						Medical treatment only	Medical + peritoneal drainage	Laparotomy	Laparotomy + peritoneal drainage	
<25	N	364	0	310	54	26	10	13	5	22
	%			85%	15%	48%	19%	24%	9%	41%
25-26	N	551	1	502	48	25	4	13	6	15
	%			91%	9%	52%	8%	27%	13%	31%
27-28	N	759	0	737	22	12	4	5	1	4
	%			97%	3%	55%	18%	23%	5%	18%
29-30	N	1073	1	1058	14	10	0	4	0	1
	%			99%	1%	71%	0%	29%	0%	7%
31-32	N	1611	0	1593	18	11	1	6	0	1
	%			99%	1%	61%	6%	33%	0%	6%
Total number of neonates	N	4358	2	4200	156	84	19	41	12	43
	%			96%	4%	54%	12%	26%	8%	28%

*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 for GA > 33 weeks:
GA 33 - 36 weeks: 39 neonates (0.9%)
GA ≥ 37 weeks: 20 neonates (0.3%)

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



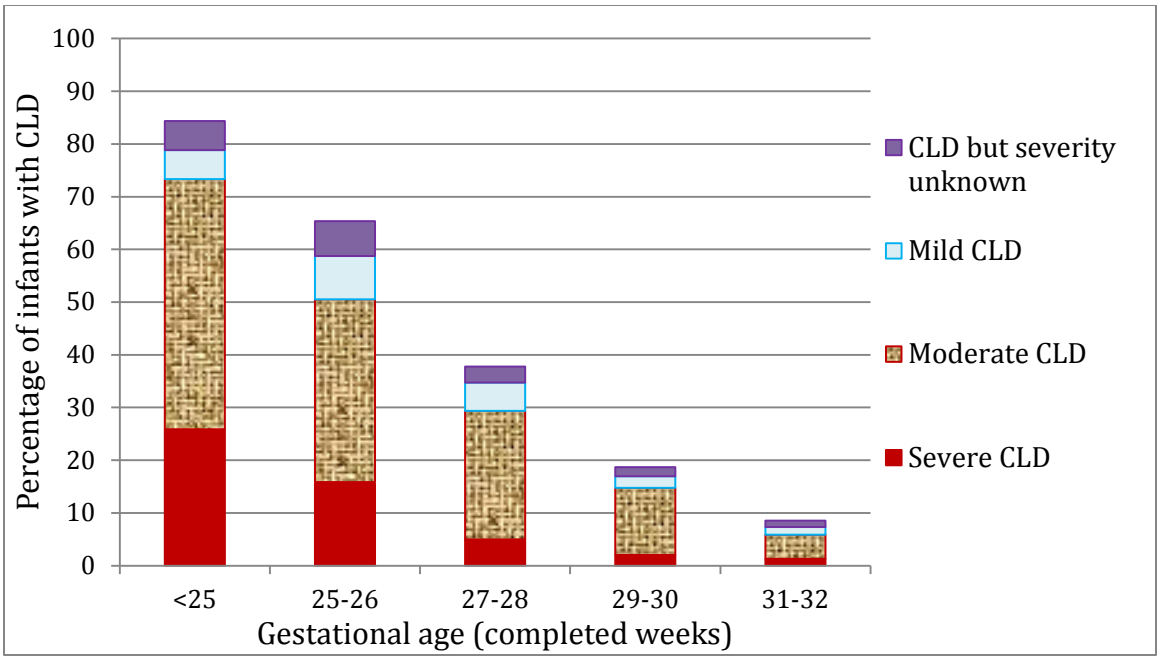
Birth weight (grams)		Total number of neonates	Missing data on NEC	No NEC	NEC*	Neonates with necrotizing enterocolitis**				Death among infants with NEC**
						Medical treatment only	Medical + peritoneal drainage	Laparotomy	laparotomy + peritoneal drainage	
<500	N	38	0	34	4	1	2	1	0	3
	%			89%	11%	25%	50%	25%	0%	75%
500-749	N	478	0	418	60	30	9	15	6	21
	%			87%	13%	50%	15%	25%	10%	35%
750-999	N	678	0	631	47	23	5	13	6	14
	%			93%	7%	49%	11%	28%	13%	30%
1000-1249	N	806	1	788	17	11	2	4	0	4
	%			98%	2%	65%	12%	24%	0%	24%
1250-1499	N	920	1	907	12	9	1	2	0	1
	%			99%	1%	75%	8%	17%	0%	8%
Total number of neonates	N	2920	2	2778	140	74	19	35	12	43
	%			95%	5%	53%	14%	25%	9%	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: 49 neonates (1.0%)
BW ≥ 2500g: 26 neonates (0.4%)

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

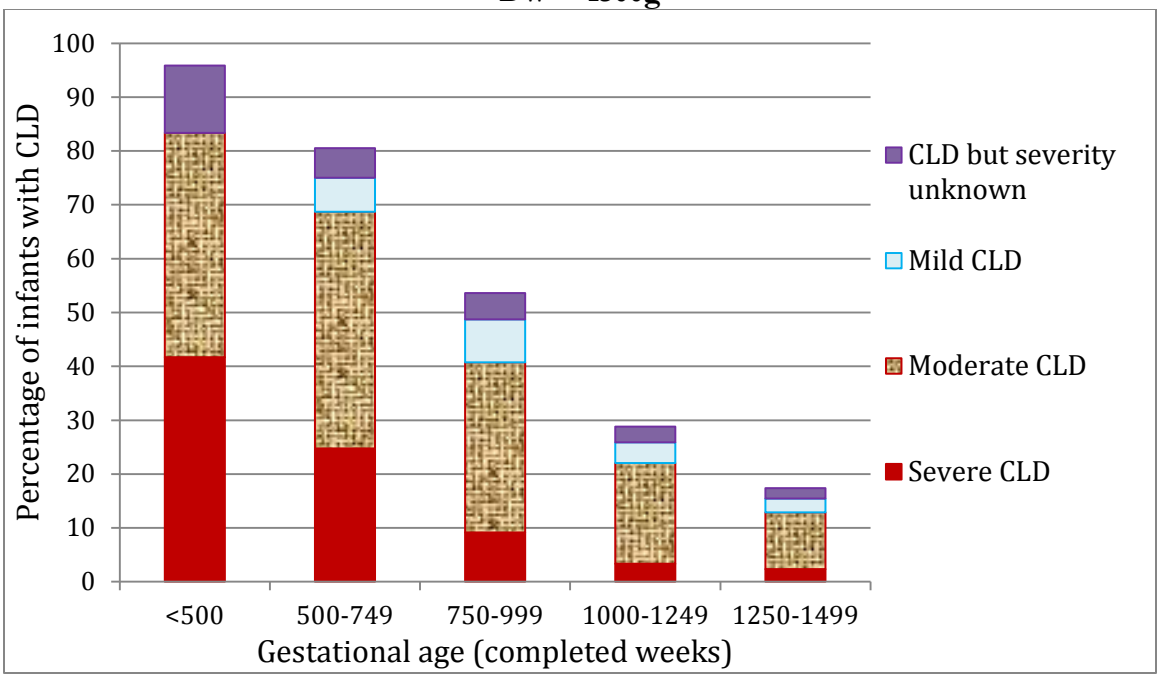


GA	Total number of neonates	Number of neonates who died before 36 weeks PMA	Number of surviving neonates whose respiratory support is unknown*	CLD from**	Number of neonates with known results	Number of neonates with severe CLD	Number of neonates with moderate CLD	Number of neonates with mild CLD	Number of neonates with CLD but severity unknown	Number of neonates without CLD
<25	364	127	1	36w	209	55	103	13	12	26
				Disch	27	6	9	0	1	11
25-26	551	49	3	36w	362	67	135	29	24	107
				Disch	137	12	38	12	9	66
27-28	759	32	1	36w	411	29	120	26	10	226
				Disch	315	7	57	13	12	226
29-30	1 073	21	7	36w	440	15	68	15	6	336
				Disch	605	6	65	8	12	514
31-32	1 611	26	11	36w	541	16	40	17	12	456
				Disch	1 033	4	32	6	7	984
Total	4 358	255	23	36w	1 963	182	466	100	64	1 151
				Disch	2 117	35	201	39	41	1 801

COMMENTS: See pages 127-128 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 #20
Chronic lung disease (CLD) at 36 weeks post menstrual age (PMA) or discharge: BW < 1500g



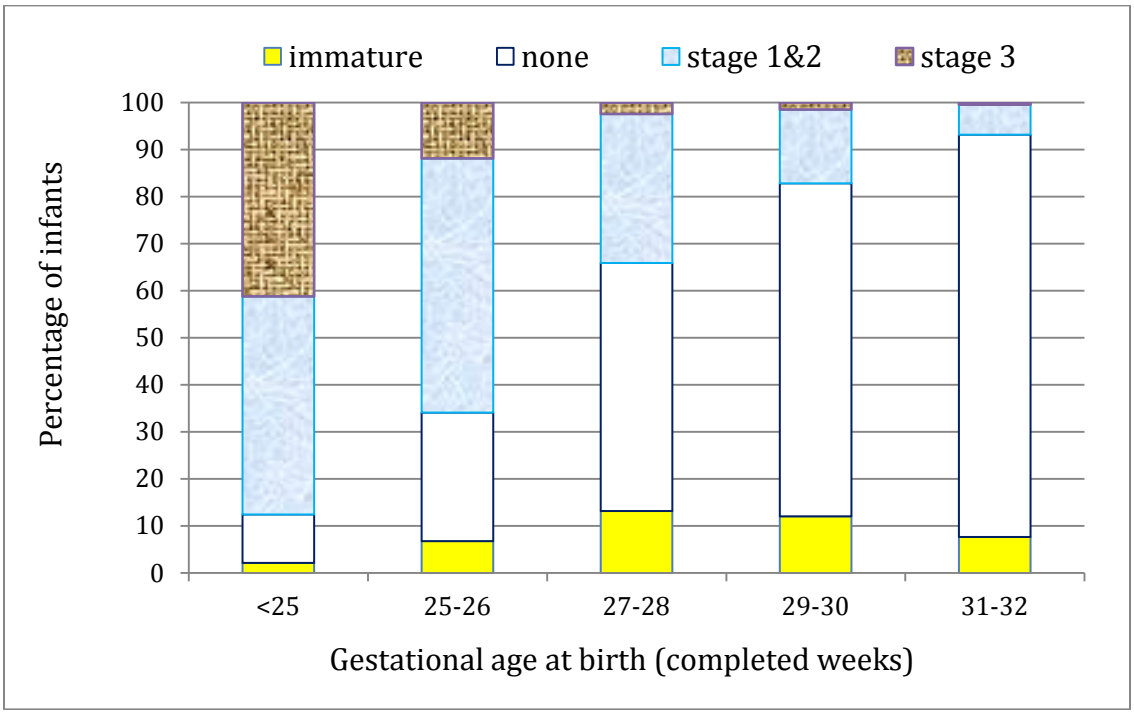
BW	Total number of neonates	Number of neonates who died before 36 weeks' PMA	Number of surviving neonates whose respiratory support is unknown*	CLD from**	Number of neonates with known results	Number of neonates with severe CLD	Number of neonates with moderate CLD	Number of neonates with mild CLD	Number of neonates with CLD but severity unknown	Number of neonates without CLD
<500	38	14	0	36w	22	10	9	0	3	0
				Disch	2	0	1	0	0	1
500-749	478	113	1	36w	315	79	146	22	18	50
				Disch	49	11	14	1	2	21
750-999	678	60	4	36w	411	47	151	29	21	163
				Disch	203	9	43	20	9	122
1000-1249	806	49	3	36w	378	19	83	22	6	248
				Disch	376	6	58	7	16	289
1250-1499	920	138	4	36w	347	13	43	12	9	270
				Disch	431	5	39	8	6	373
Total	2 920	374	12	36w	1 473	168	432	85	57	731
				Disch	1 061	31	155	36	33	806

COMMENTS: See pages 127-128 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

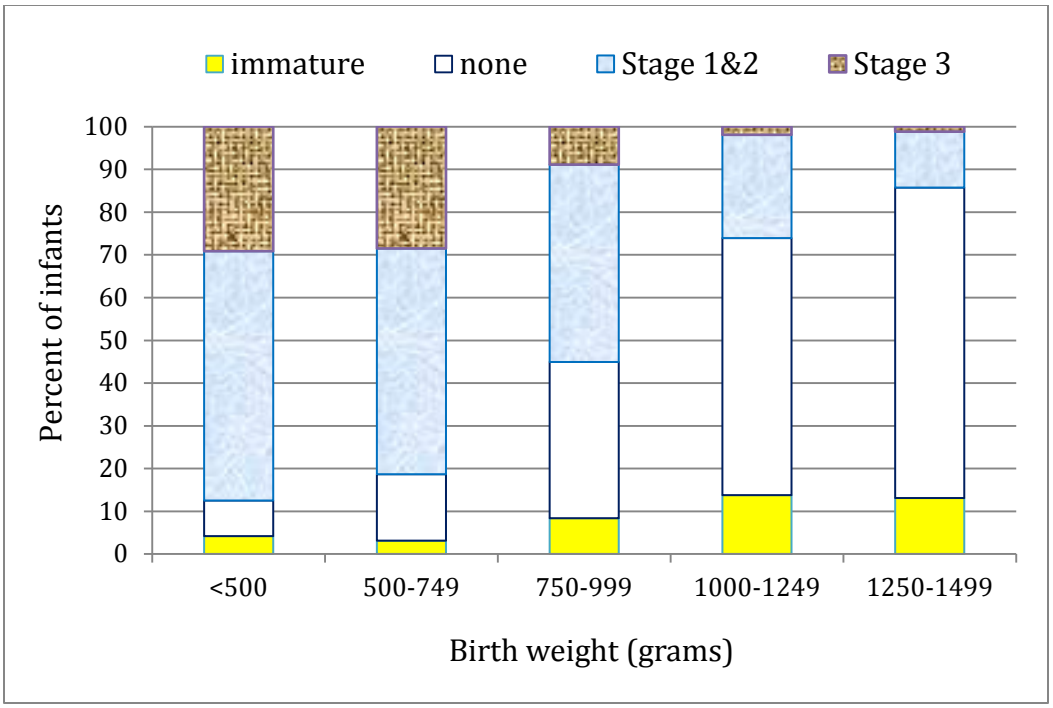


GA (completed weeks)		Total number of neonates	Number of neonates alive at 6 weeks of age	Number of neonates with known eye examination results	Retinopathy of prematurity*				
					Immature	None	Stages 1 & 2	Stage 3	Stages 4 & 5
<25	N	364	247	233	5	24	108	96	0
	%				2%	10%	46%	41%	0%
25-26	N	551	505	472	32	129	255	56	0
	%				7%	27%	54%	12%	0%
27-28	N	759	729	622	82	328	197	15	0
	%				13%	53%	32%	2%	0%
29-30	N	1 073	1 053	606	73	429	95	9	0
	%				12%	71%	16%	1%	0%
31-32	N	1 611	1 585	235	18	201	15	1	0
	%				8%	86%	6%	0%	0%
Total neonates included	N	4 358	4 119	2 168	210	1 111	670	177	0
	%				10%	51%	31%	8%	0%

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

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

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



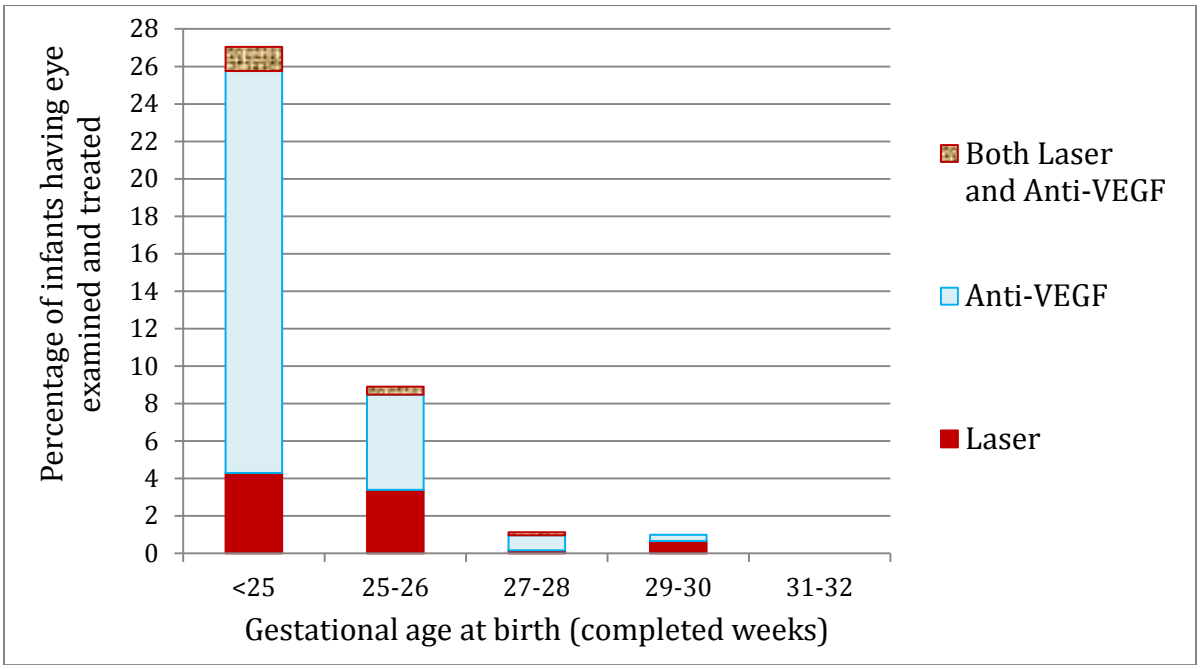
BW (grams)		Total number of neonates	Number of neonates alive at 6 weeks of age	Number of neonates with known eye examination results	Retinopathy of prematurity*				
					Immature	None	Stages 1 & 2	Stage 3	Stages 4 & 5
<500	N	38	25	24	1	2	14	7	0
	%				4%	8%	58%	29%	0%
500-749	N	478	374	354	11	55	187	101	0
	%				3%	16%	53%	29%	0%
750-999	N	678	625	550	46	201	254	49	0
	%				8%	37%	46%	9%	0%
1000-1249	N	806	780	567	78	341	137	11	0
	%				14%	60%	24%	2%	0%
1250-1499	N	920	899	413	54	300	54	5	0
	%				13%	73%	13%	1%	0%
Total neonates included	N	2 920	2 703	1 908	190	899	646	173	0
	%				10%	47%	34%	9%	0%

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

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

Presentation #23

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

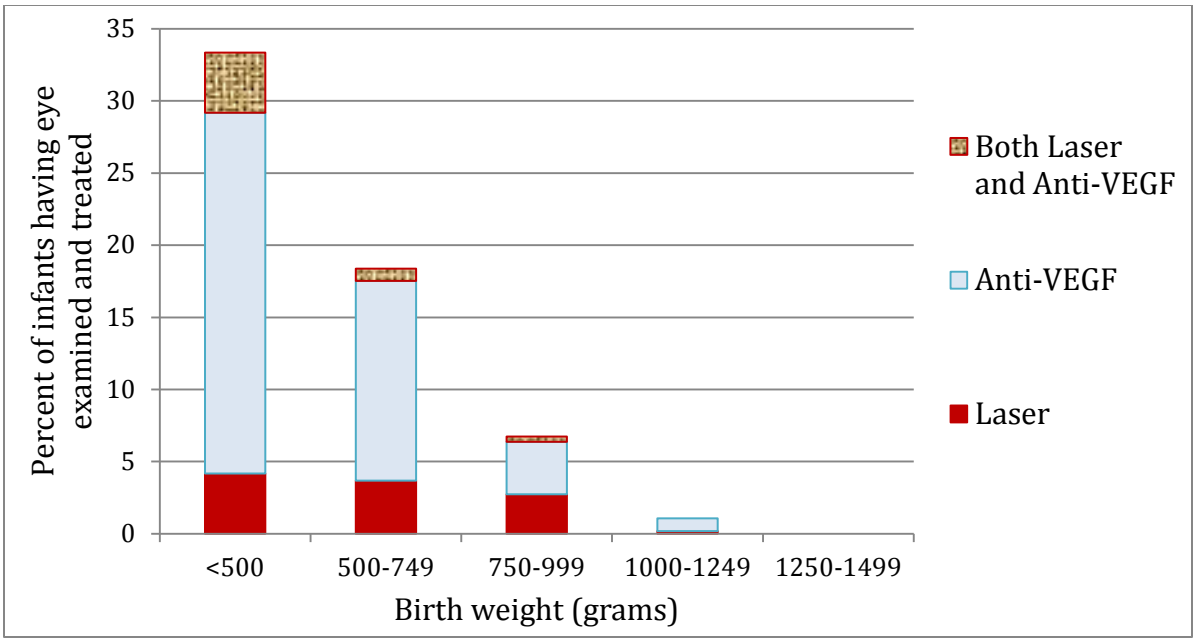


Birth GA (completed weeks)		Total number of neonates	Number of neonates with known eye examination results	Therapy for retinopathy of prematurity (ROP)*	Therapy for ROP			
					Laser	Anti-VEGF	Both Laser and Anti-VEGF	Other surgery
<25	N	364	233	63	10	50	3	0
	%			27%				
25-26	N	551	472	42	16	24	2	0
	%			9%				
27-28	N	759	622	7	1	5	1	0
	%			1%				
29-30	N	1 073	606	6	4	2	0	0
	%			1%				
31-32	N	1 611	235	0	0	0	0	0
	%			0%				
Total neonates included	N	4 358	2 168	118	31	81	6	0
	%			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.**

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	38	24	8	1	6	1	0
	%			33%				
500-749	N	478	354	65	13	49	3	0
	%			18%				
750-999	N	678	550	37	15	20	2	0
	%			7%				
1000-1249	N	806	567	6	1	5	0	0
	%			1%				
1250-1499	N	920	413	0	0	0	0	0
	%			0%				
Total neonates included	N	2 920	1908	116	30	80	6	0
	%			6%				

***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.**

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
Mortality or 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	143	74 (52)	102 (71)	63 (83)	36 (48)	36 (28)	26 (18)	51 (36)
24	206	146 (71)	180 (87)	124 (84)	59 (42)	49 (24)	26 (13)	74 (36)
25	250	217 (87)	199 (80)	154 (70)	46 (23)	42 (18)	27 (11)	77 (31)
26	282	261 (93)	197 (70)	159 (61)	15 (7)	25 (9)	20 (7)	50 (18)
27	304	288 (95)	165 (54)	122 (42)	8 (4)	22 (8)	10 (3)	39 (13)
28	418	405 (97)	165 (39)	132 (33)	6 (2)	20 (5)	10 (2)	26 (6)
29	439	431 (98)	128 (29)	100 (23)	3 (1)	17 (4)	7 (2)	12 (3)
30	581	570 (98)	102 (18)	78 (14)	5 (2)	17 (3)	6 (1)	13 (2)
31	719	712 (99)	95 (13)	63 (9)	0	17 (3)	7 (1)	15 (2)
32	830	815 (98)	79 (10)	47 (6)	0	11 (3)	8 (1)	21 (3)
Total neonates	4172	3919 (94)	1412 (34)	1042 (27)	178 (10)	256 (8)	147 (4)	378 (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

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.

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 $MgSO_4$			Prenatal steroids[a]	Delayed cord clamping[b]			Admission temperature			Apgar <5 at 5 minutes
	N	Yes	No	Missing	Completed course within last week prior to birth[a]	Yes	No	Missing	<36.5	36.5-37.2	>37.2	
xx	< 20	30.0	60.0	10.0	30.0	70.0	10.0	20.0	20.0	60.0	20.0	0.0
viii		50.0	50.0	0.0	0.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0
xxvi		37.5	62.5	0.0	37.5	0.0	75.0	25.0	50.0	37.5	12.5	50.0
xxiii		30.0	70.0	0.0	10.0	0.0	100.0	0.0	80.0	20.0	0.0	0.0
xii		83.3	16.7	0.0	66.7	91.7	8.3	0.0	8.3	75.0	16.7	0.0
xvii		100.0	0.0	0.0	41.7	58.3	41.7	0.0	16.7	58.3	25.0	25.0
xv		50.0	50.0	0.0	42.9	7.1	71.4	21.4	23.1	30.8	46.2	14.3
iii	20 – 39	79.2	20.8	0.0	37.5	79.2	20.8	0.0	33.3	54.2	12.5	4.2
ii		90.0	5.0	5.0	55.0	50.0	50.0	0.0	5.0	75.0	20.0	25.0
xi		85.0	15.0	0.0	45.0	75.0	15.0	10.0	47.4	42.1	10.5	5.0
xxii		53.6	39.3	7.1	50.0	89.3	7.1	3.6	50.0	39.3	10.7	21.4
xiv		84.9	15.2	0.0	30.3	51.5	48.5	0.0	12.5	68.8	18.8	15.2
xxx		67.7	29.0	3.2	32.3	25.8	45.2	29.0	46.7	30.0	23.3	16.7
vi		79.4	20.6	0.0	32.4	79.4	20.6	0.0	47.1	47.1	5.9	23.5
xix		83.3	16.7	0.0	52.8	0.0	0.0	100.0	35.3	47.1	17.7	11.1
xiii	40 – 70	45.0	55.0	0.0	45.0	70.0	27.5	2.5	30.0	57.5	12.5	17.5
xxv		83.3	10.4	6.3	37.5	68.8	20.8	10.4	44.4	48.9	6.7	12.5
xviii		90.0	10.0	0.0	82.0	4.0	96.0	0.0	53.7	36.6	9.8	10.0
v		60.0	35.6	4.4	37.8	62.2	33.3	4.4	35.6	53.3	11.1	26.7
x		66.7	27.8	5.6	37.7	55.6	37.0	7.4	33.3	48.2	18.5	27.8
xxi		78.6	21.4	0.0	47.3	28.6	37.5	33.9	16.7	44.4	38.9	14.3
xxix		84.5	15.5	0.0	56.9	29.3	46.6	24.1	31.6	42.1	26.3	25.9
xvi	> 70	70.0	30.0	0.0	58.6	7.1	92.9	0.0	53.6	37.7	8.7	20.0
iv		30.6	69.4	0.0	35.5	68.5	30.6	0.9	26.4	43.6	30.0	5.4
xxviii		71.0	14.5	14.5	35.4	59.5	35.9	4.6	22.5	62.5	15.0	23.7
xxvii		86.5	13.5	0.0	44.8	47.9	52.1	0.0	8.5	56.4	35.1	7.3
i		67.2	32.8	0.0	71.0	53.4	46.6	0.0	15.9	71.7	12.4	11.6
xxiv		90.1	9.9	0.0	41.2	63.7	36.3	0.0	14.4	70.2	15.5	25.4
Total CNN		72.0	25.6	2.3	46.2	50.7	41.5	7.8	27.3	54.2	18.5	17.0

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

[a] Completed course of prenatal 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
[b] Any delayed cord clamping regardless of timing

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 antibiotics[b]	Exclusive breast milk feeding at discharge[c]	Exclusive formula feeding at discharge[c]
	N	%	%	%	%	%	%
xx	< 20	60.0	50.0	100.0	40.0	50.0	30.0
viii		0.0	0.0	50.0	0.0	0.0	100.0
xxvi		0.0	0.0	75.0	25.0	50.0	25.0
xxiii		90.0	80.0	70.0	0.0	20.0	20.0
xii		66.7	41.7	75.0	16.7	75.0	8.3
xvii		50.0	41.7	91.7	0.0	83.3	0.0
xv		7.1	0.0	85.7	7.1	28.6	21.4
iii	20 – 39	50.0	25.0	79.2	4.2	37.5	29.2
ii		30.0	25.0	35.0	0.0	0.0	50.0
xi		65.0	65.0	75.0	65.0	45.0	10.0
xxii		42.9	32.1	100.0	7.1	10.7	7.1
xiv		33.3	24.2	51.5	6.1	45.5	18.2
xxx		22.6	16.1	32.3	0.0	0.0	41.9
vi		32.4	20.6	44.1	8.8	8.8	17.7
xix		41.7	30.6	27.8	2.8	41.7	33.3
xiii	40 – 70	30.0	17.5	97.5	10.0	15.0	42.5
xxv		31.3	20.8	12.5	2.1	31.3	52.1
xviii		30.0	26.0	24.0	10.0	26.0	34.0
v		31.1	24.4	86.7	2.2	26.7	26.7
x		16.7	13.0	35.2	1.9	46.3	18.5
xxi		33.9	23.2	82.1	7.1	37.5	30.4
xxix		34.5	24.1	81.0	5.2	43.1	32.8
xvi	> 70	25.7	18.6	80.0	7.1	25.7	32.9
iv		38.7	28.8	82.9	2.7	3.6	13.5
xxviii		50.4	35.9	93.1	14.5	26.0	21.4
xxvii		15.6	13.5	58.3	1.0	51.0	20.8
i		33.6	24.4	93.9	6.9	54.2	9.2
xxiv		23.6	15.9	89.0	5.0	57.7	14.8
Total CNN		32.9	24.0	72.9	7.0	35.6	22.9

*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 antibiotics. Prophylactic administration of trimethoprim or amoxicillin for the prevention of urinary tract infections with a suspected renal anomaly was not included as antibiotics.
[c] Information obtained from *Discharge* screen/table of CNN database.

These are unadjusted rates.

E.2. Site Comparisons – Survival / Mortality

Presentation #28
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	NA	NA	0.0	85.7	100.0	100.0	100.0	99.5	99.1
Bϕ	47.5	93.5	97.3	97.1	99.0	100.0	90.2	97.7	93.9
C	50.0	100.0	100.0	96.3	97.4	100.0	100.0	99.2	98.9
D	100.0	100.0	100.0	92.3	96.0	100.0	100.0	97.2	98.5
E	46.2	82.6	84.4	94.5	98.6	97.2	100.0	97.6	95.3
F	85.7	66.7	100.0	100.0	96.9	100.0	97.4	98.8	98.2
G	85.7	91.3	100.0	100.0	95.1	97.6	99.2	98.4	97.8
Hϕ	50.0	100.0	93.8	100.0	100.0	NA	NA	100.0	96.7
I	68.4	86.9	94.3	100.0	97.4	100.0	98.8	100.0	95.5
J	50.0	87.5	100.0	100.0	97.4	100.0	98.7	99.3	97.8
K	36.4	100.0	93.8	100.0	100.0	98.4	99.2	99.1	98.0
L	40.0	50.0	93.8	100.0	100.0	100.0	100.0	99.6	97.7
M	69.6	82.8	93.8	91.5	94.9	99.0	98.2	96.8	95.3
N	66.7	87.5	100.0	97.0	100.0	100.0	100.0	100.0	99.0
O	NA	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
P	NA	100.0	100.0	93.1	100.0	98.2	100.0	100.0	99.3
Q	100.0	100.0	100.0	100.0	100.0	95.0	100.0	100.0	99.6
R	75.0	100.0	92.9	100.0	100.0	100.0	100.0	100.0	99.5
S	76.9	88.4	97.8	100.0	98.8	97.1	98.5	99.3	97.8
Tϕ	57.1	91.3	93.3	97.2	100.0	NA	NA	NA	94.1
U	85.7	80.0	90.9	100.0	93.3	85.7	96.1	95.6	94.7
Vϕ	NA	100.0	90.5	100.0	100.0	NA	NA	NA	98.5
W	50.0	76.5	88.9	97.3	95.7	98.6	98.8	99.4	97.6
Xϕ	40.0	100.0	100.0	94.4	100.0	NA	NA	NA	94.4
Y	100.0	NA	100.0	100.0	100.0	100.0	95.8	100.0	99.1
Z	61.9	93.3	96.1	98.0	97.6	98.9	98.1	98.3	95.9
AAϕ	42.9	94.1	100.0	95.5	98.1	NA	NA	NA	94.6
AB	80.0	76.9	100.0	100.0	100.0	100.0	98.5	100.0	98.6
AC	100.0	100.0	83.3	100.0	100.0	100.0	100.0	98.2	98.7
ADϕ	62.5	94.1	88.2	95.7	95.1	100.0	98.3	99.5	97.7
AE	75.0	95.2	98.4	100.0	99.1	100.0	100.0	99.8	99.1
Overall survival rate for GA**	63.7	90.2	95.5	97.9	98.3	98.9	98.9	98.8	97.4

These analyses included 14 773 neonates from 31 sites.

Twenty-four sites collected data on all eligible admissions whereas seven sites (marked byϕ) collected data on selected eligible admissions only.

ϕ Please note the data collection criteria were not the same for these seven 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 #29
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	NA	0.0	50.0	100.0	100.0	99.6	99.1
Bϕ	25.0	62.8	90.6	97.2	96.7	98.6	96.5	93.9
C	NA	100.0	85.7	93.8	94.1	100.0	99.5	98.9
D	NA	100.0	100.0	100.0	90.9	99.3	97.9	98.5
E	100.0	72.7	76.7	87.5	97.8	96.5	98.7	95.3
F	NA	80.0	100.0	93.3	100.0	98.9	98.5	98.2
G	100.0	88.9	90.5	100.0	96.7	97.9	98.6	97.8
Hϕ	NA	83.3	89.5	100.0	100.0	100.0	100.0	96.7
I	40.0	80.4	91.7	94.4	96.8	98.7	100.0	95.5
J	100.0	57.1	84.6	100.0	100.0	98.6	99.4	97.8
K	100.0	50.0	96.0	100.0	96.9	98.8	99.3	98.0
L	NA	42.9	70.0	81.8	100.0	100.0	99.6	97.7
M	100.0	66.7	85.7	97.1	95.6	96.2	97.4	95.3
N	50.0	60.0	100.0	100.0	100.0	100.0	100.0	99.0
O	NA	100.0	100.0	100.0	100.0	100.0	100.0	100.0
P	NA	NA	100.0	100.0	92.3	99.2	100.0	99.3
Q	100.0	100.0	90.9	100.0	100.0	100.0	100.0	99.6
R	100.0	85.7	100.0	93.8	100.0	100.0	100.0	99.5
S	0.0	84.2	89.4	100.0	100.0	97.6	99.4	97.8
Tϕ	100.0	80.0	81.0	93.9	100.0	100.0	NA	94.1
U	NA	66.7	100.0	100.0	89.3	93.4	95.6	94.7
Vϕ	NA	100.0	87.5	97.0	100.0	100.0	NA	98.5
W	NA	42.9	100.0	85.2	95.8	98.3	99.0	97.6
Xϕ	100.0	40.0	100.0	100.0	88.9	100.0	NA	94.4
Y	NA	NA	100.0	100.0	100.0	97.0	100.0	99.1
Z	40.0	73.7	90.0	100.0	96.8	97.8	98.9	95.9
AAϕ	0.0	62.5	95.2	96.4	97.3	98.1	100.0	94.6
AB	100.0	77.3	100.0	100.0	100.0	99.5	100.0	98.6
AC	NA	100.0	100.0	90.9	100.0	98.4	100.0	98.7
ADϕ	NA	76.5	94.1	86.7	100.0	99.0	98.5	97.7
AE	57.1	85.3	100.0	98.6	100.0	100.0	99.8	99.1
Overall survival rate for BW**	60.5	74.7	91.0	96.4	97.6	98.6	98.9	97.4

These analyses included 14 772 neonates from 31 sites (1 neonate had missing BW data).

Twenty-four sites collected data on all eligible admissions whereas seven sites (marked by ϕ) collected data on selected eligible admissions only.

ϕ Please note the data collection criteria were not the same for these seven 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

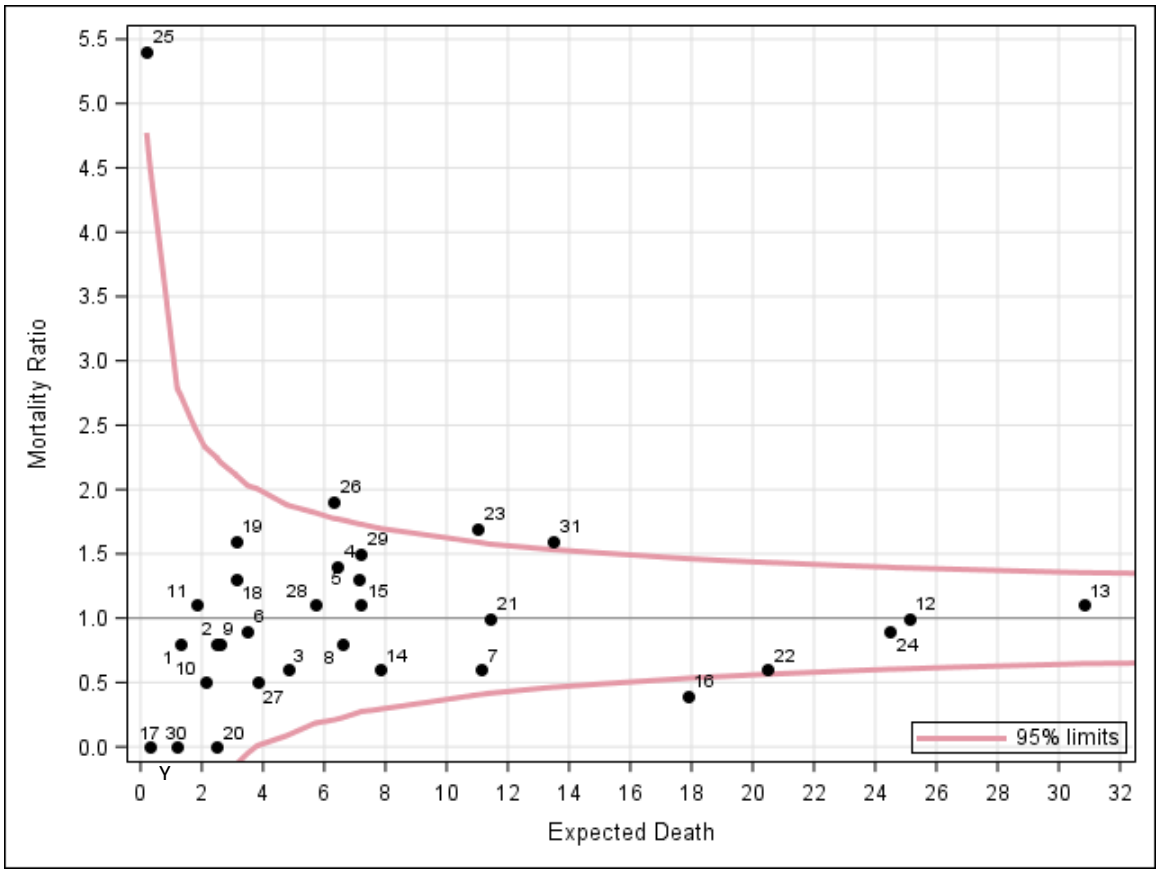
NA = no data available, 0 = no neonates survived, Delivery room deaths were not included

Presentation #30a
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	45	1	1.3	0.8	0.0	4.2
2	130	2	2.6	0.8	0.1	2.7
3	110	3	4.8	0.6	0.1	1.8
4	152	9	6.4	1.4	0.6	2.7
5	118	9	7.1	1.3	0.6	2.4
6	65	3	3.5	0.9	0.2	2.5
7	128	7	11.1	0.6	0.3	1.3
8	126	5	6.6	0.8	0.2	1.8
9	59	2	2.5	0.8	0.1	2.9
10	63	1	2.1	0.5	0.0	2.6
11	79	2	1.8	1.1	0.1	4.0
12	309	26	25.1	1.0	0.7	1.5
13	400	34	30.8	1.1	0.8	1.5
14	156	5	7.8	0.6	0.2	1.5
15	146	8	7.2	1.1	0.5	2.2
16	301	8	17.9	0.4	0.2	0.9
17	12	0	0.3	0.0	.	11.2
18	68	4	3.1	1.3	0.4	3.3
19	72	5	3.1	1.6	0.5	3.7
20	43	0	2.5	0.0	.	1.4
21	181	11	11.4	1.0	0.5	1.7
22	255	13	20.5	0.6	0.3	1.1
23	183	19	11.0	1.7	1.0	2.7
24	312	23	24.5	0.9	0.6	1.4
25	15	1	0.2	5.4	0.1	30.2
26	118	12	6.3	1.9	1.0	3.3
27	91	2	3.8	0.5	0.1	1.9
28	89	6	5.7	1.1	0.4	2.3
29	116	11	7.2	1.5	0.8	2.7
30	26	0	1.2	0.0	.	3.0
31	204	21	13.5	1.6	1.0	2.4

Numeric site codes were used in Presentations 30a-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 #30b
Mortality: GA<33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 30a
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 30b
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.

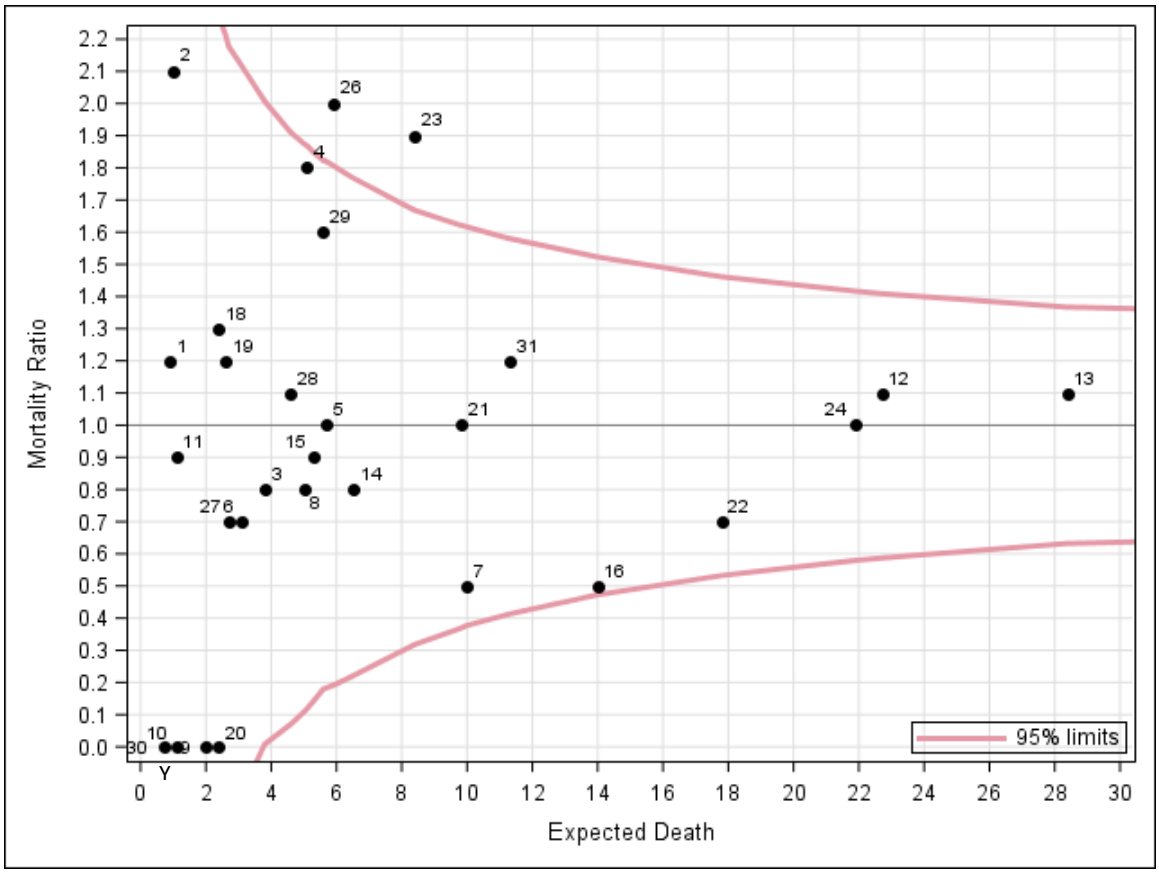
Presentation #30c
Mortality: GA<29 weeks: Adjusted standardized ratios by site

Site	Number of neonates	Number of deaths	Adjusted# expected number of deaths	Adjusted# standardized ratio	95% confidence interval (CI) for adjusted standardized ratio	
1	10	1	0.9	1.2	0.0	6.4
2	25	2	1.0	2.1	0.2	7.4
3	35	3	3.8	0.8	0.2	2.3
4	61	9	5.1	1.8	0.8	3.4
5	40	6	5.7	1.0	0.4	2.3
6	22	2	3.1	0.7	0.1	2.4
7	63	5	10.0	0.5	0.2	1.2
8	39	4	5.0	0.8	0.2	2.1
9	21	0	2.0	0.0	.	1.8
10	12	0	1.1	0.0	.	3.3
11	16	1	1.1	0.9	0.0	4.9
12	151	25	22.7	1.1	0.7	1.6
13	191	30	28.4	1.1	0.7	1.5
14	54	5	6.5	0.8	0.2	1.8
15	53	5	5.3	0.9	0.3	2.2
16	119	7	14.0	0.5	0.2	1.0
18	18	3	2.4	1.3	0.3	3.7
19	22	3	2.6	1.2	0.2	3.4
20	20	0	2.4	0.0	.	1.6
21	67	10	9.8	1.0	0.5	1.9
22	110	12	17.8	0.7	0.3	1.2
23	65	16	8.4	1.9	1.1	3.1
24	157	21	21.9	1.0	0.6	1.5
26	35	12	5.9	2.0	1.0	3.5
27	26	2	2.7	0.7	0.1	2.7
28	35	5	4.6	1.1	0.3	2.5
29	41	9	5.6	1.6	0.7	3.0
30	10	0	0.7	0.0	.	5.2
31	83	14	11.3	1.2	0.7	2.1

Numeric site codes were used in Presentations 30a-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: Site 17 was excluded from the analysis due to the small number of eligible neonates. Site 25 did not have any eligible neonates in the GA<29 category.

Presentations #30d
Mortality: GA<29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 30c
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

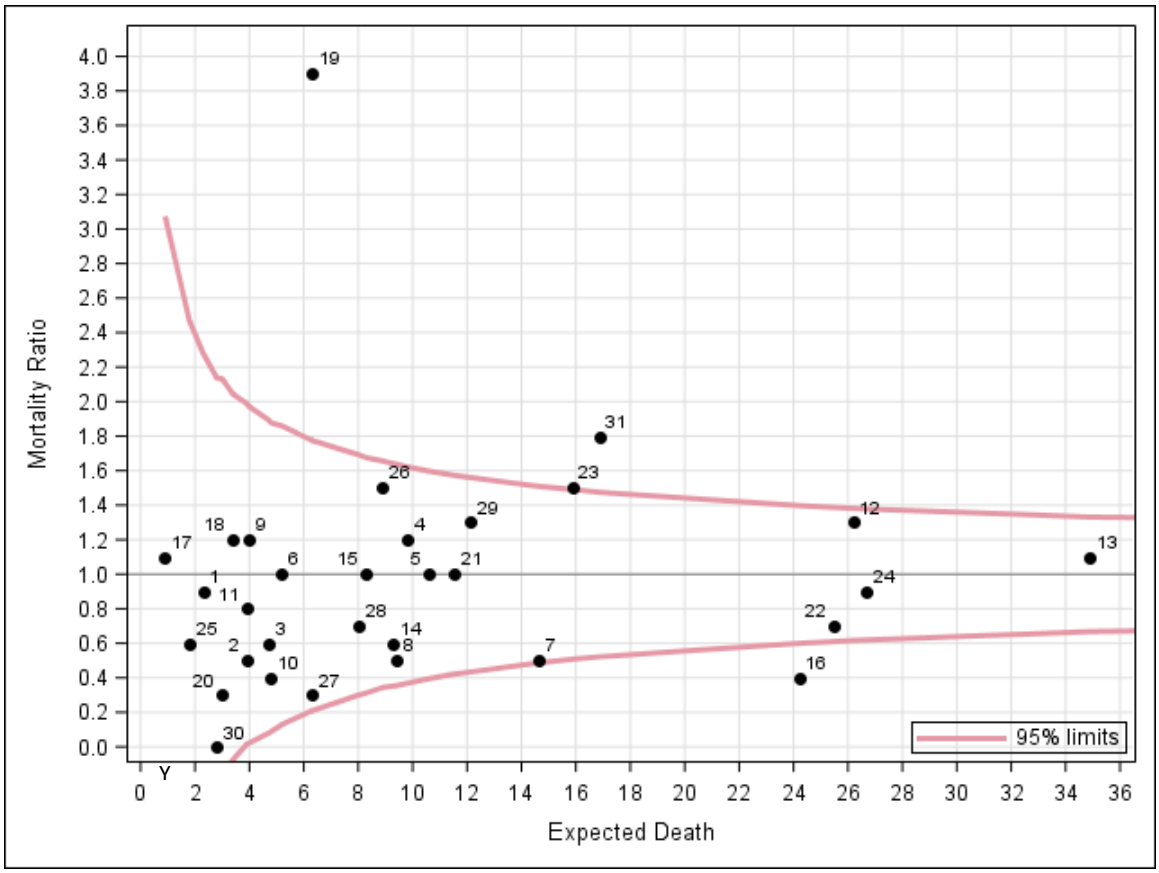
Explanation for Presentation 30d
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red 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 #30e
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	148	2	2.3	0.9	0.1	3.2
2	130	2	3.9	0.5	0.1	1.9
3	111	3	4.7	0.6	0.1	1.9
4	716	12	9.8	1.2	0.6	2.1
5	518	11	10.6	1.0	0.5	1.9
6	320	5	5.2	1.0	0.3	2.3
7	662	8	14.6	0.5	0.2	1.1
8	501	5	9.4	0.5	0.2	1.2
9	322	5	4.0	1.2	0.4	2.9
10	409	2	4.8	0.4	0.0	1.5
11	365	3	3.9	0.8	0.2	2.3
12	510	33	26.2	1.3	0.9	1.8
13	973	38	34.9	1.1	0.8	1.5
14	425	6	9.3	0.6	0.2	1.4
15	146	8	8.3	1.0	0.4	1.9
16	1013	9	24.2	0.4	0.2	0.7
17	111	1	0.9	1.1	0.0	6.2
18	68	4	3.4	1.2	0.3	3.0
19	494	25	6.3	3.9	2.6	5.8
20	204	1	3.0	0.3	0.0	1.9
21	181	11	11.5	1.0	0.5	1.7
22	873	17	25.5	0.7	0.4	1.1
23	531	24	15.9	1.5	1.0	2.3
24	576	23	26.7	0.9	0.5	1.3
25	313	1	1.8	0.6	0.0	3.2
26	551	13	8.9	1.5	0.8	2.5
27	427	2	6.3	0.3	0.0	1.1
28	347	6	8.0	0.7	0.3	1.6
29	697	16	12.1	1.3	0.8	2.1
30	244	0	2.8	0.0	.	1.3
31	673	30	16.9	1.8	1.2	2.5

Numeric site codes were used in Presentations 30a-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 #30f
Mortality: All neonates: Adjusted standardized ratios by site



Explanation for Presentation 30e
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 30f
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 #31
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	%	%	%	%	%	%	%
F	< 70	4.6	3.5	15.6	23.8	0.0	12.1	33.3
Y		0.0	0.0	0.0	8.3	0.0	0.0	8.3
O		0.0	7.4	0.0	11.1	0.0	14.8	25.9
A		10.5	0.0	9.1	5.9	0.0	5.3	21.1
AC		2.1	2.9	5.0	4.4	0.0	6.4	12.8
Q		0.0	10.3	11.5	57.1	7.4	11.1	61.1
D		3.4	10.0	7.4	31.6	3.4	13.6	40.7
P		3.0	1.6	0.0	11.1	0.0	4.6	18.2
X	71 – 120	5.6	6.8	11.5	17.9	5.6	7.0	28.2
C		3.7	3.7	6.8	6.3	0.0	6.2	13.6
J		6.6	5.6	0.0	35.3	0.0	4.4	40.7
R		2.1	3.2	8.3	17.0	3.1	8.3	27.1
U		6.4	5.8	0.0	33.3	7.7	3.9	47.4
L		10.1	8.8	4.0	12.2	5.0	7.6	27.7
H		3.3	6.0	5.7	20.9	0.8	9.2	30.8
W	121 – 160	9.7	10.1	11.3	15.8	6.5	8.1	33.1
K		5.7	7.0	11.2	30.7	1.3	11.3	39.0
AD		7.9	19.6	14.0	19.0	2.4	13.5	33.3
G		5.4	6.2	11.9	44.7	2.3	14.0	56.6
V		1.5	2.6	0.0	8.5	1.5	2.3	11.5
AA		5.4	5.6	2.6	35.9	1.4	3.4	43.0
N		3.9	2.9	13.6	21.5	2.3	6.2	27.7
AB		3.1	4.8	5.2	14.8	2.5	10.1	23.9
S	> 160	4.9	8.6	18.9	61.9	4.6	13.3	66.7
E		10.4	10.8	21.1	24.0	1.6	4.7	36.3
M		10.5	7.7	7.6	36.3	3.8	11.0	45.2
AE		2.9	5.8	5.7	33.7	1.6	7.3	39.1
T		5.9	6.7	15.4	32.2	4.8	8.6	39.6
B		8.9	14.3	37.5	27.7	7.1	8.3	41.5
I		8.0	18.2	11.4	11.3	4.6	9.8	31.2
Z		8.5	9.0	12.8	35.4	6.6	15.6	46.2
Total CNN		6.2	8.2	9.9	27.7	3.6	9.3	37.9

Mortality or severe morbidity = Mortality prior to discharge or any of the five morbidities
*PMA: Post-menstrual age

These are unadjusted rates.

Presentation #32
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	%	%	%	%	%	%	%
Y	≤ 20	0.0	0.0	0.0	50.0	0.0	0.0	50.0
X		15.0	15.0	27.3	47.1	15.0	20.0	65.0
AC		9.1	0.0	10.0	20.0	0.0	27.3	45.5
O		0.0	18.2	0.0	27.3	0.0	18.2	45.5
A		100.0	0.0	NA	NA	0.0	100.0	100.0
P		0.0	8.3	0.0	27.3	0.0	8.3	33.3
C		6.3	12.5	14.3	26.7	0.0	31.3	50.0
R	21 – 40	6.9	6.9	15.4	51.9	3.5	27.6	72.4
D		0.0	21.1	11.1	61.9	9.5	33.3	76.2
U		13.0	8.7	0.0	70.0	4.4	13.0	87.0
Q		0.0	5.3	16.7	78.3	12.5	20.8	87.5
V		7.7	8.0	0.0	16.7	0.0	0.0	26.9
J		14.3	14.3	0.0	73.3	0.0	8.6	77.1
F		9.1	4.6	26.3	60.0	0.0	27.3	68.2
L		33.3	18.5	8.0	37.5	16.7	22.2	72.2
H		10.0	10.3	9.4	47.2	2.5	15.0	62.5
N	41 – 70	9.8	2.5	19.2	58.5	2.4	12.2	63.4
G		7.9	8.1	17.0	72.9	1.6	23.8	85.7
AD		14.3	31.0	18.8	47.2	7.1	33.3	66.7
AA		9.4	3.9	7.1	58.3	3.8	7.6	67.9
AB		9.3	7.7	10.2	40.0	7.4	25.9	57.4
K		13.9	12.3	18.2	55.4	3.1	21.5	69.2
W		22.0	21.6	21.2	39.4	12.5	9.8	58.5
T		14.9	10.6	19.2	61.4	10.5	16.4	71.6
E		23.5	15.6	29.2	61.5	2.9	13.2	75.0
AE	> 70	6.4	7.4	8.7	64.4	4.0	16.7	71.4
S		10.5	15.0	22.0	89.3	8.8	24.6	92.1
B		16.4	19.5	38.0	46.2	12.0	15.7	64.8
M		16.7	8.3	14.1	68.6	7.1	22.6	76.2
I		14.2	22.5	12.3	20.0	8.9	17.8	52.1
Z		15.6	15.4	16.1	62.4	12.6	29.7	75.4
Total CNN		13.1	13.6	15.2	54.7	7.4	20.0	69.2

Mortality or severe morbidity = Mortality prior to discharge or any of the five morbidities
*PMA: Post-menstrual age

These are unadjusted rates.

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

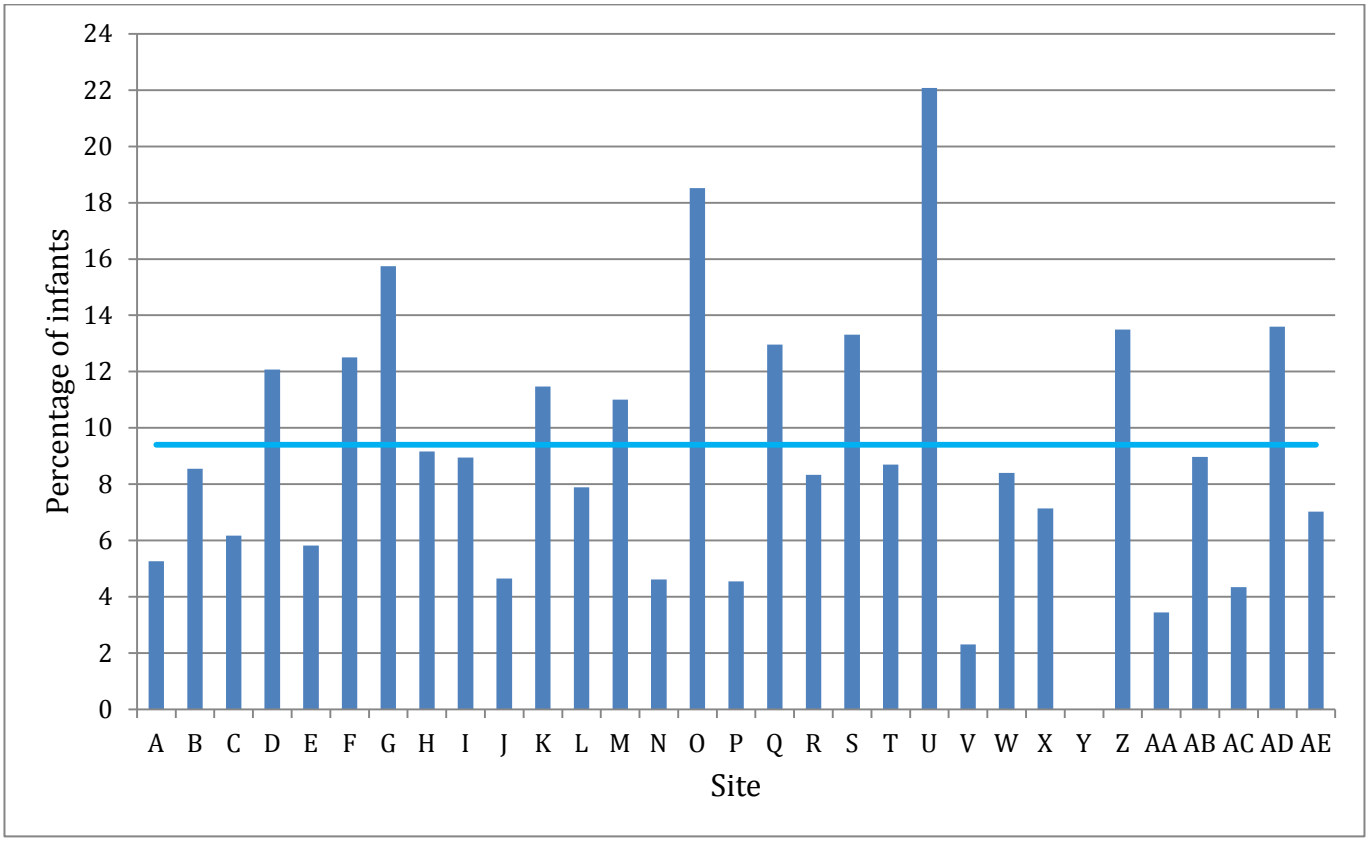
In presentations #33 and #34, late onset sepsis was attributed to the hospital where the first episode of sepsis was acquired. Each neonate was counted only once even if there were multiple episodes of infections.

In presentations #35 and #36, 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 #33

Late onset sepsis: GA<33 weeks: Site specific crude rates
(n=4 292 neonates, 66 excluded due to death before 3 days of age)



Site	A	B	C	D	E	F	G	H	I	J	K
%	5.3	8.5	6.2	12.1	5.8	12.5	15.7	9.2	9.0	4.7	11.5
Site	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**V**
%	7.9	11.0	4.6	18.5	4.5	13.0	8.3	13.3	8.7	22.1	2.3
Site	**W**	**X**	**Y**	**Z**	**AA**	**AB**	**AC**	**AD**	**AE**	**CNN**	
%	8.4	7.1	0.0	13.5	3.4	9.0	4.3	13.6	7.0	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).

In presentations #33 and #34, 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 #34a
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	45	2	2.7	0.8	0.1	2.7
2	130	3	5.9	0.5	0.1	1.5
3	120	11	10.0	1.1	0.6	2.0
4	157	18	13.8	1.3	0.8	2.1
5	125	17	11.0	1.5	0.9	2.5
6	64	8	5.2	1.6	0.7	3.1
7	129	20	16.7	1.2	0.7	1.9
8	128	6	9.5	0.6	0.2	1.4
9	57	7	5.1	1.4	0.5	2.8
10	66	3	3.7	0.8	0.2	2.4
11	81	5	4.7	1.1	0.3	2.5
12	316	27	35.8	0.8	0.5	1.1
13	405	56	47.0	1.2	0.9	1.5
14	154	14	12.1	1.2	0.6	1.9
15	145	5	11.3	0.4	0.1	1.0
16	312	22	28.8	0.8	0.5	1.2
17	12	0	0.7	0.0	.	5.5
18	70	5	4.7	1.1	0.3	2.5
19	91	17	9.8	1.7	1.0	2.8
20	55	7	6.4	1.1	0.4	2.3
21	184	16	17.4	0.9	0.5	1.5
22	263	35	29.1	1.2	0.8	1.7
23	191	11	17.4	0.6	0.3	1.1
24	321	29	39.7	0.7	0.5	1.0
25	19	1	0.6	1.8	0.0	9.8
26	114	9	8.4	1.1	0.5	2.0
27	96	8	7.1	1.1	0.5	2.2
28	86	4	6.4	0.6	0.2	1.6
29	119	10	8.9	1.1	0.5	2.1
30	28	5	2.2	2.2	0.7	5.2
31	209	23	22.2	1.0	0.7	1.6

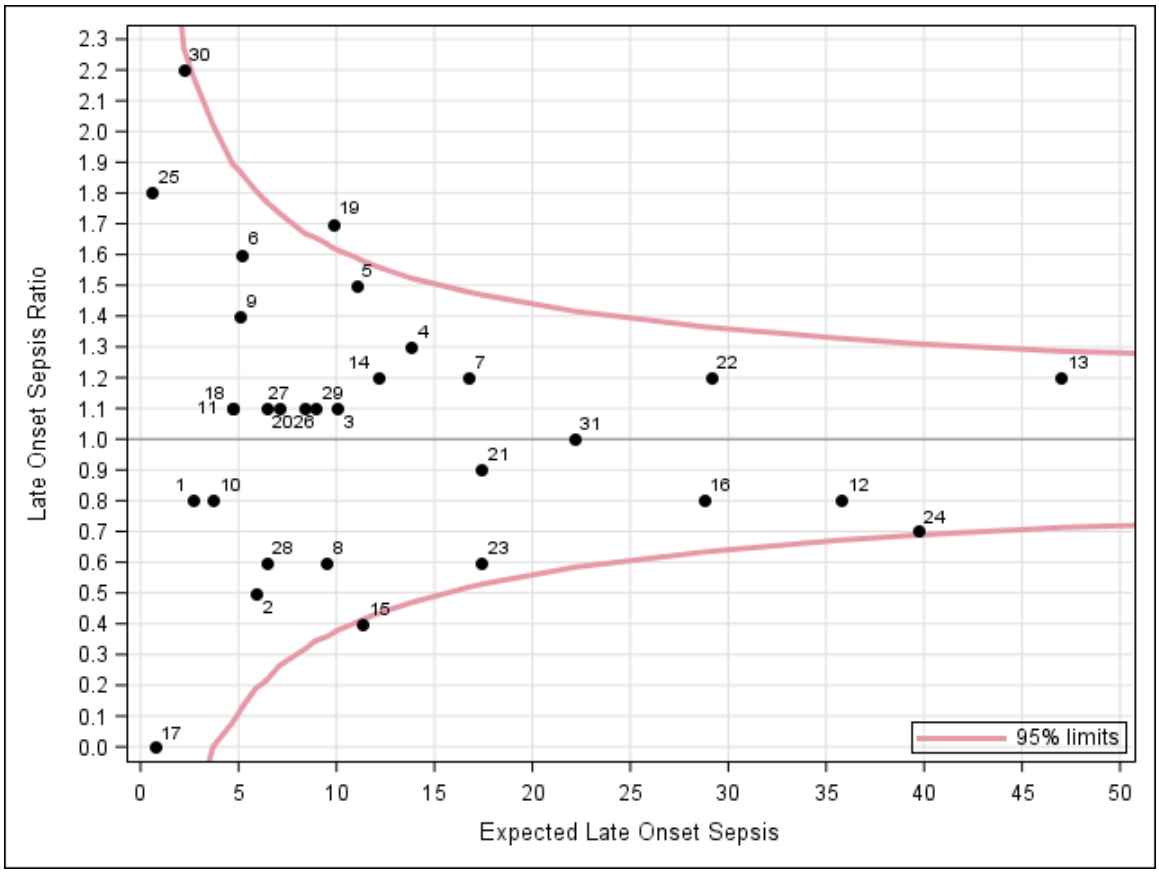
Numeric site codes were used in Presentations 34a-d and they may not correspond to other presentations in this report.

*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.

Presentation # 34b
Late onset sepsis: GA<33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 34a
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 34b
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 #34c
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	9	2	1.8	1.1	0.1	4.0
2	25	0	3.0	0.0	.	1.2
3	40	6	8.0	0.7	0.3	1.6
4	63	14	11.5	1.2	0.7	2.0
5	41	14	8.9	1.6	0.9	2.7
6	21	6	4.2	1.4	0.5	3.1
7	64	17	15.2	1.1	0.7	1.8
8	39	3	7.0	0.4	0.1	1.3
9	20	6	4.4	1.4	0.5	2.9
10	12	1	1.9	0.5	0.0	3.0
11	16	5	3.0	1.7	0.5	3.9
12	152	25	31.3	0.8	0.5	1.2
13	183	49	41.5	1.2	0.9	1.6
14	49	12	9.5	1.3	0.6	2.2
15	51	4	8.7	0.5	0.1	1.2
16	124	21	23.3	0.9	0.6	1.4
18	19	4	3.5	1.1	0.3	2.9
19	36	17	8.4	2.0	1.2	3.2
20	24	5	5.6	0.9	0.3	2.1
21	65	11	14.6	0.8	0.4	1.3
22	113	28	24.8	1.1	0.7	1.6
23	67	11	13.7	0.8	0.4	1.4
24	163	27	35.5	0.8	0.5	1.1
26	31	8	6.6	1.2	0.5	2.4
27	29	8	5.3	1.5	0.7	3.0
28	31	3	4.9	0.6	0.1	1.8
29	37	4	6.7	0.6	0.2	1.5
30	12	3	1.7	1.8	0.4	5.2
31	84	19	18.9	1.0	0.6	1.6

Numeric site codes were used in Presentations 34a-d and they may not correspond to other presentations in this report.

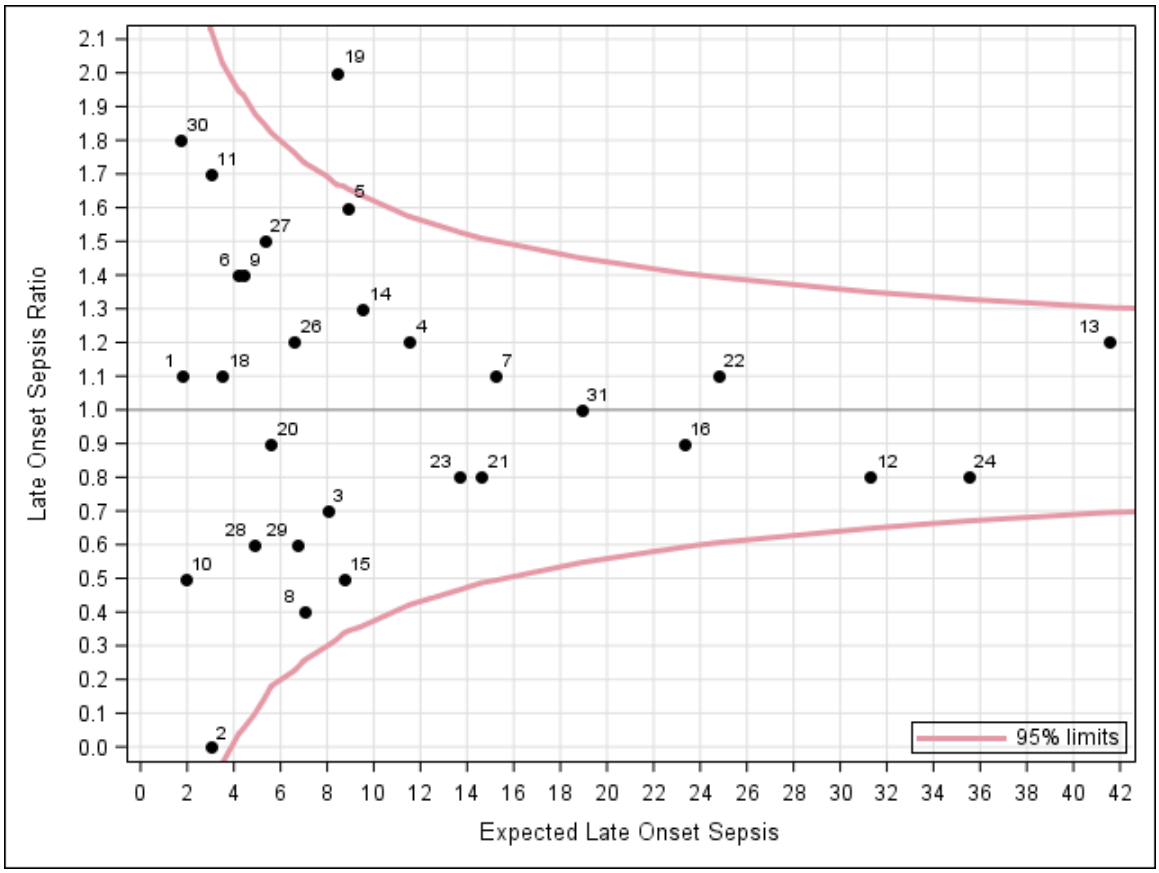
*Late onset sepsis was attributed to the hospital where the first episode of sepsis was acquired.

*Neonates who died before 3 days of age are excluded.

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

Note: Site 17 was excluded from the analysis due to the small number of eligible neonates. Site 25 did not have any eligible neonates in the GA<29 category.

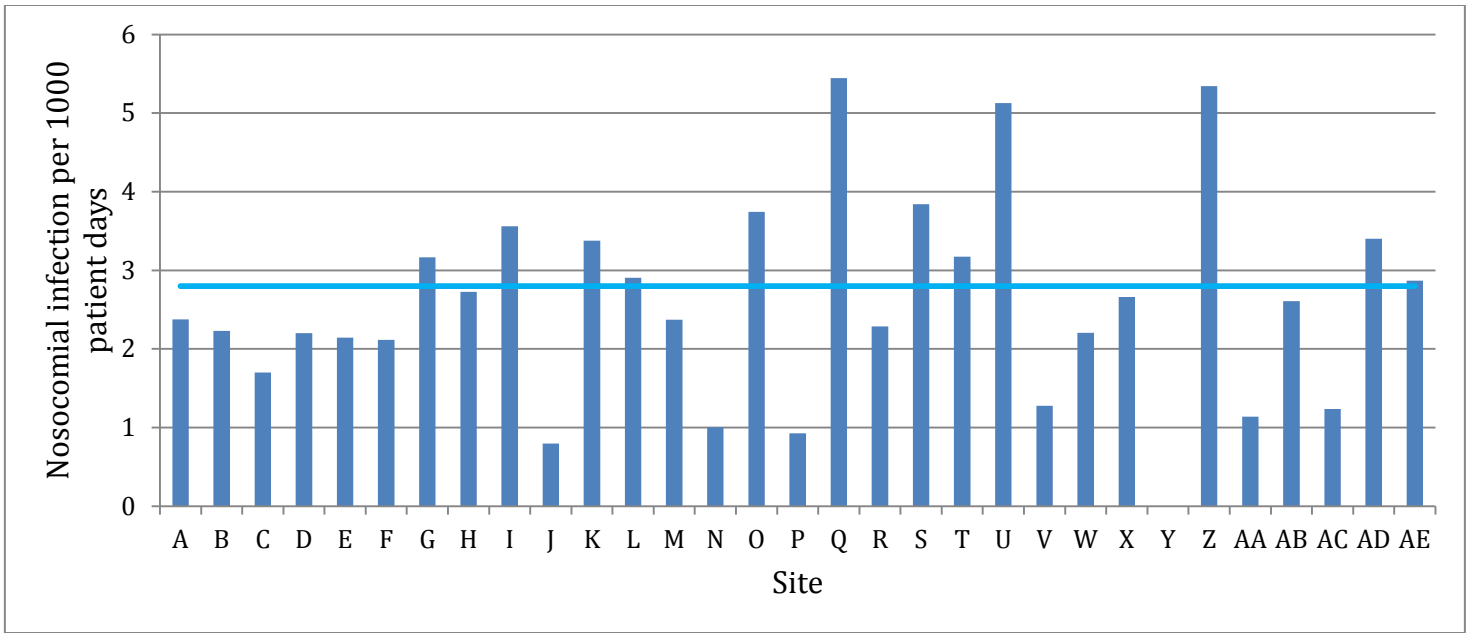
Presentation # 34d
Late onset sepsis: GA<29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 34c
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 34d
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 #35
Late onset sepsis per 1000 patient days: GA<33 weeks: Site specific crude rates

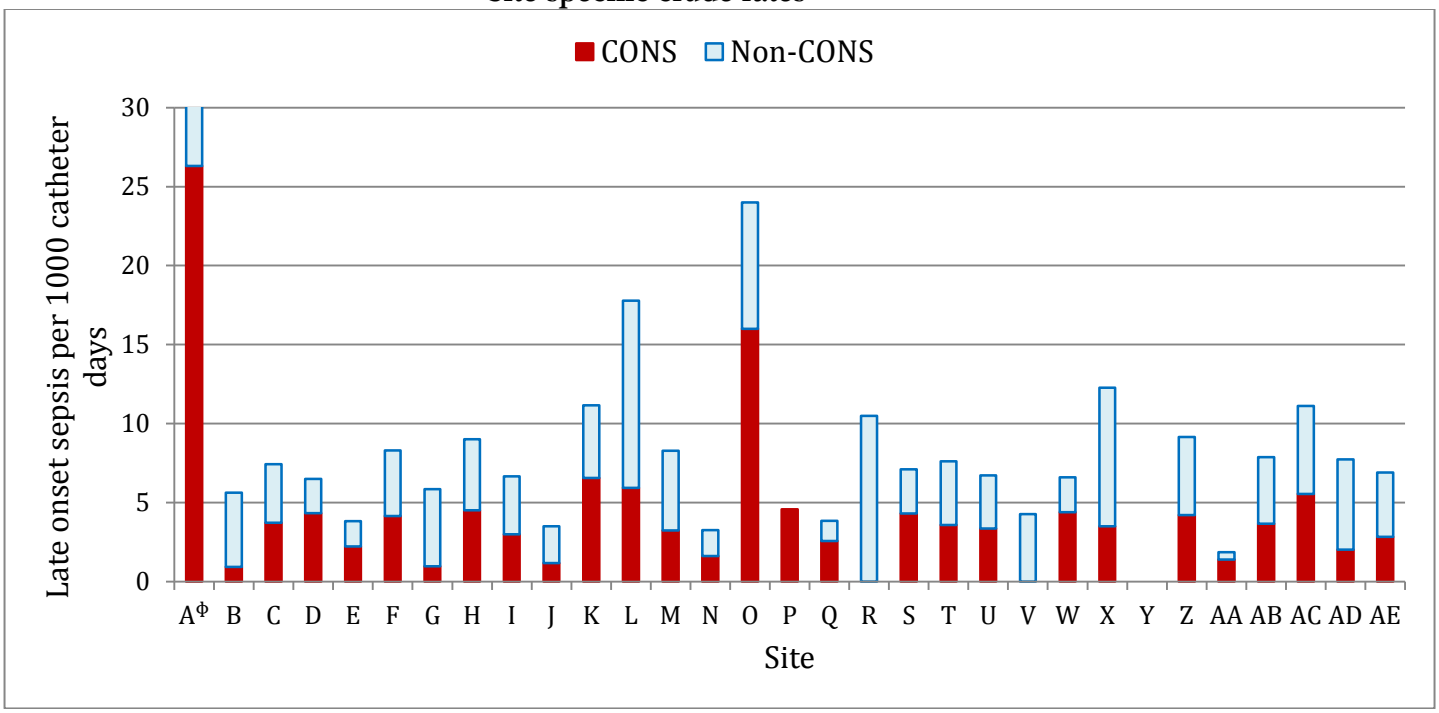


Site	Infections per 1000 patient days	Site	Infections per 1000 patient days	Site	Infections per 1000 patient days
A	2.4	**L**	2.9	**W**	2.2
B	2.2	**M**	2.4	**X**	2.7
C	1.7	**N**	1.0	**Y**	0.0
D	2.2	**O**	3.7	**Z**	5.3
E	2.1	**P**	0.9	**AA**	1.1
F	2.1	**Q**	5.4	**AB**	2.6
G	3.2	**R**	2.3	**AC**	1.2
H	2.7	**S**	3.8	**AD**	3.4
I	3.6	**T**	3.2	**AE**	2.9
J	0.8	**U**	5.1	**CNN**	2.8
K	3.4	**V**	1.3		

Total number of neonates = 4 358

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

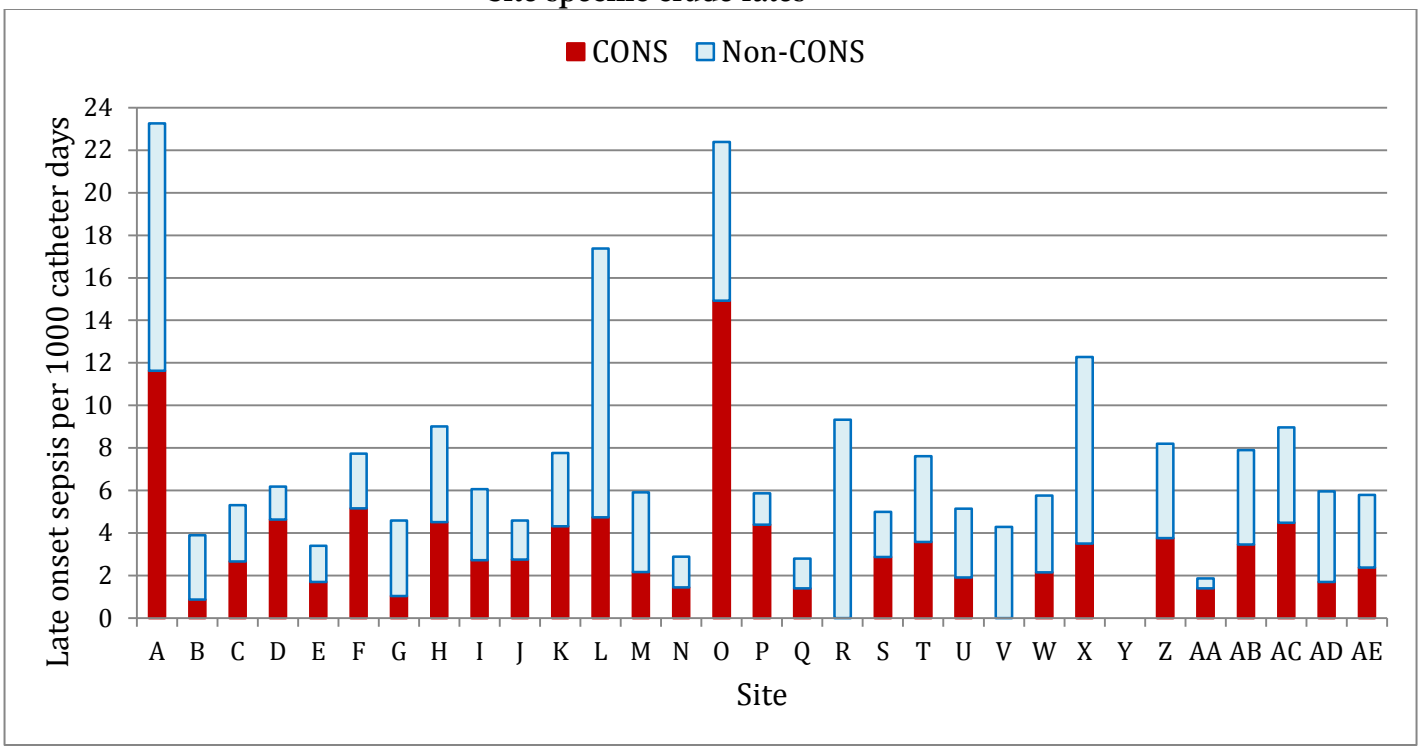
Presentation #36a
Central Line-Associated Bloodstream Infections per 1000 central line* days: GA < 33 weeks: Site specific crude rates



Site	CLABSI**		Central line days	CLABSI per 1000 central line days	
	CONS	Non-CONS		CONS	Non-CONS
A$^{\phi}$	1	1	38	26.3	26.3
B	4	20	4257	0.9	4.7
C	2	2	538	3.7	3.7
D	2	1	462	4.3	2.2
E	7	5	3130	2.2	1.6
F	2	2	482	4.1	4.1
G	3	15	3073	1.0	4.9
H	4	4	887	4.5	4.5
I	9	11	3003	3.0	3.7
J	1	2	855	1.2	2.3
K	10	7	1523	6.6	4.6
L	3	6	506	5.9	11.9
M	9	14	2779	3.2	5.0
N	2	2	1229	1.6	1.6
O	2	1	125	16.0	8.0
P	2	0	437	4.6	0.0
Q	2	1	780	2.6	1.3
R	0	4	381	0.0	10.5
S	14	9	3239	4.3	2.8
T	8	9	2234	3.6	4.0
U	15	15	4460	3.4	3.4
V	0	2	467	0.0	4.3
W	6	3	1365	4.4	2.2
X	2	5	570	3.5	8.8
Y	0	0	72	0.0	0.0
Z	17	20	4039	4.2	5.0
AA	3	1	2137	1.4	0.5
AB	7	8	1906	3.7	4.2
AC	1	1	180	5.6	5.6
AD	5	14	2457	2.0	5.7
AE	7	10	2462	2.8	4.1
CNN	150	195	50073	3.0	3.9

*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.
$^{\phi}$Site A's rate goes over the y-axis limit in the graph. Refer to the table for site A's actual rate.

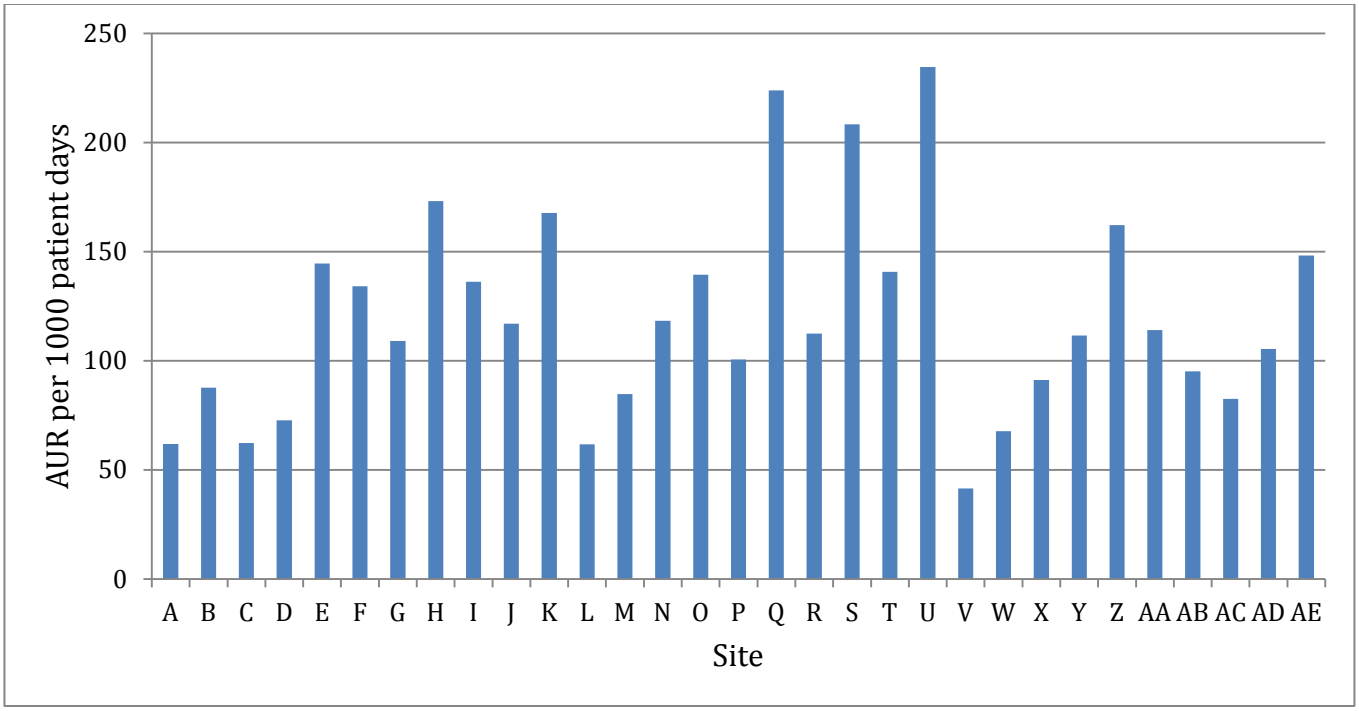
Presentation #36b
Central Line-Associated Bloodstream Infections per 1000 central line* days: All neonates: Site specific crude rates



Site	CLABSI**		Central line days	CLABSI per 1000 central line days		Site	CLABSI**		Central line days	CLABSI per 1000 central line days	
	CONS	Non-CONS		CONS	Non-CONS		CONS	Non-CONS		CONS	Non-CONS
A	1	1	86	11.6	11.6	**Q**	3	3	2144	1.4	1.4
B	7	24	7937	0.9	3.0	**R**	0	4	429	0.0	9.3
C	2	2	752	2.7	2.7	**S**	15	11	5204	2.9	2.1
D	3	1	647	4.6	1.5	**T**	8	9	2234	3.6	4.0
E	9	9	5301	1.7	1.7	**U**	16	27	8345	1.9	3.2
F	4	2	775	5.2	2.6	**V**	0	2	467	0.0	4.3
G	5	17	4800	1.0	3.5	**W**	6	10	2778	2.2	3.6
H	4	4	887	4.5	4.5	**X**	2	5	570	3.5	8.8
I	9	11	3297	2.7	3.3	**Y**	0	0	132	0.0	0.0
J	3	2	1088	2.8	1.8	**Z**	17	20	4513	3.8	4.4
K	10	8	2316	4.3	3.5	**AA**	3	1	2137	1.4	0.5
L	3	8	633	4.7	12.6	**AB**	7	9	2026	3.5	4.4
M	11	19	5068	2.2	3.7	**AC**	1	1	223	4.5	4.5
N	2	2	1381	1.4	1.4	**AD**	6	15	3525	1.7	4.3
O	2	1	134	14.9	7.5	**AE**	7	10	2936	2.4	3.4
P	3	1	682	4.4	1.5	**CNN**	169	239	73447	2.3	3.3

*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 #37
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*

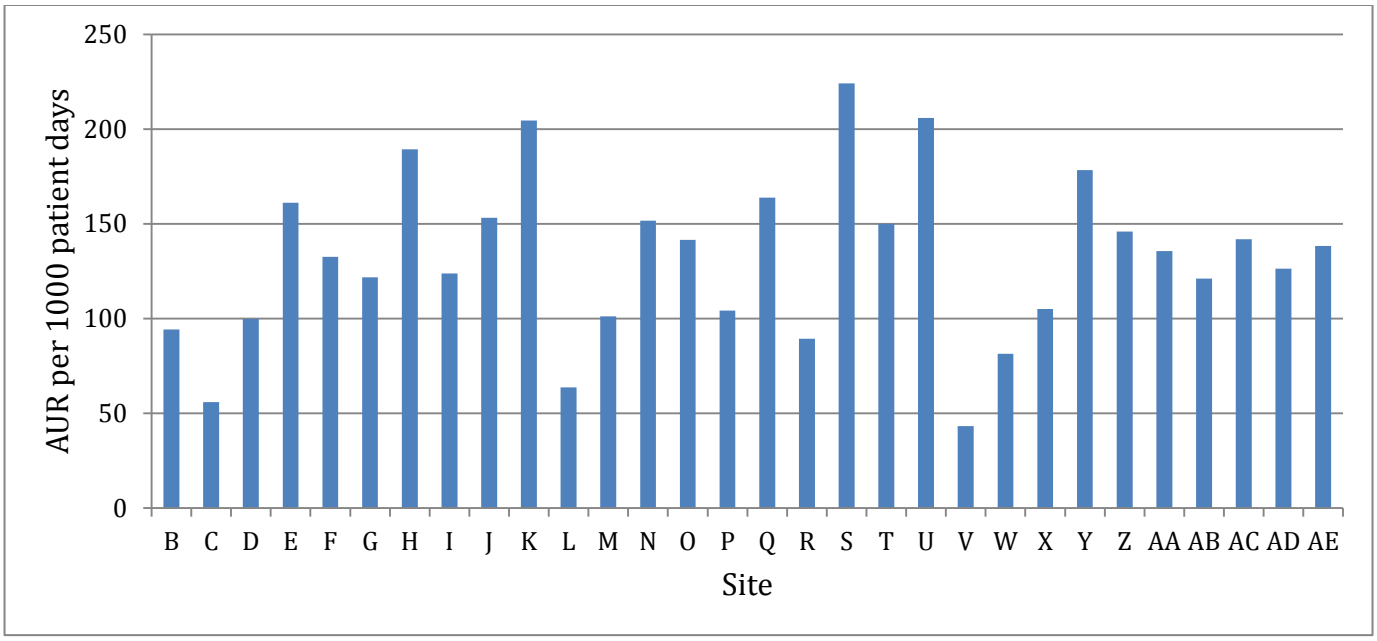


Site	Days of antimicrobial use per 1000 patient days	Site	Days of antimicrobial use per 1000 patient days	Site	Days of antimicrobial use per 1000 patient days
A	61.9	**L**	61.7	**W**	67.7
B	87.7	**M**	84.8	**X**	91.2
C	62.2	**N**	118.4	**Y**	111.5
D	72.6	**O**	139.4	**Z**	162.1
E	144.5	**P**	100.6	**AA**	114.1
F	134.1	**Q**	223.8	**AB**	95.2
G	109.0	**R**	112.4	**AC**	82.5
H	173.1	**S**	208.4	**AD**	105.4
I	136.2	**T**	140.7	**AE**	148.3
J	117.1	**U**	234.6	**CNN**	120.1
K	167.7	**V**	41.5		

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

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

Presentation #38
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*

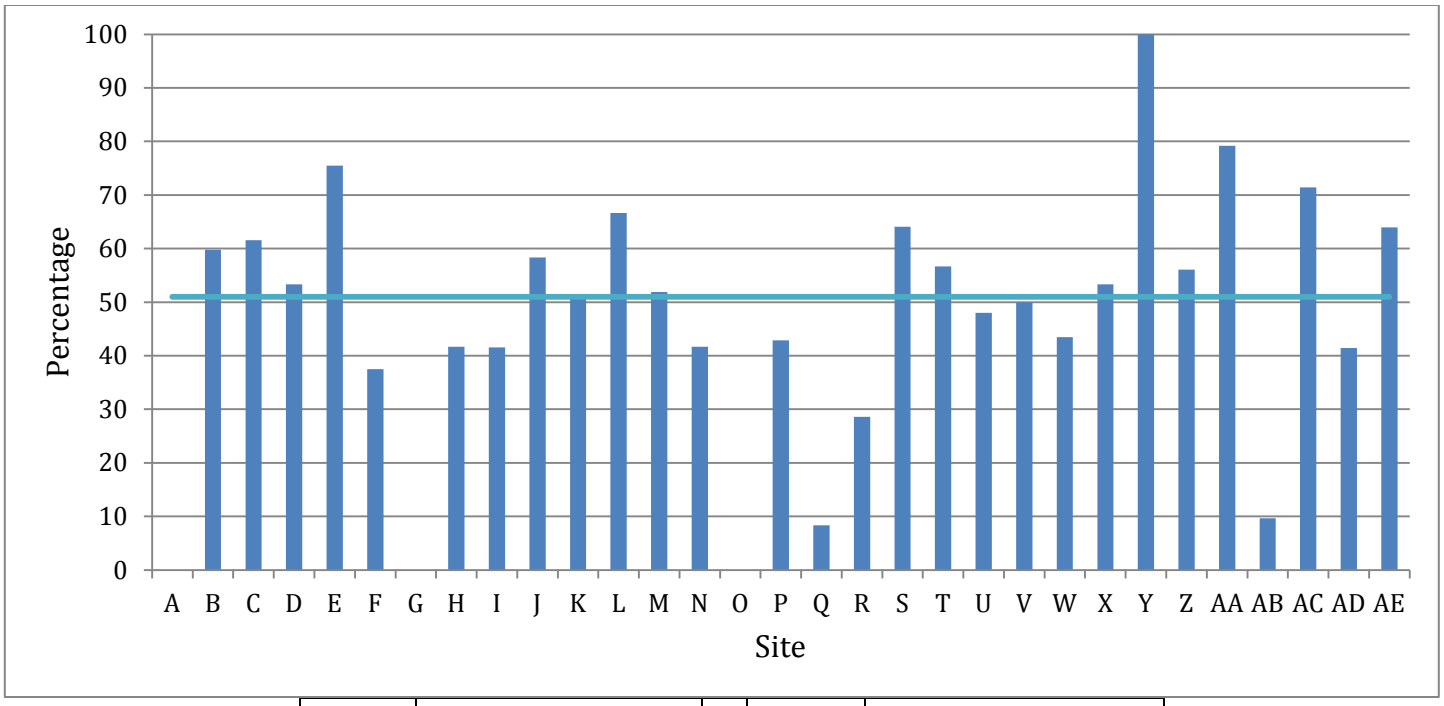


Site	Days of antimicrobial use per 1000 patient days	Site	Days of antimicrobial use per 1000 patient days	Site	Days of antimicrobial use per 1000 patient days
B	94.3	**M**	101.2	**X**	105.1
C	56.0	**N**	151.7	**Y**	178.4
D	99.8	**O**	141.6	**Z**	146.0
E	161.1	**P**	104.2	**AA**	135.6
F	132.6	**Q**	163.8	**AB**	121.1
G	121.8	**R**	89.4	**AC**	141.9
H	189.3	**S**	224.2	**AD**	126.4
I	123.8	**T**	149.9	**AE**	138.4
J	153.2	**U**	205.9		
K	204.6	**V**	43.3	**CNN**	134.9
L	63.8	**W**	81.5		

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

Presentation #39
Rate of treatment[#] for patent ductus arteriosus (PDA): GA<33 weeks who had PDA:
Site specific crude rates

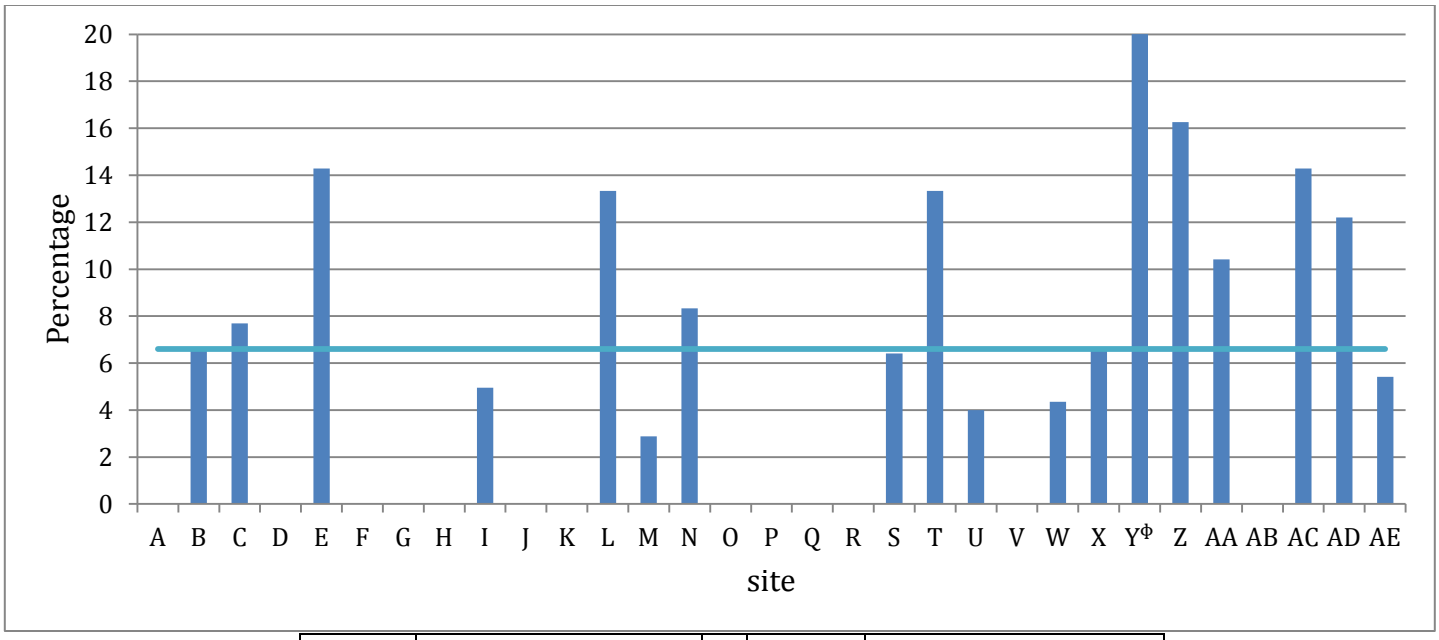


Site	Treatment[#] for PDA among neonates who had PDA (%)		Site	Treatment[#] for PDA among neonates who had PDA (%)
A	0.0		**Q**	8.3
B	59.8		**R**	28.6
C	61.5		**S**	64.1
D	53.3		**T**	56.7
E	75.5		**U**	48.0
F	37.5		**V**	50.0
G	0.0		**W**	43.5
H	41.7		**X**	53.3
I	41.6		**Y**	100.0
J	58.3		**Z**	56.1
K	51.2		**AA**	79.2
L	66.7		**AB**	9.7
M	51.9		**AC**	71.4
N	41.7		**AD**	41.5
O	0.0		**AE**	64.0
P	42.9		**CNN**	51.0

Total number of neonates who had PDA = 1 205

[#]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 #40
Surgical patent ductus arteriosus (PDA) ligation rate: GA<33 weeks who had PDA:
Site specific crude rates



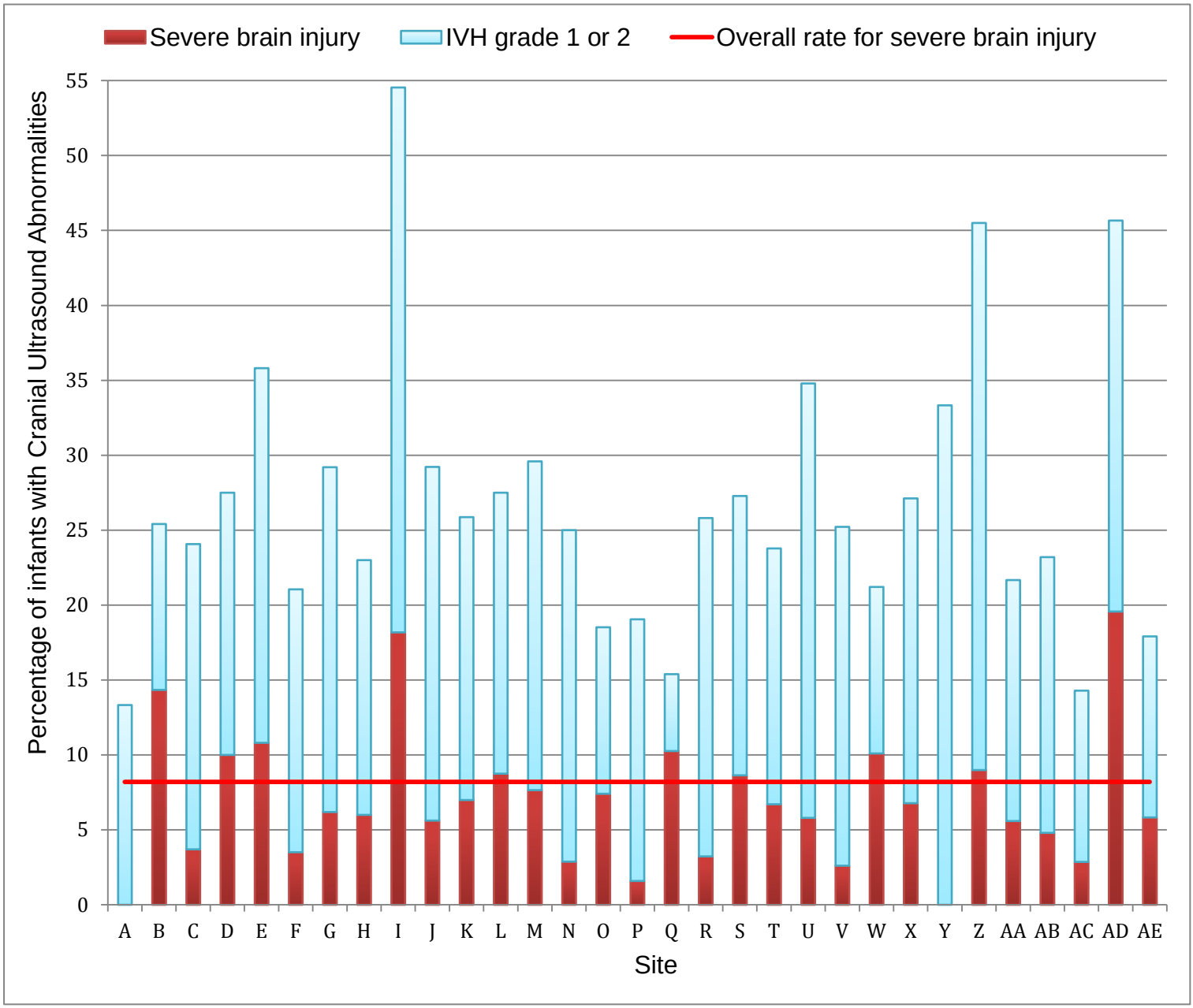
Site	Surgical ligation for PDA among neonates who had PDA (%)		Site	Surgical ligation for PDA among neonates who had PDA (%)
A	0.0		**Q**	0.0
B	6.5		**R**	0.0
C	7.7		**S**	6.4
D	0.0		**T**	13.3
E	14.3		**U**	4.0
F	0.0		**V**	0.0
G	0.0		**W**	4.4
H	0.0		**X**	6.7
I	5.0		**Y$^{\phi}$**	100.0
J	0.0		**Z**	16.3
K	0.0		**AA**	10.4
L	13.3		**AB**	0.0
M	2.9		**AC**	14.3
N	8.3		**AD**	12.2
O	0.0		**AE**	5.4
P	0.0		**CNN**	6.6

Total number of neonates who had PDA = 1 205

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

$^{\phi}$Site Y's rate goes over the y-axis limit in the graph. Refer to the table for site Y's actual rate.

Presentation #41
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 #41 (continued)
Severe brain injury rate: GA<33 weeks: Site specific crude rates

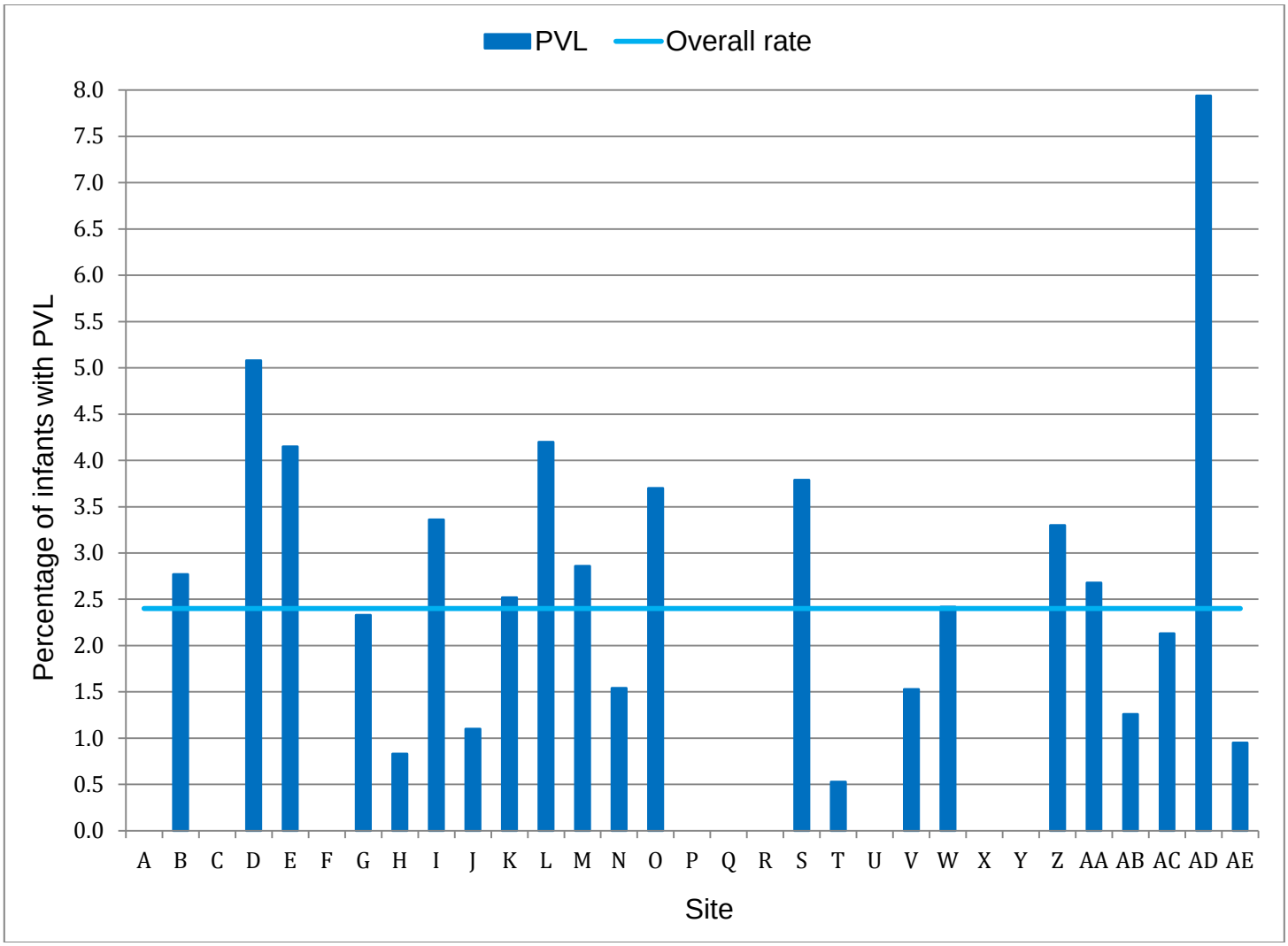
Site	<25	25-26	27-28	29-30	31-32	Overall rate* per site %
A	NA	NA	0.0	0.0	0.0	0.0
B	35.3	32.6	2.9	0.0	13.6	14.3
C	50.0	14.3	0.0	0.0	0.0	3.7
D	0.0	25.0	16.7	0.0	0.0	10.0
E	25.0	15.0	12.5	6.1	8.6	10.8
F	0.0	33.3	0.0	9.1	0.0	3.5
G	4.8	13.6	5.3	0.0	7.7	6.2
H	16.7	5.6	13.3	3.2	3.3	6.0
I	36.1	24.0	12.5	7.7	13.3	18.2
J	12.5	25.0	10.5	0.0	0.0	5.6
K	36.4	0.0	12.5	0.0	4.9	7.0
L	33.3	0.0	20.0	6.3	2.7	8.8
M	17.4	6.9	3.1	15.2	1.5	7.7
N	16.7	0.0	0.0	6.1	0.0	2.9
O	NA	50.0	11.1	0.0	0.0	7.4
P	NA	16.7	0.0	0.0	0.0	1.6
Q	16.7	0.0	0.0	11.1	18.2	10.3
R	0.0	0.0	14.3	0.0	2.9	3.2
S	30.8	11.6	9.1	1.6	2.2	8.6
T	42.9	4.6	0.0	6.5	3.0	6.7
U	14.3	20.0	0.0	8.0	0.0	5.8
V	NA	0.0	10.0	0.0	2.2	2.6
W	50.0	28.6	5.9	3.2	3.2	10.1
X	60.0	0.0	0.0	0.0	4.8	6.8
Y	0.0	NA	0.0	0.0	0.0	0.0
Z	23.7	16.7	7.9	1.1	2.6	9.0
AA	16.7	0.0	3.5	11.6	2.1	5.6
AB	22.2	8.3	3.2	5.3	0.0	4.8
AC	0.0	0.0	0.0	0.0	6.7	2.9
AD	75.0	35.3	5.9	8.7	11.1	19.6
AE	21.1	12.2	0.0	7.1	0.0	5.8
Overall rate per GA group %**	26.7	14.9	6.3	4.2	3.5	8.2

Total number of neonates = 4 358

Severe brain injury includes Grade 3 or 4 IVH or PVL
Note that the proportion of neonates with neuroimaging data available varies by GA. 810 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 #42
Periventricular leukomalacia (PVL) rates: GA<33 weeks: Site specific crude rates



Presentation #42 (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	NA	NA	0.0	0.0	0.0	0.0
B	7.5	8.7	1.4	0.0	1.0	2.8
C	0.0	0.0	0.0	0.0	0.0	0.0
D	0.0	16.7	12.5	0.0	0.0	5.1
E	0.0	8.7	3.1	3.6	4.3	4.2
F	0.0	0.0	0.0	0.0	0.0	0.0
G	4.8	8.7	0.0	0.0	0.0	2.3
H	0.0	0.0	6.3	0.0	0.0	0.8
I	10.5	8.2	1.4	1.2	0.0	3.4
J	0.0	0.0	5.3	0.0	0.0	1.1
K	9.1	0.0	3.1	0.0	3.5	2.5
L	20.0	0.0	12.5	0.0	1.5	4.2
M	4.4	0.0	0.0	8.5	1.3	2.9
N	16.7	0.0	0.0	3.0	0.0	1.5
O	NA	0.0	11.1	0.0	0.0	3.7
P	NA	0.0	0.0	0.0	0.0	0.0
Q	0.0	0.0	0.0	0.0	0.0	0.0
R	0.0	0.0	0.0	0.0	0.0	0.0
S	11.5	7.0	6.7	1.6	0.0	3.8
T	0.0	0.0	0.0	0.0	1.2	0.5
U	0.0	0.0	0.0	0.0	0.0	0.0
V	NA	0.0	4.8	0.0	1.6	1.5
W	0.0	5.9	5.6	2.7	0.0	2.4
X	0.0	0.0	0.0	0.0	0.0	0.0
Y	0.0	NA	0.0	0.0	0.0	0.0
Z	11.1	10.0	1.3	0.0	0.0	3.3
AA	0.0	0.0	0.0	9.1	0.0	2.7
AB	0.0	7.7	3.2	0.0	0.0	1.3
AC	0.0	0.0	0.0	0.0	3.9	2.1
AD	37.5	17.7	5.9	8.7	1.6	7.9
AE	0.0	7.1	0.0	0.0	0.0	1.0
Overall rate per GA group %**	7.1	5.8	2.4	1.5	0.7	2.4

Total number of neonates = 4 358

Note that the proportion of neonates with neuroimaging data available varies by GA.

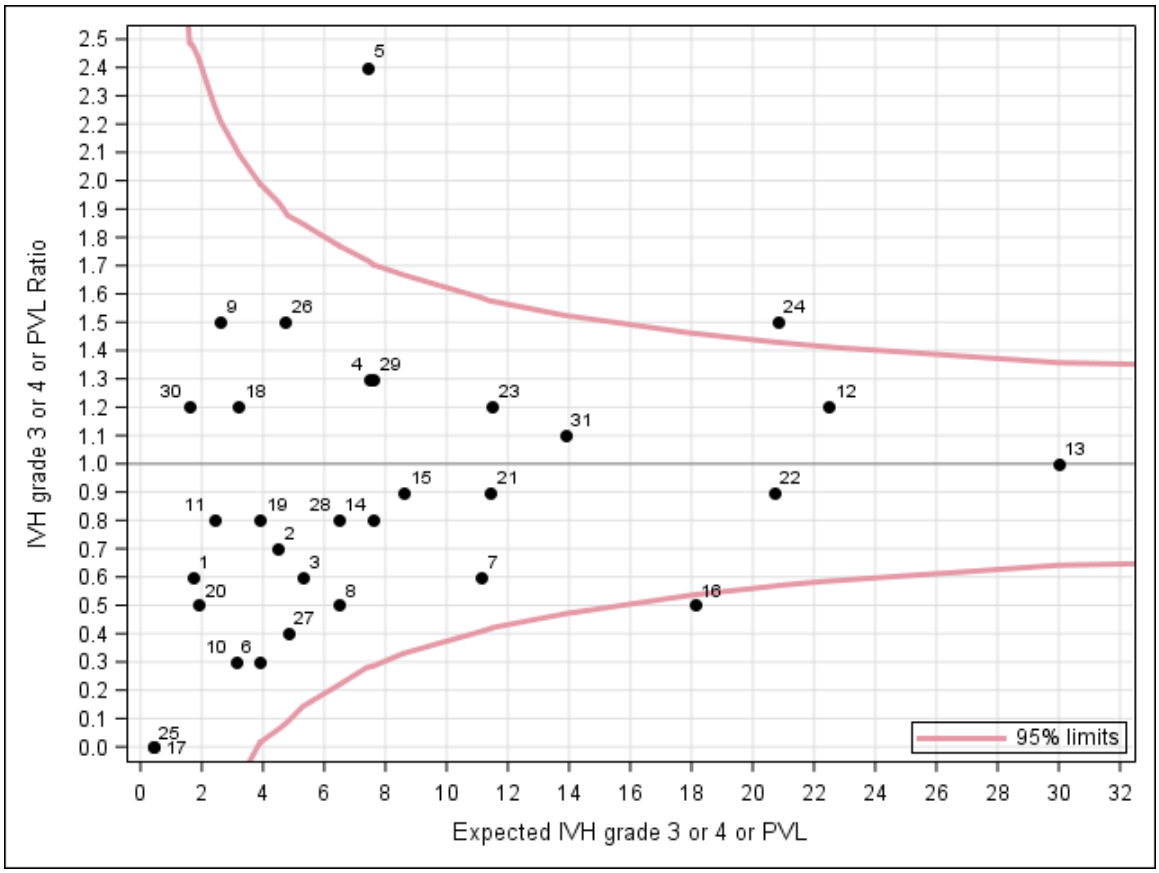
*Overall % = (number of neonates with PVL for site / total number of neonates for site) *100
**Overall % = (number of neonates with PVL for GA category / total number of neonates in GA category) *100
NA = no data available

Presentation #43a
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	45	34	1	1.7	0.6	0.0	3.3
2	130	114	3	4.5	0.7	0.1	2.0
3	110	90	3	5.3	0.6	0.1	1.7
4	152	136	10	7.5	1.3	0.6	2.5
5	118	84	18	7.4	2.4	1.5	3.9
6	65	56	1	3.9	0.3	0.0	1.4
7	128	112	7	11.1	0.6	0.3	1.3
8	126	100	3	6.5	0.5	0.1	1.4
9	59	40	4	2.6	1.5	0.4	4.0
10	63	62	1	3.1	0.3	0.0	1.8
11	79	52	2	2.4	0.8	0.1	3.1
12	309	230	26	22.5	1.2	0.8	1.7
13	400	346	31	30.0	1.0	0.7	1.5
14	156	122	6	7.6	0.8	0.3	1.7
15	146	140	8	8.6	0.9	0.4	1.8
16	301	231	9	18.1	0.5	0.2	0.9
17	12	6	0	0.4	0.0	.	9.6
18	68	56	4	3.2	1.2	0.3	3.2
19	72	64	3	3.9	0.8	0.2	2.3
20	43	28	1	1.9	0.5	0.0	2.9
21	181	158	10	11.4	0.9	0.4	1.6
22	255	212	18	20.7	0.9	0.5	1.4
23	183	139	14	11.5	1.2	0.7	2.0
24	312	196	32	20.8	1.5	1.1	2.2
25	15	11	0	0.4	0.0	.	9.8
26	118	79	7	4.7	1.5	0.6	3.1
27	91	88	2	4.8	0.4	0.0	1.5
28	89	87	5	6.5	0.8	0.2	1.8
29	116	92	10	7.6	1.3	0.6	2.4
30	26	26	2	1.6	1.2	0.1	4.5
31	204	190	15	13.9	1.1	0.6	1.8

Numeric site codes were used in Presentations 42a-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.

Presentation #43b
IVH grade 3 or 4 or PVL: GA<33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 42a
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 42b
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.

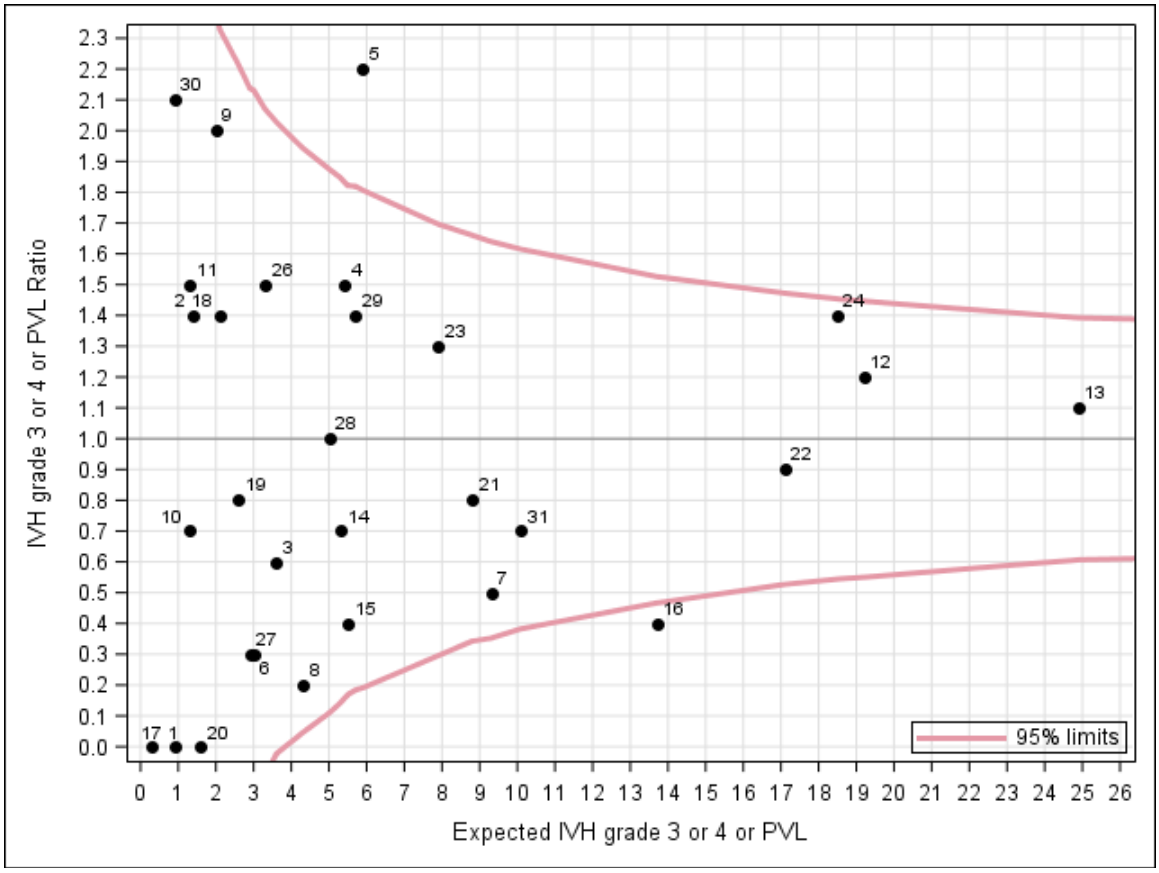
Presentation# 43c
IVH grade 3 or 4 or PVL: GA<29 weeks: Adjusted standardized ratios by site

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	10	9	0	0.9	0.0	.	3.9
2	25	24	2	1.4	1.4	0.2	5.0
3	35	34	2	3.6	0.6	0.1	2.0
4	61	61	8	5.4	1.5	0.6	2.9
5	40	40	13	5.9	2.2	1.2	3.8
6	22	22	1	3.0	0.3	0.0	1.8
7	63	62	5	9.3	0.5	0.2	1.3
8	39	38	1	4.3	0.2	0.0	1.3
9	21	19	4	2.0	2.0	0.5	5.1
10	12	12	1	1.3	0.7	0.0	4.2
11	16	16	2	1.3	1.5	0.2	5.4
12	151	141	23	19.2	1.2	0.8	1.8
13	191	187	28	24.9	1.1	0.7	1.6
14	54	52	4	5.3	0.7	0.2	1.9
15	53	52	2	5.5	0.4	0.0	1.3
16	119	115	6	13.7	0.4	0.2	1.0
18	18	18	3	2.1	1.4	0.3	4.2
19	22	22	2	2.6	0.8	0.1	2.8
20	20	15	0	1.6	0.0	.	2.3
21	67	66	7	8.8	0.8	0.3	1.6
22	110	109	16	17.1	0.9	0.5	1.5
23	65	61	10	7.9	1.3	0.6	2.3
24	157	132	26	18.5	1.4	0.9	2.1
26	35	26	5	3.3	1.5	0.5	3.5
27	26	26	1	2.9	0.3	0.0	1.9
28	35	35	5	5.0	1.0	0.3	2.3
29	41	37	8	5.7	1.4	0.6	2.7
30	10	10	2	0.9	2.1	0.2	7.7
31	83	83	7	10.1	0.7	0.3	1.4

Numeric site codes were used in Presentations 42a-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: Site 17 was excluded from the analysis due to the small number of eligible neonates. Site 25 did not have any eligible neonates in the GA<29 category.

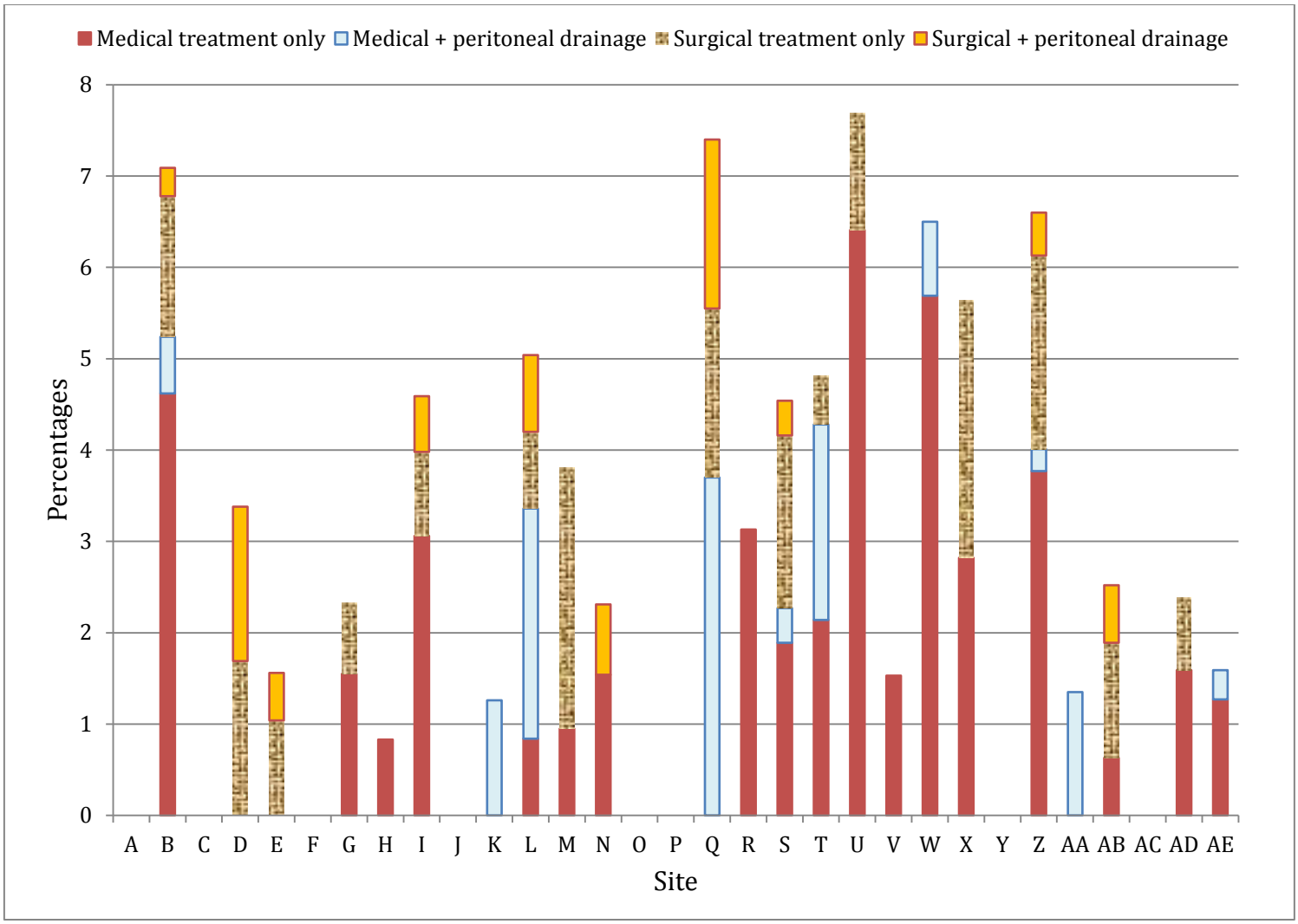
Presentation #43d
IVH grade 3 or 4 or PVL: GA<29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 42c
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 42d
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 #44
Necrotizing enterocolitis (NEC) treatment rates: GA<33 weeks:
Site specific crude rates



Presentation #44 (continued)

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

Site	Treatment (%)				
	Medical treatment only	Medical + peritoneal drainage	Laparotomy only	Peritoneal drainage + Laparotomy	Any
A	0.0	0.0	0.0	0.0	0.0
B	4.6	0.6	1.5	0.3	7.1
C	0.0	0.0	0.0	0.0	0.0
D	0.0	0.0	1.7	1.7	3.4
E	0.0	0.0	1.0	0.5	1.6
F	0.0	0.0	0.0	0.0	0.0
G	1.6	0.0	0.8	0.0	2.3
H	0.8	0.0	0.0	0.0	0.8
I	3.1	0.0	0.9	0.6	4.6
J	0.0	0.0	0.0	0.0	0.0
K	0.0	1.3	0.0	0.0	1.3
L	0.8	2.5	0.8	0.8	5.0
M	1.0	0.0	2.9	0.0	3.8
N	1.5	0.0	0.0	0.8	2.3
O	0.0	0.0	0.0	0.0	0.0
P	0.0	0.0	0.0	0.0	0.0
Q	0.0	3.7	1.9	1.9	7.4
R	3.1	0.0	0.0	0.0	3.1
S	1.9	0.4	1.9	0.4	4.5
T	2.1	2.1	0.5	0.0	4.8
U	6.4	0.0	1.3	0.0	7.7
V	1.5	0.0	0.0	0.0	1.5
W	5.7	0.8	0.0	0.0	6.5
X	2.8	0.0	2.8	0.0	5.6
Y	0.0	0.0	0.0	0.0	0.0
Z	3.8	0.2	2.1	0.5	6.6
AA	0.0	1.4	0.0	0.0	1.4
AB	0.6	0.0	1.3	0.6	2.5
AC	0.0	0.0	0.0	0.0	0.0
AD	1.6	0.0	0.8	0.0	2.4
AE	1.3	0.3	0.0	0.0	1.6
Total	1.9	0.4	0.9	0.3	3.6

COMMENTS: These analyses include 4 358 neonates from 31 sites.

Presentation #45a

Necrotizing enterocolitis (NEC): GA<33 weeks: Adjusted standardized ratios by site

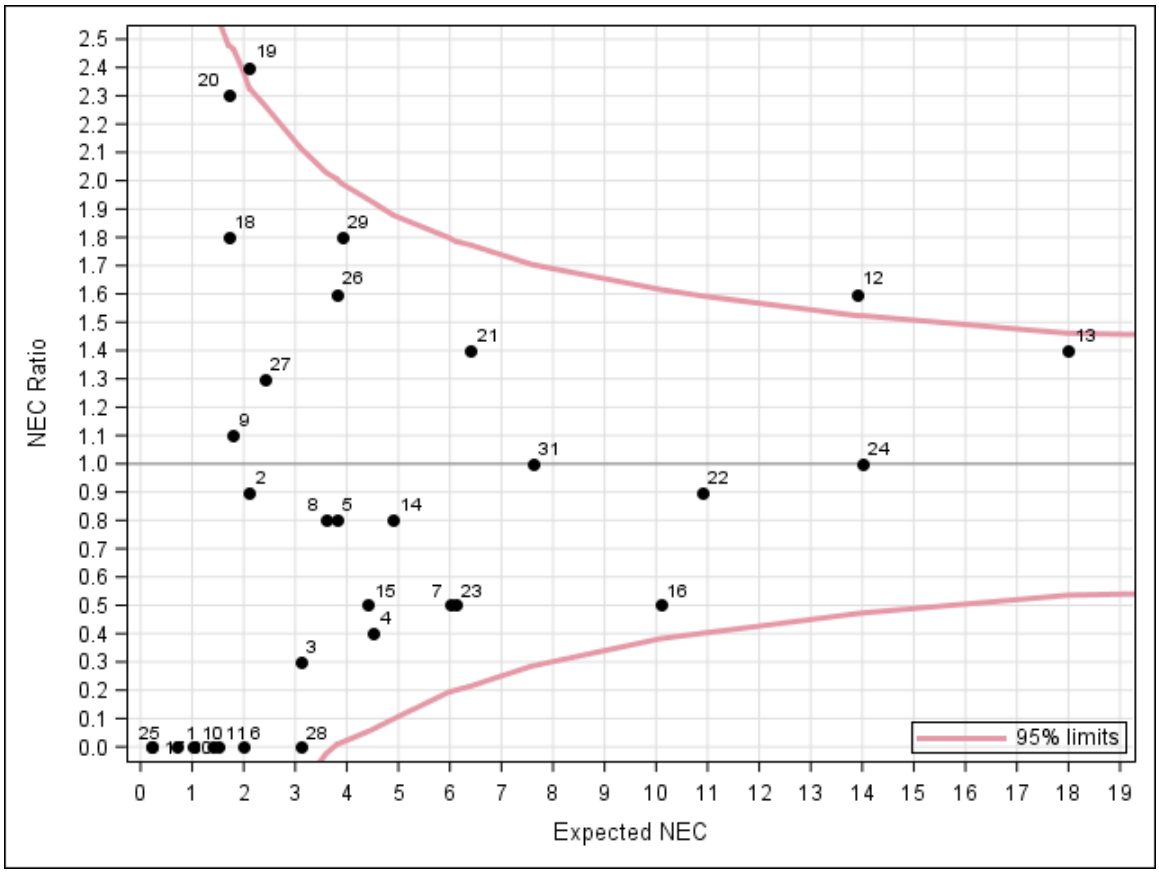
Site	Number of neonates	Number of neonates with NEC	Adjusted# expected number of neonates with NEC	Adjusted# standardized ratio	95% confidence interval for adjusted standardized ratio	
1	45	0	1.0	0.0	.	3.7
2	130	2	2.1	0.9	0.1	3.4
3	110	1	3.1	0.3	0.0	1.8
4	152	2	4.5	0.4	0.0	1.6
5	118	3	3.8	0.8	0.2	2.3
6	65	0	2.0	0.0	.	1.8
7	128	3	6.0	0.5	0.1	1.5
8	126	3	3.6	0.8	0.2	2.4
9	59	2	1.8	1.1	0.1	3.9
10	63	0	1.4	0.0	.	2.7
11	79	0	1.5	0.0	.	2.4
12	309	22	13.9	1.6	1.0	2.4
13	400	26	18.0	1.4	0.9	2.1
14	156	4	4.9	0.8	0.2	2.1
15	145	2	4.4	0.5	0.1	1.6
16	301	5	10.1	0.5	0.2	1.2
17	12	0	0.2	0.0	.	16.4
18	68	3	1.7	1.8	0.4	5.2
19	72	5	2.1	2.4	0.8	5.5
20	43	4	1.7	2.3	0.6	5.9
21	181	9	6.4	1.4	0.6	2.7
22	255	10	10.9	0.9	0.4	1.7
23	183	3	6.1	0.5	0.1	1.4
24	312	14	14.0	1.0	0.5	1.7
25	15	0	0.2	0.0	.	23.5
26	118	6	3.8	1.6	0.6	3.5
27	91	3	2.4	1.3	0.3	3.7
28	89	0	3.1	0.0	.	1.2
29	115	7	3.9	1.8	0.7	3.7
30	26	0	0.7	0.0	.	5.1
31	204	8	7.6	1.0	0.5	2.1

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.

Variables adjusted for in the prediction model: GA, SGA, sex, and SNAPII > 20

Presentation #45b
Necrotizing enterocolitis (NEC): GA<33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 44a
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 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 #45c

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	10	0	0.6	0.0	.	6.0
2	25	0	0.9	0.0	.	4.0
3	35	1	2.3	0.4	0.0	2.4
4	61	2	3.6	0.6	0.1	2.0
5	40	3	3.1	1.0	0.2	2.8
6	22	0	1.7	0.0	.	2.2
7	63	1	5.3	0.2	0.0	1.0
8	39	1	2.7	0.4	0.0	2.1
9	21	2	1.4	1.4	0.2	5.1
10	12	0	0.7	0.0	.	5.4
11	16	0	0.9	0.0	.	4.2
12	151	18	12.1	1.5	0.9	2.3
13	191	24	15.7	1.5	1.0	2.3
14	54	4	3.8	1.1	0.3	2.7
15	53	2	3.3	0.6	0.1	2.2
16	119	5	8.0	0.6	0.2	1.5
18	18	2	1.3	1.6	0.2	5.7
19	22	1	1.6	0.6	0.0	3.6
20	20	3	1.5	2.0	0.4	6.0
21	67	7	5.3	1.3	0.5	2.7
22	110	9	9.2	1.0	0.4	1.9
23	65	2	4.7	0.4	0.0	1.5
24	157	14	12.2	1.2	0.6	1.9
26	35	6	3.1	1.9	0.7	4.2
27	26	1	1.7	0.6	0.0	3.3
28	35	0	2.5	0.0	.	1.5
29	40	5	3.0	1.7	0.5	3.9
30	10	0	0.5	0.0	.	7.6
31	83	6	6.3	0.9	0.3	2.1

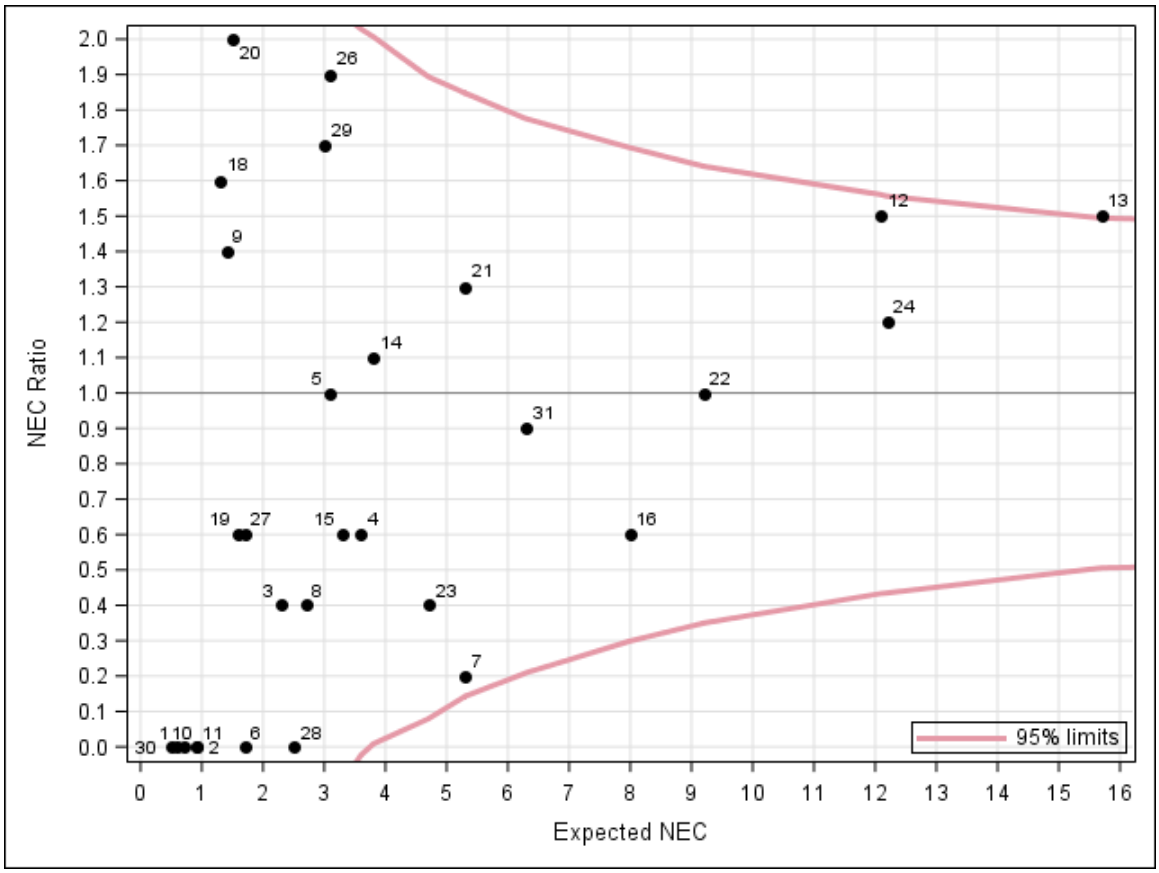
Numeric site codes were used in Presentations 44a-d and they may not correspond to other presentations in this report.

Neonates with major congenital anomalies are excluded.

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

Note: Site 17 was excluded from the analysis due to the small number of eligible neonates. Site 25 did not have any eligible neonates in the GA<29 category.

Presentation #45d
NEC: GA<29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 44c
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 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 #46
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	NA	NA	NA	0.0	9.1	5.9
B	84.2	58.1	28.6	16.9	9.5	27.7
C	100.0	14.3	28.6	0.0	2.6	6.3
D	100.0	83.3	25.0	25.0	8.3	31.6
E	100.0	70.6	48.3	15.7	1.5	24.0
F	100.0	50.0	41.7	8.3	6.5	23.8
G	94.4	77.3	47.4	12.0	23.1	44.7
H	33.3	77.8	13.3	12.9	6.3	20.9
I	34.6	24.5	10.6	4.9	1.3	11.3
J	100.0	100.0	57.9	27.8	8.1	35.3
K	100.0	77.3	33.3	24.3	10.5	30.7
L	75.0	80.0	13.3	17.7	1.5	12.2
M	100.0	83.3	40.0	19.5	14.1	36.3
N	100.0	68.8	36.8	6.1	3.6	21.5
O	NA	50.0	22.2	0.0	0.0	11.1
P	NA	40.0	16.7	11.1	4.0	11.1
Q	100.0	100.0	61.5	45.5	33.3	57.1
R	100.0	72.7	23.1	3.3	2.7	17.0
S	100.0	94.9	79.6	65.6	25.9	61.9
T	87.5	90.5	32.1	28.6	13.4	32.2
U	100.0	75.0	50.0	32.0	7.4	33.3
V	NA	40.0	10.5	11.4	3.3	8.5
W	75.0	46.2	25.0	5.6	6.7	15.8
X	100.0	66.7	33.3	17.7	3.0	17.9
Y	100.0	NA	0.0	0.0	0.0	8.3
Z	85.4	62.5	49.3	20.2	9.9	35.4
AA	66.7	62.5	55.2	37.2	13.7	35.9
AB	62.5	72.7	22.6	5.1	1.5	14.8
AC	0.0	0.0	40.0	0.0	0.0	4.4
AD	100.0	50.0	26.7	9.1	5.2	19.0
AE	100.0	70.0	52.4	19.0	11.0	33.7
Overall CLD rate for GA group	84.3	65.3	37.7	18.7	8.5	27.7

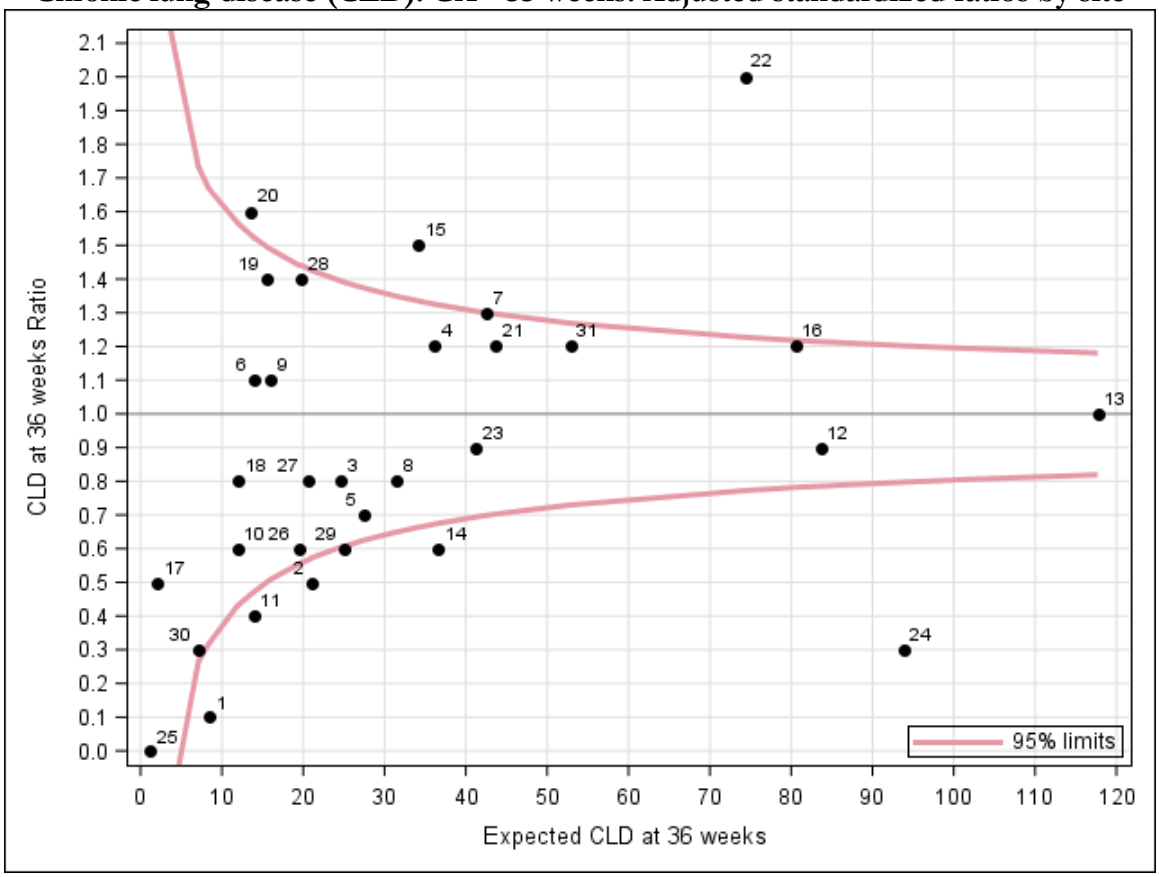
Total number of neonates = 4 080
278 neonates were excluded due to death prior to week 36 or first admission after week 36
NA = Data not available

Presentation #47a
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	45	44	1	8.4	0.1	0.0	0.7
2	130	128	11	21.0	0.5	0.3	0.9
3	110	106	19	24.6	0.8	0.5	1.2
4	152	143	42	36.1	1.2	0.8	1.6
5	118	109	19	27.5	0.7	0.4	1.1
6	65	62	15	14.0	1.1	0.6	1.8
7	128	122	55	42.6	1.3	1.0	1.7
8	126	126	26	31.4	0.8	0.5	1.2
9	59	57	18	16.0	1.1	0.7	1.8
10	63	61	7	11.9	0.6	0.2	1.2
11	79	78	5	13.9	0.4	0.1	0.8
12	309	279	74	83.6	0.9	0.7	1.1
13	400	368	123	117.7	1.0	0.9	1.2
14	156	152	23	36.6	0.6	0.4	0.9
15	146	139	51	34.1	1.5	1.1	2.0
16	301	293	96	80.6	1.2	1.0	1.5
17	12	12	1	2.1	0.5	0.0	2.7
18	68	64	10	12.0	0.8	0.4	1.5
19	72	66	22	15.5	1.4	0.9	2.1
20	43	38	21	13.5	1.6	1.0	2.4
21	181	168	51	43.7	1.2	0.9	1.5
22	255	243	149	74.4	2.0	1.7	2.4
23	183	162	37	41.2	0.9	0.6	1.2
24	312	289	30	93.9	0.3	0.2	0.5
25	15	14	0	1.2	0.0	.	3.1
26	118	106	12	19.4	0.6	0.3	1.1
27	91	89	16	20.5	0.8	0.4	1.3
28	89	83	28	19.8	1.4	0.9	2.0
29	116	106	14	25.1	0.6	0.3	0.9
30	26	26	2	7.1	0.3	0.0	1.0
31	204	177	64	52.9	1.2	0.9	1.5

Numeric site codes were used in Presentations 47a-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.

Presentation #47b
Chronic lung disease (CLD): GA <33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 47a
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 47b
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.

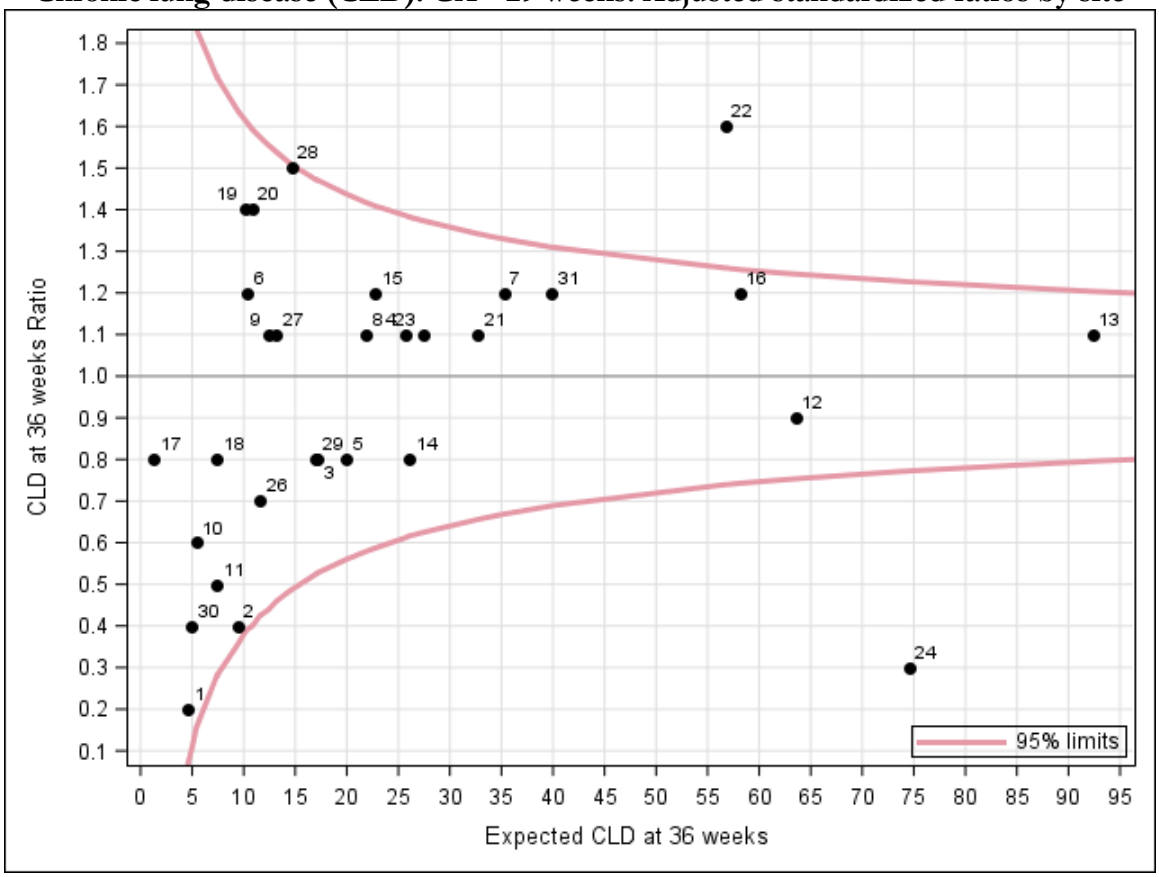
Presentation #47c
Chronic lung disease (CLD): GA <29 weeks: Adjusted standardized ratios by site

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	10	9	1	4.6	0.2	0.0	1.2
2	25	23	4	9.4	0.4	0.1	1.1
3	35	32	14	17.1	0.8	0.4	1.4
4	61	52	28	25.6	1.1	0.7	1.6
5	40	34	15	20.0	0.8	0.4	1.2
6	22	20	12	10.3	1.2	0.6	2.0
7	63	59	43	35.2	1.2	0.9	1.6
8	39	39	23	21.8	1.1	0.7	1.6
9	21	21	13	12.4	1.1	0.6	1.8
10	12	11	3	5.4	0.6	0.1	1.6
11	16	15	4	7.4	0.5	0.1	1.4
12	151	125	56	63.5	0.9	0.7	1.1
13	191	163	99	92.3	1.1	0.9	1.3
14	54	50	20	26.0	0.8	0.5	1.2
15	53	48	28	22.7	1.2	0.8	1.8
16	119	112	70	58.1	1.2	0.9	1.5
18	18	15	6	7.4	0.8	0.3	1.8
19	22	19	14	10.2	1.4	0.8	2.3
20	20	19	15	10.8	1.4	0.8	2.3
21	67	57	35	32.6	1.1	0.7	1.5
22	110	99	88	56.7	1.6	1.2	1.9
23	65	49	30	27.5	1.1	0.7	1.6
24	157	136	26	74.6	0.3	0.2	0.5
26	35	23	8	11.6	0.7	0.3	1.4
27	26	24	14	13.2	1.1	0.6	1.8
28	35	30	22	14.6	1.5	0.9	2.3
29	41	33	13	17.0	0.8	0.4	1.3
30	10	10	2	4.9	0.4	0.0	1.5
31	83	69	47	39.9	1.2	0.9	1.6

Numeric site codes were used in Presentations 47a-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 17 was excluded from the analysis due to the small number of eligible neonates. Site 25 did not have any eligible neonates in the GA<29 category.

Presentation #47d
Chronic lung disease (CLD): GA <29 weeks: Adjusted standardized ratios by site

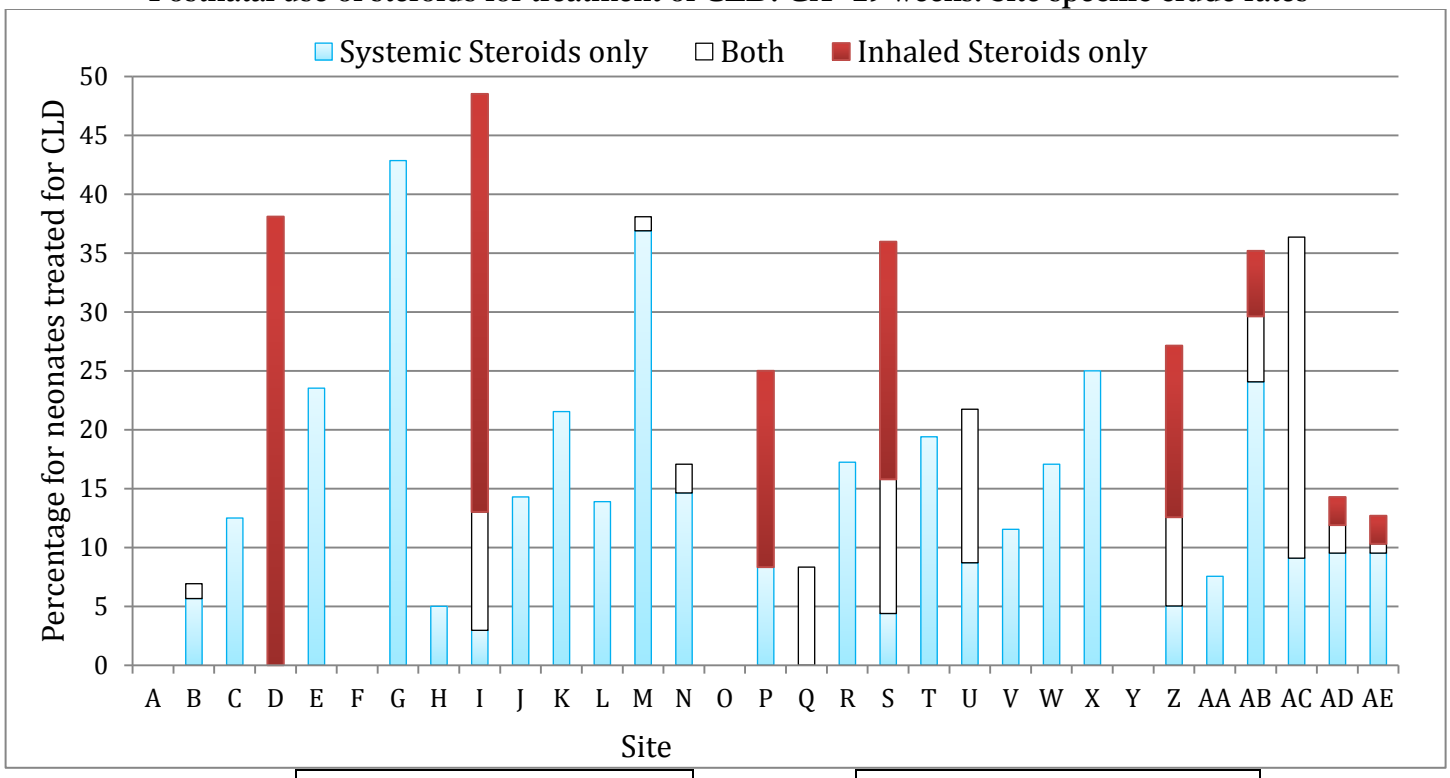


Explanation for Presentation 47c
Column 1: Numeric site codes
Column 2: Total number of neonates at each site (<29 weeks GA and no major anomaly)
Column 3: Number of eligible neonates at each site (<29 weeks GA and no major anomaly) who were actually used to fit the model
Column 4: Number of neonates 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 47d
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 #48a
Postnatal use of steroids for treatment of CLD: GA<29 weeks: Site specific crude rates†



Site	Postnatal steroid use (%)		
	Systemic Steroids only	Both	Inhaled Steroids only
A	0.0	0.0	0.0
B	5.7	1.3	0.0
C	12.5	0.0	0.0
D	0.0	0.0	38.1
E	23.5	0.0	0.0
F	0.0	0.0	0.0
G	42.9	0.0	0.0
H	5.0	0.0	0.0
I	3.0	10.1	35.5
J	14.3	0.0	0.0
K	21.5	0.0	0.0
L	13.9	0.0	0.0
M	36.9	1.2	0.0
N	14.6	2.4	0.0
O	0.0	0.0	0.0
P	8.3	0.0	16.7

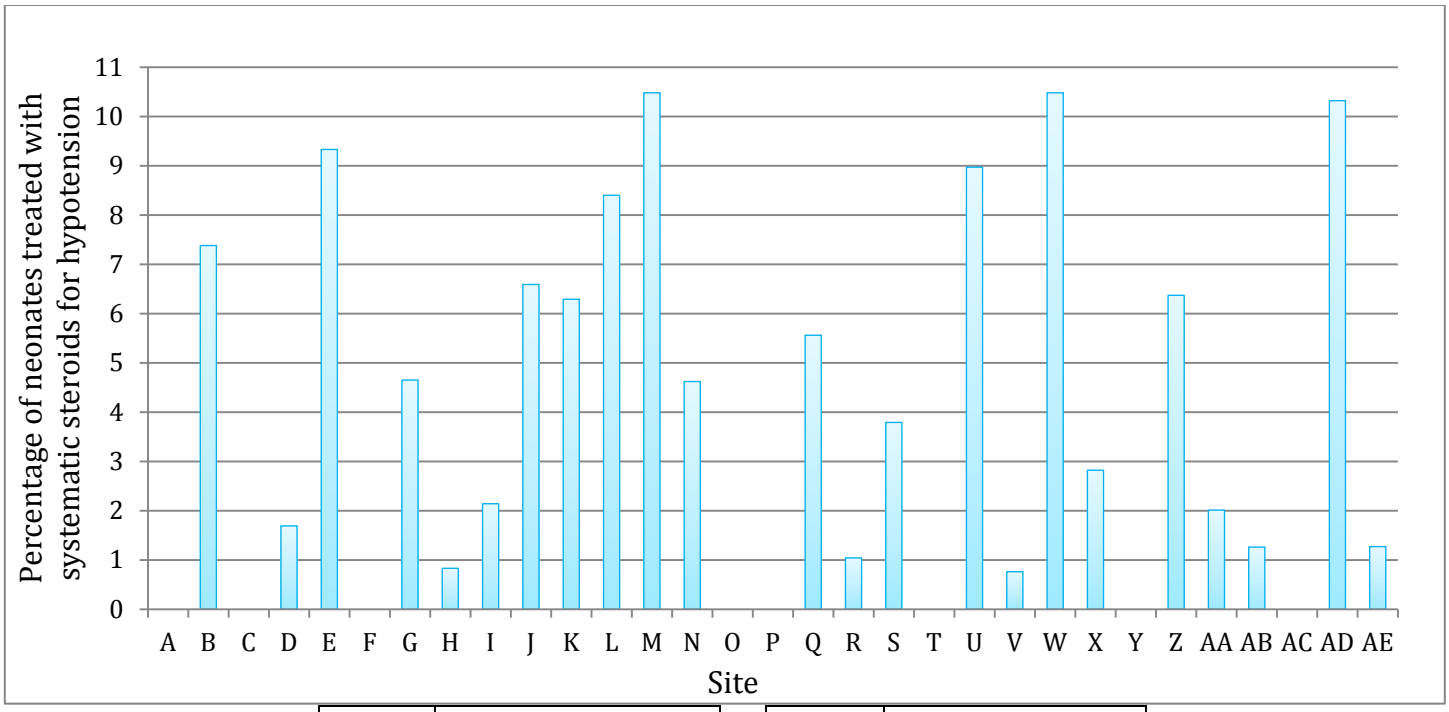
Site	Postnatal steroid use (%)		
	Systemic Steroids only	Both	Inhaled Steroids only
Q	0.0	8.3	0.0
R	17.2	0.0	0.0
S	4.4	11.4	20.2
T	19.4	0.0	0.0
U	8.7	13.0	0.0
V	11.5	0.0	0.0
W	17.1	0.0	0.0
X	25.0	0.0	0.0
Y	0.0	0.0	0.0
Z	5.0	7.5	14.6
AA	7.6	0.0	0.0
AB	24.1	5.6	5.6
AC	9.1	27.3	0.0
AD	9.5	2.4	2.4
AE	9.5	0.8	2.4
Total	12.4	3.7	7.7

Total number of neonates = 1 674

† Percentage of neonates treated for CLD 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 #48b
Systemic steroids for hypotension: GA<33 weeks: Site specific crude rates†



Site	Postnatal systemic steroids use for hypotension (%)
A	0.0
B	7.4
C	0.0
D	1.7
E	9.3
F	0.0
G	4.7
H	0.8
I	2.1
J	6.6
K	6.3
L	8.4
M	10.5
N	4.6
O	0.0
P	0.0

Site	Postnatal systemic steroids use for hypotension (%)
Q	5.6
R	1.0
S	3.8
T	0.0
U	9.0
V	0.8
W	10.5
X	2.8
Y	0.0
Z	6.4
AA	2.0
AB	1.3
AC	0.0
AD	10.3
AE	1.3
Total	4.5

Total number of neonates = 4 358

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

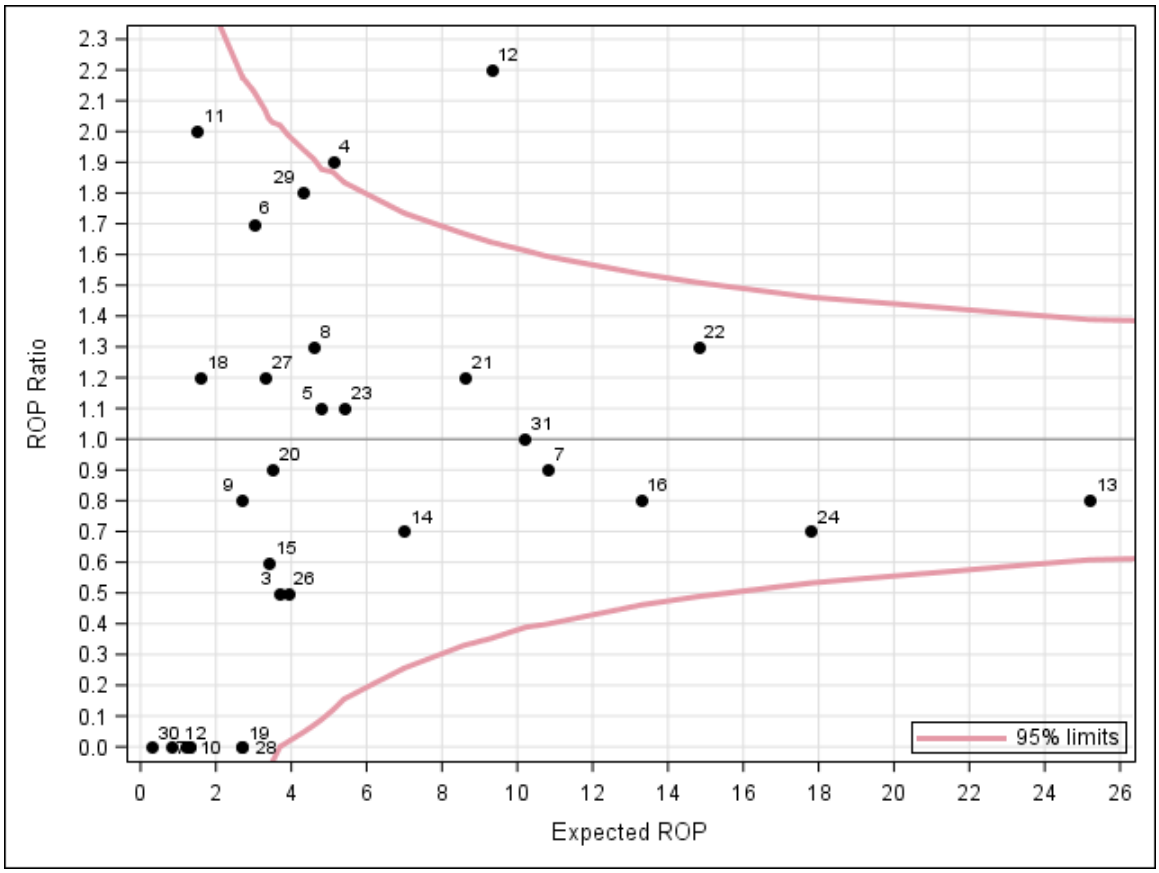
COMMENTS: Specific criteria for these treatments at each site were not documented here.

Presentation #49a
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	45	19	0	1.3	0.0	.	2.9
2	130	58	0	1.3	0.0	.	2.8
3	110	47	2	3.7	0.5	0.1	1.9
4	152	84	10	5.1	1.9	0.9	3.6
5	118	44	5	4.8	1.1	0.3	2.5
6	65	31	5	3.0	1.7	0.5	3.9
7	128	84	10	10.8	0.9	0.4	1.7
8	126	42	6	4.6	1.3	0.5	2.8
9	59	27	2	2.7	0.8	0.1	2.7
10	63	44	0	1.2	0.0	.	3.1
11	79	43	3	1.5	2.0	0.4	5.9
12	309	50	20	9.3	2.2	1.3	3.3
13	400	183	20	25.2	0.8	0.5	1.2
14	156	94	5	7.0	0.7	0.2	1.7
15	146	75	2	3.4	0.6	0.1	2.1
16	301	183	11	13.3	0.8	0.4	1.5
17	12	5	0	0.3	0.0	.	10.6
18	68	24	2	1.6	1.2	0.1	4.5
19	72	17	0	2.7	0.0	.	1.3
20	43	20	3	3.5	0.9	0.2	2.5
21	181	64	10	8.6	1.2	0.6	2.1
22	255	107	19	14.8	1.3	0.8	2.0
23	183	34	6	5.4	1.1	0.4	2.4
24	312	105	12	17.8	0.7	0.3	1.2
25	15	9	1	0.0	34.6	0.5	192.5
26	118	49	2	3.9	0.5	0.1	1.8
27	91	44	4	3.3	1.2	0.3	3.1
28	89	51	0	2.7	0.0	.	1.3
29	116	68	8	4.3	1.8	0.8	3.6
30	26	23	0	0.8	0.0	.	4.7
31	204	128	10	10.2	1.0	0.5	1.8

Numeric site codes were used in Presentations 49a-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.

Presentation #49b
ROP ≥ Stage 3: GA<33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 49a
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 49b
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: site 25 is not shown in the funnel plot due to high ASR. Refer to the table for site 25.

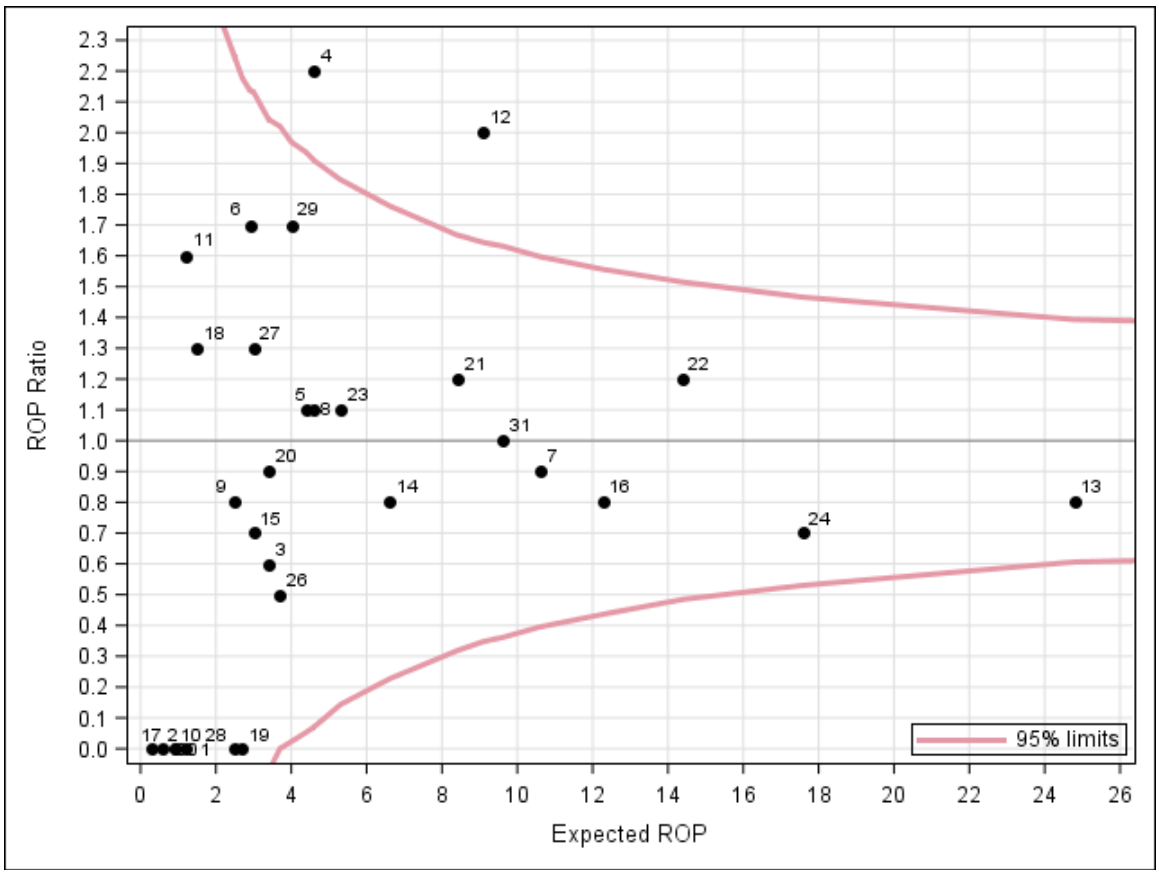
Presentation# 49c
ROP ≥ Stage 3: GA<29 weeks: Adjusted standardized ratios by site

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	10	9	0	1.2	0.0	.	3.2
2	25	22	0	0.9	0.0	.	4.1
3	35	29	2	3.4	0.6	0.1	2.1
4	61	52	10	4.6	2.2	1.0	4.0
5	40	30	5	4.6	1.1	0.4	2.6
6	22	19	5	2.9	1.7	0.6	4.0
7	63	59	10	10.6	0.9	0.5	1.7
8	39	25	5	4.4	1.1	0.4	2.6
9	21	18	2	2.5	0.8	0.1	2.9
10	12	11	0	0.9	0.0	.	4.2
11	16	14	2	1.2	1.6	0.2	5.9
12	151	45	18	9.1	2.0	1.2	3.1
13	191	148	20	24.8	0.8	0.5	1.2
14	54	49	5	6.6	0.8	0.2	1.8
15	53	28	2	3.0	0.7	0.1	2.4
16	119	109	10	12.3	0.8	0.4	1.5
18	18	9	2	1.5	1.3	0.1	4.8
19	22	14	0	2.7	0.0	.	1.3
20	20	15	3	3.4	0.9	0.2	2.6
21	67	52	10	8.4	1.2	0.6	2.2
22	110	87	18	14.4	1.2	0.7	2.0
23	65	23	6	5.3	1.1	0.4	2.5
24	157	98	12	17.6	0.7	0.4	1.2
26	35	24	2	3.7	0.5	0.1	1.9
27	26	23	4	3.0	1.3	0.4	3.4
28	35	27	0	2.5	0.0	.	1.5
29	41	33	7	4.0	1.7	0.7	3.6
30	10	10	0	0.6	0.0	.	5.9
31	83	70	10	9.6	1.0	0.5	1.9

Numeric site codes were used in Presentations 49a-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: Site 17 was excluded from the analysis due to the small number of eligible neonates. Site 25 did not have any eligible neonates in the GA<29 category.

Presentation #49d
ROP ≥ Stage 3: GA<29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 49c
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 49d
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 #50a

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	45	5	11.7	0.4	0.1	1.0
2	130	15	30.2	0.5	0.3	0.8
3	110	29	34.6	0.8	0.6	1.2
4	152	58	54.3	1.1	0.8	1.4
5	118	36	40.1	0.9	0.6	1.2
6	65	21	19.6	1.1	0.7	1.6
7	128	73	56.7	1.3	1.0	1.6
8	126	34	39.8	0.9	0.6	1.2
9	59	24	20.6	1.2	0.7	1.7
10	63	10	17.2	0.6	0.3	1.1
11	79	10	19.3	0.5	0.2	1.0
12	309	123	131.7	0.9	0.8	1.1
13	400	179	174.2	1.0	0.9	1.2
14	156	38	50.7	0.7	0.5	1.0
15	146	64	50.7	1.3	1.0	1.6
16	301	113	111.6	1.0	0.8	1.2
17	12	1	2.7	0.4	0.0	2.0
18	68	18	18.6	1.0	0.6	1.5
19	72	34	22.8	1.5	1.0	2.1
20	43	24	18.9	1.3	0.8	1.9
21	181	69	64.2	1.1	0.8	1.4
22	255	168	104.5	1.6	1.4	1.9
23	183	63	68.2	0.9	0.7	1.2
24	312	91	136.6	0.7	0.5	0.8
25	15	2	2.2	0.9	0.1	3.3
26	118	32	35.3	0.9	0.6	1.3
27	91	24	28.1	0.9	0.5	1.3
28	89	35	30.4	1.1	0.8	1.6
29	116	35	39.6	0.9	0.6	1.2
30	26	6	9.5	0.6	0.2	1.4
31	204	92	81.5	1.1	0.9	1.4

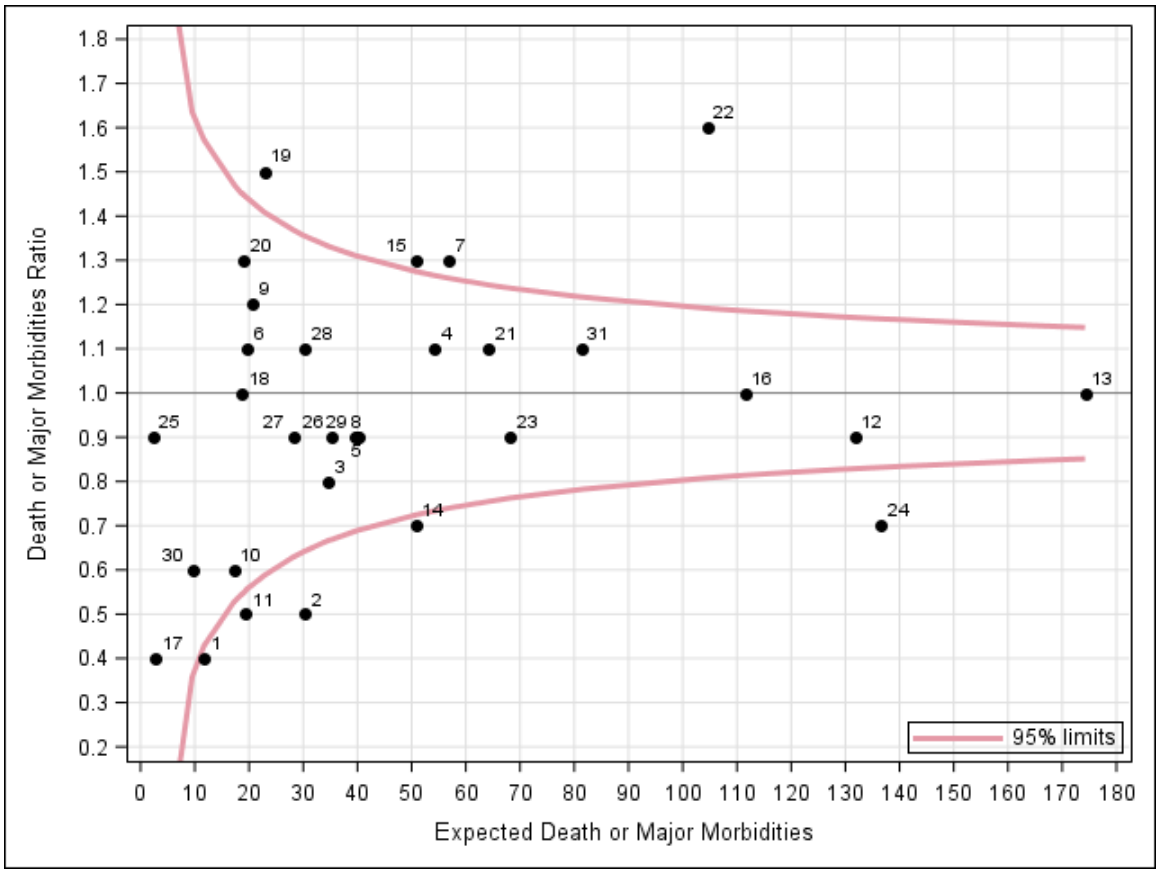
Major morbidity = IVH 3 or 4 or PVL or BPD or ROP >stage 2 or NEC or nosocomial sepsis

Numeric site codes were used in Presentations 50a-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.

Presentation #50b
Mortality or major morbidity: GA < 33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 50a
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 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.

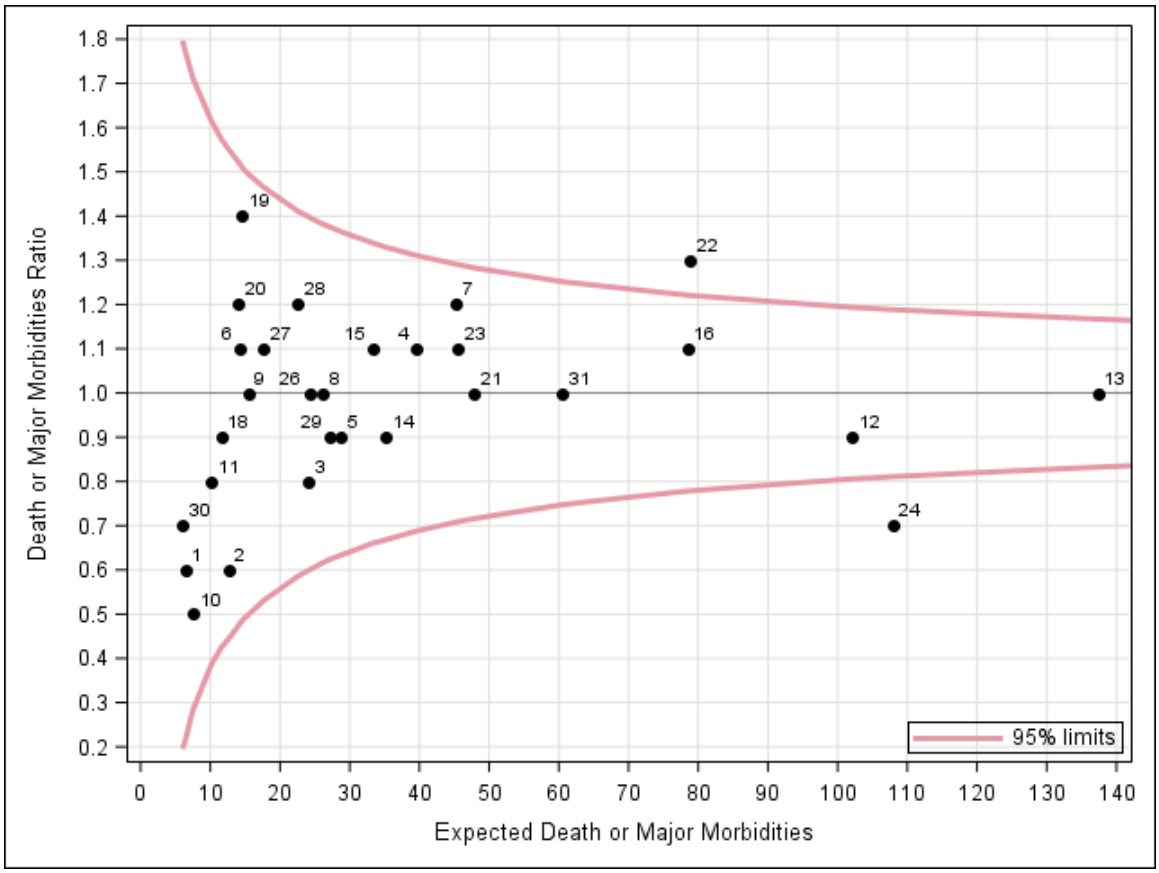
Presentation #50c
Mortality or major morbidity: GA < 29 weeks: Adjusted standardized ratios by site

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	10	4	6.4	0.6	0.2	1.6
2	25	7	12.6	0.6	0.2	1.1
3	35	20	24.0	0.8	0.5	1.3
4	61	42	39.5	1.1	0.8	1.4
5	40	26	28.8	0.9	0.6	1.3
6	22	15	14.2	1.1	0.6	1.7
7	63	54	45.3	1.2	0.9	1.6
8	39	25	26.1	1.0	0.6	1.4
9	21	16	15.4	1.0	0.6	1.7
10	12	4	7.5	0.5	0.1	1.4
11	16	8	10.2	0.8	0.3	1.5
12	151	96	102.1	0.9	0.8	1.1
13	191	142	137.3	1.0	0.9	1.2
14	54	31	35.1	0.9	0.6	1.3
15	53	36	33.3	1.1	0.8	1.5
16	119	83	78.5	1.1	0.8	1.3
18	18	11	11.6	0.9	0.5	1.7
19	22	20	14.6	1.4	0.8	2.1
20	20	17	14.0	1.2	0.7	1.9
21	67	48	47.8	1.0	0.7	1.3
22	110	101	78.9	1.3	1.0	1.6
23	65	49	45.4	1.1	0.8	1.4
24	157	78	107.9	0.7	0.6	0.9
26	35	25	24.2	1.0	0.7	1.5
27	26	19	17.6	1.1	0.7	1.7
28	35	27	22.6	1.2	0.8	1.7
29	41	24	27.2	0.9	0.6	1.3
30	10	4	6.0	0.7	0.2	1.7
31	83	63	60.5	1.0	0.8	1.3

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 50a-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: Site 17 was excluded from the analysis due to the small number of eligible neonates.
Site 25 did not have any eligible neonates in the GA<29 category.

Presentation #50d
Mortality or major morbidity: GA < 29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 50c
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 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.

F. Discharge Disposition and Status

Presentation #51

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	114	217	305	430	697	1056	1237	3465	7521
	%	31.3	39.4	40.2	40.1	43.3	52.2	53.6	57.0	50.9
Community hospital	N	54	187	340	534	754	706	414	557	3546
	%	14.8	33.9	44.8	49.8	46.8	34.9	17.9	9.2	24.0
Tertiary hospital	N	17	29	23	22	26	32	54	269	472
	%	4.7	5.3	3.0	2.1	1.6	1.6	2.3	4.4	3.2
Died	N	132	54	34	23	27	22	26	73	391
	%	36.3	9.8	4.5	2.1	1.7	1.1	1.1	1.2	2.6
Palliative care (home/other institute)	N	0	0	1	1	2	3	1	19	27
	%	0.0	0.0	0.1	0.1	0.1	0.2	0.0	0.3	0.2
Another inpatient area in site	N	46	61	53	62	105	202	577	1699	2805
	%	12.6	11.1	7.0	5.8	6.5	10.0	25.0	27.9	19.0
Out of country discharge	N	1	1	2	1	0	2	0	1	8
	%	0.3	0.2	0.3	0.1	0.0	0.1	0.0	0.0	0.1
Total neonates included	N	364	551	759	1073	1611	2023	2309	6083	14770
	%	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									14773

Presentation #52

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	364	551	759	1073	1611	2023	2309	6083	14773
Number of neonates who survived and were discharged home directly from the NICU	**N**	**114**	**217**	**305**	**430**	**697**	**1056**	**1237**	**3465**	**7521**
Oxygen	N	39	37	19	9	11	3	2	10	130
	%	34.2	17.1	6.2	2.1	1.6	0.3	0.2	0.3	1.7
Monitor	N	18	17	9	4	13	12	18	61	152
	%	15.8	7.8	3.0	0.9	1.9	1.1	1.5	1.8	2.0
Enterostomy	N	3	2	1	3	0	2	2	10	23
	%	2.6	0.9	0.3	0.7	0.0	0.2	0.2	0.3	0.3
Gavage	N	13	12	12	12	11	5	13	60	138
	%	11.4	5.5	3.9	2.8	1.6	0.5	1.1	1.7	1.8
Tracheostomy	N	1	0	0	0	0	1	0	2	4
	%	0.9	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1
Gastrostomy	N	4	2	0	1	4	8	2	11	32
	%	3.5	0.9	0.0	0.2	0.6	0.8	0.2	0.3	0.4
Ventilation	N	0	0	0	0	0	0	0	1	1
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CPAP	N	1	0	1	0	2	1	0	3	8
	%	0.9	0.0	0.3	0.0	0.3	0.1	0.0	0.1	0.1
Feeding status at discharge directly home										
Breast milk only	N	32	67	107	176	273	418	405	1190	2668
	%	28.1	30.9	35.1	40.9	39.2	39.6	32.7	34.3	35.5
Formula only	N	46	80	101	137	209	251	360	750	1934
	%	40.4	36.9	33.1	31.9	30.0	23.8	29.1	21.7	25.7
Both breast milk and formula	N	31	58	85	102	196	367	463	1487	2789
	%	27.2	26.7	27.9	23.7	28.1	34.8	37.4	42.9	37.1

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

G. Hypoxic Ischemic Encephalopathy

Presentation #53

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**	59	224	44	30	357
	No	82	47	18	37	184
	Unknown	0	0	0	0	0
	Total	**141**	**271**	**62**	**67**	**541**

B. Reason for not receiving hypothermia treatment*

Reason	**Number**
Chromosomal anomalies	1
Major congenital anomalies	2
Weight < 2000g or GA < 35 weeks	34
Extreme condition	14
Head trauma or intracranial hemorrhage	3
Mild HIE	99
Unit policy	19
Health care team preference	7
Delayed transfer	29
Parental request	1
Unknown	10

*One neonate can have more than one reasons.

C. Time of admission

Time	**Number**
<6 hours from birth	351
6 – 12 hours from birth	136
>12 hours from birth	49
Total**	536

**5 neonates are missing either time of birth or time of admission.

Presentation #53 (continued)

Hypoxic Ischemic Encephalopathy

D. Characteristics of neonates who received hypothermia (N=357)

Characteristics	N		Results
Method	357	Selective head	8 (2%)
		Whole body cooling	349 (98%)
Target temperature	357	< 33^{0}C	2 (1%)
		33-34^{0}C	288 (81%)
		33.5-34.5^{0}C	35 (10%)
		34-35^{0}C	30 (8%)
		34.5-35.5^{0}C	2 (1%)
		Unknown	0 (0%)
Seizures at initiation	357		90 (25%)
Seizures at completion	357		30 (8%)
GA < 33 weeks	357		0 (0%)
Birthweight < 2000g	357		5 (1%)
During hypothermia	349	Hypotension	114 (33%)
	348	Thrombocytopenia	66 (19%)
	348	Coagulopathy	84 (24%)
	343	Persistent metabolic acidosis	48 (14%)
Death	357		30 (8%)

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**	36	3	0	9	22	70
	Stage 2	46	81	4	24	75	230
	Stage 3	2	5	27	4	5	43
	Unknown	0	1	0	11	2	14
	Total	84	90	31	48	104	357

*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 #53 (continued)
Hypoxic Ischemic Encephalopathy
For neonates* who received hypothermia (N=357)

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**	350	3.7	3.7	0.0	1.3	3.0	5.1	28.2	After 6 hours 48 (14%)	
	Target temp achieved	353	6.1	4.4	0.1	3.7	5.2	7.1	35.4	After 10 hours 32 (9%)	After 4 hours of initiation 52 (15%)
	Age at re-warming	354	72.4	15.9	1.4	74.6	76.5	78.0	100.6	After 78 hours 87 (25%)	Re-warming started >72 hours after initiation 74 (21%)
	Age at return to normal temp	342	85.5	18.6	1.5	82.3	85.0	90.1	191.7	After 86 hours 146 (43%)	Took >8 hours to return temperature to normal after starting re-warming 162 (47%)
Temperature during hypothermia	**Lowest temp during hypothermia**	357	32.8	0.7	29.7	32.6	33.0	33.1	34.4	Lowest temp < 32.5C 71 (20%)	
	Highest temp during hypothermia	357	34.1	0.6	32.9	33.8	33.9	34.2	37.0	Highest temp > 35.5C 16 (4%)	

*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 8 years

This section includes trend analyses of specific outcomes from the last 8 years (2010-17) 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	**<23**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	
2010	9	73	172	270	333	388	371	480	611	678	788	4173
2011	15	86	166	242	318	332	391	467	553	643	828	4041
2012	28	85	184	285	294	348	416	510	610	738	872	4370
2013	16	76	197	247	267	357	434	479	620	733	836	4262
2014	8	81	226	250	332	362	412	517	585	743	871	4387
2015	14	99	177	248	289	317	425	470	536	662	793	4030
2016	16	79	214	275	272	380	431	437	551	722	861	4238
2017	16	133	215	257	294	325	434	467	606	743	868	4358

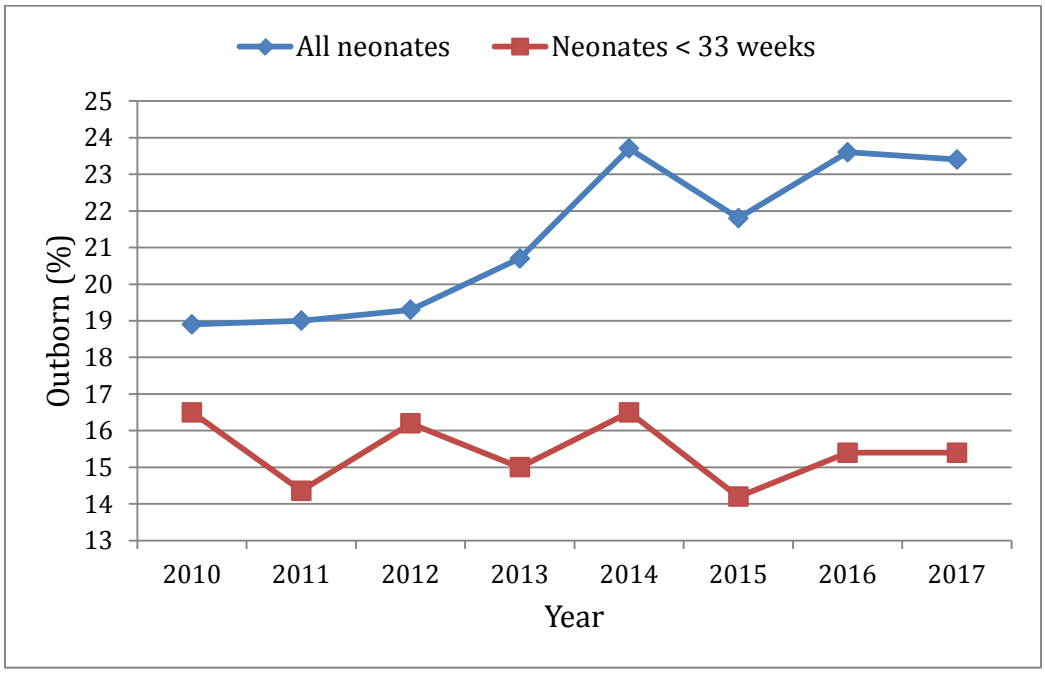
Number of neonates by admission year and birth weight

	Birth weight					Total
Year	**< 500**	**500 - 749**	**750 - 999**	**1000 – 1249**	**1250 – 1499**	
2010	32	436	792	819	879	2958
2011	31	383	660	680	794	2548
2012	48	441	696	815	922	2922
2013	36	428	651	842	919	2876
2014	36	458	760	804	922	2980
2015	40	406	680	792	864	2782
2016	40	472	710	744	901	2867
2017	38	478	678	806	920	2920

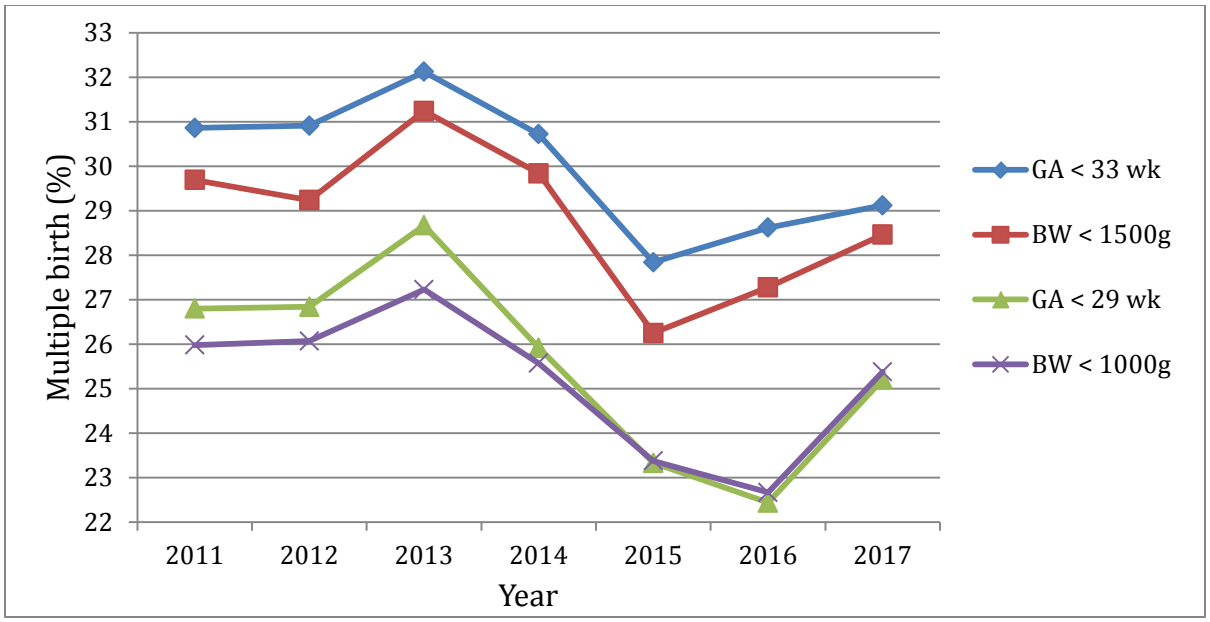
1. Neonates in the participating sites: Admission status:

		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%)	3453 (23.4%)	4 358	3 685 (84.6%)	673 (15.4%)

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

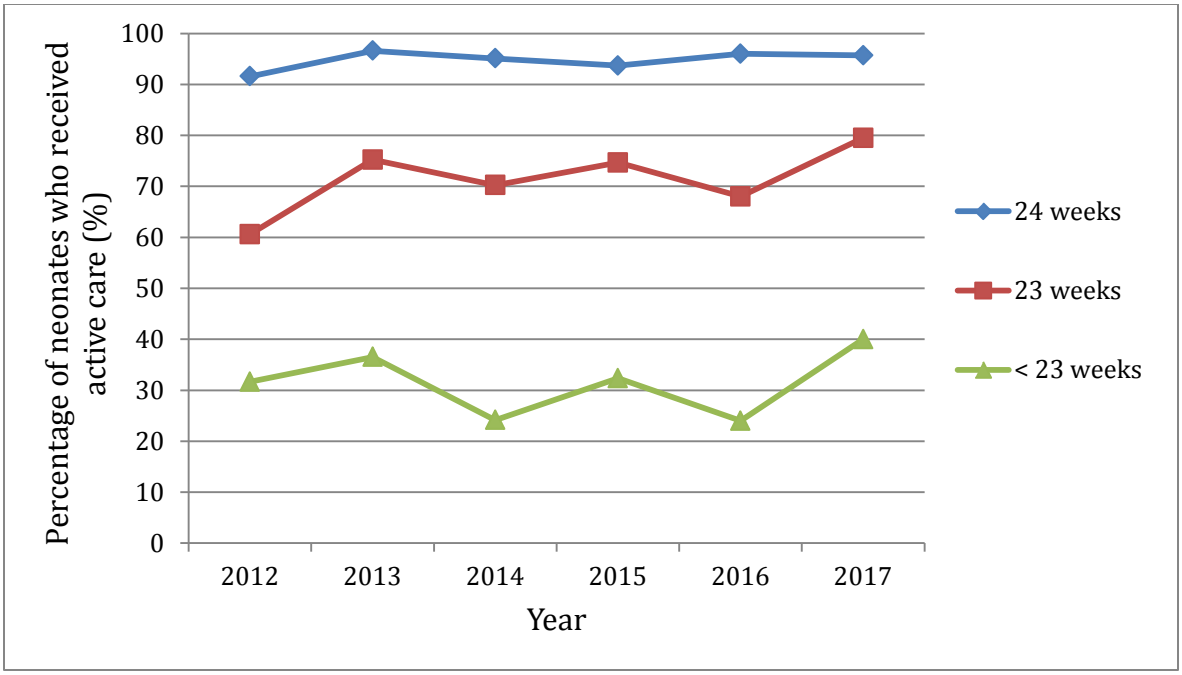


2. Multiple births



		2011	2012	2013	2014	2015	2016	2017
GA < 29 weeks	Total	1550	1639	1594	1671	1569	1667	1674
	Multiple	416 (27%)	437 (27%)	460 (29%)	441 (26%)	366 (23%)	374 (22%)	422 (25%)
	Twin	368	397	398	415	321	345	375
	Higher-Order	48	40	62	26	45	29	47
GA < 33 weeks	Total	4040	4369	4262	4387	4030	4238	4358
	Multiple	1248 (31%)	1352 (31%)	1380 (32%)	1356 (31%)	1122 (28%)	1213 (29%)	1269 (29%)
	Twin	1099	1175	1193	1229	996	1094	1156
	Higher-Order	149	177	187	127	126	119	113
BW < 1000g	Total	1145	1184	1115	1254	1126	1222	1194
	Multiple	299 (26%)	305 (26%)	306 (27%)	329 (26%)	264 (23%)	277 (23%)	303 (25%)
	Twin	261	273	259	306	236	260	269
	Higher-Order	38	32	47	23	28	17	34
BW < 1500g	Total	2747	2921	2876	2980	2782	2867	2920
	Multiple	816 (30%)	851 (29%)	905 (31%)	900 (30%)	731 (26%)	782 (27%)	831 (28%)
	Twin	713	736	769	802	634	703	747
	Higher-Order	103	115	136	98	97	79	84

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

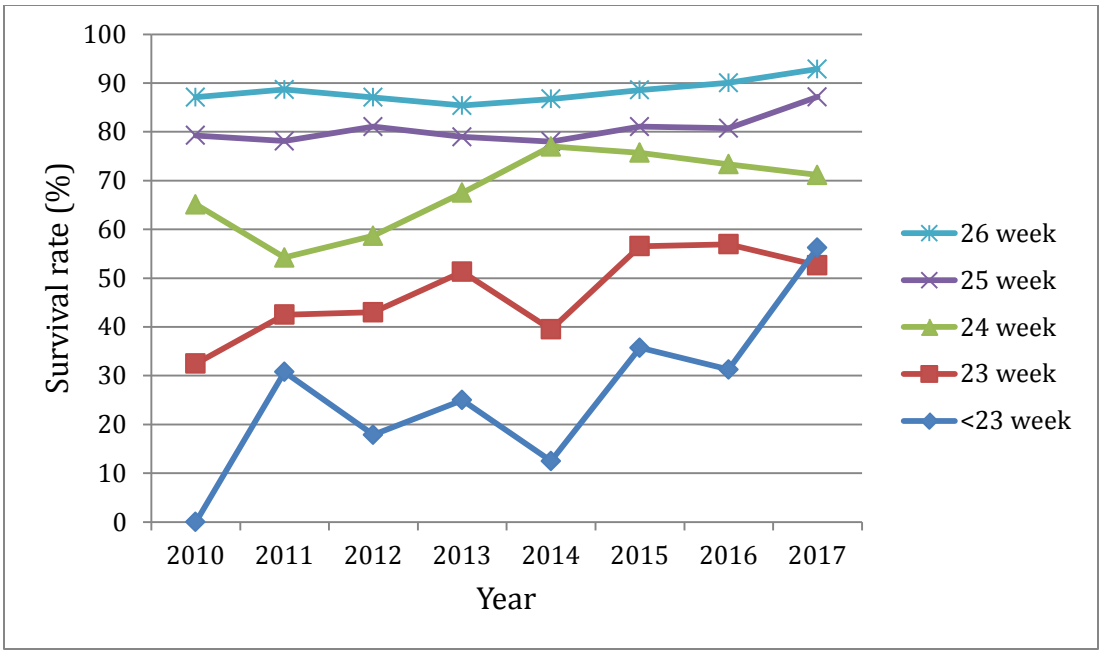


		2012	2013	2014	2015	2016	2017
<23 weeks	Number of neonates who received active care *(a-c) +e*	25	23	14	22	16	26
	Total number of neonates including DR deaths *a+d+e*	79	63	58	68	67	65
	Percentage of neonates who received active care	32%	37%	24%	32%	24%	40%
23 weeks	Number of neonates who received active care *(a-c) +e*	83	85	92	106	82	136
	Total number of neonates including DR deaths *a+d+e*	137	113	131	142	121	171
	Percentage of neonates who received active care	61%	75%	70%	75%	68%	80%
24 weeks	Number of neonates who received active care *(a-c) +e*	185	200	233	178	217	221
	Total number of neonates including DR deaths *a+d+e*	202	207	245	190	227	231
	Percentage of neonates who received active care	92%	97%	95%	94%	96%	96%

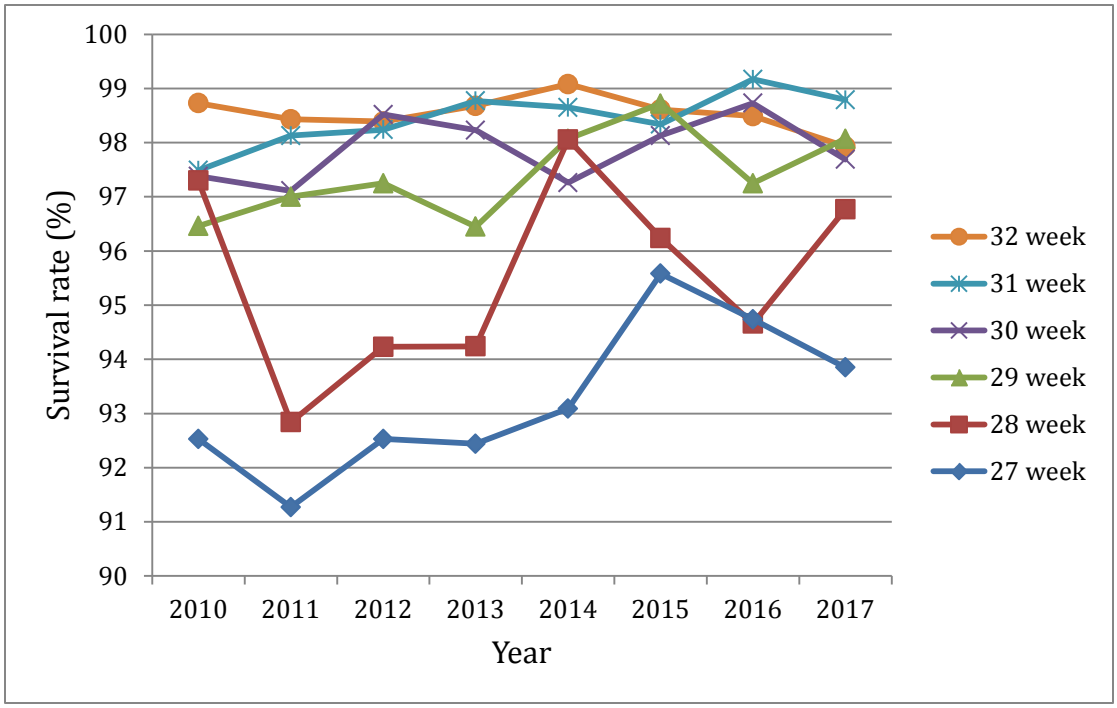
Note: Refer to presentation #4 for detailed breakdown of neonates by GA in 2017.
The alphabet notations used in the table above are carried from presentation #4.
Information should be interpreted with caution as not all sites provided data on delivery room deaths. Active care refers to infants who received cardiopulmonary resuscitation at birth.

4. Survival rate:

a. 22-26 weeks' GA:

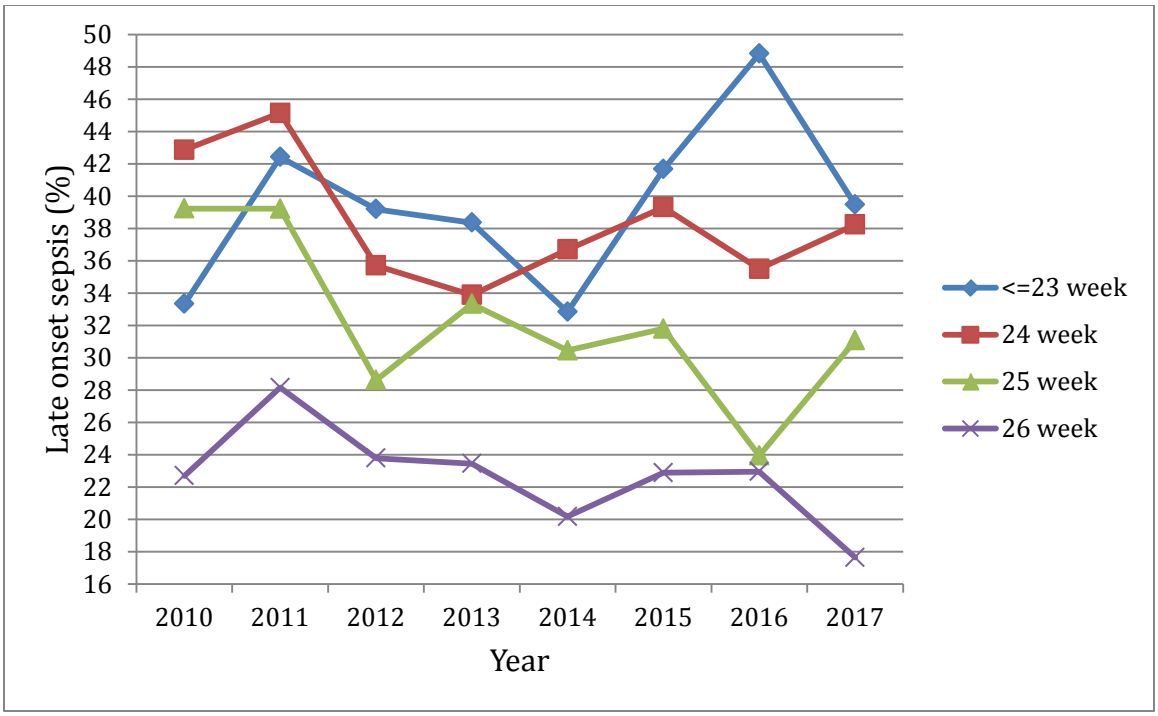


b. 27-32 weeks' GA:

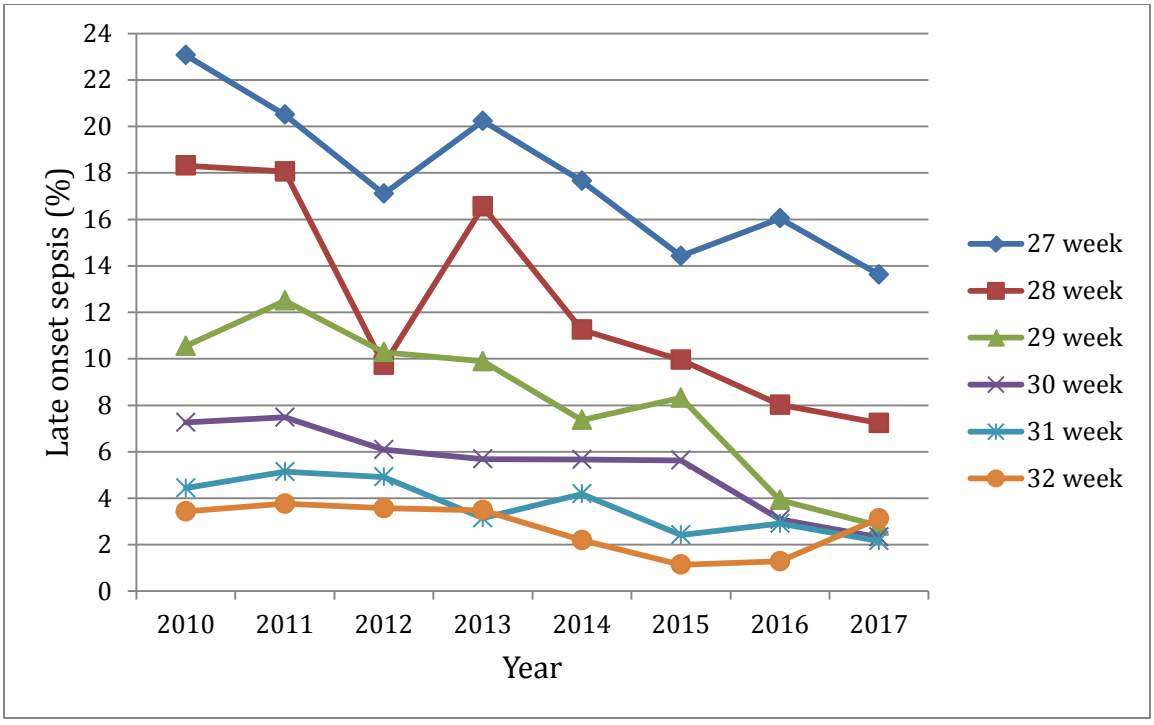


5. Late onset sepsis (with at least one infection) among neonates who survived beyond 2 days post birth

a. 23-26 weeks' GA:

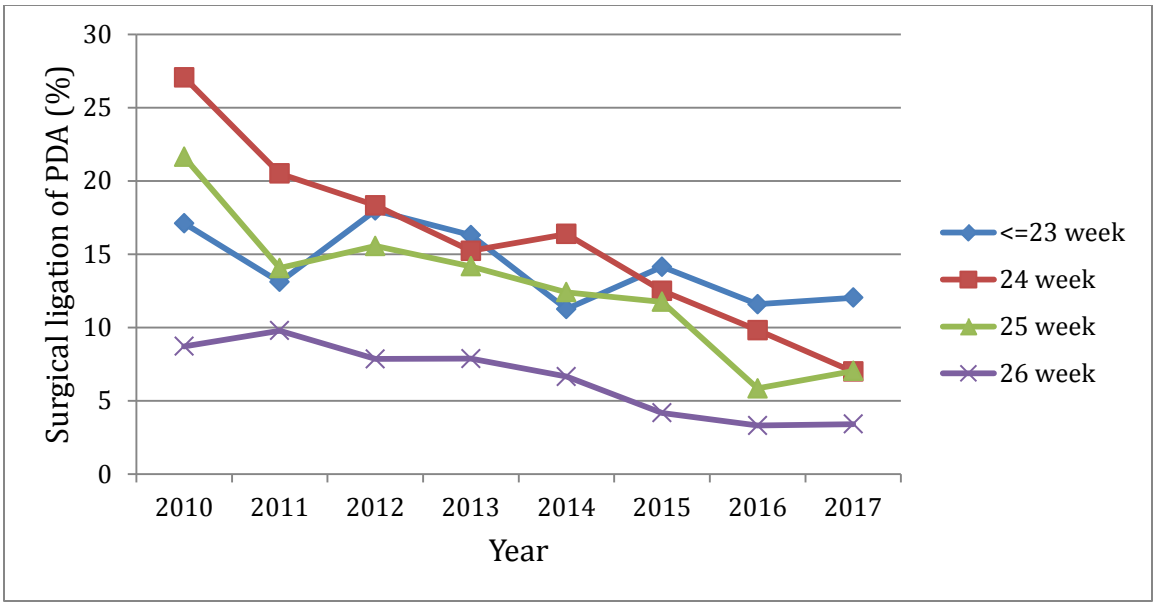


b. 27-32 weeks' GA:

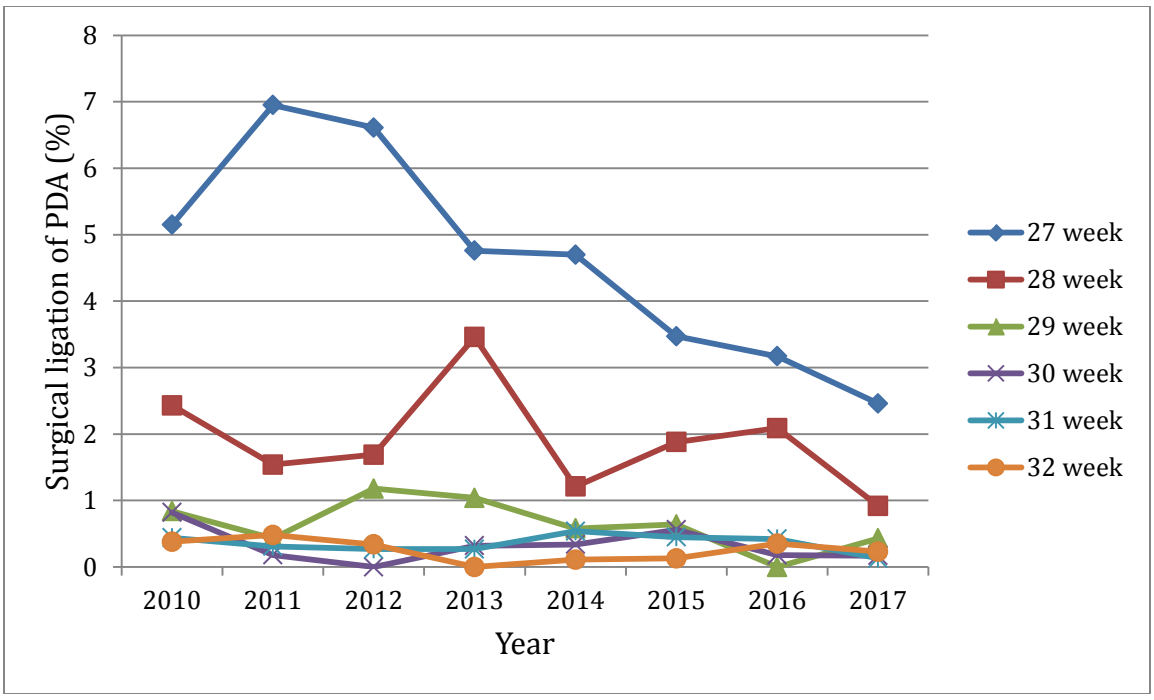


6. Surgical ligation of PDA

a. 23-26 weeks' GA:

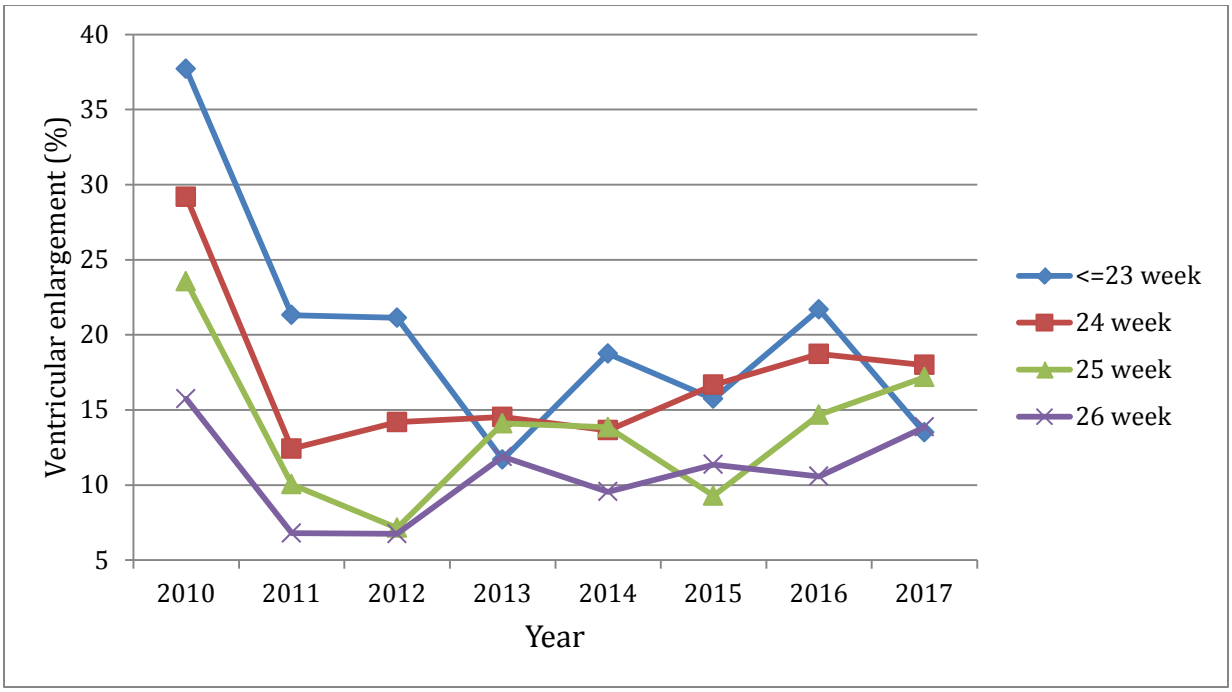


b. 27-32 weeks' GA:

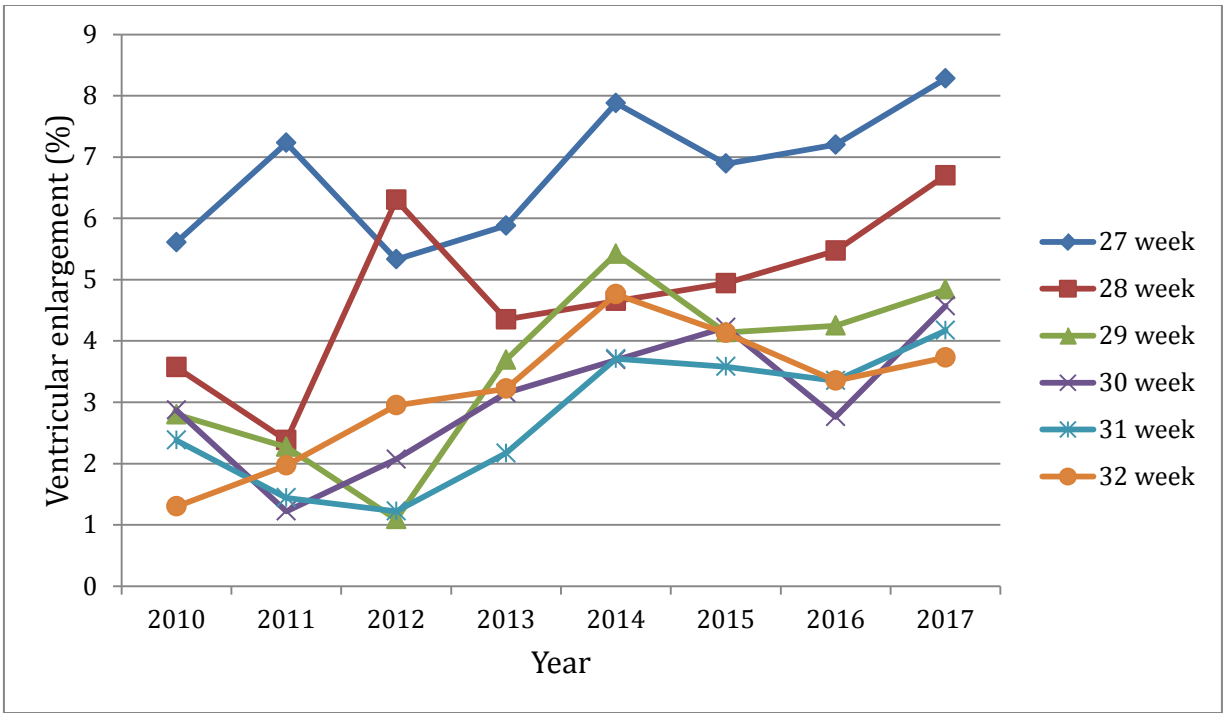


7. Ventricular enlargement (VE): (moderate and severe VE only; among neonates who received ultrasound exams)

a. 23-26 weeks' GA:

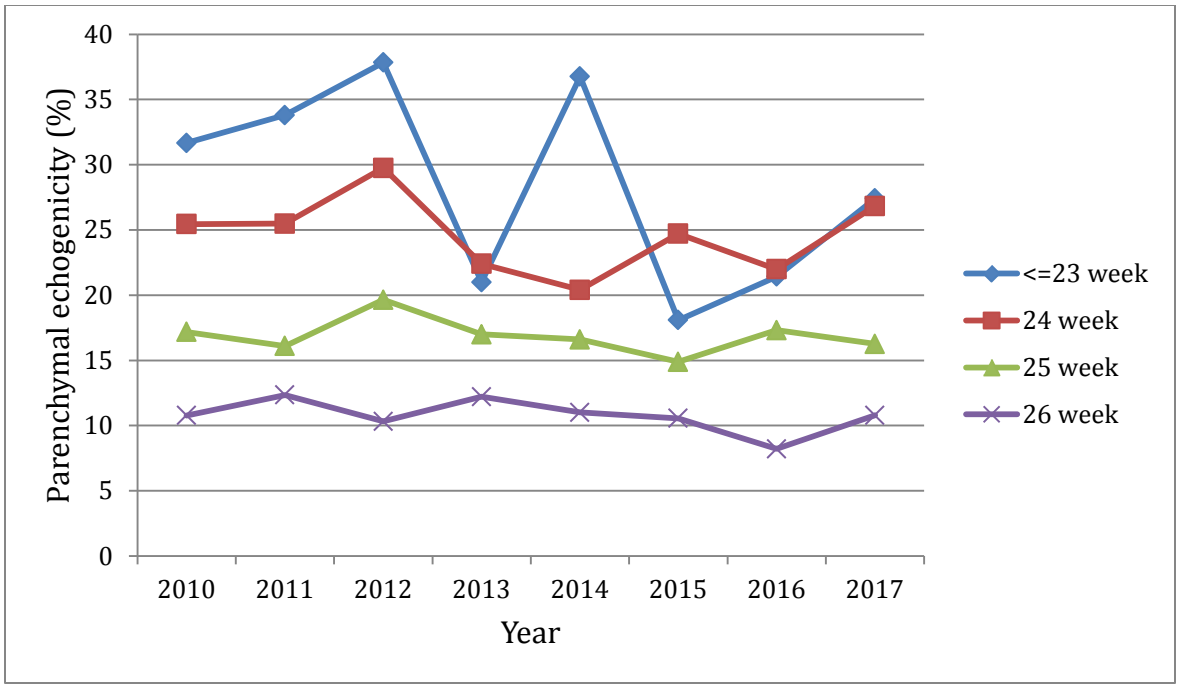


b. 27-32 weeks' GA:

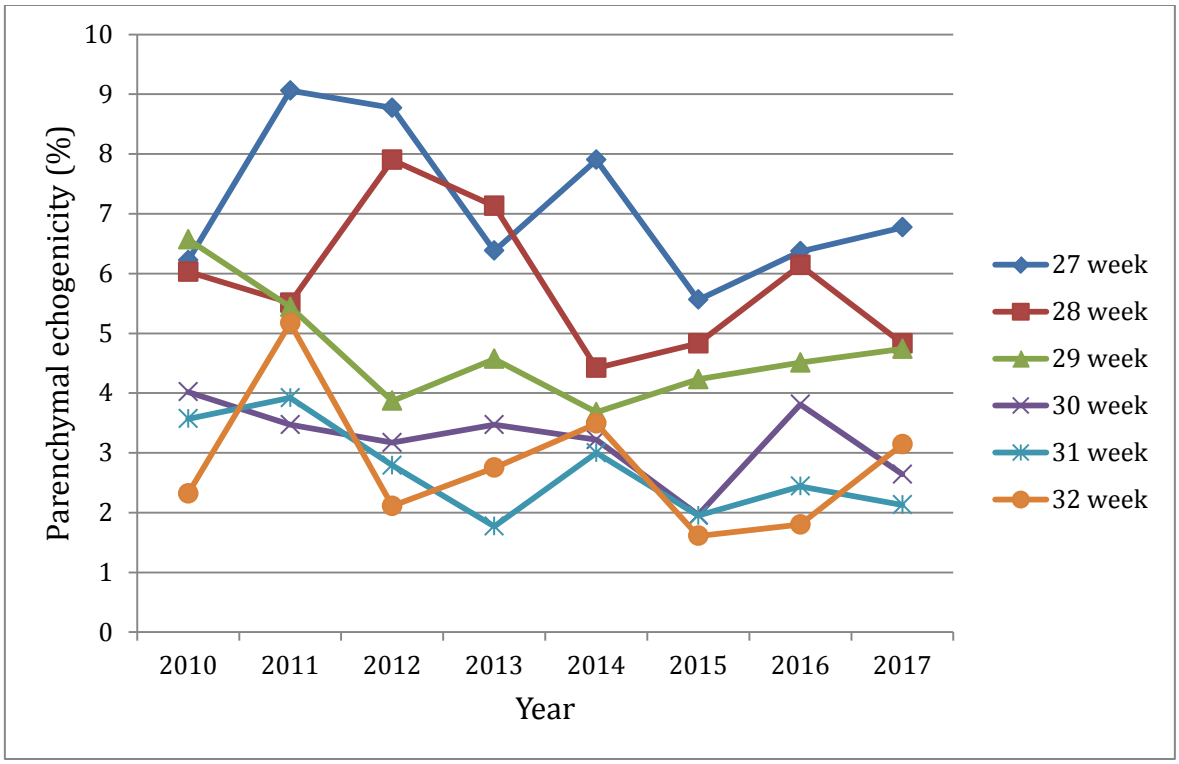


8. Parenchymal echogenicity (among neonates who received ultrasound exams)

a. 23-26 weeks' GA:

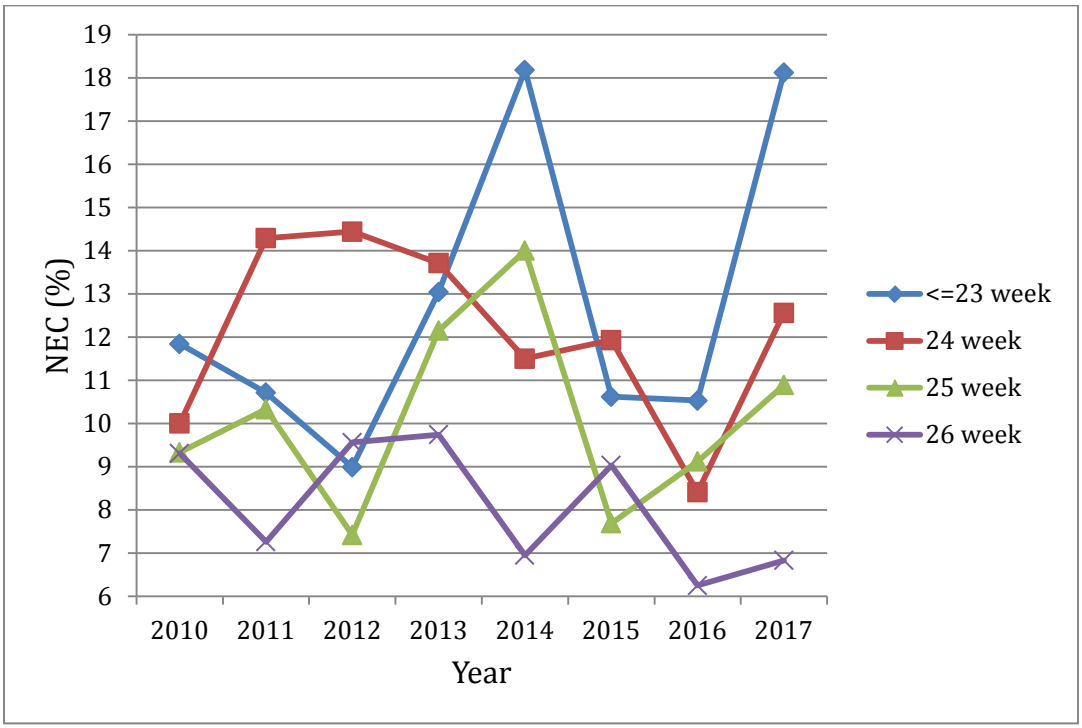


b. 27-32 weeks GA:

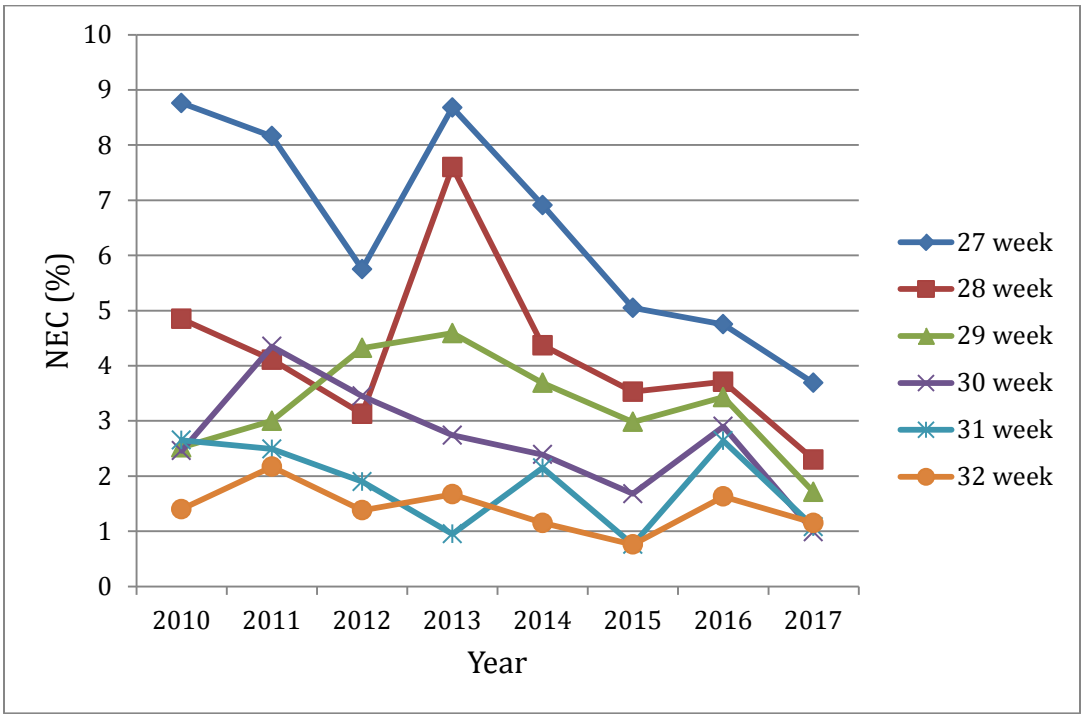


9. NEC:

a. 23-26 weeks' GA:

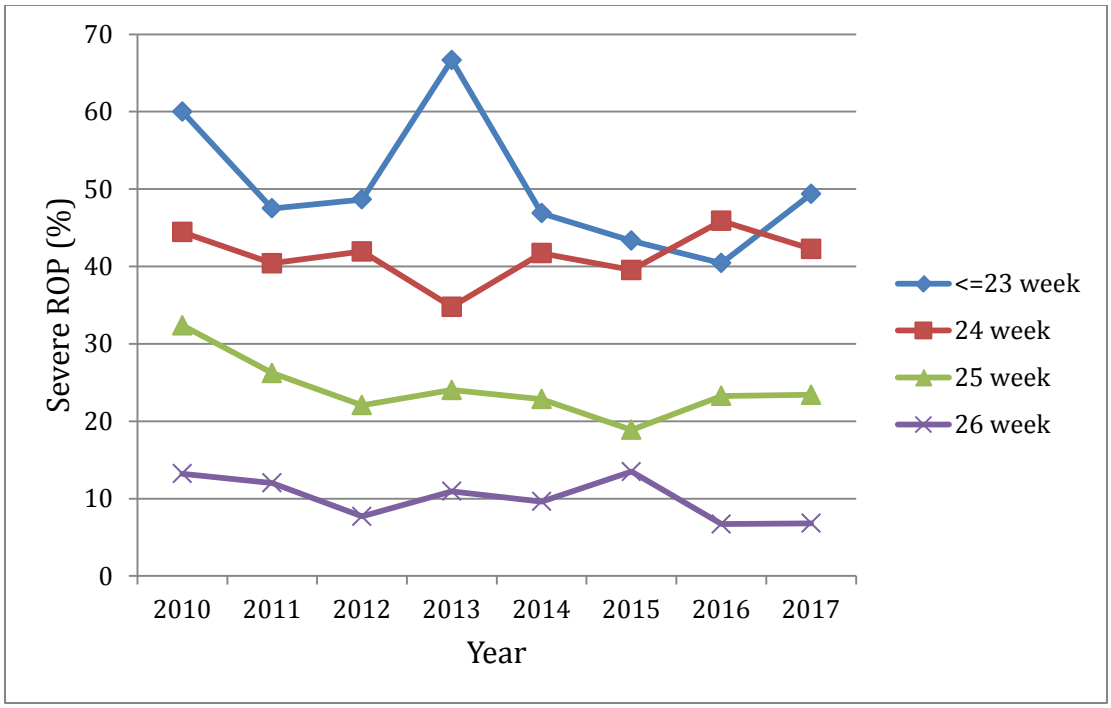


b. 27-32 weeks' GA:

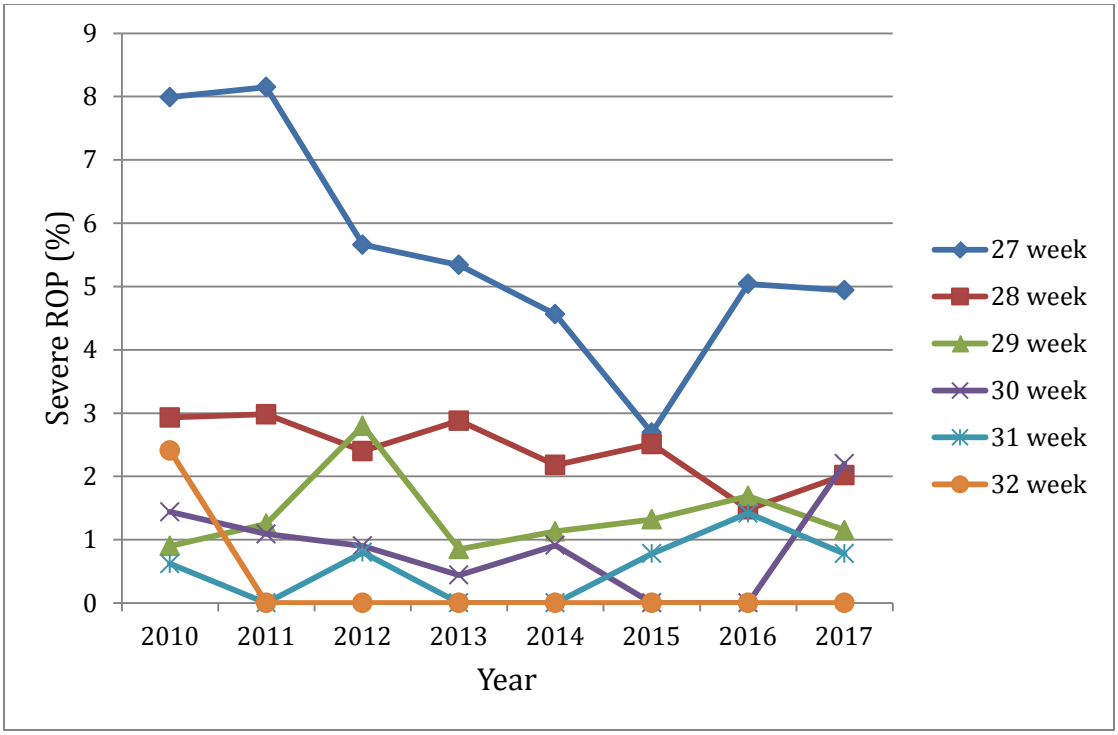


10. Severe ROP (≥ Stage 3 or ROP treatment) among neonates who received eye exams:

a. 23-26 weeks' GA:

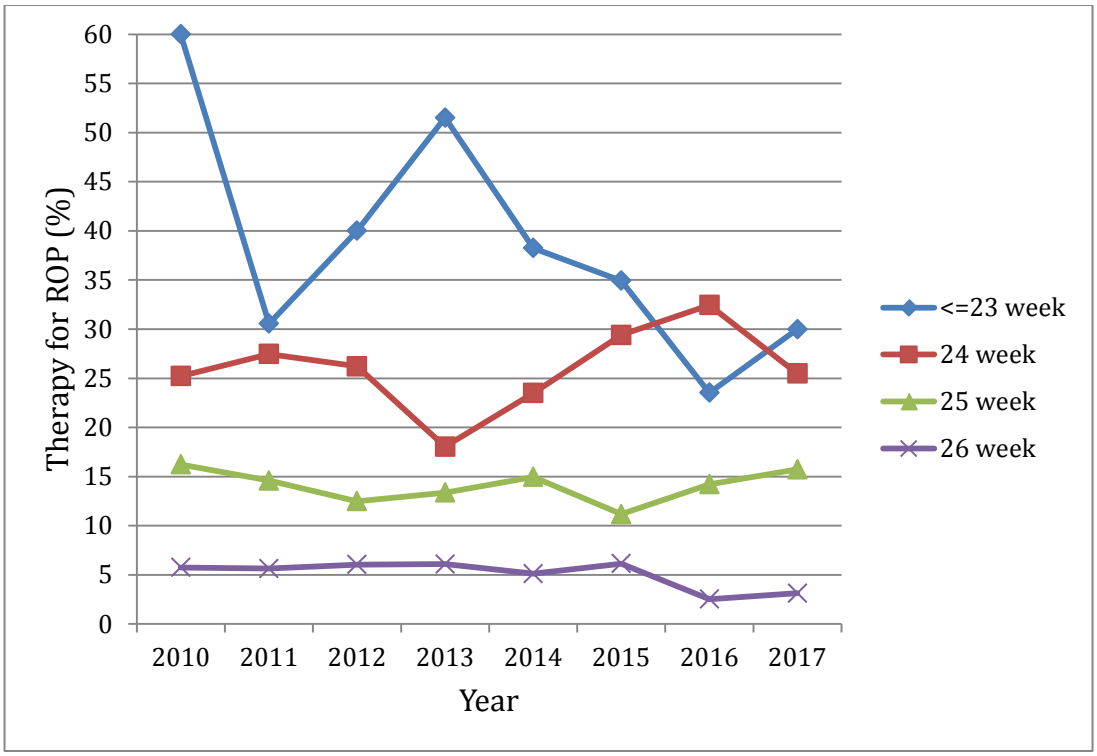


b. 27-32 weeks' GA:

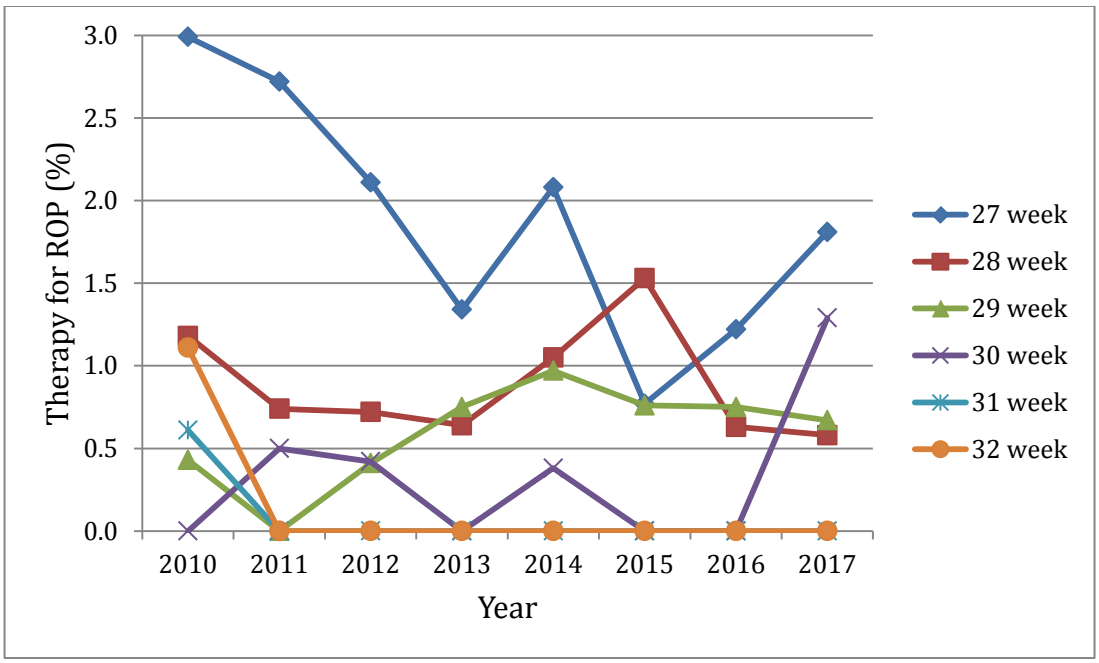


11. Therapy for ROP (among neonates who received eye exams)

a. 23-26 weeks' GA :

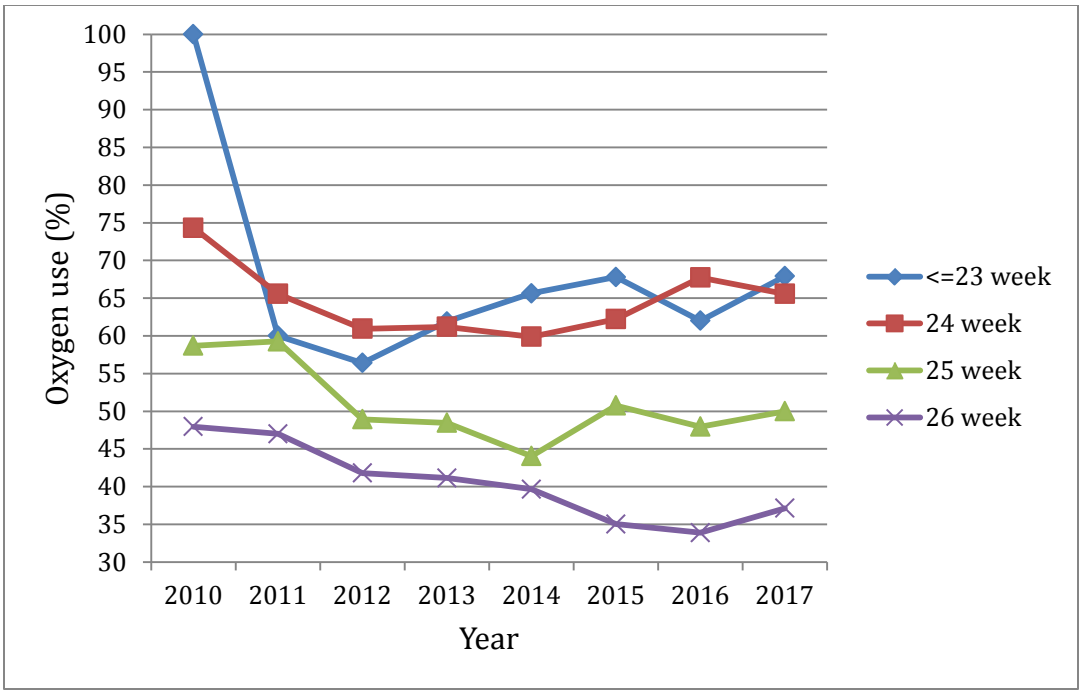


b. 27-32 weeks' GA:

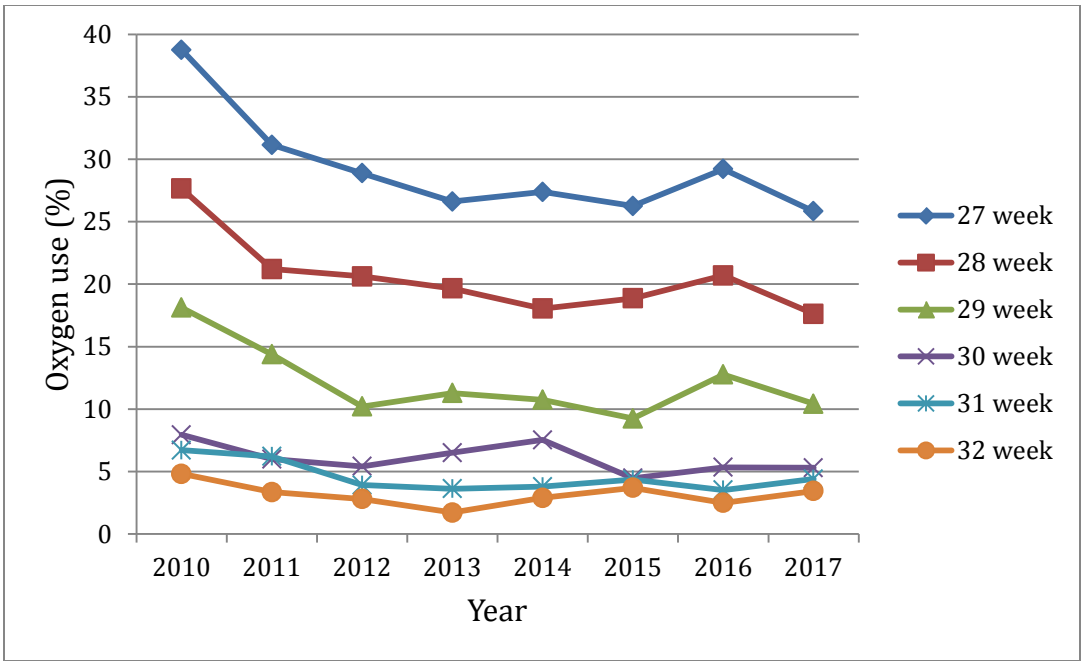


12a. Oxygen use at 36 weeks or at discharge:

a. 23-26 weeks' GA:

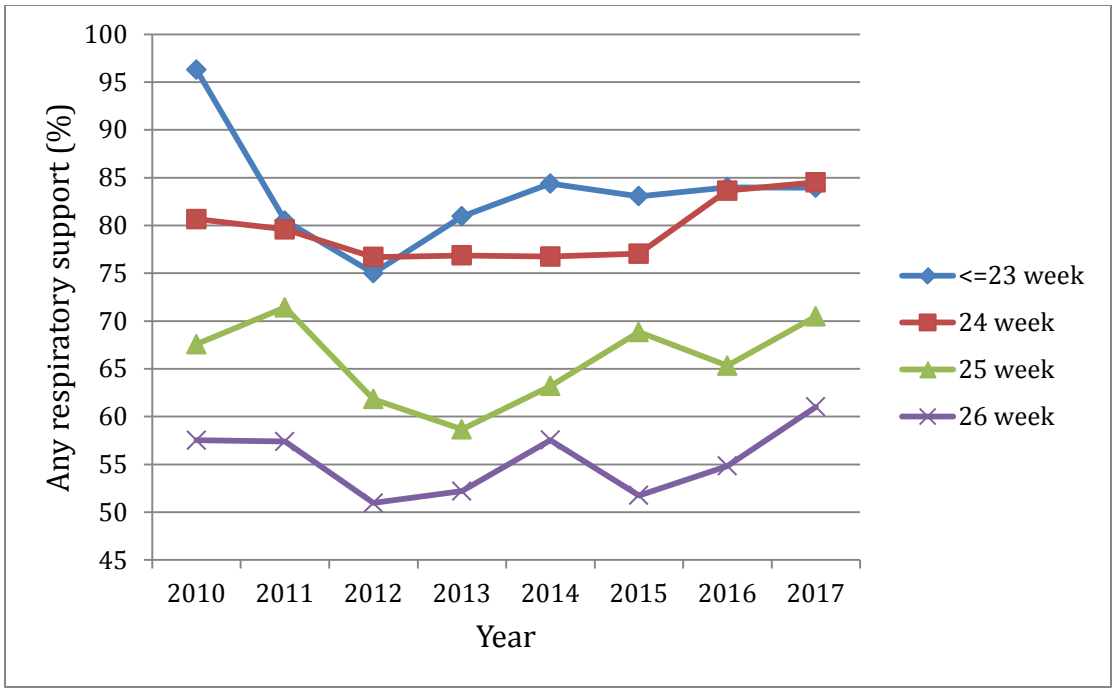


b. 27-32 weeks' GA:

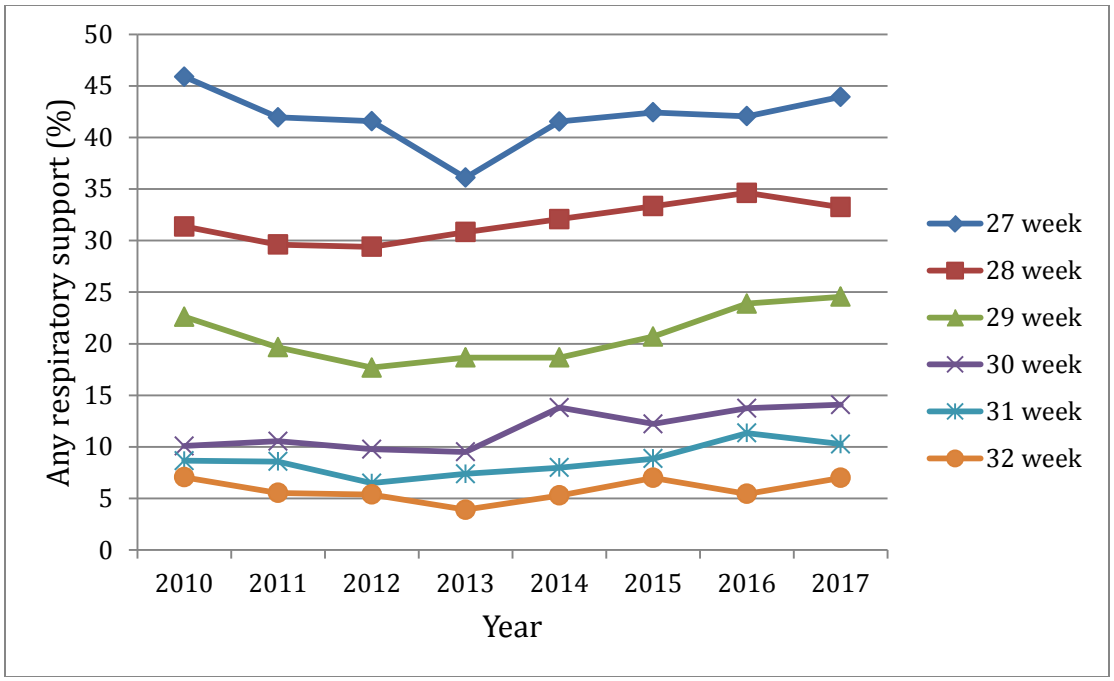


12b. Any respiratory support at 36 weeks or at discharge:

a. 23-26 weeks' GA:

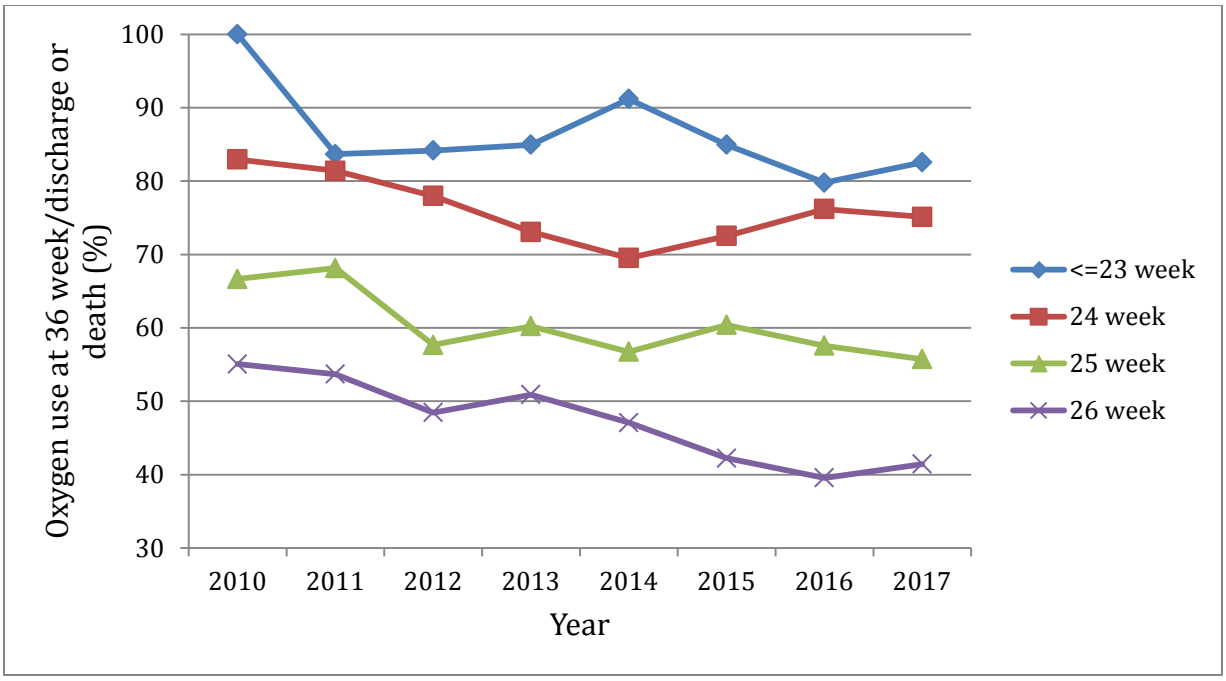


b. 27-32 weeks' GA:

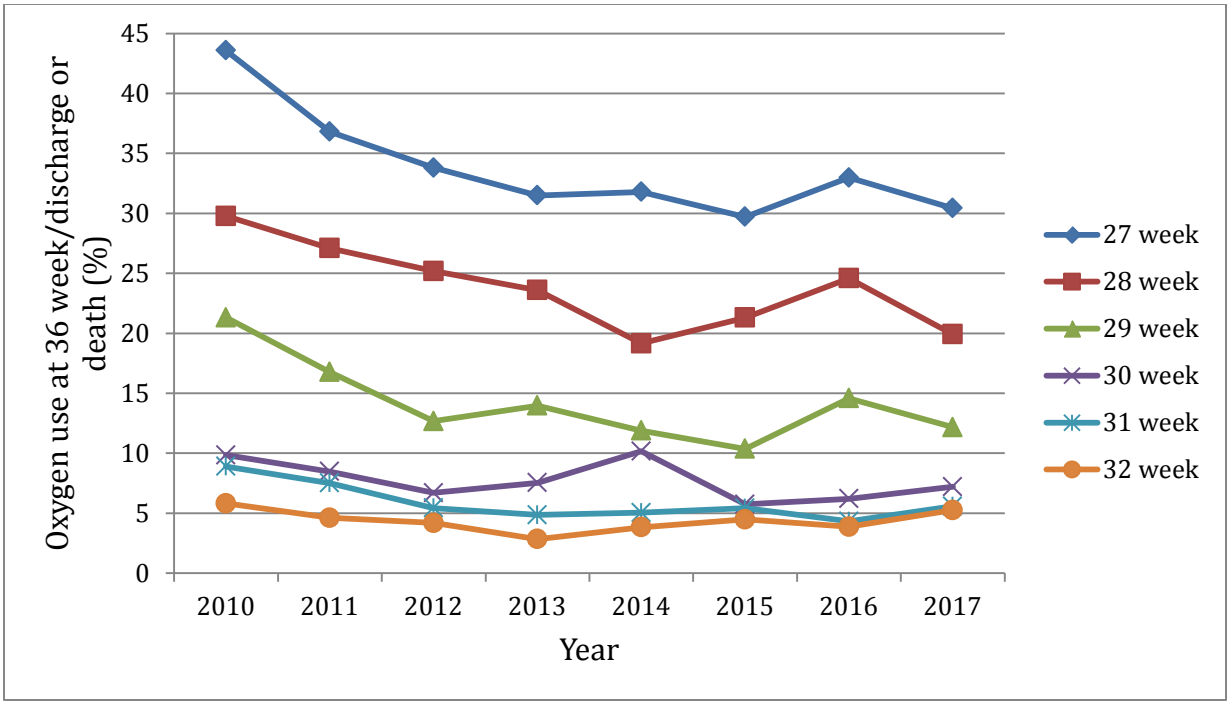


13a. Oxygen use at 36 weeks/discharge or death:

a. 23-26 weeks' GA:

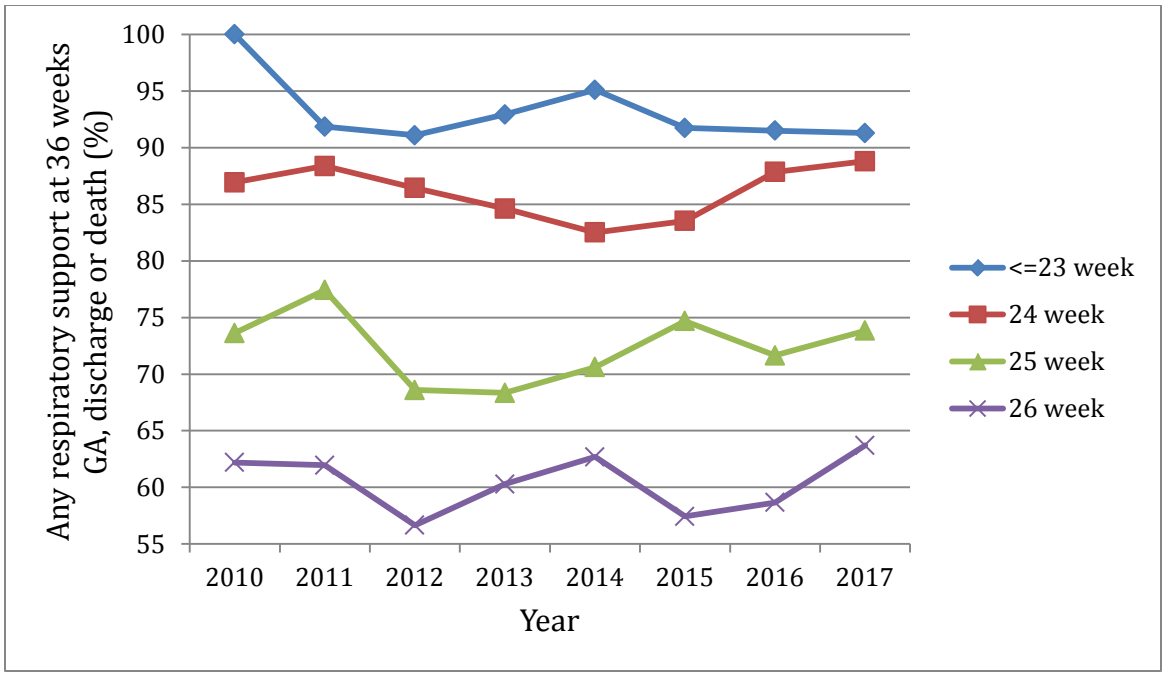


b. 27-32 weeks' GA:

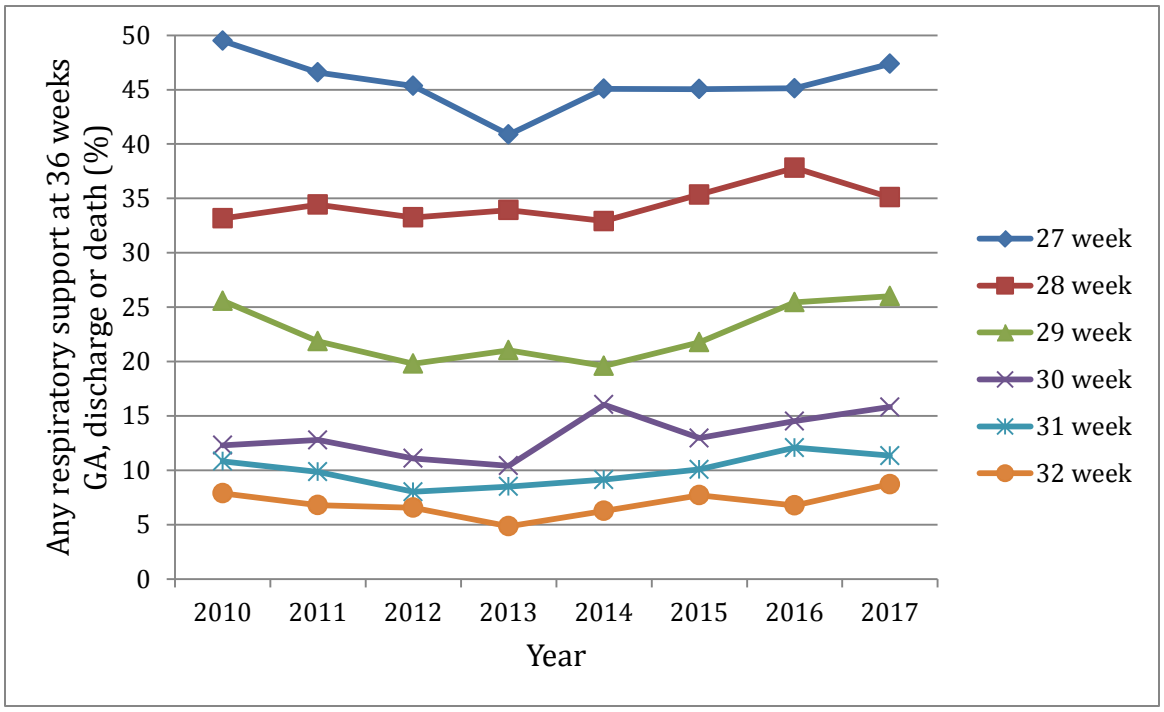


13b. Any respiratory support at 36 weeks/discharge or death:

a. 23-26 weeks' GA:

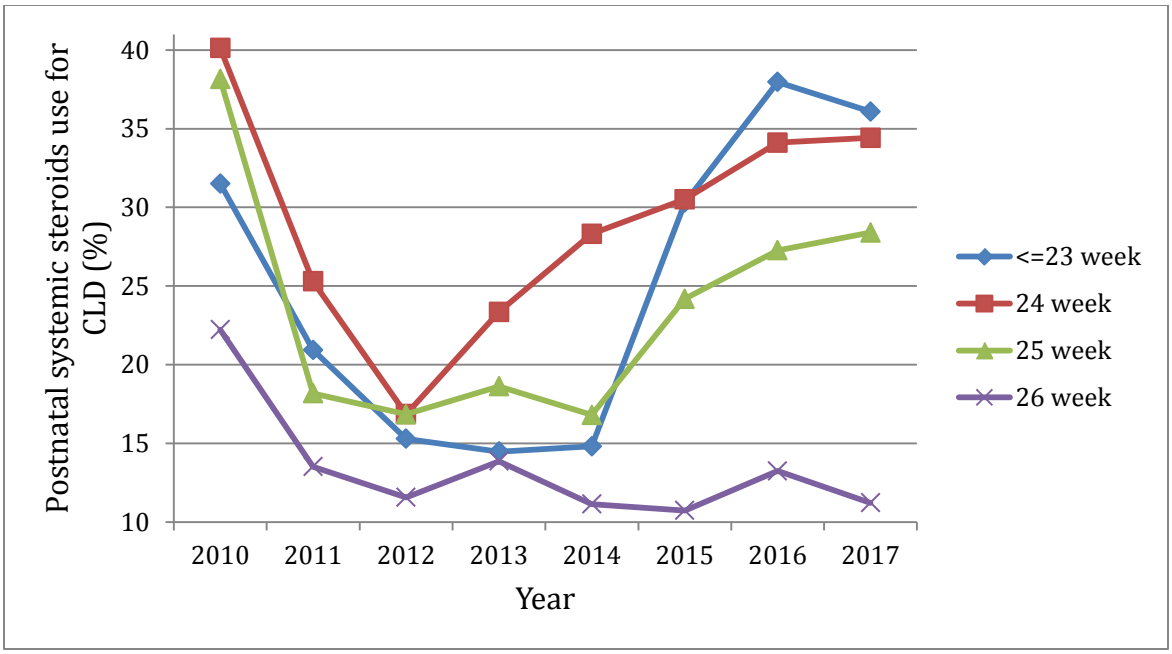


b. 27-32 weeks' GA:

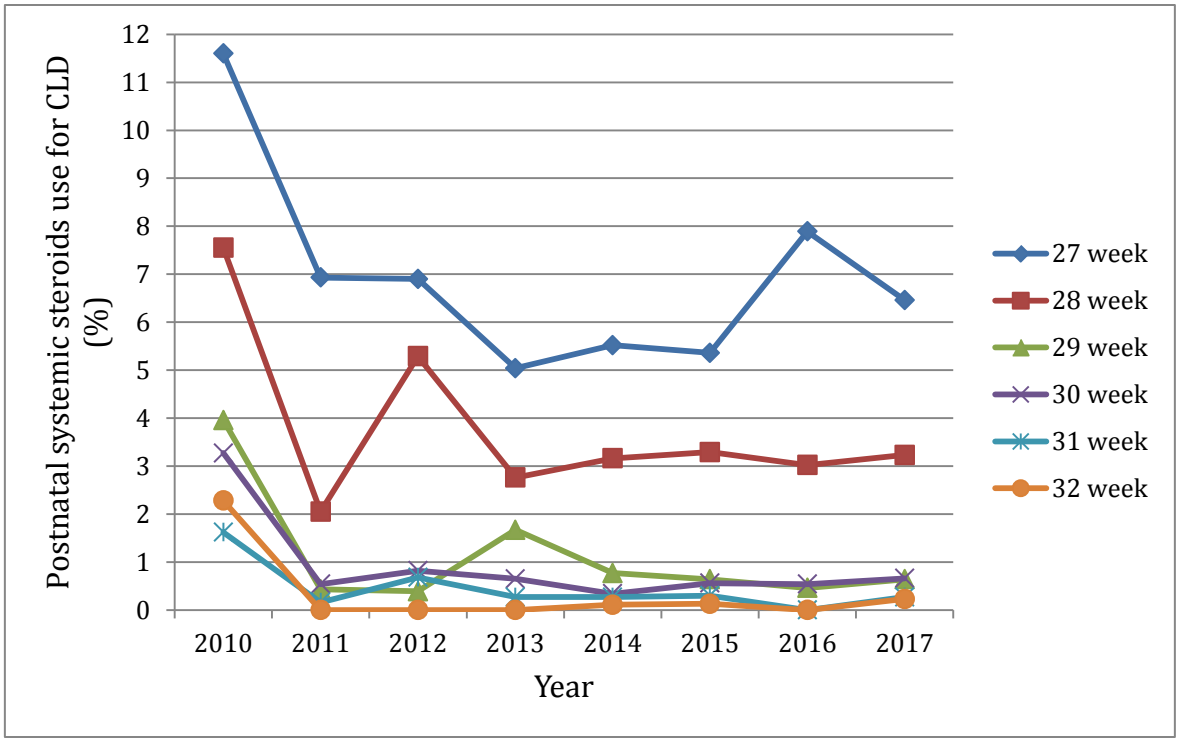


14. Postnatal systemic steroids use for chronic lung disease (CLD)

a. 23-26 weeks' GA:



b. 27-32 weeks' GA:

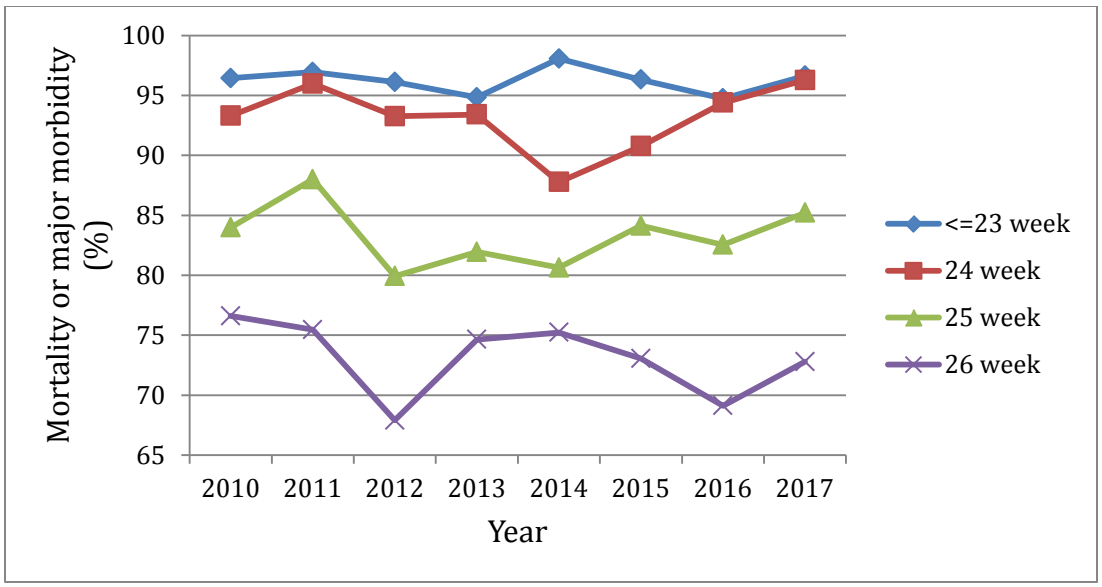


15. Mortality or major morbidity

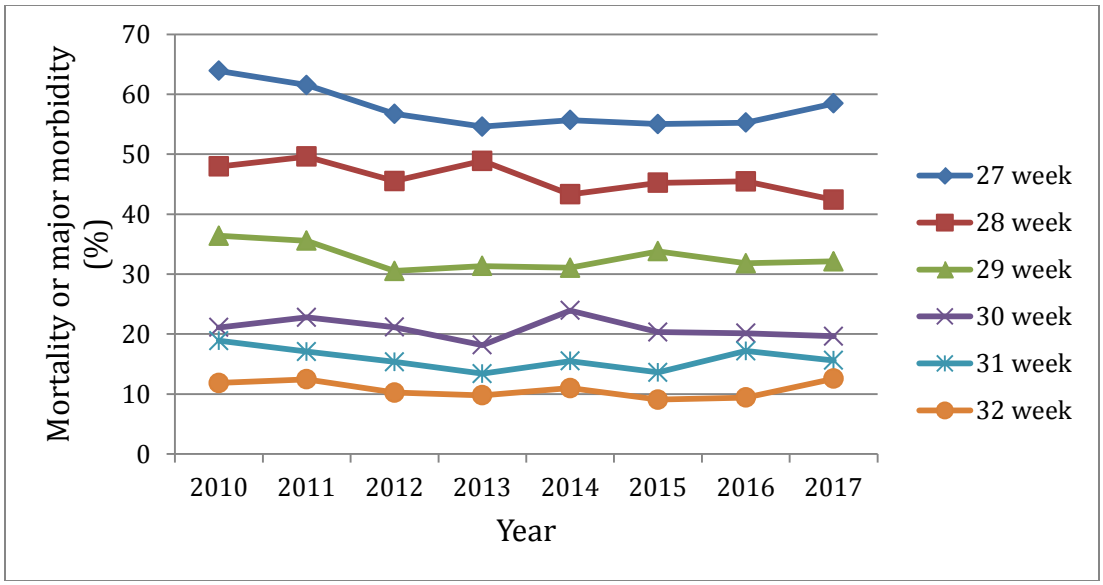
Major morbidity was counted as any one of the following:

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:



I. 2017 CNN publications

Peer reviewed publications

1) Borenstein-Levin L, Synnes A, Grunau RE, Miller SP, Yoon EW, Shah PS, Canadian Neonatal Network Investigators. Narcotics and Sedative Use in Preterm Neonates. J Pediatr. 2017 Jan:180:92-98.
2) Isayama T, Lee SK, Yang J, Lee D, Daspal S, Dunn M, Shah PS for the Canadian Neonatal Network and Canadian Neonatal Follow-Up Network Investigators. Revisiting the Definition of Bronchopulmonary Dysplasia: Effect of Changing Panoply of Respiratory Support for Preterm Neonates. JAMA Pediatr. 2017 Mar 1;171(3):271-279.
3) Mei-Dan E, Shah J, Dan EM, Murphy K, Yang J, Lee SK, Shah PS. The Effect of Birth Order on Neonatal Morbidity and Mortality in Very Preterm Twins. American Journal of Perinatology. 2017 Jul;34(9):845-850.
4) Lokku A, Mirea L, Lee SK, Shah PS, Canadian Neonatal Network. Trends and Outcomes of Patent Ductus Arteriosus Treatment in Very Preterm Infants in Canada. Am J Perinatol. 2017 Apr:34(5):441-450.
5) Stavel M, Wong J, Cieslak Z, Sherlock R, Claveau M, Shah PS. Effect of Prophylactic Indomethacin Administration and Early Feeding on Spontaneous Intestinal Perforation in Extremely Low-Birth-Weight Infants. J Perinatol. 2017 Feb;37(2):188-193.
6) Asztalos EV, Church PT, Riley P, Fajardo C, Shah PS, Canadian Neonatal Network and Canadian Neonatal Follow-up Network Investigators. Neonatal Factors Associated with a Good Neurodevelopmental Outcome in Very Preterm Infants. Am J Perinatol. 2017 Mar;34(4):388-396.
7) Asztalos EV, Church PT, Riley P, Fajardo C, Shah PS, Canadian Neonatal Network and Canadian Neonatal Follow-up Network Investigators. Association between Primary Caregiver Education and Cognitive and Language Development of Preterm Neonates. Am J Perinatol. 2017 Mar;34(4):364-371.
8) Synnes A, Luu TM, Moddemann D, Church P, Lee D, Vincer M, Ballantyne M, Majnemer A, Creighton D, Yang J, Sauve R, Saigal S, Shah P, Lee SK, Canadian Neonatal Network and the Canadian Neonatal Follow-Up Network. Determinants of developmental outcomes in a very preterm Canadian cohort. Arch Dis Child Fetal Neonatal Ed. 2017 May;102(3):F235-F234.
9) Hines D, Modi N, Lee SK, Isayama T, Sjors G, Gagliardi, Lehtonen L, Vento M, Kusuda S, Bassler D, Mori R, Reichman B, Hakansson S, Darlow BA, Adams M, Rusconi F, San Feliciano L, Lui K, Morisaki N, Musrap N, Shah PS for the International Network for Evaluating Outcomes of Neonates. Scoping review shows wide variation in the definitions of bronchopulmonary dysplasia in preterm infants and calls for a consensus. Acta Paediatr. 2017 Mar;106(3):366-374.
10) Mukerji A, Shah PS, Shivananda S, Yee W, Read B, Minski J, Alvaro R, Fusch C, Canadian Neonatal Network Investigators. Survey of noninvasive respiratory support practices in Canadian neonatal intensive care units. Acta Paediatr. 2017 Mar;106(3):387-393.
11) Darlow BA, Lui K, Kusuda S, Reichman B, Håkansson S, Bassler D, Modi N, Lee SK, Lehtonen L, Vento M, Isayama T, Sjörs G, Helenius KK, Adams M, Rusconi F, Morisaki N, Shah PS for the International Network for Evaluating Outcomes of Neonates. International

variations and trends in the treatment for retinopathy of prematurity. Br J Ophthalmol. 2017 Oct;101(10):1399-1404.

12) Lyu Y, Ye XY, Isayama T, Alvaro R, Nwaesei C, Barrington K, Lee SK, Shah PS; Canadian Neonatal Network Investigators. Admission Systolic Blood Pressure and Outcomes in Preterm Infants of ≤ 26 Weeks' Gestation. Am J Perinatol. 2017 Nov;34(13):1271-1278.
13) Shah PS, Seidlitz W, Chan P, Yeh S, Musrap N, Lee SK; data abstractors of the Canadian Neonatal Network. Internal Audit of the Canadian Neonatal Network Data Collection System. Am J Perinatol. 2017 Oct;34(12):1241-1249.
14) Shalabi M, Mohamed A, Lemyre B, Aziz K, Faucher D, Shah PS; Canadian Neonatal Network Investigators. Antenatal Exposure to Magnesium Sulfate and Spontaneous Intestinal Perforation and Necrotizing Enterocolitis in Extremely Preterm Neonates. Am J Perinatol. 2017 Oct;34(12):1227-1233.
15) Raghuram K, Yang J, Church PT, Cieslak Z, Synnes A, Mukerji A, Shah PS, for the Canadian Neonatal Network, Canadian Neonatal Follow-Up Network Investigators. Head Growth Trajectory and Neurodevelopmental Outcomes in Preterm Neonates. Pediatrics. 2017;140(1):e20170216.
16) Soraisham AS, Rabi Y, Shah PS, Singhal N, Synnes A, Yang J, Lee SK, Lodha AK. Neurodevelopmental outcomes of preterm infants resuscitated with different oxygen concentration at birth. J Perinatol. 2017 Oct;37(10):1141-1147.
17) Kelly LE, Shah PS, Håkansson S, Kusuda S, Adams M, Lee SK, Sjörs G, Vento M, Rusconi F, Lehtonen L, Reichman B, Darlow BA, Lui K, Feliciano LS, Gagliardi L, Bassler D, Modi N. Perinatal health services organization for preterm births: a multinational comparison. J Perinatol. 2017 Jul;37(7):762-768.
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19) Helenius K, Sjors G, Shah PS, Modi N, Reichman B, Morisaki N, Kusuda S, Lui K, Darlow BA, Bassler D, Hakansson S, Adams M, Vento M, Rusconi F, Isayama T, Lee SK, Lehtonen L, International Network for Evaluating Outcomes of Neonates. Survival in Very Preterm Infants: An International Comparison of 10 National Neonatal Networks. Pediatrics. 2017;140(6).
20) Beltempo M, Piedboeuf B, Platt RW, Barrington K, Bizgu V, Shah PS; Canadian Neonatal Network Investigators. Am J Perinatal 2017;34:1396-1404.

Abstracts

1) Ting JY, Synnes AR, Roberts AB, Deshpandey A, Dow K, Lee KS, Dobson S, Lee SK, Shah PS. Association of antibiotic utilization and neurodevelopmental outcomes at 18 months' corrected age among extremely low gestational age neonates without proven sepsis. E-PAS 2017:1170.6.
2) Ting JY, Synnes AR, Roberts AB, Lisonkova S, Yoon E, Monterrosa L, Harrison A, Shah PS. Recurrent late-onset bacterial blood stream infections in preterm neonates: risk factors and outcomes. E-PAS 2017:1535.5.
3) Samara J, Abou Mehrem A, Lodha A, Yee W, Nwaesei C, Shah PS. Risk Factors Associated with Bronchopulmonary Dysplasia (BPD) among Infants born < 33 Weeks' Gestation

Managed on Continuous Positive Airway Pressure (CPAP) during the First Week of Life. E-PAS 2017:1554.12.

4) Claveau M, Yoon E, Singhal N, Aziz K, Shah PS, Wintermark P. Incidence and outcomes of newborns with a 10-minute APGAR score of zero: Gestational age matters (on behalf of the Canadian Neonatal Network, CNN). E-PAS 2017:1562.4.
5) El-Naggar W, McMillan D, Afifi J, Singh B, daSilva O, Lee SK, Shah PS. Epidemiology of Thrombosis in Neonatal Intensive Care Units. E-PAS 2017:2720.1.
6) Isayama T, Reichman B, Shah P, Sjörs G, Noguchi A, Darlow B, Hakannson S, Adams M, Rusconi F, Lehtonen L, Lee S, Lui K, Vento M, Morisaki N, Kusuda S. Variations in management of patent ductus arteriosus and use of echocardiography in preterm neonates <29 weeks gestation: An international survey. E-PAS 2017:2714.4.
7) Isayama T, Kusuda S, Lehtonen L, Helenius K, Sjörs G, Hakannson S, Adams M, Bassler D, Yang J, Lee S, Shah P.The impact of the institutional-level PDA treatment rate on mortality and morbidity of very preterm infants. E-PAS 2017:2714.1.
8) Shaiba L, Lee KS, Seshia M, Fajardo C, Lee SK, Yoon E, Shah PS. Hypoxic Ischemic Encephalopathy and Cooling: The Canadian National Experience over Past 6 Years. E-PAS 2017:3846.11.
9) Xu EH, Claveau M, Yoon E, Barrington KJ, Mohammad K, Shah PS, Wintermark P. Newborns with neonatal encephalopathy treated with hypothermia across Canada: Incidence and perinatal determinants of adverse outcome (on behalf of the Canadian Neonatal Network, CNN). E-PAS 2017:3846.3.
10) Singh B, Shah PS, Afifi J, Simpson D, Dow K, Mitra S, El-Naggar W. Prophylactic Probiotics for Preterm Infants: A National Retrospective Cohort Study. E-PAS 2017:3869.5.
11) Shah P, Lehtonen L, Lee SK, Hakannson S, Vento M, Darlow BA, Adams M, Rusconi F, Lui K, Sjörs G, Bassler D, Morisaki N1, Modi N, Noguchi A, Kusuda S, Hines D, Helenius K, Isayama T, Reichman B. Variations in healthcare workforce availability, allocation and developmental supportive infrastructure for preterm neonates <29 weeks gestation: An international survey. E-PAS 2017:3834.5.
12) Shah P, Lee SK, Lehtonen L, Kusuda S, Lui K, Sjörs G, Bassler D, Hakannson S, Vento M, Darlow BA, Adams M, Rusconi F, Isayama T, Modi N, Noguchi A, Morisaki N, Helenius K, Reichman B. Variations in physical layout, available facilities and family visiting policies for preterm neonates <29 weeks gestation: An international survey. E-PAS 2017:3734.4.
13) Beltempo M, Ye XY, Afifi J, Lee SK, Shah PS, McMillan D. SNAP-II for Predicting Mortality and Morbidity in Very Preterm Infants. E-PAS 2017:4116.1.
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15) Amer R, Moddemann D, Seshia M, Alvaro R, Synnes A, Lee KS, Lee SK, Shah PS. Neurodevelopmental outcomes of preterm infants <29 weeks gestation based on location of birth in Canada. E-PAS 2017:4130.14.
16) Ediger K, Hasan SU, Synnes A, Shah J, Yang J, Shah PS, Isayama T, Creighton D, Lodha A. Maternal smoking and neurodevelopmental outcomes in preterm infants of <29 weeks gestation: A multicenter study. E-PAS 2017:4130.2.
17) Aldana-Aguirre J, Toye J, Shah PS, Yoon EW, Kumaran K. Patent Ductus Arteriosus and Small for Gestational Age Neonates: Treatment Approaches and Outcomes. E-PAS 2017:4134.1.

18) Panczuk J, Beynon C, Synnes A. Sociodemographic and health characteristics among Aboriginal mothers of preterm infants born <29 weeks gestation and infant short- and long-term outcomes in Canada. E-PAS 2017:4161.3.
19) Adams M, Darlow B, Lehtonen L, Hakansson S, Reichman B, Shah P, Helenius K, Sjörs G, Rusconi F, Lee S, Noguchi A, Morisaki N, Kusuda S, Bassler D, Vento M, San Feliciano L, Isayama T, Lui K. Variations in feeding practices and probiotics usage in preterm neonates <29 weeks gestation: An international survey. E-PAS 2017:4116.1.
20) Beltempo M, Isayama T, Vento M, Lui K, Kusuda S, Lehtonen L, Sjörs S, Adams M, Noguchi A, Reichman B, Darlow B, Morisaki N, Bassler D, Rusconi F, Lee SK, Lodha A, Modi N, Helenius K, Shah PS. Variations in respiratory management of preterm neonates <29 weeks gestation: An international survey. E-PAS 2017:4120.6.
21) Darlow B, Vento M, Lehtonen L, Hakansson S, Reichman B, Shah P, Helenius K, Sjörs G, Rusconi F, Lee S, Noguchi A, Morisaki N, Kusuda S, Bassler D, San Feliciano L, Adams M, Isayama T, Lui K. Variations in oxygen saturation targets for preterm neonates <29 weeks gestation: An international survey. E-PAS 2017:4116.5.
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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.

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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): 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:

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%	≥100cc/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/LinkClick.aspx?fileticket=krvGeUTtLck%3d&tabid=69

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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