The Canadian Neonatal Network ™

Le Réseau Néonatal Canadien ™

Annual Report 2019 Rapport Annuel

Acknowledgements

This report is based upon data collected from 32 Health Care Organizations that were members of the Canadian Neonatal Network™ during the year 2018. In addition to all the investigators and the funding agency, we would like to recognize the invaluable support of the Neonatal Intensive Care Units (NICUs) that collected this information, the support of all of the participating sites and most importantly, the dedication and hard work of the Site Investigators, NICU Medical Directors and Data Abstractors.

Structure of the CNN

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

Funding

The CNN infrastructure is funded by the Canadian Institutes of Health Research. Individual participating sites provided additional funding 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

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Participating CNN Sites and Site Investigators in 2019:

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A. Executive Summary

Inclusion summary:

This report from the Canadian Neonatal Network™ (CNN) is based on data from 32 tertiary NICU sites that contributed data in the year 2019. Admissions between January 1, 2019 and December 31, 2019 who were discharged by March 31, 2020 were included. Eleven (11) infants who were admitted in 2018 but discharged after March 31, 2019 were also included in the 2019 report. Delivery room deaths, moribund neonates, and readmissions from 2018 were excluded.

Total number of eligible admissions to participating sites (See section D.1 for analyses)	15 981
Total number of eligible individual neonates (See section D.2. for analyses)	14 868
Total number of eligible very preterm (GA <33 weeks) neonates	4 446
Total number of eligible extremely preterm (GA <29 weeks) neonates (See section D.3. for analyses)	1 718
Total number of eligible very low birth weight (BW <1500 g) neonates (See section D.3. for analyses)	2 956

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 2019, eight (8) sites were only able to contribute data from a subset of eligible neonates admitted to their NICUs due to resource limitations or challenges related to the COVID-19 pandemic. 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. Out of 32 CNN sites, 30 had maternity units in their facilities; and of those, 29 collected data on delivery room deaths in 2019.

b. The proportion of infants receiving active care in the delivery room remained similar at lower GAs:
   i. At 22 weeks' GA, 40% of all neonates received active care in the delivery room
   ii. At 23 weeks' GA, 71% of all neonates received active care in the delivery room

c. The survival rate has remained similar at lower GAs:
   i. At 22 weeks' GA, 11% of all neonates and 29% of neonates who received intensive care survived.
   ii. At 23 weeks' GA, 33% of all neonates and 46% of neonates who received intensive care survived.

d. The survival rate also remained similar at lower BWs:
   i. At 400-499g, 22% of all neonates and 38% of neonates who received intensive care survived.
   ii. At 500-599g, 50% of all neonates and 66% of neonates who received intensive care survived.

e. Among inborn neonates <29 weeks' GA at birth:
   i. 37% received a complete course of antenatal steroids within the last week prior to birth
   ii. 79% received MgSO4 for neuroprotection.
   iii. 51% received deferred cord clamping ≥30 sec
   iv. 29% were hypothermic (temperature <36.5^{0}C) on admission.
   v. 79% received feeds within the first 2 days of admission
   vi. 21% were never intubated during their stay
   vii. 38% exclusively received breast milk feeding at discharge

f. Among neonates <33 weeks that received only a single course medical treatment for PDA, rate of acetaminophen use has increased from 20% in 2018 to 29% in 2019

g. There were no late-onset fungal infections among infants >26 weeks

h. Severe ROP occurred in 10% of neonates <33 weeks' GA (6% required treatment)

i. A total of 635 neonates were diagnosed with HIE and of whom 389 received hypothermia (compared to 306 in 2018)

j. Use of prophylactic indomethacin among infants born ≤25 weeks has decreased from 31% in 2018 to 19% in 2019

B. CNN Site Characteristics

SITE	CNN data collection criteria	Level II / Step-down nursery	Level II / Step-down data included in CNN	Delivery room deaths included in CNN	ROP treatment service?	PDA surgical service?
Victoria General Hospital	All eligible admissions	y	y	y	y	y
BC Women's Hospital	All eligible admissions	y	n	y	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)*	< 33 weeks GA, HIE, CDH & gastroschisis	n	n/a	n/a	n	y
Regina General Hospital	All eligible admissions	y	y	y	n	n
Royal University Hospital	All eligible admissions except 25 which could not be completed due to COVID	n	n/a	n	n	y
Health Sciences Centre Winnipeg	<33 weeks GA, cardiac, CDH & gastroschisis	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	y	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 & HIE	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 & Rehab Centre	All eligible admissions	y	y	y	y	y
IWK Health Centre	< 33 weeks GA, HIE, CDH & gastroschisis	y	y	y	y	y
Cape Breton Regional Hospital	All eligible admissions	n	n/a	y	n	n
University of Utah Hospital	All eligible admissions	y	n	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, 2019 and December 31, 2019, and were discharged by March 31, 2020. 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. Eleven (11) infants who were admitted in 2018 but discharged after March 31, 2019 were also included in the 2019 report. Delivery room deaths, moribund neonates, and readmissions from 2018 were excluded. A total of 14 868 patients accounted for 15 981 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 15 981 eligible admissions (including readmissions) to 32 sites. 24 of these sites submitted complete data (n=13 989) on all admissions and 8 sites submitted data on a selected admission cohort (n=1 992).

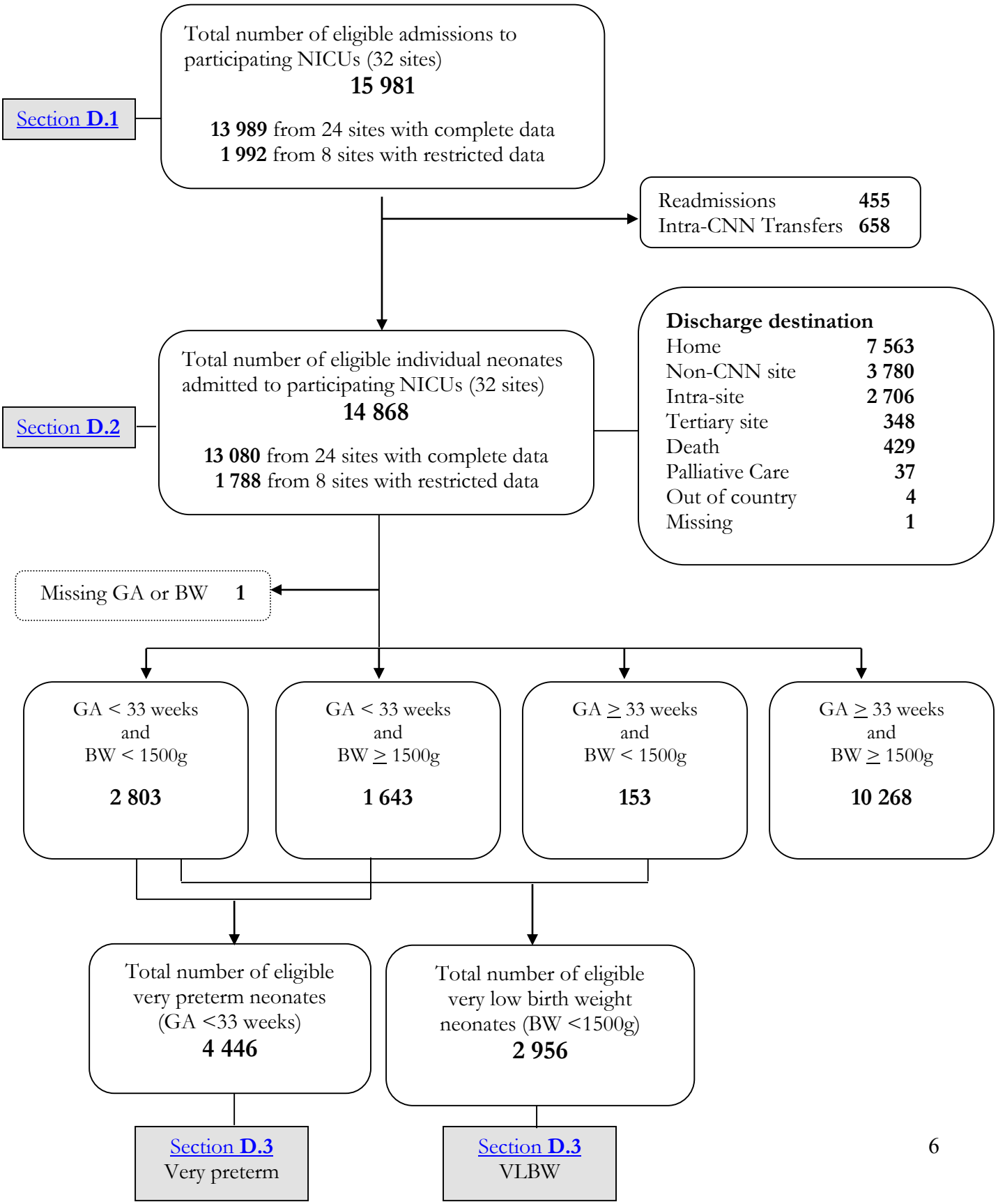
Section D.2. Analyses based on number of eligible neonates admitted to participating sites

These include data from 14 868 eligible neonates admitted to 32 sites. 24 of these sites submitted complete data (n=13 080) on all eligible admitted neonates and 8 sites submitted data on selected eligible admitted neonates (n=1 788).

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 4 446 eligible very preterm neonates and 2 956 eligible very low birth weight (VLBW) neonates.

Canadian Neonatal Network™ Database: Admissions between January 1, 2019 and December 31, 2019 who were discharged by March 31, 2020. Eleven (11) infants who were admitted in 2018 but discharged after March 31, 2019 were also included in the 2019 report. Delivery room deaths, moribund neonates, and readmissions from 2018 were excluded.

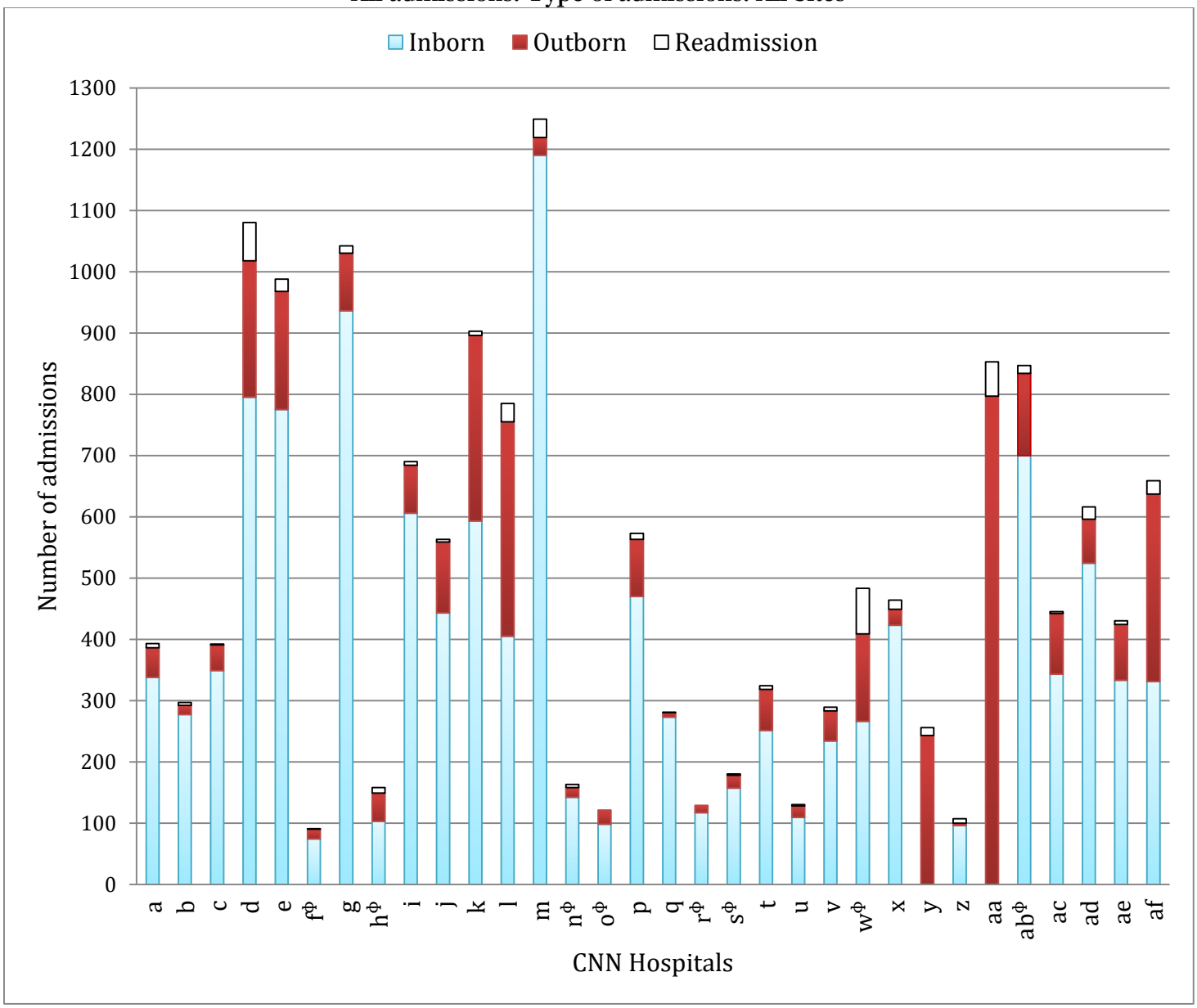


Section D.1

Analyses based on number of eligible admissions to participating sites

These include data from 15 981 eligible admissions (including readmissions) to 32 sites. 24 of these sites submitted complete data (n=13 989) on all admissions and 8 sites submitted data on a selected admission cohort (n=1 992).

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

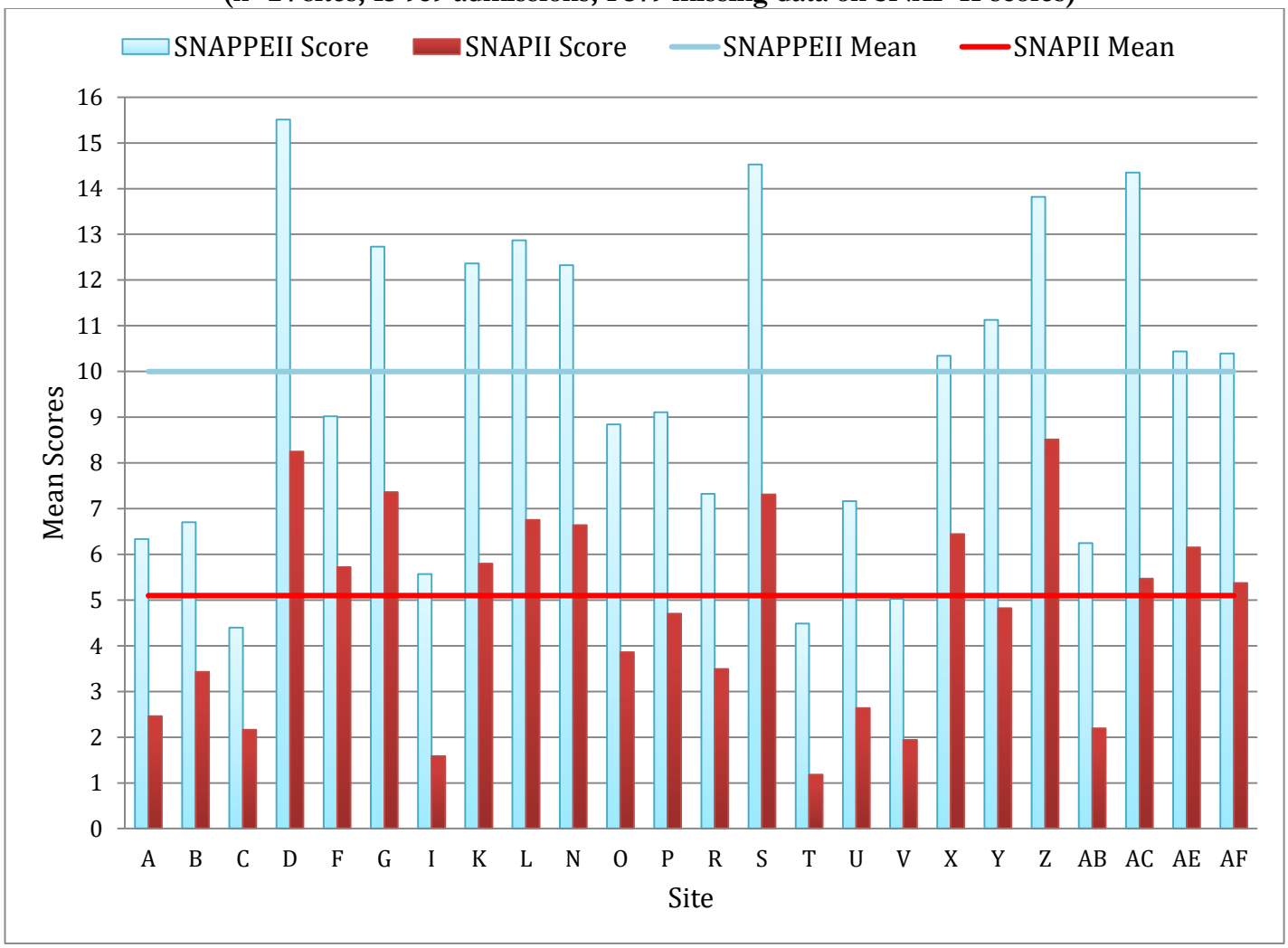
Sites		Admission Status			Total
		Inborn	Outborn	Readmission	
a	Count	338	48	7	393
	%	86.0	12.2	1.8	(100.0)
b	Count	277	15	5	297
	%	93.3	5.1	1.7	(100.0)
c	Count	349	42	1	392
	%	89.0	10.7	0.3	(100.0)
d	Count	795	223	62	1080
	%	73.6	20.7	5.7	(100.0)
e	Count	775	193	20	988
	%	78.4	19.5	2.0	(100.0)
f$^{\phi}$	Count	74	16	1	91
	%	81.3	17.6	1.1	(100.0)
g	Count	936	94	12	1042
	%	89.8	9.0	1.2	(100.0)
h$^{\phi}$	Count	103	46	9	158
	%	65.2	29.1	5.7	(100.0)
i	Count	606	78	6	690
	%	87.8	11.3	0.9	(100.0)
j	Count	443	116	4	563
	%	78.7	20.6	0.7	(100.0)
k	Count	593	303	7	903
	%	65.7	33.6	0.8	(100.0)
l	Count	405	350	30	785
	%	51.6	44.6	3.8	(100.0)
m	Count	1190	29	30	1249
	%	95.3	2.3	2.4	(100.0)
n$^{\phi}$	Count	142	16	5	163
	%	87.1	9.8	3.1	(100.0)
o$^{\phi}$	Count	98	23	0	121
	%	81.0	19.0	0.0	(100.0)
p	Count	470	93	10	573
	%	82.0	16.2	1.8	(100.0)

Sites		Admission status			Total
		Inborn	Outborn	Readmission	
q	Count	273	7	1	281
	%	97.2	2.5	0.4	(100.0)
r$^{\phi}$	Count	117	12	0	129
	%	90.7	9.3	0.0	(100.0)
s$^{\phi}$	Count	157	21	2	180
	%	87.2	11.7	1.1	(100.0)
t	Count	251	67	6	324
	%	77.5	20.7	1.9	(100.0)
u	Count	109	19	2	130
	%	83.9	14.6	1.5	(100.0)
v	Count	234	49	6	289
	%	81.0	17.0	2.1	(100.0)
w$^{\phi}$	Count	266	143	74	483
	%	55.1	29.6	15.3	(100.0)
x	Count	423	26	15	464
	%	91.2	5.6	3.2	(100.0)
y	Count	0	243	13	256
	%	0.0	94.9	5.1	(100.0)
z	Count	96	4	7	107
	%	89.7	3.7	6.5	(100.0)
aa	Count	0	797	56	853
	%	0.0	93.4	6.6	(100.0)
ab$^{\phi}$	Count	700	134	13	847
	%	82.6	15.8	1.5	(100.0)
ac	Count	343	99	3	445
	%	77.1	22.3	0.7	(100.0)
ad	Count	524	72	20	616
	%	85.1	11.7	3.3	(100.0)
ae	Count	333	91	6	430
	%	77.4	21.2	1.4	(100.0)
af	Count	331	306	22	659
	%	50.2	46.4	3.3	(100.0)

Total number of admissions:	15 981
Inborn:	11 751 (73.5%)
Outborn:	3 775 (23.6%)
Readmission:	455 (2.9%)
Missing data on inborn/outborn status:	0 (0.0%)

COMMENTS: These analyses include 15 981 admissions to participating sites across the CNN during the period of January 1, 2019 to December 31, 2019. After adjusting for readmission, 14 868 neonates are represented. **Twenty-four sites collected data on all eligible admissions whereas eight 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, 13 989 admissions, 1 379 missing data on SNAP-II scores)



Data collection status	Number of sites	Score	Mean	Std Dev	Q1	Median	Q3
Complete	24	SNAPIIPE	10.0	0.1	0	0	18
		SNAPII	5.1	0.1	0	0	7
Restricted	8	SNAPIIPE	14.1	0.4	0	7	21
		SNAPII	6.5	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	6.3	2.5	**Q**$^{\phi}$	Mean	16.5	8.0
	SEM	0.6	0.3		SEM	1.6	1.0
B	Mean	6.7	3.4	**R**	Mean	7.3	3.5
	SEM	0.7	0.4		SEM	0.6	0.3
C	Mean	4.4	2.2	**S**	Mean	14.5	7.3
	SEM	0.4	0.2		SEM	1.1	0.7
D	Mean	15.5	8.2	**T**	Mean	4.5	1.2
	SEM	0.7	0.4		SEM	0.5	0.2
E$^{\phi}$	Mean	17.5	7.6	**U**	Mean	7.2	2.6
	SEM	1.8	1.1		SEM	0.4	0.2
F	Mean	9.0	5.7	**V**	Mean	5.0	1.9
	SEM	0.9	0.7		SEM	0.6	0.3
G	Mean	12.7	7.4	**W**$^{\phi}$	Mean	19.2	9.7
	SEM	1.3	0.8		SEM	1.6	0.9
H$^{\phi}$	Mean	7.2	3.0	**X**	Mean	10.3	6.4
	SEM	0.4	0.3		SEM	0.5	0.3
I	Mean	5.6	1.6	**Y**	Mean	11.1	4.8
	SEM	0.9	0.4		SEM	0.5	0.3
J$^{\phi}$	Mean	17.1	9.3	**Z**	Mean	13.8	8.5
	SEM	2.3	1.4		SEM	0.5	0.3
K	Mean	12.4	5.8	**AA**$^{\phi}$	Mean	18.8	9.6
	SEM	0.6	0.4		SEM	1.5	0.9
L	Mean	12.9	6.8	**AB**	Mean	6.2	2.2
	SEM	0.8	0.5		SEM	0.5	0.3
M$^{\phi}$	Mean	12.8	4.8	**AC**	Mean	14.4	5.5
	SEM	1.4	0.7		SEM	3.6	2.1
N	Mean	12.3	6.6	**AD**$^{\phi}$	Mean	20.5	9.4
	SEM	0.7	0.5		SEM	1.0	0.6
O	Mean	8.8	3.9	**AE**	Mean	10.4	6.2
	SEM	0.7	0.4		SEM	0.5	0.3
P	Mean	9.1	4.7	**AF**	Mean	10.4	5.4
	SEM	0.8	0.5		SEM	0.8	0.5

COMMENTS: These analyses include 15 981 admissions (1 392 missing data on SNAP scores) to participating all sites during the year 2019. Adjusting for readmission, these analyses represent 14 868 Neonates. **Twenty-four sites collected data on all eligible admissions whereas eight sites (marked by $^{\phi}$) collected data on a selected cohort of eligible admissions only.** These eight sites were not included in the Presentation #2 bar graph but were included in the Presentation #2 Table (above).

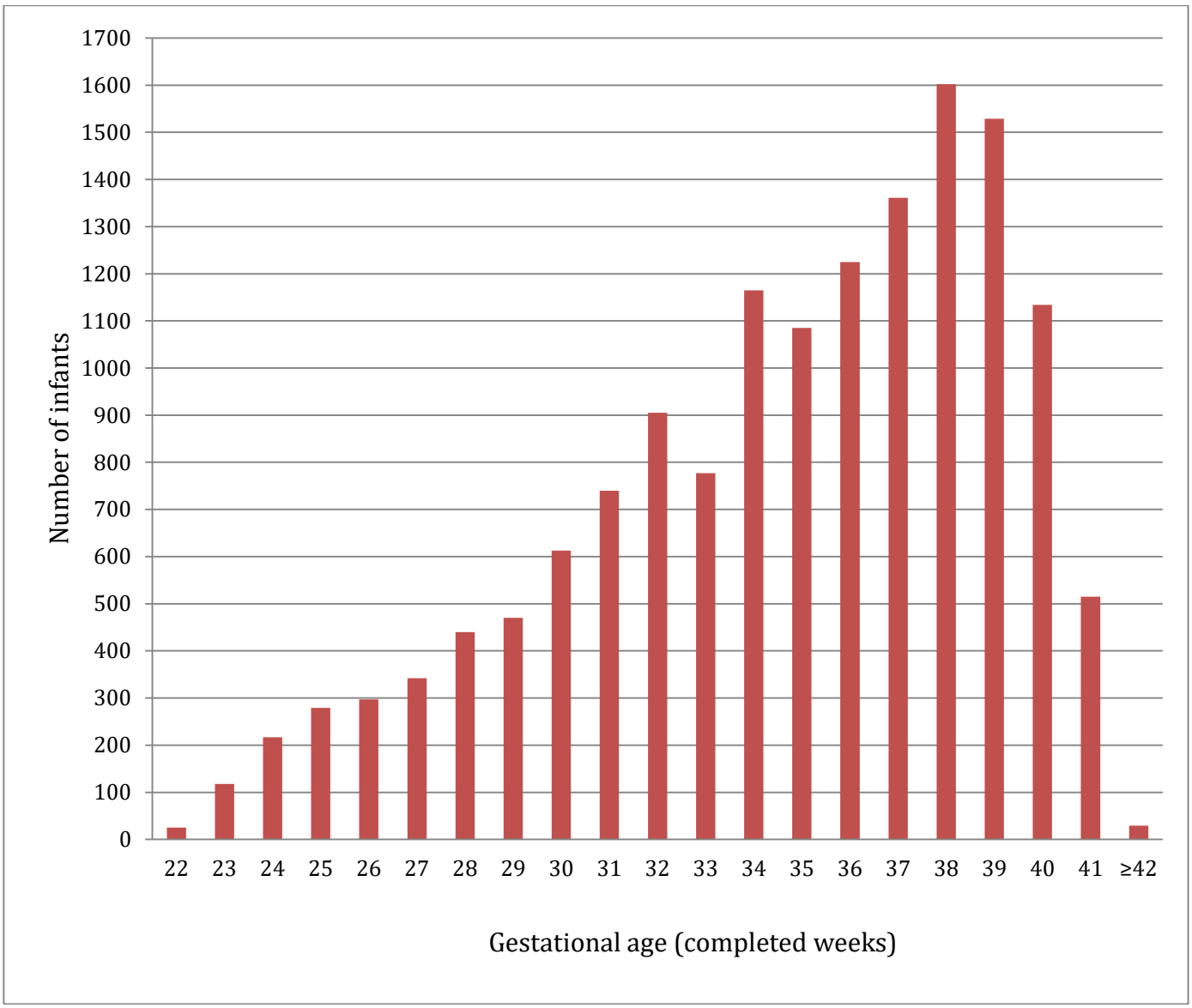
$^{\phi}$ Please note that the criteria for entering neonates in the CNN dataset are not the same for these eight sites and thus, the scores are not comparable with each other or with centers contributing complete data. These eight sites may have included neonates at lower GAs and/or lower BWs; thus,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

Section D.2

Analyses based on number of eligible neonates admitted to participating sites

These include data from 14 868 eligible neonates admitted to 32 sites. 24 of these sites submitted complete data (n=12 903) on all eligible admitted neonates and 8 sites submitted data on a selected cohort of eligible admitted neonates (n=1 965).

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

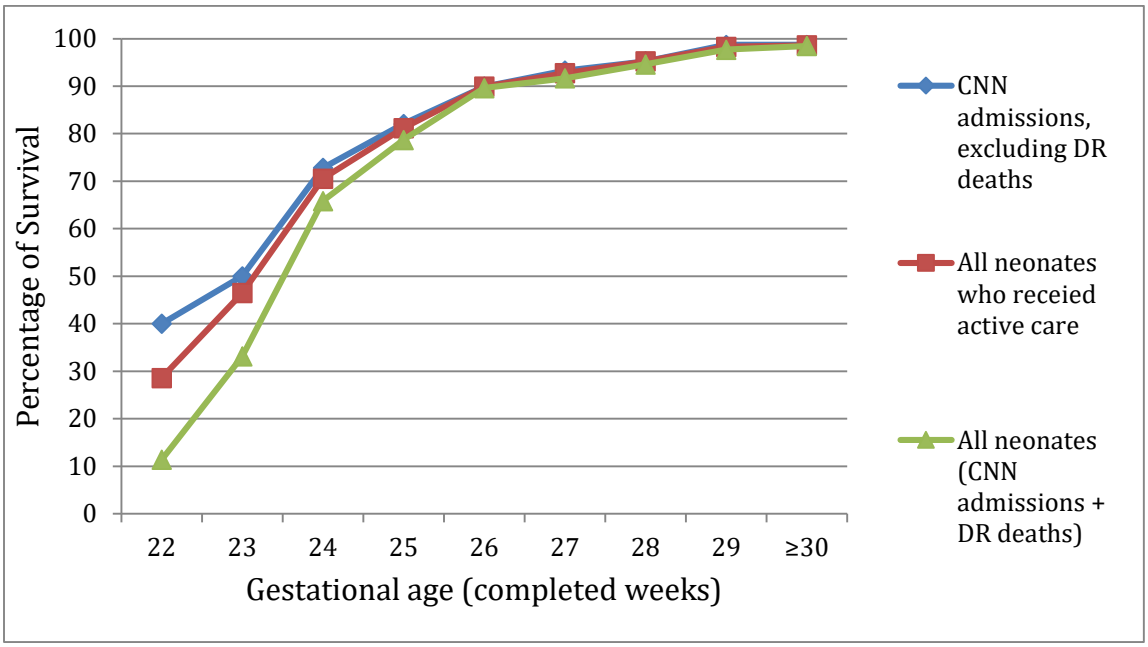


Presentation #3 (continued)
Gestational age distribution: All sites and all admitted neonates

GA in completed weeks at birth	Frequency	Percent	Cumulative percent
22	25	0.2	0.2
23	118	0.8	1.0
24	217	1.5	2.4
25	279	1.9	4.3
26	297	2.0	6.3
27	342	2.3	8.6
28	440	3.0	11.6
29	470	3.2	14.7
30	613	4.1	18.8
31	740	5.0	23.8
32	905	6.1	29.9
33	777	5.2	35.1
34	1 165	7.8	43.0
35	1 085	7.3	50.3
36	1 225	8.2	58.5
37	1 361	9.2	67.7
38	1 602	10.8	78.4
39	1 529	10.3	88.7
40	1 134	7.6	96.3
41	515	3.5	99.8
≥42	29	0.2	100.0
Total included	14 686	100.0	
Total # of missing GA	0		
Total # of neonates	14 686		

COMMENTS: The GA distribution of neonates is shown here. Term babies (≥37 weeks) represent 41.5% of the total number of neonates. Twenty-four sites collected data on all eligible admissions whereas eight sites collected data on a selected cohort of eligible admissions.

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

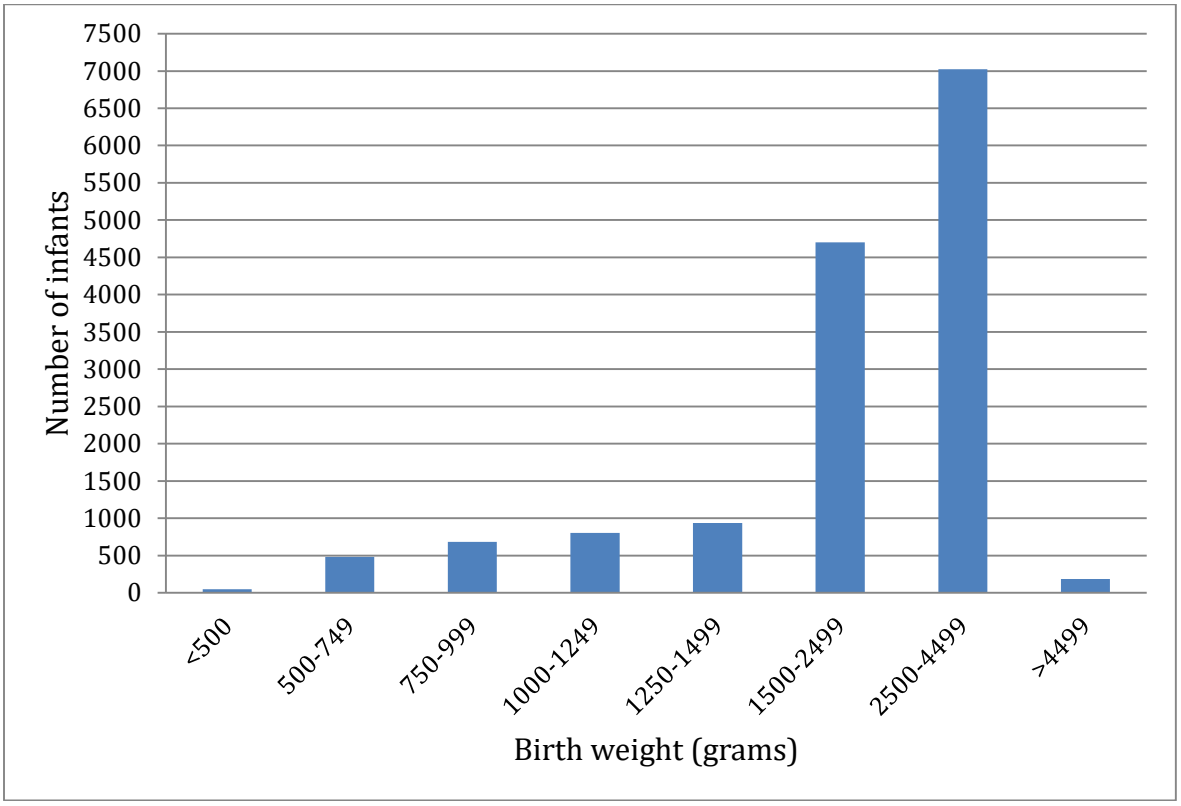


CNN admissions, excluding delivery room deaths					Delivery room deaths*		Total CNN admissions including delivery room deaths*				
GA (completed weeks)	**#of neonates**	**#of survivors**	**Percent survival among CNN admissions, excluding DR deaths**	**#of neonates who received comfort care**	**Palliative care**	**Active care ******	**Total**	**#of neonates who received comfort care**	**# of neonates who received active care****	**Percent survival among those who received active care**	**Percent survival among all neonates (CNN admissions + DR deaths)**
	a	*b*	*b/a*	*c*	*d*	*e*	*a+d+e*	*c+d*	*(a-c) +e*	*b/ (a-c)+e*	*b/(a+d+e)*
22	25	10	40	0	53	10	88	53	35	29	11
23	118	59	50	1	50	10	178	51	127	46	33
24	217	158	73	0	16	7	240	16	224	71	66
25	279	229	82	0	9	3	291	9	282	81	79
26	297	267	90	0	1	0	298	1	297	90	90
27	342	319	93	0	4	2	348	4	344	93	92
28	440	419	95	0	3	0	443	3	440	95	95
29	470	464	99	0	3	2	475	3	472	98	98
≥30	12 680	12 514	99	2	15	13	12 708	17	12 691	99	98
Total included	14 868	14 439	97	3	154	47	15 069	157	14 912	97	96
Missing GA	0				3	1	4	3	1		
Total	**14 868**				**157**	**48**	**15 073**	**160**	**14 913**		

***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. Only one CNN site did not contribute delivery room death data.

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

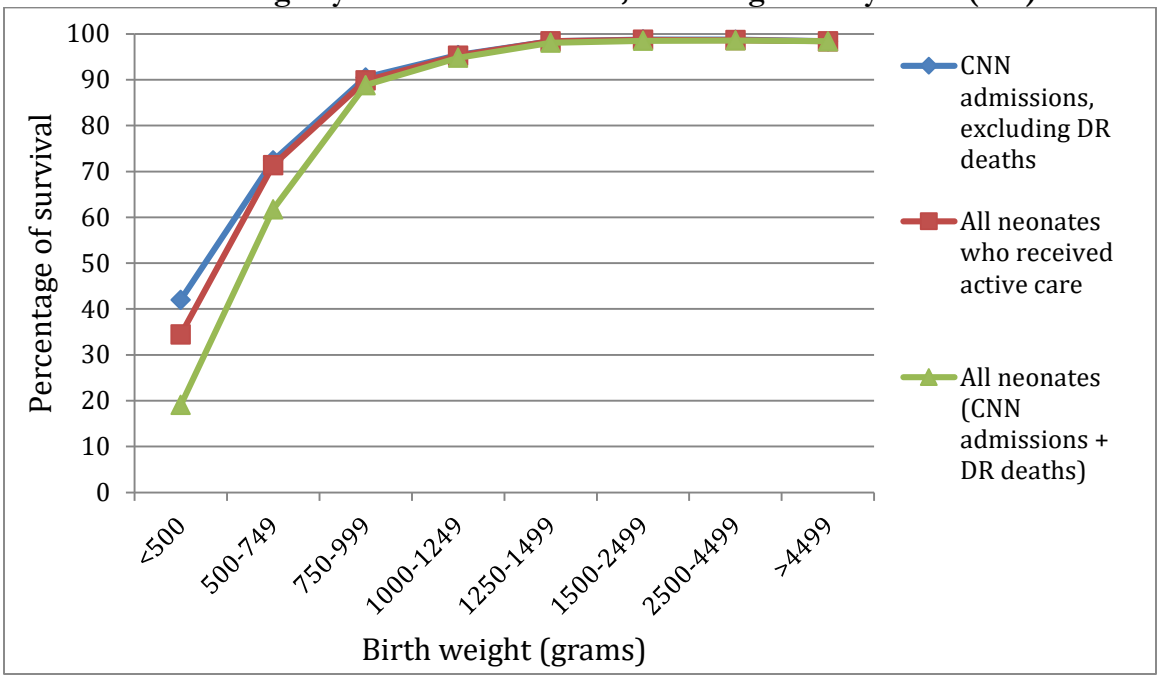


BW (grams)	Frequency	Percent from total number of neonates	Cumulative percent
<500	50	0.3	0.3
500-749	482	3.2	3.6
750-999	685	4.6	8.2
1000-1249	802	5.4	13.6
1250-1499	937	6.3	19.9
1500-2499	4701	31.6	51.5
2500-4499	7023	47.2	98.7
>4499	187	1.3	100.0
Total included	14 867	100.0	
Missing BW	1		
Total # of neonates	14 868		

COMMENTS: The BW distribution of neonates admitted to the CNN sites. Eighty percent weighed more than 1 500g at birth and 48.5% weighed more than 2 500g. Twenty-four sites collected data on all admissions whereas eight 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

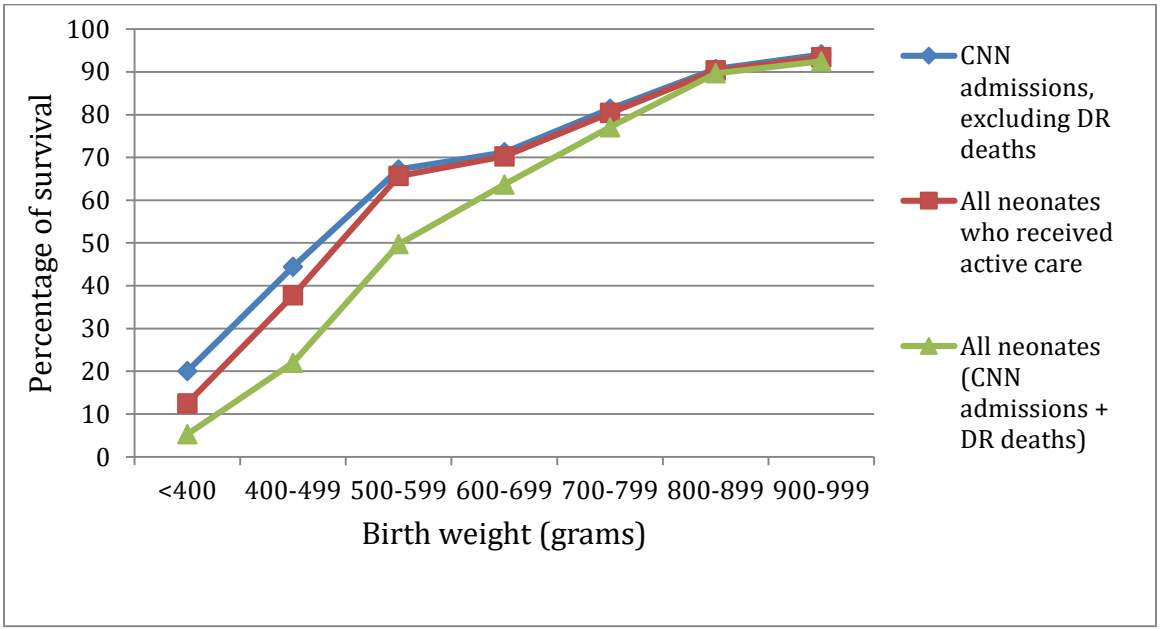


CNN Admissions, excluding delivery room deaths					Delivery room deaths*		Total CNN admissions + Delivery room deaths*				
BW (grams)	**#of neonates**	**# of survivors**	**Percent survival of CNN admissions, excluding DR deaths**	**# of neonates who received palliative care**	**Palliative care**	**Active 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	50	21	42	0	49	11	110	49	61	34	19
500-749	482	349	72	1	75	8	565	76	489	71	62
750-999	685	620	91	0	8	5	698	8	690	90	89
1000-1249	802	765	95	0	4	1	807	4	803	95	95
1250-1499	937	922	98	1	2	1	940	3	937	98	98
1500-2499	4 701	4 643	99	1	9	4	4 714	10	4 704	99	98
2500-4499	7 023	6 934	99	0	4	7	7 034	4	7 030	99	99
>4499	187	184	98	0	0	0	187	0	187	98	98
Total neonates included	14 867	14 438	97	3	151	37	15 055	154	14 901	97	96
Missing BW	1				6	11	18	6	12		
Total # of neonates	**14 868**				**157**	**48**	**15 073**	**160**	**14 913**		

***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. Only one CNN site did not contribute delivery room death data.

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



CNN Admissions, excluding delivery room deaths					Delivery room deaths*		Total CNN admissions + Delivery room deaths*				
BW (grams)	**Number of neonates**	**Number of survivors**	**Percent survival of CNN admissions,** excluding DR deaths	**Number of neonates who received palliative care**	**Palliative care**	**Active care ****	**Total**	**Number of neonates who received palliative care**	**Number of neonates who received active care****	**Percent survival of neonates who received active care**	**Percent survival of all neonates (CNN admissions + DR deaths)**
	a	*b*	*b/a*	*c*	*d*	*e*	*a+d+e*	*c+d*	*(a-c) +e*	*b/ (a-c)+e*	*b/(a+d+e)*
<400	5	1	20	0	11	3	19	11	8	13	5
400-499	45	20	44	0	38	8	91	38	53	38	22
500-599	131	88	67	1	42	4	177	43	134	66	50
600-699	229	163	71	0	24	3	256	24	232	70	64
700-799	252	205	81	0	11	3	266	11	255	80	77
800-899	268	243	91	0	2	1	271	2	269	90	90
900-999	287	270	94	0	3	2	292	3	289	93	92
Total included	**1 217**	**990**	**84**	**1**	**131**	**24**	**1 372**	**132**	**1 240**	**80**	**72**

***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. Only one CNN site did not contribute delivery room death data.

Presentation #7a
Maternal and peripartum characteristics: All neonates

Characteristics				**GA at birth (completed weeks)**					
		Missing/ Unknown		**<26**	**26-28**	**29-32**	**33 - 36**	**≥37**	**Total**
Total				**639**	**1079**	**2728**	**4252**	**6170**	**14868**
No prenatal care		470	N	27	48	120	68	65	328
			%	4.3	4.6	4.5	1.7	1.1	2.3
Marijuana/cannabis		155	N	32	76	163	296	331	898
			%	5.1	7.1	6.0	7.0	5.4	6.1
Smoking		57	N	88	156	403	574	715	1936
			%	13.8	14.6	14.8	13.5	11.6	13.1
Maternal hypertension		821	N	80	212	636	947	659	2534
			%	12.9	20.2	24.0	23.3	11.7	18.0
Maternal diabetes		923	N	66	157	520	818	1038	2599
			%	10.9	15.2	19.8	20.2	18.4	18.6
Assisted pregnancy (ART)			N	96	143	309	413	242	1203
			%	15.0	13.3	11.3	9.7	3.9	8.1
Multiples		1	N	186	260	862	1098	150	2556
			%	29.1	24.1	31.6	25.8	2.4	17.2
$MgSO_4$ for neuroprotection		1100	N	457	792	1675	565	49	3538
			%	74.0	76.7	64.8	14.1	0.9	25.7
Antenatal steroids	None	354	N	68	104	293	2343	5946	8754
			%	10.8	9.8	11.0	56.6	98.8	60.3
	Partial		N	215	329	731	451	5	1731
			%	34.2	30.9	27.5	10.9	0.1	11.9
	Complete		N	346	631	1634	1348	70	4029
			%	55.0	59.3	61.5	32.5	1.2	27.8
Mode of birth	Vaginal	15	N	282	342	926	1867	3547	6964
			%	44.1	31.7	34.0	44.0	57.6	46.9
	C/S		N	357	736	1801	2381	2614	7889
			%	55.9	68.3	66.0	56.1	42.4	53.1
Presentation	Vertex	1294	N	325	585	1732	3178	4962	10782
			%	53.7	56.9	67.9	80.2	91.5	79.4
	Breech		N	237	391	709	674	363	2374
			%	39.2	38.0	27.8	17.0	6.7	17.5
	Other		N	43	53	109	113	100	418
			%	7.1	5.2	4.3	2.9	1.8	3.1
Rupture of membranes	<24 h	1153	N	421	743	2001	3336	5060	11561
			%	69.5	72.7	76.6	84.2	91.8	84.3
	24h to 1wk		N	99	136	290	393	360	1278
			%	16.3	13.3	11.1	9.9	6.5	9.3
	>1 wk		N	86	143	320	233	94	876
			%	14.2	14.0	12.3	5.9	1.7	6.4

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				**639**	**1079**	**2728**	**4252**	**6170**	**14868**
Chorioamnionitis*		1575	N	272	294	439	304	542	1851
			%	45.3	29.0	17.1	7.8	10.4	13.9
Deferred cord clamping	≤ 29 sec	2799	N	33	64	115	99	128	439
			%	5.6	6.4	4.7	2.8	2.9	3.6
	30-59 sec		N	101	179	481	610	599	1970
			%	17.1	18.0	19.6	16.9	13.5	16.3
	≥60 sec		N	139	364	1045	1420	1383	4351
			%	23.6	36.6	42.6	39.4	31.2	36.1
	Yes, but timing unknown		N	9	14	70	219	281	593
			%	1.5	1.4	2.9	6.1	6.3	4.9
	No		N	308	375	742	1253	2038	4716
			%	52.2	37.7	30.3	34.8	46.0	39.1

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

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

			No ANCS	Complete course within last week prior to birth *	Complete course more than 1 week before birth **	Complete course but timing unknown ***	Partial course within last 24 hours ****
	Weeks						
Inborn	**22-28**	N	82	547	398	15	396
		%	5.6	37.3	27.1	1.0	27.0
	29-32	N	165	736	804	37	584
		%	6.9	30.9	33.7	1.6	24.5
Outborn	**22-28**	N	88	3	10	4	121
		%	35.5	1.2	4.0	1.6	48.8
	29-32	N	128	31	23	3	104
		%	37.4	9.1	6.7	0.9	30.4

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

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

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

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

Note: Data on "Partial course >24 hours ago" and "Partial course but timing unknown" are collected in the database but they are not reported in this table.

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

Singleton

			Deferred Cord clamping timing						Immediate Cord clamping	Unknown timing
			0-15 seconds	16-30 seconds	31-60 seconds	61-75 seconds	>75 seconds	Duration unknown		
	Weeks									
Inborn	**22-28**	N	42	120	426	13	18	16	416	27
		%	3.9	11.1	39.5	1.2	1.7	1.5	38.6	2.5
	29-32	N	23	200	809	14	33	40	407	61
		%	1.5	12.6	51.0	0.9	2.1	2.5	25.7	3.8
Outborn	**22-28**	N	2	7	37	0	2	3	77	65
		%	1.0	3.6	19.2	0.0	1.0	1.6	39.9	33.7
	29-32	N	3	20	55	0	2	9	56	134
		%	1.1	7.2	19.7	0.0	0.7	3.2	20.1	48.0

First twin

			Deferred Cord clamping timing						Immediate Cord clamping	Unknown timing
			0-15 seconds	16-30 seconds	31-60 seconds	61-75 seconds	>75 seconds	Duration unknown		
	Weeks									
Inborn	**22-28**	N	3	25	62	1	2	1	78	11
		%	1.6	13.7	33.9	0.6	1.1	0.6	42.6	6.0
	29-32	N	4	39	161	4	4	14	110	23
		%	1.1	10.9	44.9	1.1	1.1	3.9	30.6	6.4
Outborn	**22-28**	N	0	0	4	0	1	0	15	6
		%	0.0	0.0	15.4	0.0	3.9	0.0	57.7	23.1
	29-32	N	0	1	4	0	0	0	8	17
		%	0.0	3.3	13.3	0.0	0.0	0.0	26.7	56.7

Second twin

			Deferred Cord clamping timing						Immediate Cord clamping	Unknown timing
			0-15 seconds	16-30 seconds	31-60 seconds	61-75 seconds	>75 seconds	Duration unknown		
	Weeks									
Inborn	**22-28**	N	5	26	63	1	2	3	64	10
		%	2.9	14.9	36.2	0.6	1.2	1.7	36.8	5.8
	29-32	N	6	33	172	1	2	7	111	20
		%	1.7	9.4	48.9	0.3	0.6	2.0	31.5	5.7
Outborn	**22-28**	N	0	0	4	0	0	0	14	11
		%	0.0	0.0	13.8	0.0	0.0	0.0	48.3	37.9
	29-32	N	1	2	4	0	0	0	12	14
		%	3.0	6.1	12.1	0.0	0.0	0.0	36.4	42.4

Presentation #8a
Resuscitation details: GA < 31 weeks

Action taken			**GA at birth (completed weeks)**								
			≤23	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**Total**
Total			**143**	**217**	**279**	**297**	**342**	**440**	**470**	**613**	**2801**
No resuscitation needed/provided		N	0	0	0	0	1	5	7	29	42
		%	0.0	0.0	0.0	0.0	0.3	1.1	1.5	4.7	1.5
CPAP		N	24	66	134	190	251	339	378	463	1845
		%	16.9	30.4	48.0	64.0	73.4	77.1	80.4	75.5	65.9
PPV via mask		N	124	184	233	221	251	324	302	331	1970
		%	87.3	84.8	83.5	74.4	73.4	73.6	64.3	54.0	70.4
PPV via ETT		N	125	161	171	148	128	132	92	89	1046
		%	88.0	74.2	61.3	49.8	37.4	30.0	19.6	14.5	37.4
Chest compression		N	9	14	18	12	13	13	4	13	96
		%	6.3	6.5	6.5	4.0	3.8	3.0	0.9	2.1	3.4
Epinephrine		N	7	10	9	9	9	8	2	6	60
		%	4.9	4.6	3.2	3.0	2.6	1.8	0.4	1.0	2.1
Unknown		N	0	0	1	1	0	0	1	4	7
		%	0.0	0.0	0.4	0.3	0.0	0.0	0.2	0.7	0.3
Any resuscitation provided*		N	140	215	278	295	340	435	454	556	2713
		%	98.6	99.1	99.6	99.3	99.4	98.9	96.6	90.7	96.9
Initial gas	Air	N	20	34	42	54	64	108	126	207	655
		%	14.0	15.7	15.1	18.2	18.7	24.6	26.8	33.8	23.4
	22-40% O_2	N	73	109	139	137	185	211	239	221	1314
		%	51.1	50.2	49.8	46.1	54.1	48.0	50.9	36.1	46.9
	41-70% O_2	N	3	9	26	33	29	38	27	38	203
		%	2.1	4.2	9.3	11.1	8.5	8.6	5.7	6.2	7.2
	71-99% O_2	N	1	3	7	8	4	10	7	6	46
		%	0.7	1.4	2.5	2.7	1.2	2.3	1.5	1.0	1.6
	100% O_2	N	34	35	40	33	31	30	25	40	268
		%	23.8	16.1	14.3	11.1	9.1	6.8	5.3	6.5	9.6
	Unknown/ Missing	N	12	27	25	32	29	43	46	101	315
		%	8.4	12.4	9.0	10.8	8.5	9.8	9.8	16.5	11.2
Maximum O_2 conc. during resus.	21%	N	0	2	1	2	0	7	11	14	37
		%	0.0	0.9	0.4	0.7	0.0	1.6	2.3	2.3	1.3
	22-40%	N	7	15	27	49	56	98	143	160	555
		%	4.9	6.9	9.7	16.5	16.4	22.3	30.4	26.1	19.8
	41-70%	N	7	22	42	64	73	107	92	127	534
		%	4.9	10.1	15.1	21.6	21.4	24.3	19.6	20.7	19.1
	>70%	N	119	163	177	154	161	172	153	155	1254
		%	83.2	75.1	63.4	51.9	47.1	39.1	32.6	25.3	44.8
	Missing	N	10	15	32	28	52	56	71	157	421
		%	7.0	6.9	11.5	9.4	15.2	12.7	15.1	25.6	15.0

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

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

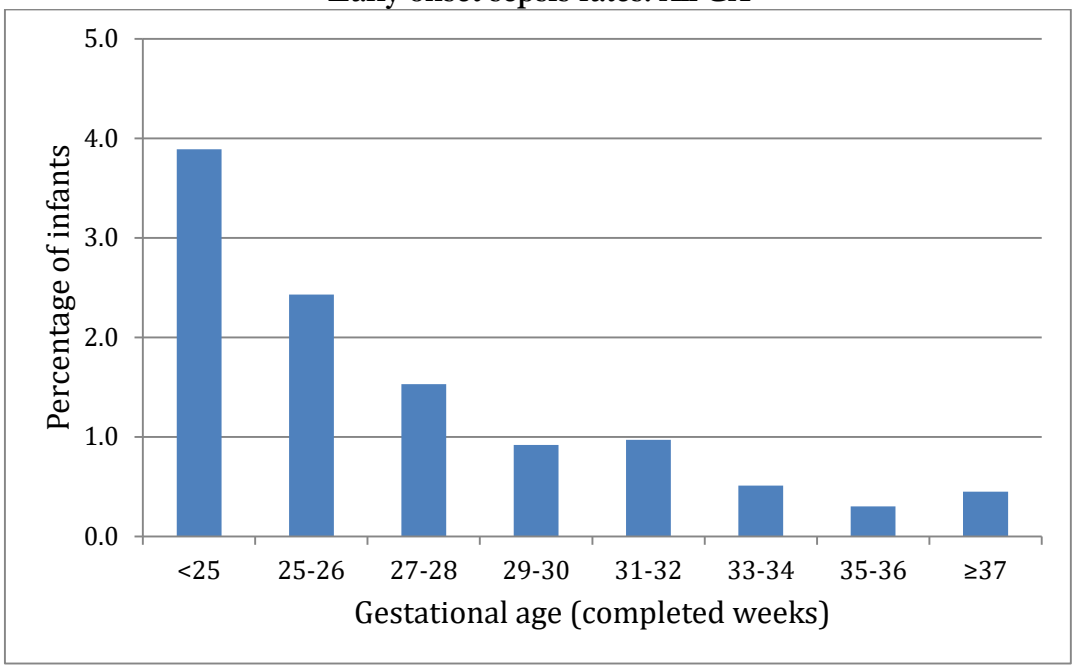
Presentation #8b
Resuscitation details: GA ≥ 31 weeks

Action taken			**GA at birth (completed weeks)**							
			31	**32**	**33**	**34**	**35**	**36**	**≥37**	**Total**
Total			**740**	**905**	**777**	**1165**	**1085**	**1225**	**6170**	**12067**
No resuscitation needed / provided		N	52	109	185	366	439	494	2318	3963
		%	7.0	12.0	23.8	31.4	40.5	40.3	37.6	32.8
CPAP		N	536	587	375	494	383	389	1959	4723
		%	72.4	64.9	48.3	42.4	35.3	31.8	31.8	39.1
PPV via mask		N	384	366	255	297	270	283	1769	3624
		%	51.9	40.4	32.8	25.5	24.9	23.1	28.7	30.0
PPV via ETT		N	70	67	50	43	50	57	414	751
		%	9.5	7.4	6.4	3.7	4.6	4.7	6.7	6.2
Chest compression		N	12	10	10	7	8	21	153	221
		%	1.6	1.1	1.3	0.6	0.7	1.7	2.5	1.8
Epinephrine		N	6	4	2	2	4	5	62	85
		%	0.8	0.4	0.3	0.2	0.4	0.4	1.0	0.7
Unknown		N	2	4	6	6	2	9	78	107
		%	0.3	0.4	0.8	0.5	0.2	0.7	1.3	0.9
Any resuscitation provided*		N	638	689	465	573	477	513	2777	6132
		%	86.2	76.1	59.9	49.2	44.0	41.9	45.0	50.8
Initial gas	Air	N	259	308	203	270	235	272	1319	2866
		%	35.0	34.0	26.1	23.2	21.7	22.2	21.4	23.8
	22-40% O_2	N	260	248	156	203	124	123	536	1650
		%	35.1	27.4	20.1	17.4	11.4	10.0	8.7	13.7
	41-70% O_2	N	45	43	31	31	27	23	131	331
		%	6.1	4.8	4.0	2.7	2.5	1.9	2.1	2.7
	71-99% O_2	N	7	8	1	1	6	3	32	58
		%	1.0	0.9	0.1	0.1	0.6	0.2	0.5	0.5
	100% O_2	N	31	38	41	48	51	46	343	598
		%	4.2	4.2	5.3	4.1	4.7	3.8	5.6	5.0
	Unknown/ Missing	N	138	260	345	612	642	758	3809	6564
		%	18.7	28.7	44.4	52.5	59.2	61.9	61.7	54.4
Maximum O_2 conc. during resus	21%	N	30	48	38	62	42	61	317	598
		%	4.1	5.3	4.9	5.3	3.9	5.0	5.1	5.0
	22-40%	N	228	232	133	197	143	178	673	1784
		%	30.8	25.6	17.1	16.9	13.2	14.5	10.9	14.8
	41-70%	N	131	140	88	108	80	65	343	955
		%	17.7	15.5	11.3	9.3	7.4	5.3	5.6	7.9
	>70%	N	172	154	119	134	123	136	906	1744
		%	23.2	17.0	15.3	11.5	11.3	11.1	14.7	14.5
	Missing	N	179	331	399	664	697	785	3931	6986
		%	24.2	36.6	51.4	57.0	64.2	64.1	63.7	57.9

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

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

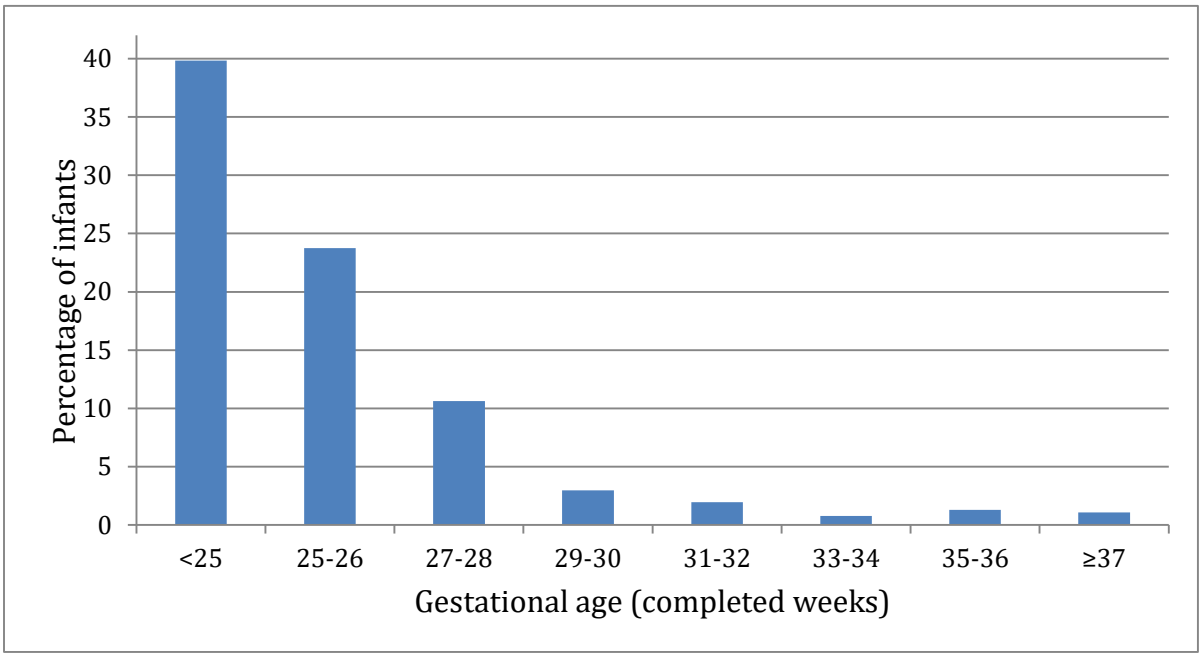
Presentation #9
Early onset sepsis rates: All GA



GA at birth (completed weeks)	Total number of neonates	No. of neonates with infection	% of neonates with infection	Total number of organisms	Organism		
					E. Coli	GBS	Others
<25	360	14	3.9	15	5	3	7
25-26	576	14	2.4	14	6	3	5
27-28	782	12	1.5	12	8	1	3
29-30	1 083	10	0.9	10	5	2	3
31-32	1 645	16	1.0	16	12	2	2
33-34	1 942	10	0.5	10	4	2	4
35-36	2 310	7	0.3	7	3	1	3
≥37	6 170	28	0.5	29	6	7	16
Total neonates included	**14 868**	**111**	**0.7**	**113**	**49**	**21**	**43**
Missing	0						
Total # of neonates	**14 868**						

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=7), Staph aureus (n=7), Enterococci (n=4), Klebsiella (n=4), Strep pneumoniae (n=4). 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.

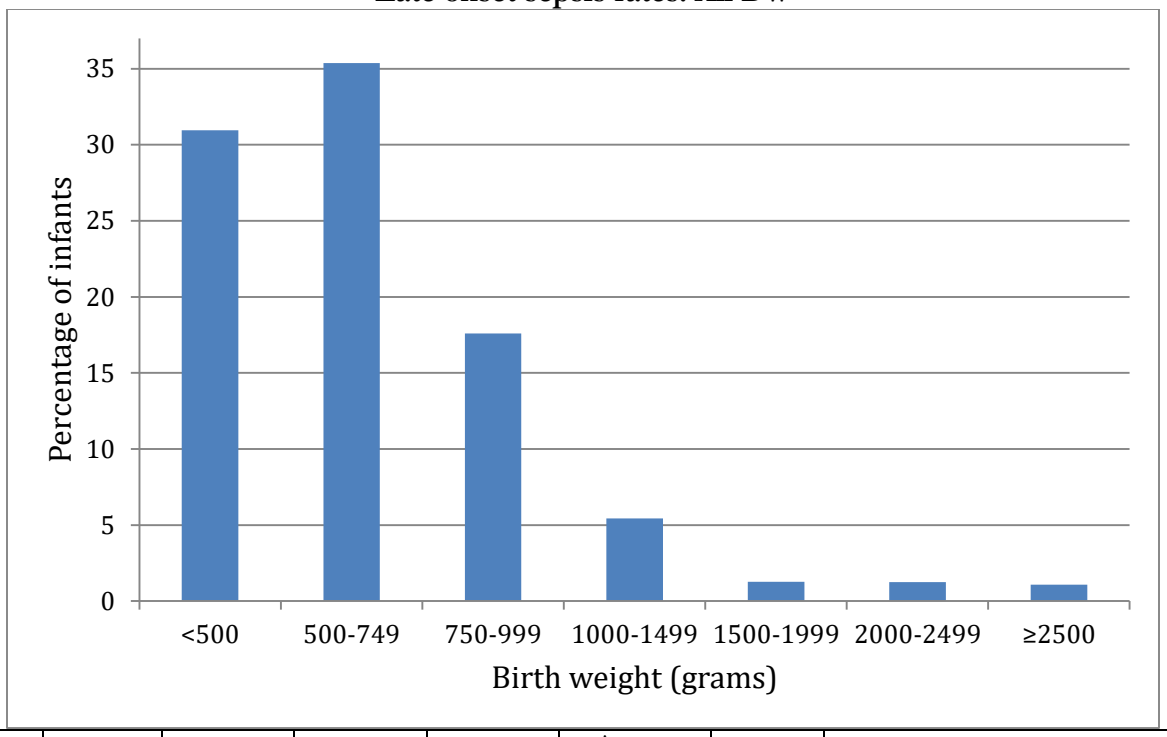
Presentation #10
Late onset sepsis rates: All GA



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	360	26	334	133	34	40	191	57	24	38	8	12	52
25-26	576	12	564	134	27	24	178	61	20	41	5	5	46
27-28	782	11	771	82	7	11	92	34	16	24	0	1	17
29-30	1 083	3	1 080	32	5	3	37	12	6	10	0	0	9
31-32	1 645	9	1 636	32	2	2	35	18	1	6	0	3	7
33-34	1 942	6	1 936	15	3	1	21	10	1	3	0	1	6
35-36	2 310	7	2 303	30	2	1	32	8	11	4	0	3	6
≥37	6 170	17	6 153	67	6	1	74	31	8	16	0	5	14
Total included	**14 868**	**91**	**14 777**	**525**	**86**	**4**	**660**	**231**	**87**	**142**	**13**	**30**	**157**
Missing	0												
Total # of neonates	**14 868**												

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: GBS (n=34), Klebsiella (n=30), Enterococci (n=24), Enterobacter (n=19), Acinetobacter (n=6). Virus category includes Cytomegalovirus (n=20) and Enterovirus (n=10).

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	50	8	42	13	3	31	19	5	3	2	1	2	6
500-749	482	24	458	162	33	35	218	71	27	51	7	10	52
750-999	685	9	676	119	25	18	159	55	18	32	5	5	44
1000-1499	1 739	11	1 728	94	11	5	108	41	16	27	0	4	20
1500-1999	2 355	8	2 347	30	5	1	35	9	6	7	0	2	11
2000-2499	2 346	8	2 338	29	3	1	35	17	4	6	0	1	7
≥2500	7 210	23	7 187	77	6	1	85	33	13	17	0	6	16
Total included	**14 867**	**91**	**14 776**	**524**	**86**	**4**	**659**	**231**	**87**	**142**	**13**	**30**	**156**
Missing (BW)	1												
Total # of neonates	**14 867**												

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: GBS (n=34), Klebsiella (n=30), Enterococci (n=24), Enterobacter (n=19), Acinetobacter (n=6). Virus category includes Cytomegalovirus (n=20) and Enterovirus (n=10).

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				639	1079	1083	1645	4252	6170	14868
Prophylactic	Indomethacin	2	N	120	60	4	1	0	0	185
			%	18.8	5.6	0.4	0.1	0.0	0.0	1.2
	Probiotics	2	N	401	737	720	869	404	26	3157
			%	62.9	68.3	66.5	52.8	9.5	0.4	21.2
RDS	Unknown	2	N	3	0	4	6	8	8	29
			%	0.5	0.0	0.4	0.4	0.2	0.1	0.2
	Uncertain		N	0	7	26	34	48	19	134
			%	0.0	0.7	2.4	2.1	1.1	0.3	0.9
	None		N	22	107	282	827	3603	5913	10754
			%	3.5	9.9	26.0	50.3	84.7	95.9	72.3
	Definite		N	613	965	771	778	593	229	3949
			%	96.1	89.4	71.2	47.3	14.0	3.7	26.6
Surfactant in first 30 min			N	150	90	27	15	7	2	291
			%	23.5	8.3	2.5	0.9	0.2	0.0	2.0
Surfactant in first 60 min			N	315	206	82	40	17	5	665
			%	49.3	19.1	7.6	2.4	0.4	0.1	4.5
Surfactant in first 120 min			N	414	378	173	75	36	11	1087
			%	64.8	35.0	16.0	4.6	0.9	0.2	7.3
Surfactant after 120 minutes			N	163	341	291	269	252	178	1494
			%	25.5	31.6	26.8	16.3	5.9	2.9	10.1
Surfactant at any time			N	577	719	464	344	288	189	2581
			%	90.3	66.6	42.8	20.9	6.8	3.1	17.4
Pneumothorax diagnosis		2	N	61	38	39	43	120	349	650
			%	9.6	3.5	3.6	2.6	2.8	5.7	4.4
Pneumothorax treatment**	Observation only	2	N	11	10	12	19	67	261	380
			%	18.0	26.3	30.8	44.2	55.8	74.8	58.5
	Needle drainage	2	N	24	11	11	15	24	56	141
			%	39.3	28.9	28.2	34.9	20.0	16.0	21.7
	Chest tube	2	N	49	32	29	21	42	56	229
			%	80.3	84.2	74.4	48.8	35.0	16.0	35.2
Seizures	Definite /suspected	3	N	44	39	10	22	79	386	580
			%	6.9	3.6	0.9	1.3	1.9	6.3	3.9

** 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				639	1079	1083	1645	4252	6170	14868
Operations	Laparotomy	2	N	56	45	13	18	71	122	325
			%	8.8	4.2	1.2	1.1	1.7	2.0	2.2
	Thoracotomy	2	N	9	5	2	4	18	49	87
			%	1.4	0.5	0.2	0.2	0.4	0.8	0.6
	VP shunt	2	N	7	18	4	1	5	12	47
			%	1.1	1.7	0.4	0.1	0.1	0.2	0.3
	Ostomy		N	3	3	0	2	8	8	24
			%	0.5	0.3	0.0	0.1	0.2	0.1	0.2
	Reservoir/Drain	2	N	15	18	3	4	0	0	40
			%	2.4	1.7	0.3	0.2	0.0	0.0	0.3
Gastro-intestinal perforation	Spontaneous	81	N	47	18	3	5	14	7	94
			%	7.4	1.7	0.3	0.3	0.3	0.1	0.6
	NEC related		N	24	8	1	4	2	1	40
			%	3.8	0.8	0.1	0.3	0.1	0.0	0.3
Acquired stricture		2	N	10	12	1	3	1	5	32
			%	1.6	1.1	0.1	0.2	0.0	0.1	0.2
Exchange transfusion		2	N	1	3	1	2	5	14	26
			%	0.2	0.3	0.1	0.1	0.1	0.2	0.2
Congenital anomaly*	None		N	429	813	908	1389	3529	4587	11655
			%	67.1	75.4	83.8	84.4	83.0	74.3	78.4
	Minor		N	181	229	141	195	454	883	2083
			%	28.3	21.2	13.0	11.9	10.7	14.3	14.0
	Major		N	29	37	34	61	269	700	1130
			%	4.5	3.4	3.1	3.7	6.3	11.4	7.6

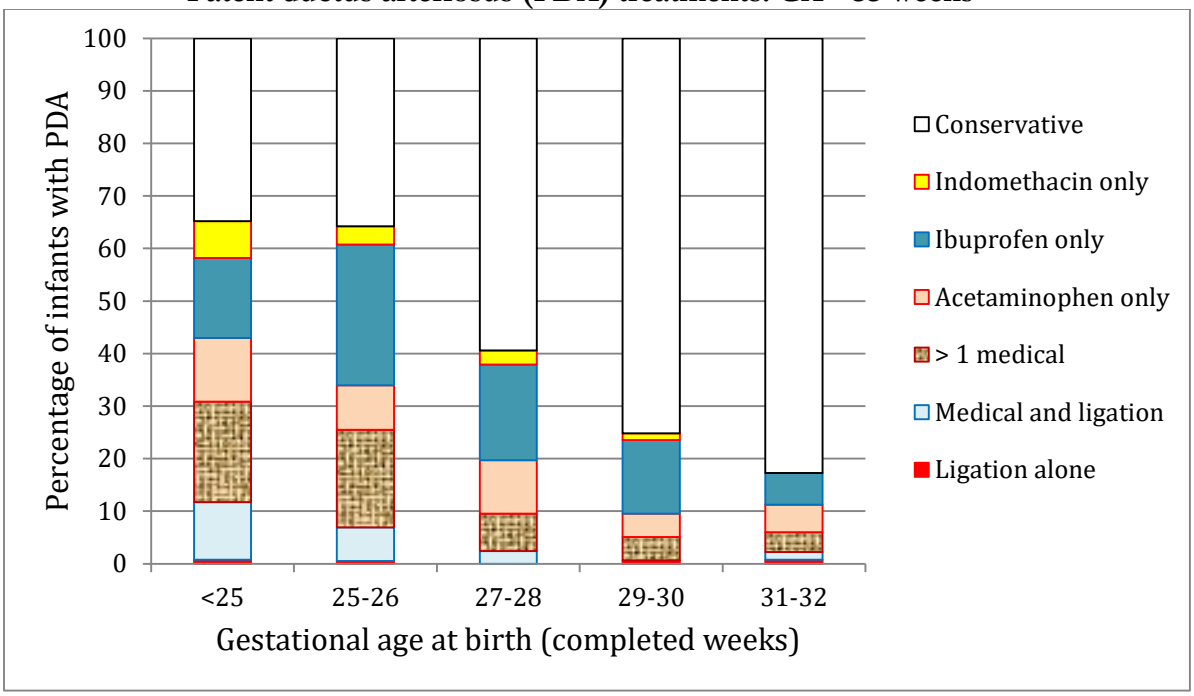
*A list of major anomalies can be found in the 2013 annual report, pages 124-127. It is available via the following link: http://www.canadianneonatalnetwork.org/Portal/LinkClick.aspx?fileticket=lreR0871sjA%3d&tabid=39

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 4 446 eligible very preterm neonates and 2 956 eligible VLBW neonates.

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

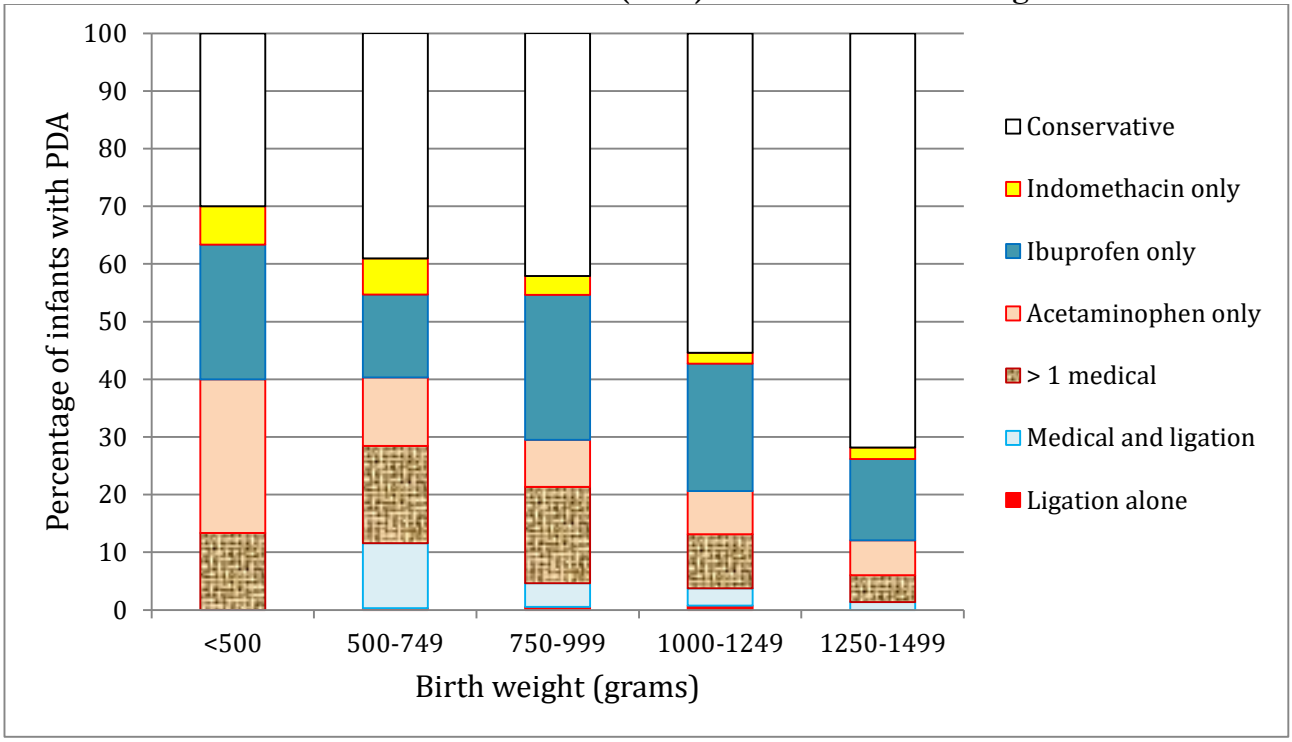


Birth GA (completed weeks)		Total	Missing data on PDA	PDA unknown	No PDA	Neonates with PDA	Treatment†						
							Conservative	Indo	Ibu	Acetaminophen	> 1 medical*	Medical and ligation#	Ligation alone
<25	**N**	360	1	10	93	256	89	18	39	31	49	28	2
	%						35%	7%	15%	12%	19%	11%	1%
25-26	**N**	576	0	4	195	377	135	13	101	32	70	24	2
	%						36%	3%	27%	8%	19%	6%	1%
27-28	**N**	782	0	4	443	335	199	9	61	34	24	8	0
	%						59%	3%	18%	10%	7%	2%	0%
29-30	**N**	1083	0	1	925	157	118	2	22	7	7	0	1
	%						75%	1%	14%	4%	4%	0%	1%
31-32	**N**	1645	0	4	1508	133	110	0	8	7	5	2	1
	%						83%	0%	6%	5%	4%	2%	1%
Total neonates included	**N**	4446	1	23	3164	1258	651	42	231	111	155	62	6
	%						52%	3%	18%	9%	12%	5%	0%

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

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

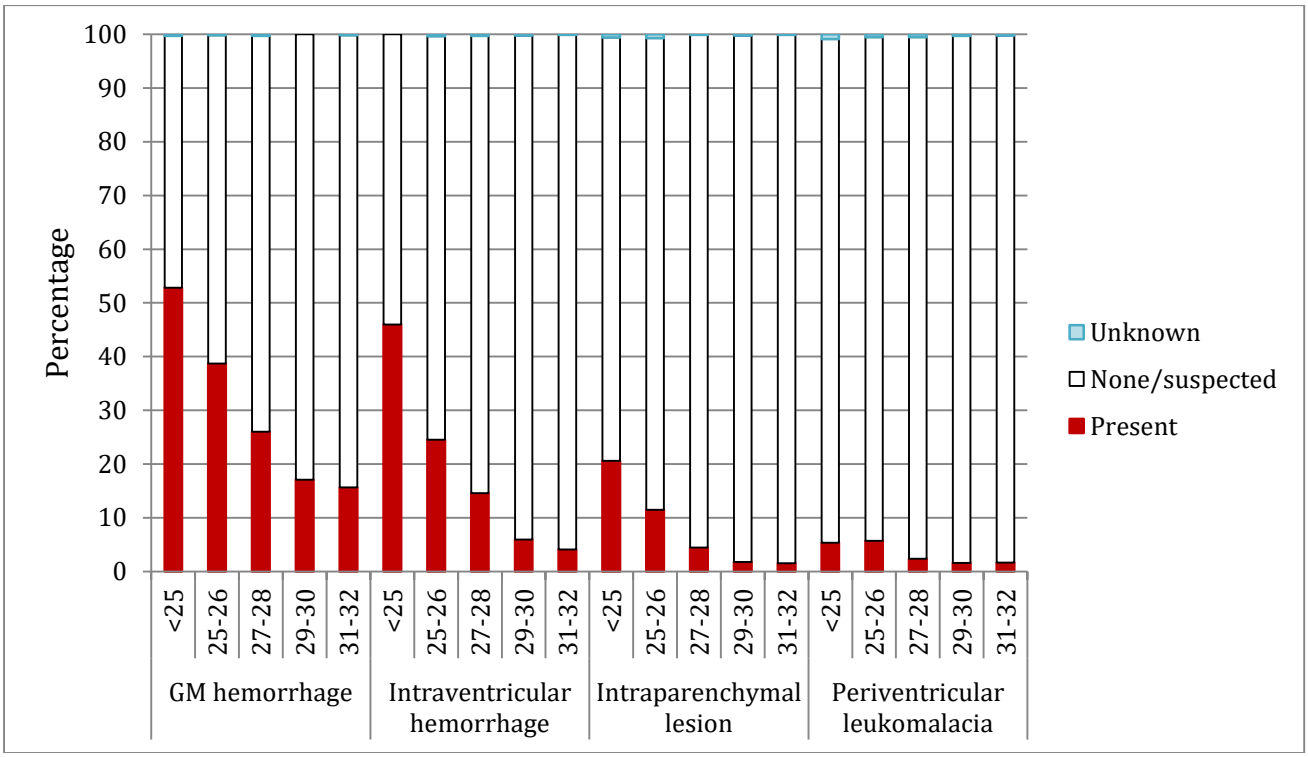


BW (grams)		Total	Missing data on PDA	PDA information unknown	No PDA	Neonates with PDA	Treatment†						
							Conservative	Indo	Ibu	Acetaminophen	> 1 medical*	Medical and ligation#	Ligation alone
<500	**N**	50	0	4	16	30	9	2	7	8	4	0	0
	%						30%	7%	23%	27%	13%	0%	0%
500-749	**N**	482	1	6	155	320	125	20	46	38	54	36	1
	%						39%	6%	14%	12%	17%	11%	0%
750-999	**N**	685	0	5	314	366	154	12	92	30	61	15	2
	%						42%	3%	25%	8%	17%	4%	1%
1000-1249	**N**	802	0	3	532	267	148	5	59	20	25	8	2
	%						55%	2%	22%	7%	9%	3%	1%
1250-1499	**N**	937	0	3	785	149	107	3	21	9	7	2	0
	%						72%	2%	14%	6%	5%	1%	0%
Total neonates included	**N**	2956	1	21	1802	1132	543	42	225	105	151	61	5
	%						48%	4%	20%	9%	13%	5%	0%

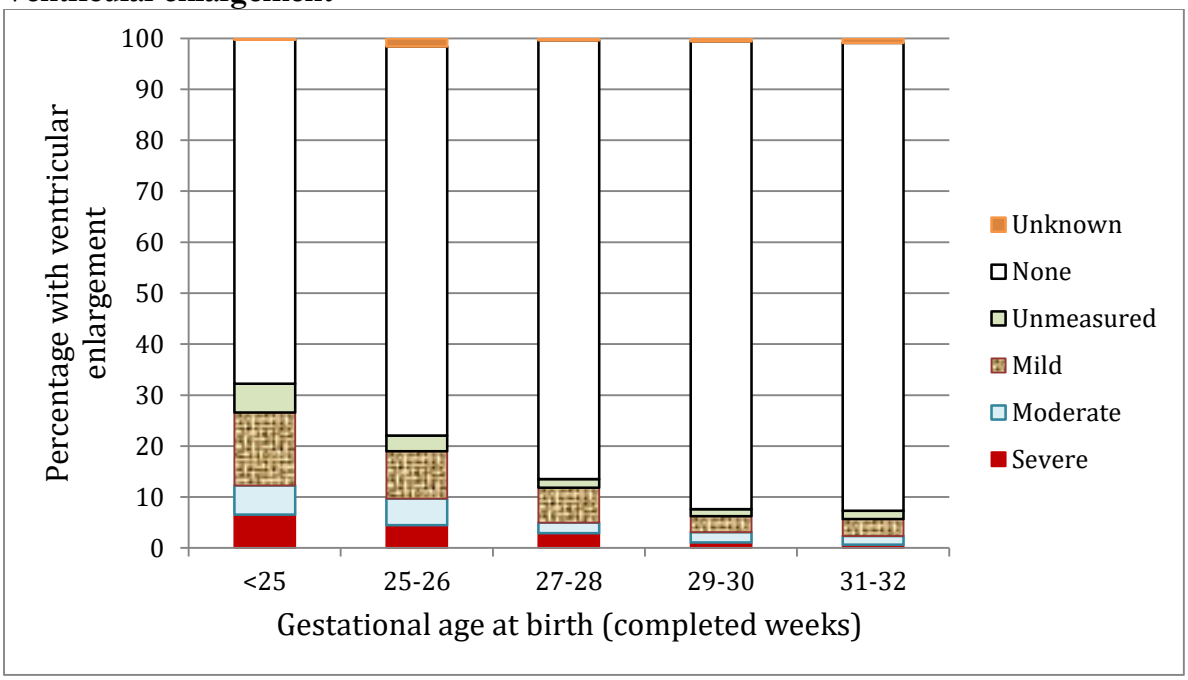
† The percentage of neonates receiving each PDA treatment was calculated using the total number of neonates diagnosed with PDA as the denominator.
*>1 medical = 2 or 3 of (Indomethacin or Ibuprofen or Acetaminophen)
#Medical and ligation = Ligation + at least one of the drugs (Indomethacin or Ibuprofen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

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



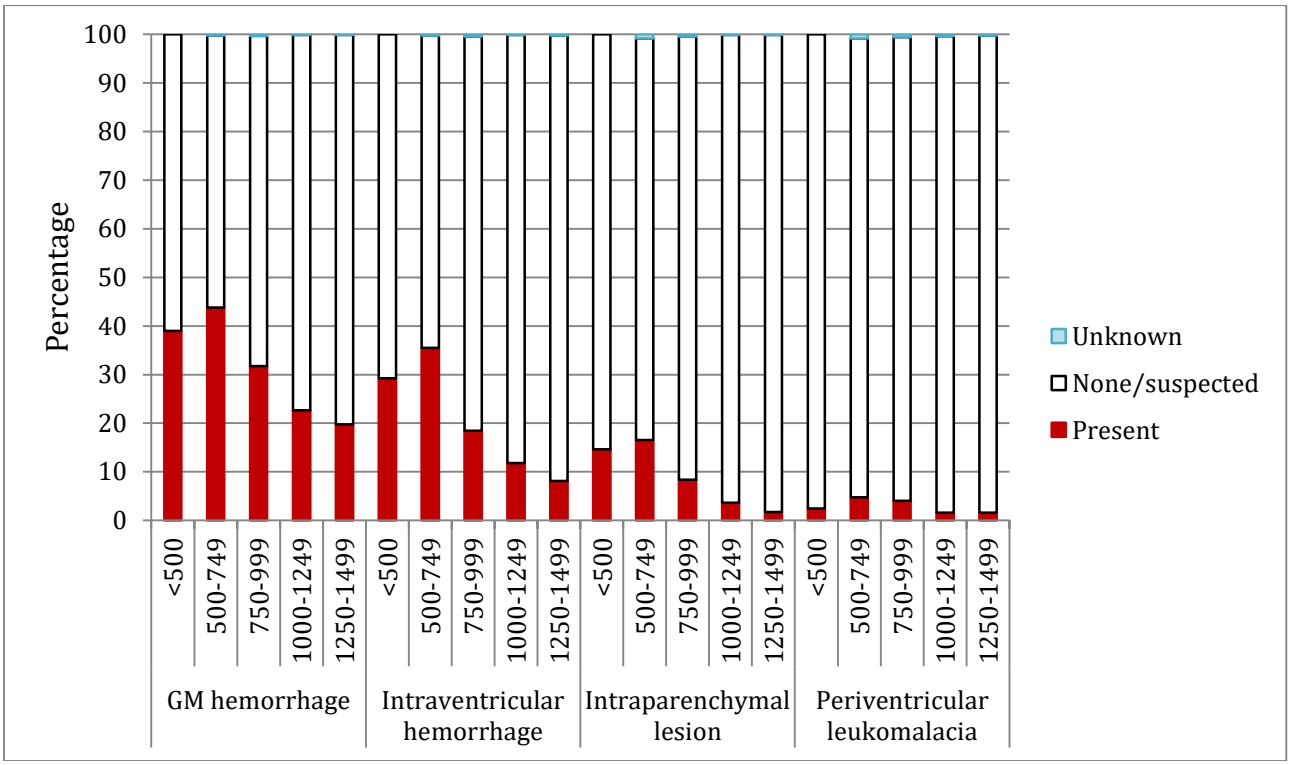
See page 134 for classifications of ventricular enlargement.

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

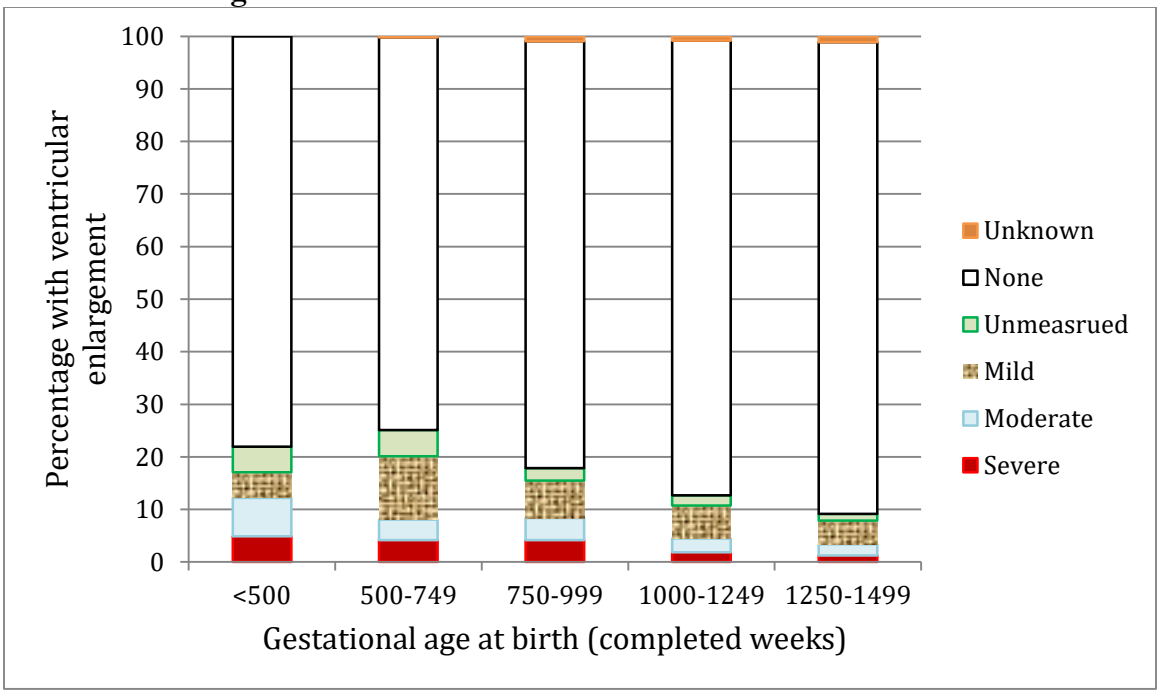
GA at birth (completed weeks)		Total	Neuro-imaging available	Neuroimaging findings																	
				GM hemorrhage			Intraventricular hemorrhage			Ventricular enlargement						Intraparenchymal lesion			Periventricular leukomalacia		
				Present	None/suspected	Unknown	Present	None/suspected	Unknown	Mild	Moderate	Severe	Unmeasured	None	Unknown	Present	None/suspected	Unknown	Present	None/suspected	Unknown
<25	N	360	335	177	157	1	154	181	0	48	19	22	19	226	1	69	264	2	18	314	3
	%			53%	47%	0%	46%	54%	0%	14%	6%	7%	6%	67%	0%	21%	79%	1%	5%	94%	1%
25-26	N	576	558	216	341	1	137	419	2	52	29	25	17	426	9	64	490	4	32	523	3
	%			39%	61%	0%	25%	75%	0%	9%	5%	4%	3%	76%	2%	11%	88%	1%	6%	94%	1%
27-28	N	782	761	198	561	2	111	648	2	52	16	22	13	654	3	34	726	1	18	739	4
	%			26%	74%	0%	15%	85%	0%	7%	2%	3%	2%	86%	0%	4%	95%	0%	2%	97%	1%
29-30	N	1083	1006	172	834	0	60	944	2	32	20	11	14	923	6	18	986	2	16	987	3
	%			17%	83%	0%	6%	94%	0%	3%	2%	1%	1%	92%	1%	2%	98%	0%	2%	98%	0%
31-32	N	1645	1024	160	862	2	42	981	1	34	17	7	17	939	9	16	1007	1	17	1005	2
	%			16%	84%	0%	4%	96%	0%	3%	2%	1%	2%	92%	1%	2%	98%	0%	2%	98%	0%
Total number of neonates	N	4446	3684	923	2755	6	504	3173	7	218	101	87	80	3168	28	201	3473	10	101	3568	15
	%			25%	75%	0%	14%	86%	0%	6%	3%	2%	2%	86%	1%	5%	94%	0%	3%	97%	0%

Note: Neuroimaging findings were not mutually exclusive, i.e. one neonate may have had more than one finding.
See page 134 for classifications of ventricular enlargement.

Presentation #16
Neuroimaging findings: BW <1500g



Ventricular enlargement



See page 134 for classifications of ventricular enlargement.

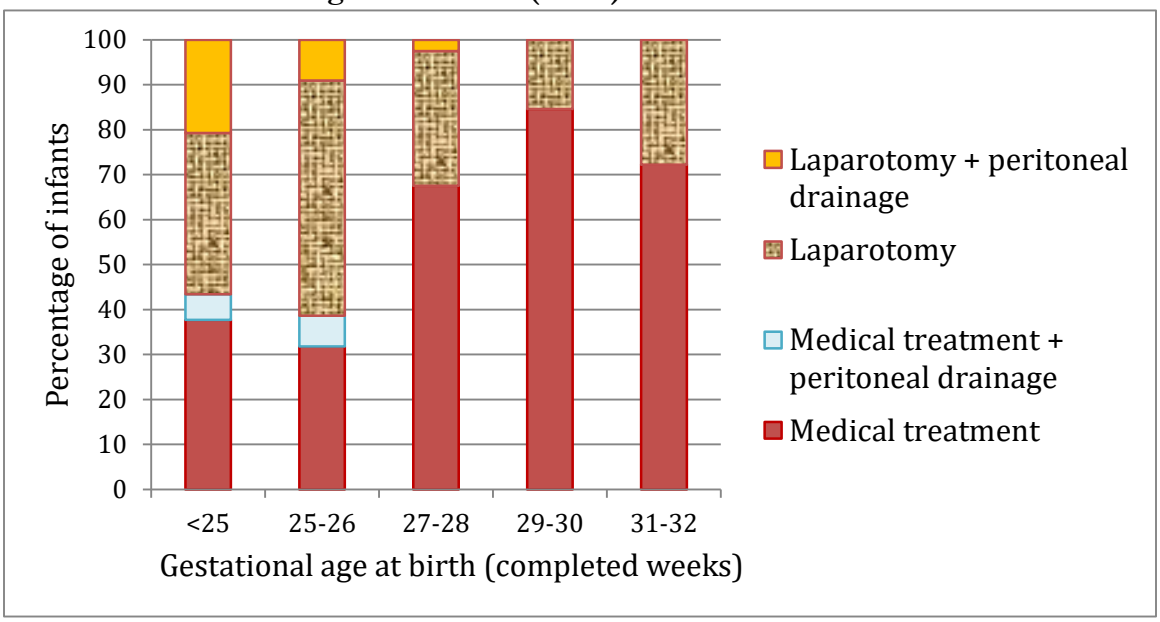
Presentation #16 (continued)
Neuroimaging findings: BW <1500g

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	50	41	16	25	0	12	29	0	2	3	2	2	32	0	6	35	0	1	40	0
	%			39%	61%	0%	29%	71%	0%	5%	7%	5%	5%	78%	0%	15%	85%	0%	2%	98%	0%
500-749	N	482	459	201	257	1	163	295	1	55	18	19	23	342	1	76	379	4	22	433	4
	%			44%	56%	0%	36%	64%	0%	12%	4%	4%	5%	75%	0%	17%	83%	1%	5%	94%	1%
750-999	N	685	671	213	456	2	124	544	3	48	28	28	16	545	6	56	612	3	27	640	4
	%			32%	68%	0%	18%	81%	0%	7%	4%	4%	2%	81%	1%	8%	91%	0%	4%	95%	1%
1000-1249	N	802	764	173	590	1	90	673	1	48	20	14	15	661	6	28	735	1	12	749	3
	%			23%	77%	0%	12%	88%	0%	6%	3%	2%	2%	87%	1%	4%	96%	0%	2%	98%	0%
1250-1499	N	937	799	158	640	1	65	732	2	36	17	10	10	717	9	14	784	1	13	784	2
	%			20%	80%	0%	8%	92%	0%	5%	2%	1%	1%	90%	1%	2%	98%	0%	2%	98%	0%
Total neonates	N	2956	2734	761	1968	5	454	2273	7	189	86	73	66	2297	22	180	2545	9	75	2646	13
	%			28%	72%	0%	17%	83%	0%	7%	3%	3%	2%	84%	1%	7%	93%	0%	3%	97%	0%

Note: Neuroimaging findings were not mutually exclusive, i.e. one neonate may have more than one finding.
See page 134 for classifications of ventricular enlargement.

Presentation #17

Necrotizing enterocolitis (NEC) treatments: GA <33weeks



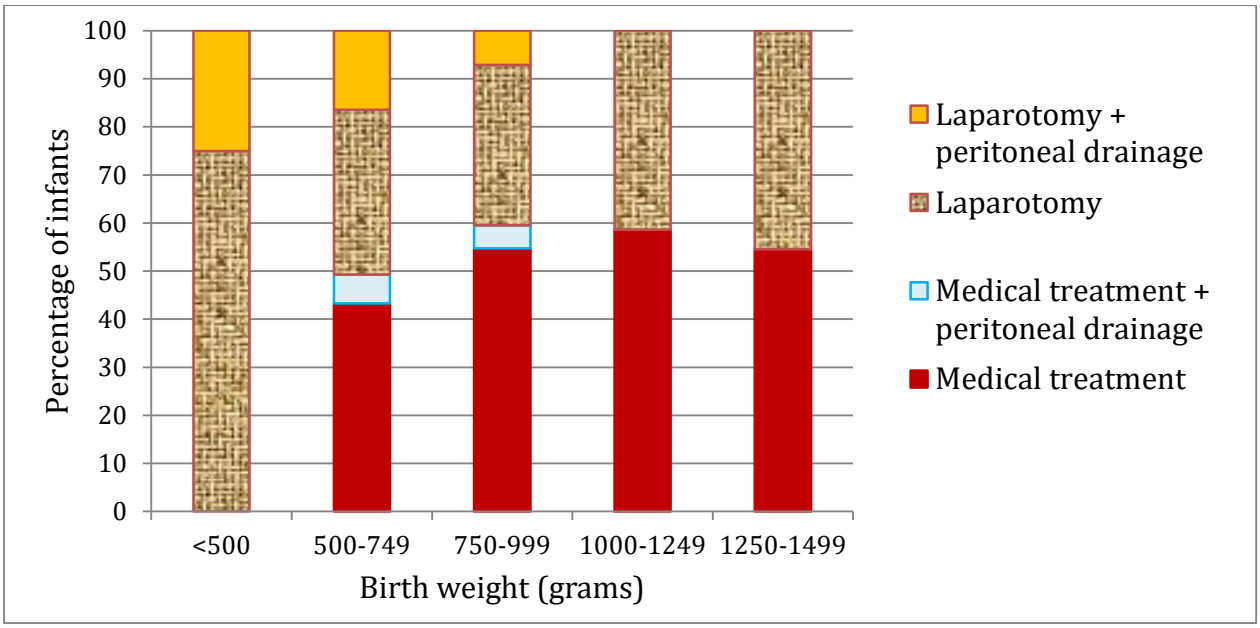
GA at birth (completed weeks)		Total number of neonates	Missing data on NEC	No NEC	NEC*	Neonates with necrotizing enterocolitis**				Death among infants with NEC**
						Medical treatment only	Medical + peritoneal drainage	Laparotomy	Laparotomy + peritoneal drainage	
<25	N	360	1	306	53	20	3	19	11	20
	%			85%	15%	38%	6%	36%	21%	38%
25-26	N	576	0	532	44	14	3	23	4	10
	%			92%	8%	32%	7%	52%	9%	23%
27-28	N	782	0	742	40	27	0	12	1	6
	%			95%	5%	68%	0%	30%	3%	15%
29-30	N	1083	0	1070	13	11	0	2	0	1
	%			99%	1%	85%	0%	15%	0%	8%
31-32	N	1645	0	1627	18	13	0	5	0	3
	%			99%	1%	72%	0%	28%	0%	17%
Total number of neonates	N	4446	1	4277	168	85	6	61	16	40
	%			96%	4%	51%	4%	36%	10%	24%

*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: 27 neonates (0.6%)
GA ≥ 37 weeks: 15 neonates (0.2%)

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



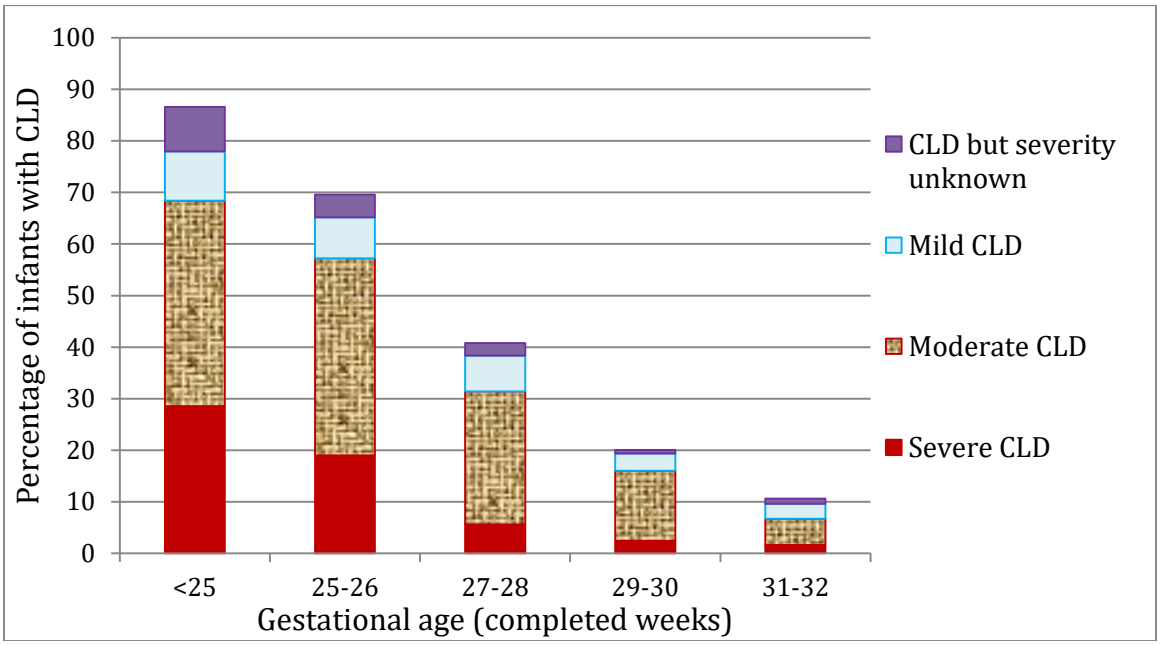
Birth weight (grams)		Total number of neonates	Missing data on NEC	No NEC	NEC*	Neonates with necrotizing enterocolitis**				Death among infants with NEC**
						Medical treatment only	Medical + peritoneal drainage	Laparotomy	laparotomy + peritoneal drainage	
<500	N	50	0	42	8	0	0	6	2	4
	%			84%	16%	0%	0%	75%	25%	50%
500-749	N	482	1	414	67	29	4	23	11	18
	%			86%	14%	43%	6%	34%	16%	27%
750-999	N	685	0	643	42	23	2	14	3	10
	%			94%	6%	55%	5%	33%	7%	24%
1000-1249	N	802	0	773	29	17	0	12	0	5
	%			96%	4%	59%	0%	41%	0%	17%
1250-1499	N	937	0	926	11	6	0	5	0	2
	%			99%	1%	55%	0%	45%	0%	18%
Total number of neonates	N	2956	1	2798	157	75	6	60	16	39
	%			95%	5%	48%	4%	38%	10%	25%

*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.

<u>Number (%) of neonates with NEC and BW > 1500g:</u>
BW 1500 - 2499g: 33 neonates (0.7%)
BW ≥ 2500g: 20 neonates (0.3%)

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

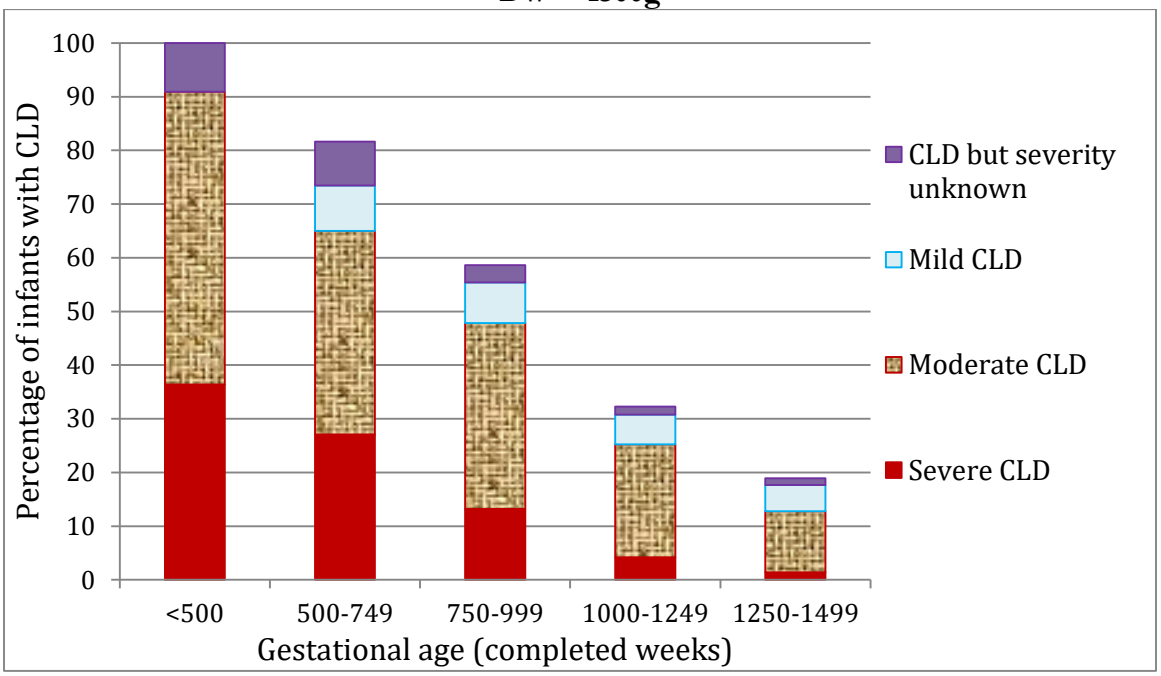


GA	Total number of neonates	Number of neonates who died before 36 weeks PMA	Number of surviving neonates whose respiratory support is unknown*	CLD from**	Number of neonates with known results	Number of neonates with severe CLD, N (%)	Number of neonates with moderate CLD, N (%)	Number of neonates with mild CLD, N (%)	Number of neonates with CLD but severity unknown, N (%)	Number of neonates without CLD, N(%)
<25	360	127	2	36w	201	55 (27)	84 (42)	19 (9)	20 (10)	23 (11)
				Disch	30	11 (37)	8 (27)	3 (10)	0 (0)	8 (27)
25-26	576	75	1	36w	383	83 (22)	156 (41)	22 (6)	16 (4)	106 (28)
				Disch	117	12 (10)	35 (30)	18 (15)	6 (5)	46 (39)
27-28	782	42	5	36w	421	36 (9)	142 (34)	32 (8)	13 (3)	198 (47)
				Disch	314	5 (2)	48 (15)	19 (6)	5 (2)	237 (75)
29-30	1 083	21	6	36w	444	22 (5)	88 (20)	25 (6)	6 (1)	303 (68)
				Disch	612	4 (1)	55 (9)	11 (2)	1 (0)	541 (88)
31-32	1 645	24	3	36w	613	21 (3)	52 (8)	36 (6)	10 (2)	494 (81)
				Disch	1 005	6 (1)	30 (3)	11 (1)	6 (1)	952 (95)
Total	4 446	289	17	36w	2 062	217 (11)	522 (25)	134 (7)	65 (3)	1124 (55)
				Disch	2 078	38 (2)	176 (8)	62 (3)	18 (1)	1784 (86)

COMMENTS: See pages 134-135 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



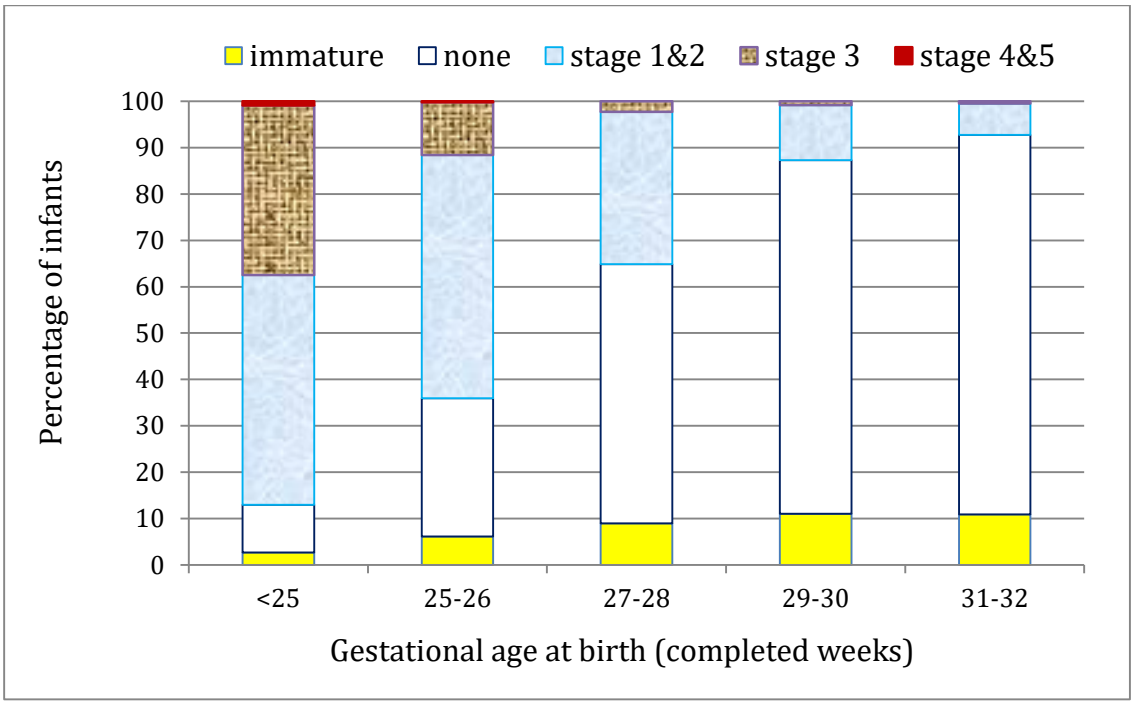
BW	Total number of neonates	Number of neonates who died before 36 weeks' PMA	Number of surviving neonates whose respiratory support is unknown*	CLD from**	Number of neonates with known results	Number of neonates with severe CLD, N (%)	Number of neonates with moderate CLD, N (%)	Number of neonates with mild CLD, N (%)	Number of neonates with CLD but severity unknown, N (%)	Number of neonates without CLD, N (%)
<500	50	28	0	36w	21	7 (33)	12 (57)	0 (0)	2 (10)	0 (0)
				Disch	1	1 (100)	0 (0)	0 (0)	0 (0)	0 (0)
500-749	482	126	2	36w	303	82 (27)	125 (41)	24 (8)	28 (9)	44 (15)
				Disch	51	14 (27)	9 (18)	6 (12)	1 (2)	21 (41)
750-999	685	61	3	36w	443	74 (17)	175 (40)	31 (7)	16 (4)	147 (33)
				Disch	178	8 (4)	40 (22)	16 (9)	4 (2)	110 (62)
1000-1249	802	58	4	36w	383	27 (7)	109 (28)	18 (5)	7 (2)	222 (58)
				Disch	357	4 (1)	47 (13)	23 (6)	4 (1)	279 (78)
1250-1499	937	138	2	36w	362	9 (2)	54 (15)	30 (8)	5 (1)	264 (73)
				Disch	435	2 (0)	37 (9)	9 (2)	5 (1)	382 (88)
Total	2 956	411	11	36w	1 512	199 (13)	475 (31)	103 (7)	58 (4)	677 (45)
				Disch	1 022	29 (3)	133 (13)	54 (5)	14 (1)	792 (78)

COMMENTS: See pages 134-135 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

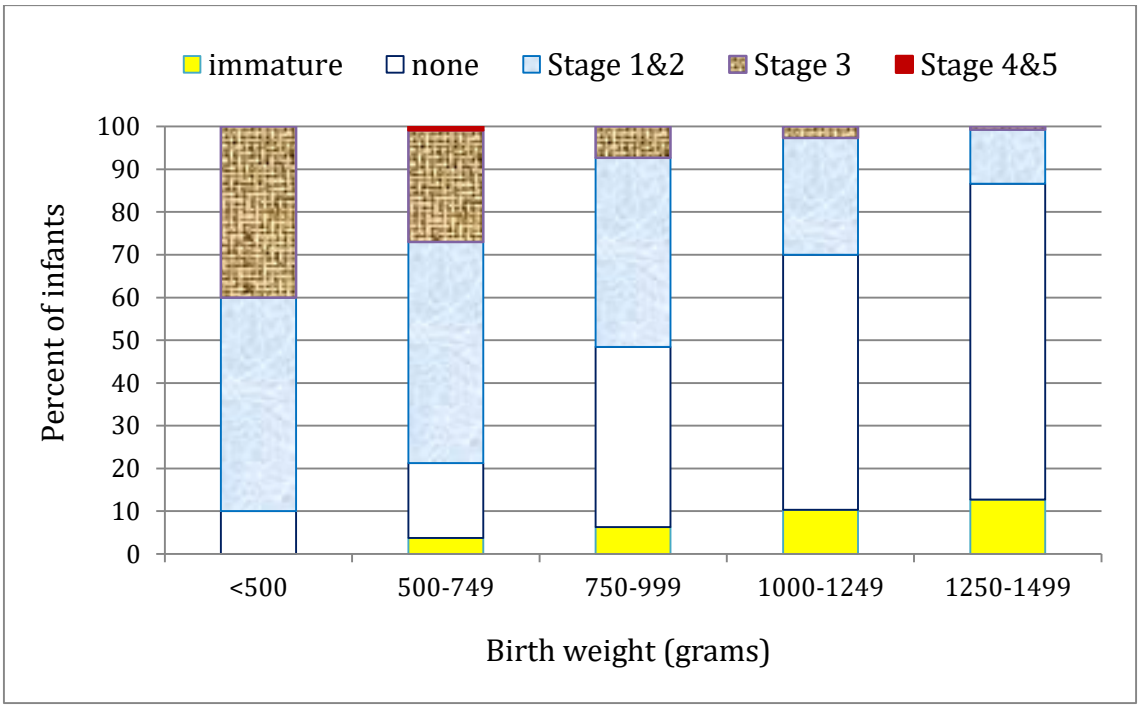


GA (completed weeks)		Total number of neonates	Number of neonates alive at 6 weeks of age	Number of neonates with known eye examination results	Retinopathy of prematurity*				
					Immature	None	Stages 1 & 2	Stage 3	Stages 4 & 5
<25	N	360	238	224	6	23	111	82	2
	%				3%	10%	50%	37%	1%
25-26	N	576	510	490	30	146	257	56	1
	%				6%	30%	52%	11%	0%
27-28	N	782	743	646	58	361	212	15	0
	%				9%	56%	33%	2%	0%
29-30	N	1 083	1 065	605	67	461	72	5	0
	%				11%	76%	12%	1%	0%
31-32	N	1 645	1 624	193	21	158	13	1	0
	%				11%	82%	7%	1%	0%
Total neonates included	N	4 446	4 180	2 158	182	1149	665	159	3
	%				8%	53%	31%	7%	0%

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

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

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



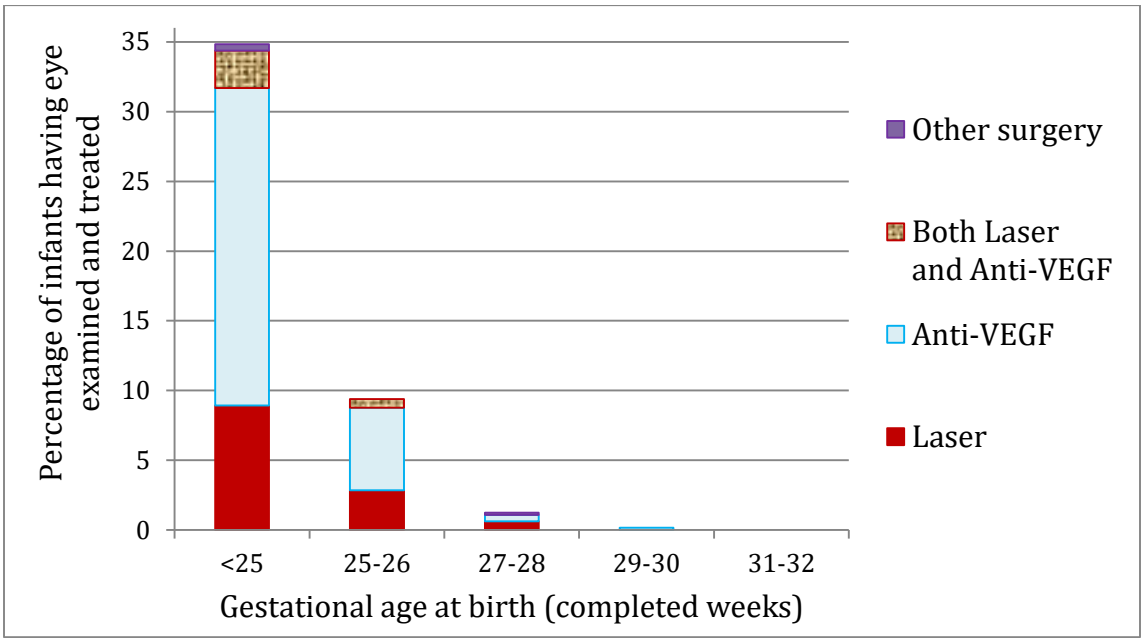
BW (grams)		Total number of neonates	Number of neonates alive at 6 weeks of age	Number of neonates with known eye examination results	Retinopathy of prematurity*				
					Immature	None	Stages 1 & 2	Stage 3	Stages 4 & 5
<500	N	50	22	20	0	2	10	8	0
	%				0%	10%	50%	40%	0%
500-749	N	482	367	348	13	61	180	91	3
	%				4%	18%	52%	26%	1%
750-999	N	685	631	572	36	241	253	42	0
	%				6%	42%	44%	7%	0%
1000-1249	N	802	767	553	57	330	151	15	0
	%				10%	60%	27%	3%	0%
1250-1499	N	937	924	433	55	320	55	3	0
	%				13%	74%	13%	1%	0%
Total neonates included	N	2 956	2 711	1 926	161	954	649	159	3
	%				8%	50%	34%	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 #23

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

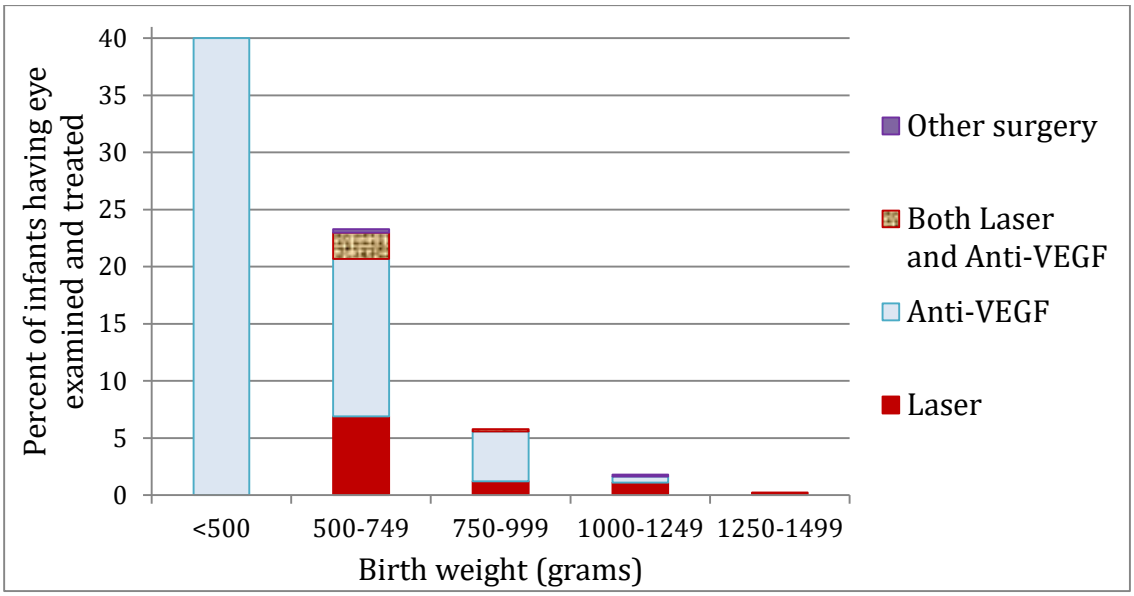


Birth GA (completed weeks)		Total number of neonates	Number of neonates with known eye examination results	Therapy for retinopathy of prematurity (ROP)*	Therapy for ROP			
					Laser	Anti-VEGF	Both Laser and Anti-VEGF	Other surgery**
<25	N	360	224	77	20	51	6	1
	%			34%				
25-26	N	576	490	46	14	29	3	0
	%			9%				
27-28	N	782	646	7	4	3	0	1
	%			1%				
29-30	N	1 083	605	1	0	1	0	0
	%			0%				
31-32	N	1 645	193	0	0	0	0	0
	%			0%				
Total neonates included	N	4 446	2 158	131	38	84	9	2
	%			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.**
****Infants who had other surgery may have one or both of Laser and Anti-VEGF treatments.**

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

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



BW (grams)		Total number of neonates	Number of neonates with known eye examination results	Therapy for retinopathy of prematurity (ROP)*	Therapy for ROP			
					Laser	Anti-VEGF	Both Laser and Anti-VEGF	Other surgery
<500	N	50	20	8	0	8	0	0
	%			40%				
500-749	N	482	348	80	24	48	8	1
	%			23%				
750-999	N	685	572	33	7	25	1	0
	%			6%				
1000-1249	N	802	553	9	6	3	0	1
	%			2%				
1250-1499	N	937	433	1	1	0	0	0
	%			0%				
Total neonates included	N	2 956	1 926	131	38	84	9	2
	%			7%				

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

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

Presentation #25
Select major morbidity: GA <33 weeks

GA	Number of neonates	Number survived until discharge / transfer (%)	Major morbidity[a] (%)	CLD[b] (%)	Severe ROP[c] (%)	Severe neurological injury[d] (%)	NEC[e] (%)	Late onset sepsis [f]
<24	134	61 (46)	108 (81)	57 (89)	34 (57)	47 (38)	23 (17)	51 (38)
24	210	154 (73)	171 (81)	131 (85)	59 (41)	32 (16)	27 (13)	74 (35)
25	266	219 (82)	204 (77)	168 (76)	42 (20)	33 (13)	24 (9)	74 (28)
26	289	259 (90)	203 (70)	164 (63)	23 (10)	39 (14)	19 (7)	53 (18)
27	331	309 (93)	176 (53)	144 (47)	12 (5)	23 (7)	21 (6)	43 (13)
28	422	403 (96)	174 (41)	137 (34)	4 (1)	29 (7)	15 (4)	37 (9)
29	455	451 (99)	131 (29)	105 (23)	4 (1)	17 (4)	9 (2)	16 (4)
30	594	586 (99)	107 (18)	91 (16)	1 (0)	12 (2)	4 (1)	12 (2)
31	714	707 (99)	105 (15)	81 (12)	1 (1)	15 (3)	7 (1)	10 (1)
32	870	863 (99)	94 (11)	71 (8)	0	9 (2)	8 (1)	14 (2)
Total neonates	4285	4012 (94)	1473 (34)	1149 (29)	180 (10)	256 (7)	157 (4)	384 (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 $MgSO_4$			Antenatal steroids[a]	Timing of cord clamping			Admission temperature			Apgar <5 at 5 minutes
	N	Yes	No	Missing	Completed course within last week prior to birth[a]	≥ 30 sec	< 30 sec or none	Missing	<36.5	36.5-37.2	>37.2	
xiii	< 20	0.0	100.0	0.0	.	100.0	0.0	0.0	100.0	0.0	0.0	0.0
xviii		88.9	11.1	0.0	33.3	72.2	27.8	0.0	0.0	100.0	0.0	22.2
xxix		66.7	33.3	0.0	33.3	66.7	0.0	33.3	50.0	50.0	0.0	100.0
i		60.0	40.0	0.0	40.0	40.0	50.0	10.0	60.0	30.0	10.0	20.0
xx		70.0	30.0	0.0	40.0	50.0	40.0	10.0	30.0	40.0	30.0	0.0
xxv		90.9	9.1	0.0	54.6	81.8	9.1	9.1	27.3	36.4	36.4	27.3
vii		100.0	0.0	0.0	66.7	33.3	66.7	0.0	33.3	66.7	0.0	33.3
viii		84.6	15.4	0.0	15.4	38.5	61.5	0.0	27.3	72.7	0.0	7.7
ii		93.8	6.3	0.0	18.8	62.5	31.3	6.3	25.0	62.5	12.5	25.0
xvii	20 – 39	79.2	20.8	0.0	41.7	37.5	62.5	0.0	21.7	65.2	13.0	16.7
ix		84.2	15.8	0.0	47.4	79.0	13.2	7.9	23.7	47.4	29.0	10.5
xxiii		85.7	14.3	0.0	46.4	64.3	35.7	0.0	15.4	65.4	19.2	14.3
xix		87.1	12.9	0.0	25.8	22.6	71.0	6.5	57.1	25.0	17.9	10.0
xvi		57.7	42.3	0.0	42.3	65.4	30.8	3.9	53.9	46.2	0.0	30.8
iii		87.9	12.1	0.0	33.3	51.5	48.5	0.0	12.1	57.6	30.3	36.4
iv		79.5	20.5	0.0	46.2	51.3	35.9	12.8	18.4	65.8	15.8	10.3
xxx	40 – 70	76.2	23.8	0.0	11.9	14.3	85.7	0.0	67.7	25.8	6.5	14.3
xxiv		91.8	8.2	0.0	37.7	59.0	41.0	0.0	34.4	55.7	9.8	16.4
xxi		62.2	37.8	0.0	17.8	75.6	22.2	2.2	22.2	66.7	11.1	11.1
xxviii		95.9	4.1	0.0	34.7	49.0	51.0	0.0	40.4	38.3	21.3	12.2
xii		55.9	30.5	13.6	47.5	52.5	40.7	6.8	24.1	60.3	15.5	17.0
vi		81.7	18.3	0.0	43.3	63.3	33.3	3.3	25.9	63.0	11.1	11.7
xiv		96.0	4.0	0.0	34.0	2.0	96.0	2.0	68.0	24.0	8.0	24.0
xxvii		68.8	31.3	0.0	42.2	28.1	46.9	25.0	54.8	35.5	9.7	17.2
xxxi	> 70	78.4	21.6	0.0	41.9	12.2	82.4	5.4	33.3	44.4	22.2	23.0
v		93.4	6.6	0.0	41.0	57.4	42.6	0.0	13.7	69.4	16.9	21.4
xi		71.8	12.9	15.3	40.0	52.9	41.2	5.9	20.8	68.8	10.4	22.4
xxvi		32.7	67.3	0.0	30.8	66.4	33.7	0.0	17.3	63.5	19.2	11.5
xxxii		94.6	4.5	0.9	31.5	63.1	36.9	0.0	15.5	56.4	28.2	7.2
x		88.5	11.5	0.0	43.4	54.9	44.3	0.8	49.6	37.2	13.2	7.5
Total CNN		79.2	19.2	1.6	37.4	51.1	45.4	3.5	29.8	54.1	16.1	16.2

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

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

These are unadjusted rates.

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

Site	Number of neonates	No mechanical ventilation at any time in first 3 days[a]	Never received mechanical ventilation[a]	Fed at any time in first 2 days of admission	Never received antimicrobials[b]	Exclusive breast milk feeding at discharge[c]	Exclusive formula feeding at discharge[c]
	N	%	%	%	%	%	%
xiii	< 20	33.3	0.0	100.0	0.0	33.3	33.3
xviii		33.3	27.8	72.2	5.6	38.9	38.9
xxix		66.7	66.7	33.3	33.3	33.3	0.0
i		10.0	10.0	60.0	0.0	0.0	30.0
xx		10.0	10.0	80.0	0.0	10.0	20.0
xxv		9.1	0.0	81.8	0.0	54.6	27.3
vii		33.3	0.0	33.3	0.0	0.0	66.7
viii		23.1	23.1	84.6	23.1	30.8	30.8
ii		31.3	25.0	81.3	12.5	50.0	12.5
xvii	20 – 39	54.2	41.7	54.2	25.0	33.3	25.0
ix		29.0	21.1	63.2	0.0	60.5	10.5
xxiii		39.3	32.1	67.9	25.0	46.4	17.9
xix		12.9	12.9	58.1	0.0	3.2	45.2
xvi		34.6	19.2	92.3	3.9	26.9	23.1
iii		24.2	18.2	60.6	3.0	24.2	33.3
iv		25.6	25.6	41.0	0.0	51.3	23.1
xxx	40 – 70	4.8	4.8	57.1	7.1	26.2	23.8
xxiv		34.4	21.3	86.9	3.3	27.9	47.5
xxi		13.3	11.1	97.8	11.1	20.0	42.2
xxviii		12.2	8.2	40.8	4.1	40.8	32.7
xii		39.0	32.2	91.5	5.1	30.5	23.7
vi		16.7	15.0	78.3	5.0	63.3	10.0
xiv		22.0	22.0	46.0	10.0	28.0	24.0
xxvii		15.6	1.6	84.4	4.7	25.0	43.8
xxxi	> 70	32.4	28.4	87.8	17.6	43.2	17.6
v		26.8	21.3	88.5	3.3	51.9	13.1
xi		36.5	25.9	97.7	9.4	24.7	21.2
xxvi		29.8	24.0	87.5	2.9	1.0	4.8
xxxii		16.2	14.4	83.8	2.7	59.5	14.4
x		39.3	33.6	91.0	6.6	54.1	18.9
Total CNN		26.6	20.9	79.4	6.3	37.6	22.0

*Denominators were based on **inborn** neonates <29 weeks' GA admitted without major congenital anomaly.
[a] Neonates either received high frequency ventilation or intermittent positive pressure ventilation.
[b] Neonates never received any antimicrobials. Prophylactic administration of trimethoprim or amoxicillin for the prevention of urinary tract infections with a suspected renal anomaly was not included as antimicrobials.
[c] Information obtained from *Discharge* screen/table of CNN database, includes discharge and transfer.
These are unadjusted rates.

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	50.0	70.0	89.5	100.0	100.0	100.0	98.9	99.3	97.9
B	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7
C	0.0	NA	80.0	100.0	100.0	100.0	99.2	100.0	98.6
D	61.5	88.0	100.0	100.0	100.0	98.2	98.8	96.8	96.9
Eϕ	46.2	60.0	93.8	100.0	98.1	100.0	100.0	88.9	88.4
F	66.7	88.9	100.0	92.9	100.0	98.4	100.0	97.4	97.5
G	0.0	85.7	100.0	100.0	100.0	100.0	96.8	100.0	97.6
Hϕ	42.9	70.6	91.7	100.0	100.0	99.2	99.3	99.3	98.2
I	NA	66.7	NA	100.0	100.0	100.0	100.0	98.4	98.0
Jϕ	66.7	80.0	90.0	100.0	97.4	NA	75.0	100.0	94.4
K	100.0	90.3	90.0	100.0	100.0	97.6	95.1	98.4	97.4
L	51.3	97.7	97.2	100.0	98.5	100.0	100.0	100.0	96.1
Mϕ	66.7	50.0	95.8	100.0	100.0	NA	NA	NA	95.9
N	47.1	100.0	95.5	89.3	98.7	99.2	97.7	98.7	96.9
O	80.0	90.0	96.0	100.0	100.0	100.0	100.0	100.0	99.0
P	33.3	60.0	100.0	100.0	94.6	97.5	100.0	96.4	96.3
Qϕ	0.0	100.0	93.8	97.7	100.0	100.0	NA	NA	94.4
R	90.9	92.3	93.8	96.4	96.7	100.0	97.8	99.0	98.1
S	NA	NA	100.0	100.0	100.0	87.5	100.0	98.9	98.3
T	0.0	75.0	100.0	100.0	100.0	100.0	100.0	100.0	99.4
U	90.0	86.4	100.0	100.0	98.6	100.0	99.0	98.2	98.3
V	0.0	0.0	100.0	100.0	100.0	100.0	98.4	100.0	98.9
Wϕ	60.0	85.0	96.2	100.0	100.0	NA	NA	NA	94.9
X	84.2	88.1	94.1	98.6	99.1	100.0	98.9	99.3	98.0
Y	62.5	84.6	88.2	98.0	98.7	97.2	97.5	99.0	97.0
Z	70.2	90.8	94.0	95.2	96.8	98.8	99.4	98.4	96.3
AAϕ	47.1	60.9	93.2	100.0	100.0	NA	NA	NA	88.1
AB	25.0	76.5	76.9	97.2	96.9	99.0	100.0	99.0	97.1
AC	80.0	50.0	85.7	93.3	96.4	95.1	94.9	97.3	96.1
ADϕ	71.4	91.5	95.5	98.6	97.1	100.0	100.0	92.9	93.9
AE	55.6	86.0	96.9	96.4	97.5	99.0	100.0	98.6	96.9
AF	66.7	100.0	94.4	95.1	100.0	100.0	100.0	100.0	97.7
Overall survival rate for GA**	63.1	86.1	94.4	98.1	98.6	99.0	98.8	98.7	97.1

These analyses included 14 868 neonates from 32 sites.

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

ϕ Please note the data collection criteria were not the same for these eight sites, and thus their rates may not be comparable with other sites.

Overall* = (number of neonates who survived per site / total number of neonates for that site)*100

Overall** = (number of neonates who survived for each GA category / total number of neonates in each GA category)*100

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

Presentation #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	25.0	88.2	93.8	93.8	100.0	99.4	97.9
B	NA	100.0	50.0	100.0	100.0	100.0	100.0	99.7
C	0.0	50.0	100.0	80.0	100.0	99.4	99.6	98.6
D	0.0	77.8	100.0	97.4	100.0	98.2	97.6	96.9
Eϕ	0.0	40.0	83.3	93.8	100.0	98.1	88.9	88.4
F	NA	80.0	91.7	75.0	100.0	100.0	98.0	97.5
G	0.0	50.0	100.0	100.0	100.0	100.0	98.2	97.6
Hϕ	0.0	40.0	93.3	94.7	100.0	100.0	99.0	98.2
I	NA	NA	50.0	100.0	NA	96.2	100.0	98.0
Jϕ	NA	60.0	83.3	100.0	92.3	100.0	92.9	94.4
K	NA	100.0	89.3	94.3	100.0	95.7	98.8	97.4
L	25.0	74.1	96.1	97.3	100.0	99.5	100.0	96.1
Mϕ	0.0	60.0	93.3	94.1	100.0	100.0	NA	95.9
N	NA	58.3	95.2	100.0	100.0	98.6	98.1	96.9
O	66.7	80.0	92.3	100.0	100.0	100.0	100.0	99.0
P	NA	40.0	75.0	90.0	91.7	98.6	97.2	96.3
Qϕ	NA	42.9	96.0	92.0	100.0	100.0	100.0	94.4
R	100.0	80.0	100.0	94.4	97.1	98.9	98.9	98.1
S	NA	NA	100.0	100.0	100.0	100.0	98.0	98.3
T	0.0	NA	100.0	100.0	93.3	100.0	100.0	99.4
U	50.0	90.9	100.0	90.9	100.0	99.4	98.4	98.3
V	NA	0.0	100.0	NA	100.0	98.6	100.0	98.9
Wϕ	66.7	68.8	92.9	100.0	100.0	100.0	100.0	94.9
X	100.0	79.4	92.4	97.4	100.0	99.0	99.2	98.0
Y	NA	71.4	84.6	93.1	98.3	97.8	98.7	97.0
Z	83.3	82.2	89.3	93.6	97.2	98.0	98.6	96.3
AAϕ	33.3	55.0	76.3	96.9	100.0	100.0	100.0	88.1
AB	NA	40.0	75.0	87.5	94.3	98.6	99.2	97.1
AC	NA	83.3	80.0	80.0	100.0	95.3	97.1	96.1
ADϕ	50.0	80.8	86.3	98.2	98.2	97.1	94.1	93.9
AE	22.2	69.7	95.3	97.9	98.5	98.0	98.9	96.9
AF	66.7	73.9	93.8	100.0	94.7	100.0	100.0	97.7
Overall survival rate for BW**	42.0	72.4	90.5	95.4	98.4	98.8	98.7	97.1

These analyses included 14 867 neonates from 32 sites (1 neonate had missing BW data).

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

ϕ Please note the data collection criteria were not the same for these eight sites, and thus their rates may not be comparable with other sites.

Overall* = (number of neonates who survived per site / total number of neonates for site)*100

Overall** = (number of neonates who survived for each BW category / total number of neonates in each BW category)*100

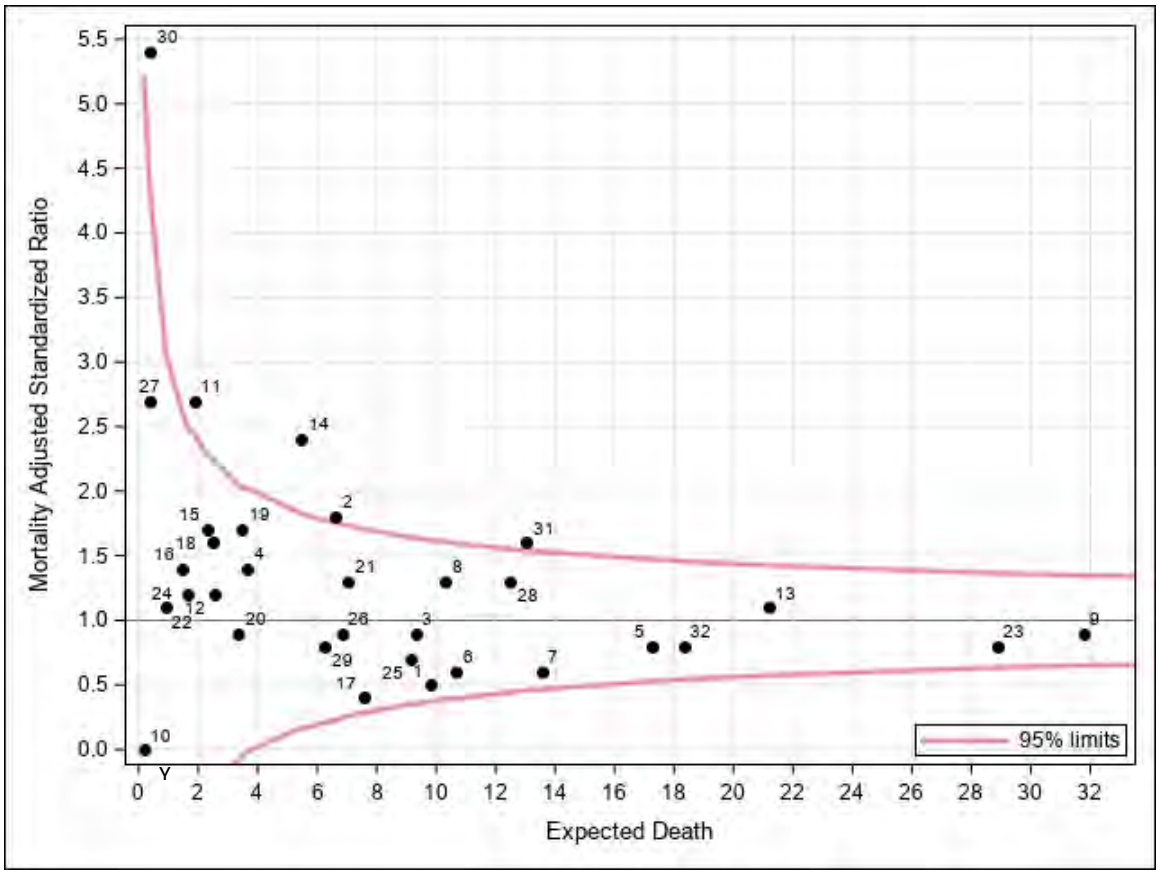
NA = no data available, 0 = no neonates survived, Delivery room deaths were not included

Presentation #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	172	5	9.8	0.5	0.2	1.2
2	107	12	6.6	1.8	0.9	3.2
3	156	8	9.3	0.9	0.4	1.7
4	120	5	3.6	1.4	0.4	3.2
5	296	13	17.3	0.8	0.4	1.3
6	155	6	10.7	0.6	0.2	1.2
7	154	8	13.5	0.6	0.3	1.2
8	147	13	10.3	1.3	0.7	2.2
9	431	29	31.8	0.9	0.6	1.3
10	6	0	0.2	0.0	.	20.7
11	41	5	1.9	2.7	0.9	6.2
12	71	3	2.5	1.2	0.2	3.5
13	263	24	21.2	1.1	0.7	1.7
14	133	13	5.5	2.4	1.3	4.1
15	63	4	2.3	1.7	0.5	4.4
16	45	2	1.5	1.4	0.2	4.9
17	120	3	7.6	0.4	0.1	1.2
18	53	4	2.5	1.6	0.4	4.2
19	88	6	3.5	1.7	0.6	3.8
20	64	3	3.4	0.9	0.2	2.6
21	130	9	7.0	1.3	0.6	2.4
22	27	1	0.9	1.1	0.0	6.2
23	314	23	28.9	0.8	0.5	1.2
24	38	2	1.7	1.2	0.1	4.3
25	172	6	9.1	0.7	0.2	1.4
26	127	6	6.8	0.9	0.3	1.9
27	8	1	0.4	2.7	0.0	15.2
28	201	16	12.5	1.3	0.7	2.1
29	120	5	6.2	0.8	0.3	1.9
30	14	2	0.4	5.4	0.6	19.6
31	173	21	13.0	1.6	1.0	2.5
32	276	15	18.3	0.8	0.5	1.3

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

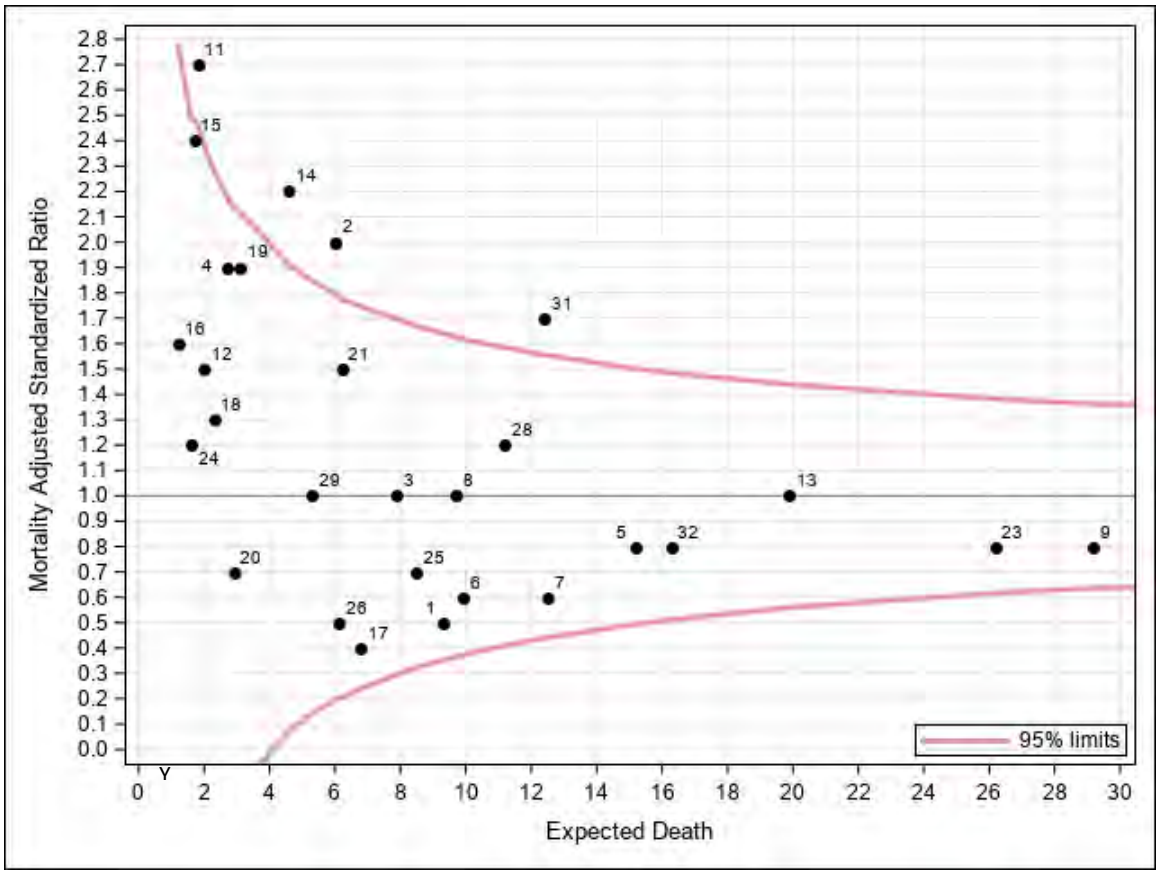
Explanation for Presentation 30b
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red 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	69	5	9.3	0.5	0.2	1.3
2	39	12	6.0	2.0	1.0	3.5
3	55	8	7.9	1.0	0.4	2.0
4	33	5	2.7	1.9	0.6	4.3
5	122	12	15.2	0.8	0.4	1.4
6	72	6	9.9	0.6	0.2	1.3
7	54	8	12.5	0.6	0.3	1.3
8	54	10	9.7	1.0	0.5	1.9
9	192	24	29.2	0.8	0.5	1.2
11	13	5	1.8	2.7	0.9	6.4
12	17	3	2.0	1.5	0.3	4.4
13	131	20	19.9	1.0	0.6	1.6
14	34	10	4.6	2.2	1.1	4.0
15	10	4	1.7	2.4	0.6	6.0
16	13	2	1.2	1.6	0.2	5.8
17	43	3	6.8	0.4	0.1	1.3
18	15	3	2.3	1.3	0.3	3.8
19	30	6	3.1	1.9	0.7	4.2
20	22	2	2.9	0.7	0.1	2.5
21	34	9	6.2	1.5	0.7	2.8
23	151	22	26.2	0.8	0.5	1.3
24	11	2	1.6	1.2	0.1	4.5
25	69	6	8.5	0.7	0.3	1.5
26	40	3	6.1	0.5	0.1	1.4
28	75	14	11.2	1.2	0.7	2.1
29	49	5	5.3	1.0	0.3	2.2
31	84	21	12.4	1.7	1.0	2.6
32	109	13	16.3	0.8	0.4	1.4

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.
Note: Sites 10, 22, 27, 30 were excluded from the analysis due to the small number of eligible neonates.

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

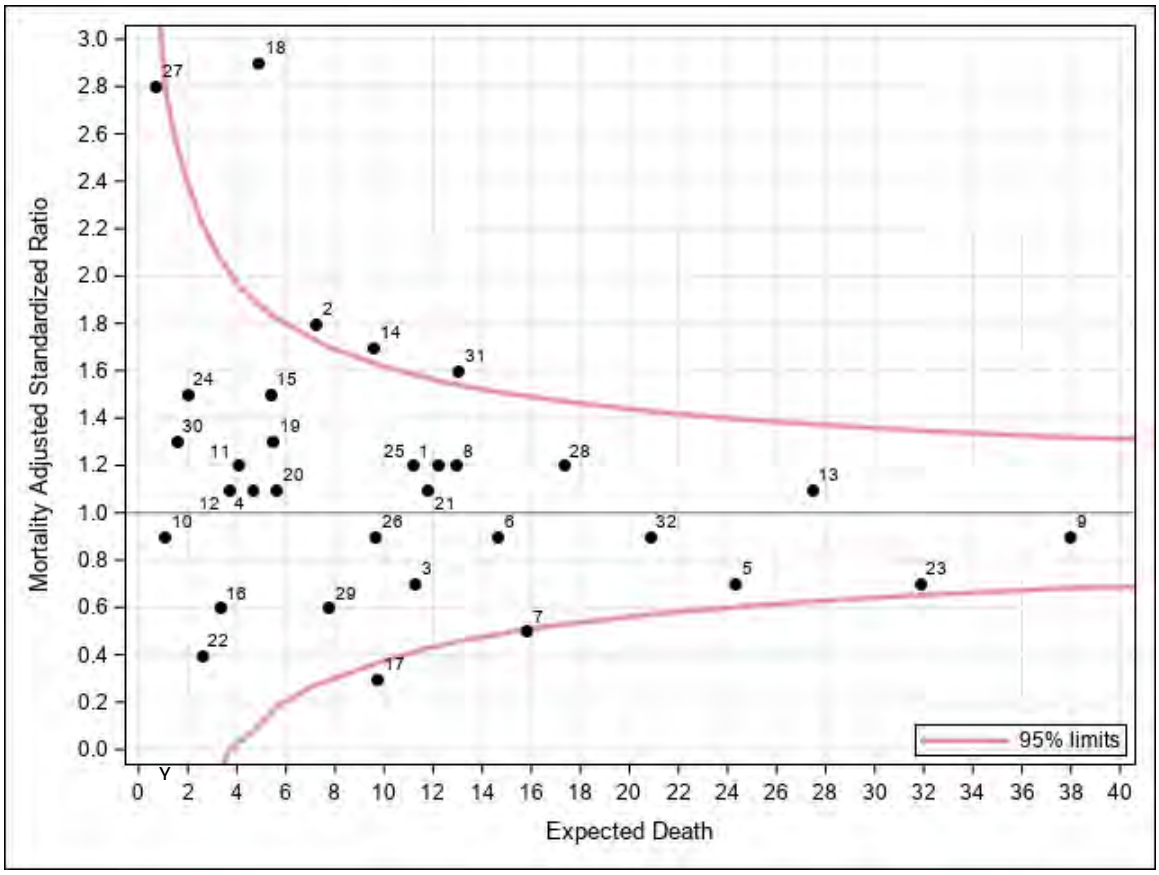
Explanation for Presentation 30d
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red 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	886	14	12.2	1.2	0.6	1.9
2	118	13	7.2	1.8	1.0	3.1
3	156	8	11.3	0.7	0.3	1.4
4	120	5	4.6	1.1	0.3	2.5
5	934	17	24.3	0.7	0.4	1.1
6	658	13	14.6	0.9	0.5	1.5
7	434	8	15.8	0.5	0.2	1.0
8	545	15	12.9	1.2	0.6	1.9
9	1051	34	38.0	0.9	0.6	1.3
10	99	1	1.1	0.9	0.0	5.2
11	434	5	4.1	1.2	0.4	2.9
12	86	4	3.7	1.1	0.3	2.8
13	959	30	27.4	1.1	0.7	1.6
14	531	16	9.5	1.7	1.0	2.7
15	353	8	5.3	1.5	0.6	3.0
16	309	2	3.3	0.6	0.1	2.2
17	400	3	9.7	0.3	0.1	0.9
18	494	14	4.9	2.9	1.6	4.8
19	368	7	5.5	1.3	0.5	2.6
20	268	6	5.6	1.1	0.4	2.3
21	762	13	11.7	1.1	0.6	1.9
22	284	1	2.5	0.4	0.0	2.2
23	586	23	31.8	0.7	0.5	1.1
24	125	3	2.0	1.5	0.3	4.5
25	499	13	11.2	1.2	0.6	2.0
26	521	9	9.6	0.9	0.4	1.8
27	96	2	0.7	2.8	0.3	10.3
28	779	21	17.4	1.2	0.7	1.8
29	121	5	7.7	0.6	0.2	1.5
30	269	2	1.5	1.3	0.1	4.8
31	173	21	13.0	1.6	1.0	2.5
32	320	18	20.8	0.9	0.5	1.4

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 #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	%	%	%	%	%	%	%
I	< 60	12.5	25.0	25.0	28.6	0.0	12.5	50.0
AC		10.2	10.4	27.3	42.6	10.2	15.3	59.3
S		0.0	20.0	0.0	40.0	0.0	9.1	45.5
B		3.6	8.3	5.3	7.4	0.0	0.0	21.4
G		5.3	2.9	20.0	11.1	2.6	10.5	23.7
V		14.3	7.7	0.0	8.3	0.0	0.0	21.4
C		12.2	7.7	0.0	19.4	0.0	4.9	31.7
T		4.2	4.7	0.0	21.7	6.3	2.1	31.3
F	61 – 130	4.7	13.5	8.8	14.8	0.0	6.3	26.6
R		4.7	3.9	40.9	22.6	0.8	9.4	28.9
P		9.1	6.2	3.7	16.7	0.0	6.1	25.8
A		6.7	3.2	1.9	8.4	0.0	4.5	15.7
E		11.9	10.3	18.5	19.8	1.8	6.4	33.0
M		4.1	1.9	3.6	16.4	0.8	3.3	21.5
J		5.4	1.6	6.3	22.9	8.1	5.4	31.1
O		3.3	4.1	6.9	22.5	2.4	8.1	28.5
Q		5.6	8.8	5.5	22.3	1.6	9.6	31.2
AB	131 – 200	9.7	16.3	6.8	17.5	3.0	6.7	28.4
U		3.4	6.2	14.6	34.3	0.6	7.3	36.3
H		7.4	6.0	11.3	19.8	2.2	8.1	33.1
K		3.8	9.1	5.4	25.5	2.5	13.3	39.2
N		8.9	17.9	14.0	81.3	3.2	8.9	84.2
W		5.1	1.4	1.4	44.7	4.4	4.4	50.0
AA		11.9	11.9	8.2	20.5	4.0	6.2	34.5
AF		6.3	12.0	5.9	21.5	6.3	12.7	32.9
D		4.5	5.0	29.0	32.0	1.1	11.7	36.3
Y	> 200	7.8	4.2	7.4	34.6	4.9	13.7	43.6
X		4.9	9.0	14.7	41.0	4.3	7.6	46.0
AE		8.9	7.5	16.4	47.2	5.6	16.7	57.8
AD		6.1	12.4	18.5	31.4	3.7	8.5	39.7
L		7.2	7.1	9.0	14.5	5.0	9.1	26.3
Z		7.9	6.8	7.1	32.8	7.6	12.3	41.0
Total CNN		6.8	7.7	9.9	29.8	3.8	9.3	38.6

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	%	%	%	%	%	%	%
I	< 15	33.3	33.3	0.0	100.0	0.0	33.3	100.0
T		14.3	14.3	0.0	58.3	7.1	7.1	71.4
B		25.0	0.0	0.0	66.7	0.0	0.0	75.0
S		0.0	0.0	0.0	66.7	0.0	25.0	50.0
P		40.0	40.0	16.7	66.7	0.0	40.0	90.0
G		18.2	0.0	25.0	44.4	9.1	27.3	63.6
V		66.7	50.0	0.0	0.0	0.0	0.0	66.7
C		38.5	27.3	0.0	62.5	0.0	15.4	84.6
AC	15 – 40	25.0	16.7	33.3	75.0	25.0	31.3	81.3
E		30.8	13.9	27.8	55.6	5.1	18.0	74.4
F		9.1	22.7	15.0	40.0	0.0	18.2	59.1
A		19.4	3.7	3.9	24.0	0.0	12.9	41.9
M		15.2	6.7	7.4	35.7	3.0	12.1	54.6
AB		29.4	26.7	16.0	58.3	5.9	14.7	70.6
J		16.7	0.0	15.4	66.7	22.2	22.2	77.8
H		27.8	11.8	26.9	55.6	2.8	19.4	77.8
R		7.5	7.5	60.0	57.9	2.5	25.0	70.0
O	41 – 80	8.9	8.9	12.5	50.0	6.7	13.3	57.8
Y		18.4	9.3	12.9	71.0	10.5	32.9	81.6
Q		11.8	12.5	11.1	42.6	2.0	15.7	52.9
AF		14.3	21.4	12.2	50.0	16.1	28.6	66.1
W		14.3	3.7	2.8	75.0	8.9	8.9	82.1
D		11.1	7.1	35.5	63.1	2.8	25.0	66.7
N		18.2	34.7	21.9	95.6	9.1	20.0	98.2
K		8.3	12.7	7.6	46.3	4.2	26.4	69.4
U		6.9	12.9	21.2	67.2	1.4	16.7	69.4
AD	> 80	11.8	20.7	24.1	58.1	8.4	18.5	68.9
AE		14.9	10.2	18.8	72.8	9.0	26.9	83.6
X		9.6	15.3	17.3	74.6	9.6	15.1	80.1
AA		25.0	16.7	8.2	41.3	6.0	11.9	58.3
L		14.3	11.8	10.8	25.8	7.1	18.2	46.8
Z		12.8	12.6	8.4	62.6	15.9	25.1	73.3
Total CNN		15.0	13.7	14.9	57.8	8.0	20.3	70.0

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

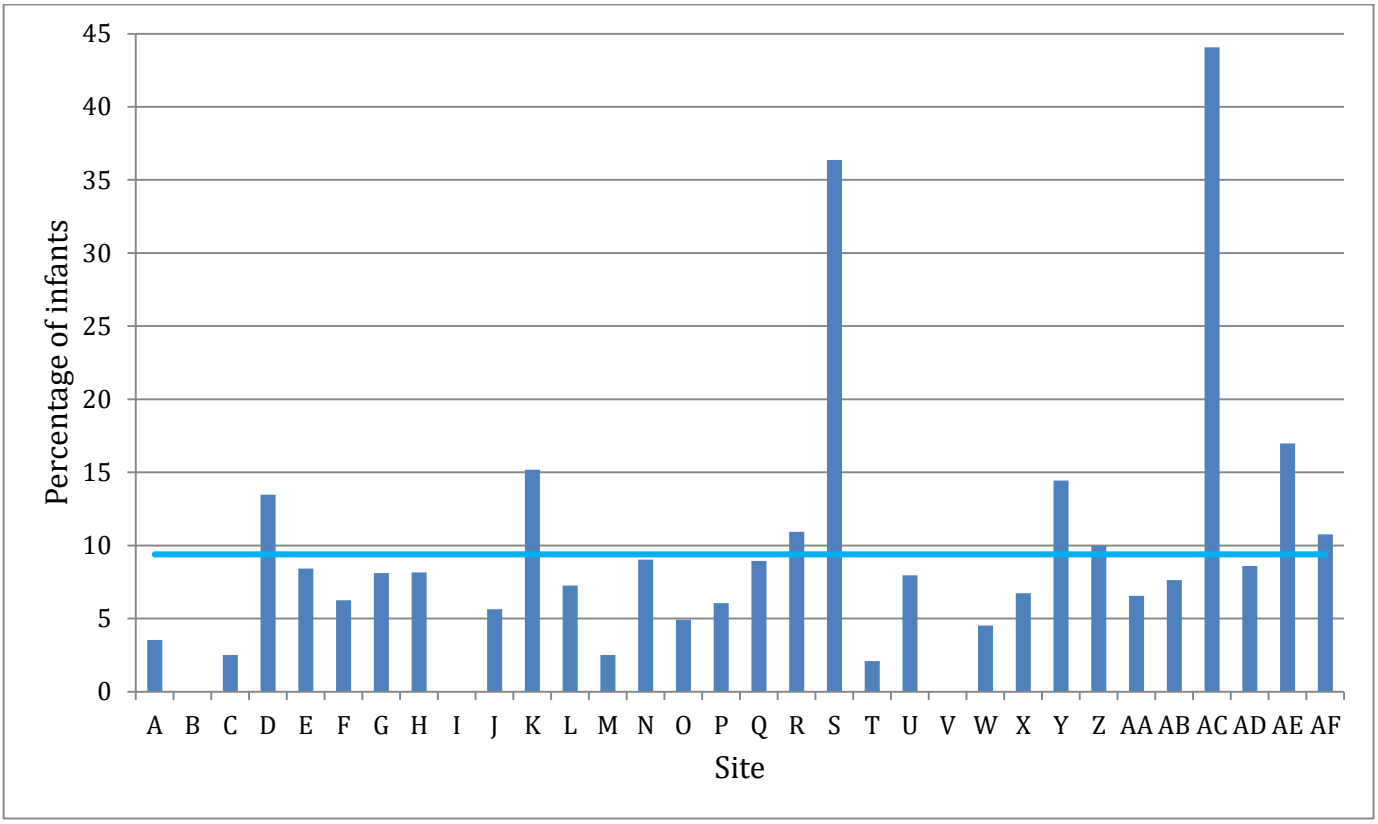
In presentations #33 and #34, late onset sepsis was attributed to the hospital where the first episode of sepsis was acquired. Each neonate was counted only once even if there were multiple episodes of infections.

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=4 385 neonates, 61 excluded due to death before 3 days of age)



Site	A	B	C	D	E	F	G	H	I	J	K
%	3.5	0.0	2.5	13.5	8.4	6.3	8.1	8.1	0.0	5.6	15.2
Site	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**V**
%	7.3	2.5	9.0	4.9	6.1	8.9	10.9	36.4	2.1	8.0	0.0
Site	**W**	**X**	**Y**	**Z**	**AA**	**AB**	**AC**	**AD**	**AE**	**AF**	**CNN**
%	4.5	6.7	14.4	10.0	6.5	7.6	44.1	8.6	17.0	10.8	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	177	14	18.5	0.8	0.4	1.3
2	109	9	9.2	1.0	0.4	1.9
3	155	7	12.8	0.5	0.2	1.1
4	119	3	6.7	0.4	0.1	1.3
5	324	22	31.5	0.7	0.4	1.1
6	161	24	17.7	1.4	0.9	2.0
7	155	17	16.5	1.0	0.6	1.6
8	155	14	14.8	0.9	0.5	1.6
9	430	44	47.5	0.9	0.7	1.2
10	14	4	1.4	2.8	0.8	7.1
11	39	1	2.7	0.4	0.0	2.0
12	71	4	4.0	1.0	0.3	2.5
13	265	45	29.2	1.5	1.1	2.1
14	132	10	8.4	1.2	0.6	2.2
15	66	4	3.6	1.1	0.3	2.8
16	48	1	2.9	0.3	0.0	1.9
17	118	6	11.0	0.5	0.2	1.2
18	76	26	8.9	2.9	1.9	4.3
19	84	3	5.4	0.6	0.1	1.6
20	64	4	5.3	0.8	0.2	1.9
21	135	11	10.1	1.1	0.5	1.9
22	28	0	1.6	0.0	.	2.3
23	311	23	35.5	0.6	0.4	1.0
24	36	3	2.5	1.2	0.2	3.5
25	181	24	17.8	1.3	0.9	2.0
26	130	14	11.2	1.2	0.7	2.1
27	7	0	0.5	0.0	.	6.7
28	202	29	18.8	1.5	1.0	2.2
29	122	11	10.3	1.1	0.5	1.9
30	12	0	0.3	0.0	.	11.3
31	168	11	16.8	0.7	0.3	1.2
32	291	25	29.2	0.9	0.6	1.3

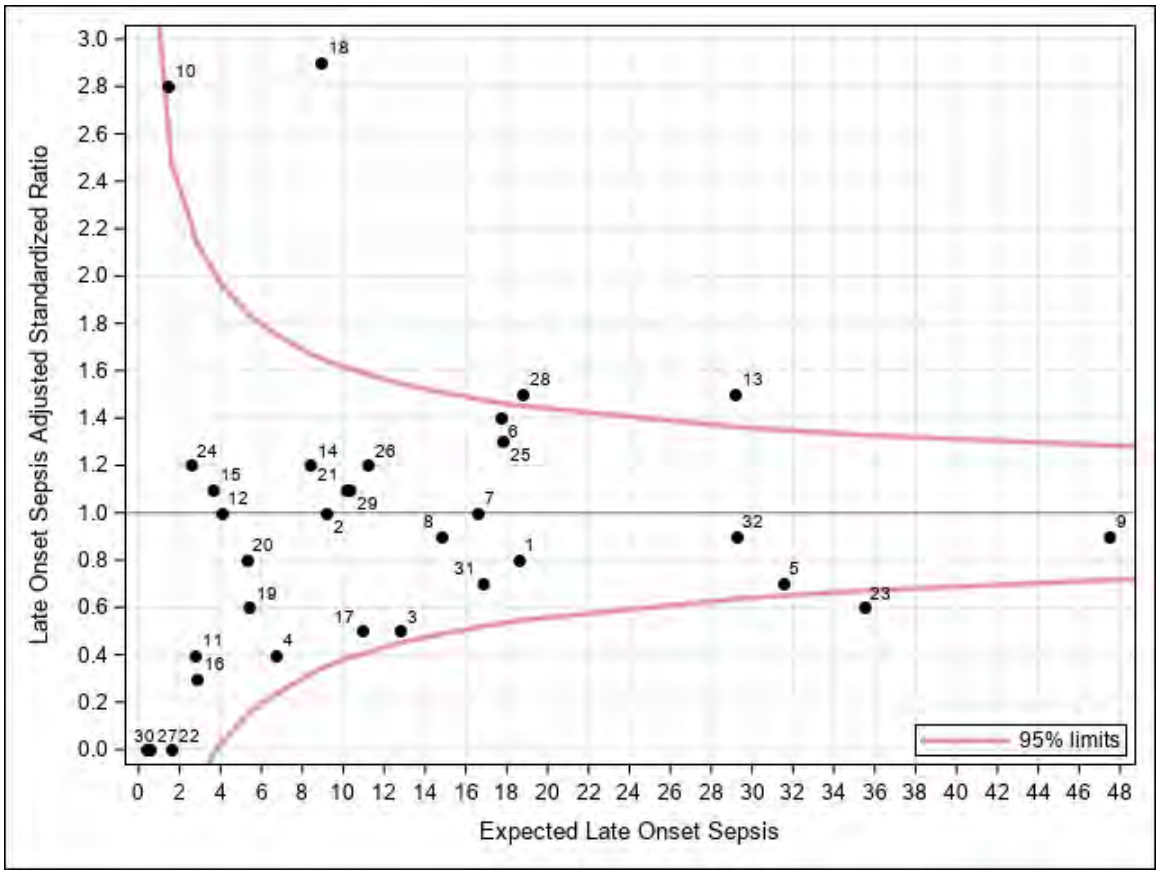
Numeric site codes were used in Presentations 34a-d and they may not correspond to other presentations in this report.

*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	71	13	16.3	0.8	0.4	1.4
2	39	9	7.8	1.2	0.5	2.2
3	53	5	10.3	0.5	0.2	1.1
4	31	3	4.4	0.7	0.1	2.0
5	143	20	27.5	0.7	0.4	1.1
6	74	21	15.8	1.3	0.8	2.0
7	54	14	14.0	1.0	0.5	1.7
8	53	11	12.5	0.9	0.4	1.6
9	186	41	41.0	1.0	0.7	1.4
11	11	1	2.1	0.5	0.0	2.7
12	16	4	2.8	1.4	0.4	3.7
13	129	36	26.4	1.4	1.0	1.9
14	32	5	6.3	0.8	0.3	1.9
15	10	4	2.3	1.8	0.5	4.5
16	14	1	2.2	0.5	0.0	2.5
17	43	5	9.1	0.6	0.2	1.3
18	30	19	7.9	2.4	1.5	3.8
19	26	3	4.2	0.7	0.1	2.1
20	22	4	4.3	0.9	0.2	2.4
21	35	7	7.9	0.9	0.4	1.8
23	146	22	30.7	0.7	0.4	1.1
24	9	2	2.0	1.0	0.1	3.7
25	72	19	15.4	1.2	0.7	1.9
26	41	11	9.1	1.2	0.6	2.2
28	75	26	16.0	1.6	1.1	2.4
29	49	8	8.4	0.9	0.4	1.9
31	75	10	14.5	0.7	0.3	1.3
32	117	22	25.1	0.9	0.5	1.3

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

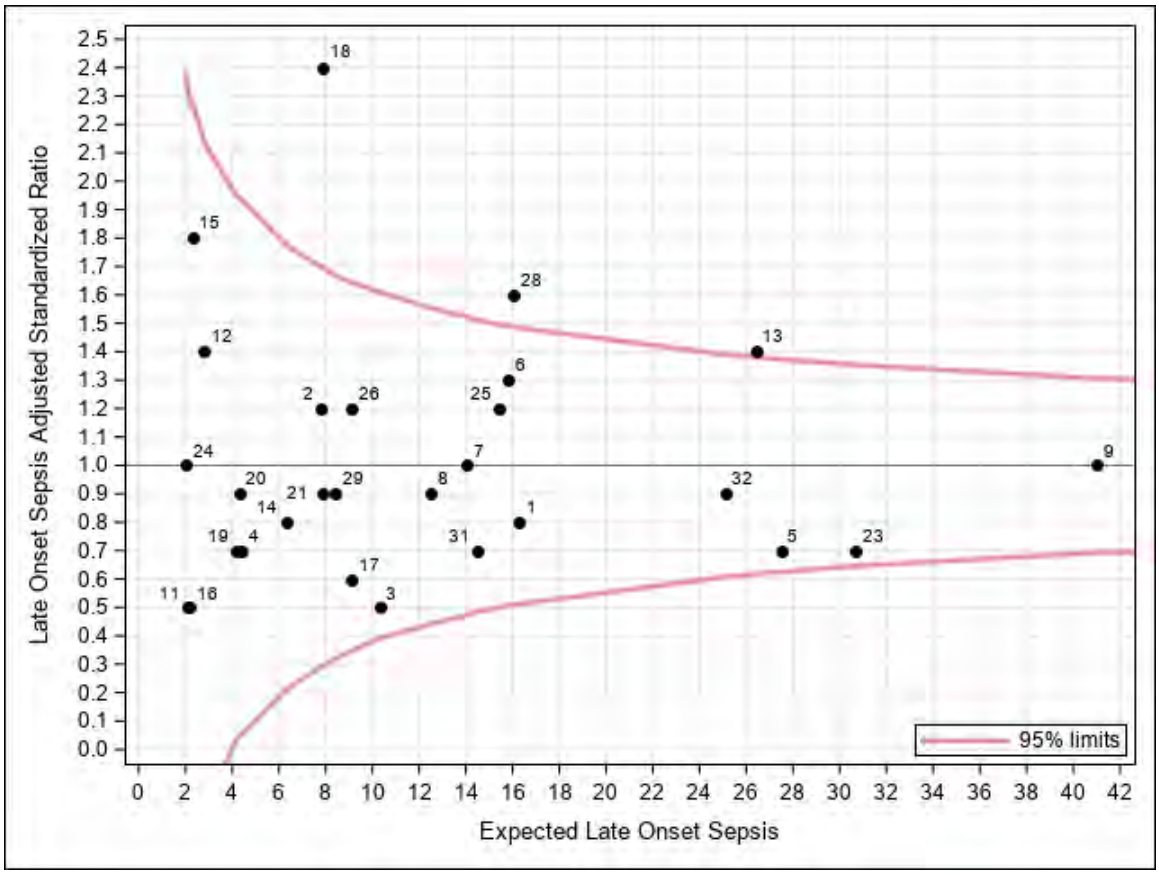
*Late onset sepsis was attributed to the hospital where the first episode of sepsis was acquired.

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

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

Note: Sites 10, 22, 27, 30 were excluded from the analysis due to the small number of eligible neonates.

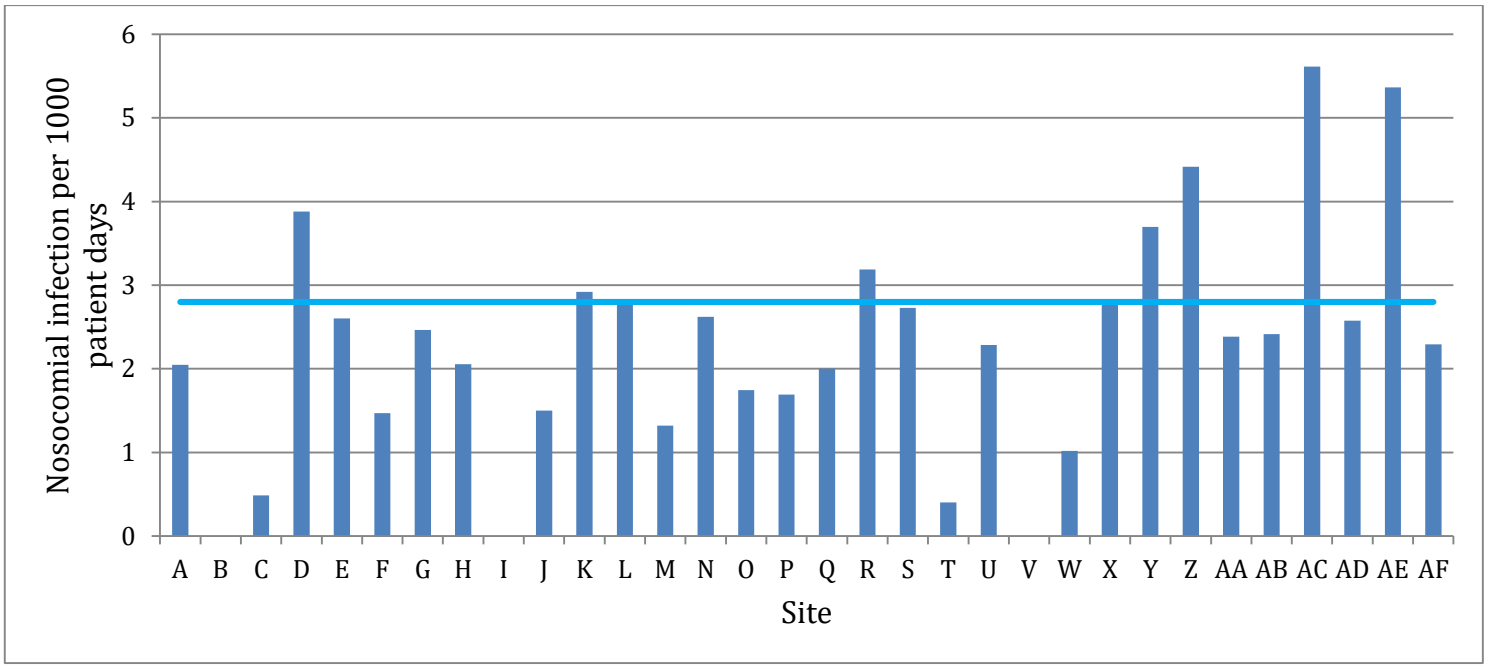
Presentation # 34d
Late onset sepsis: GA<29 weeks: Adjusted standardized ratios by site



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



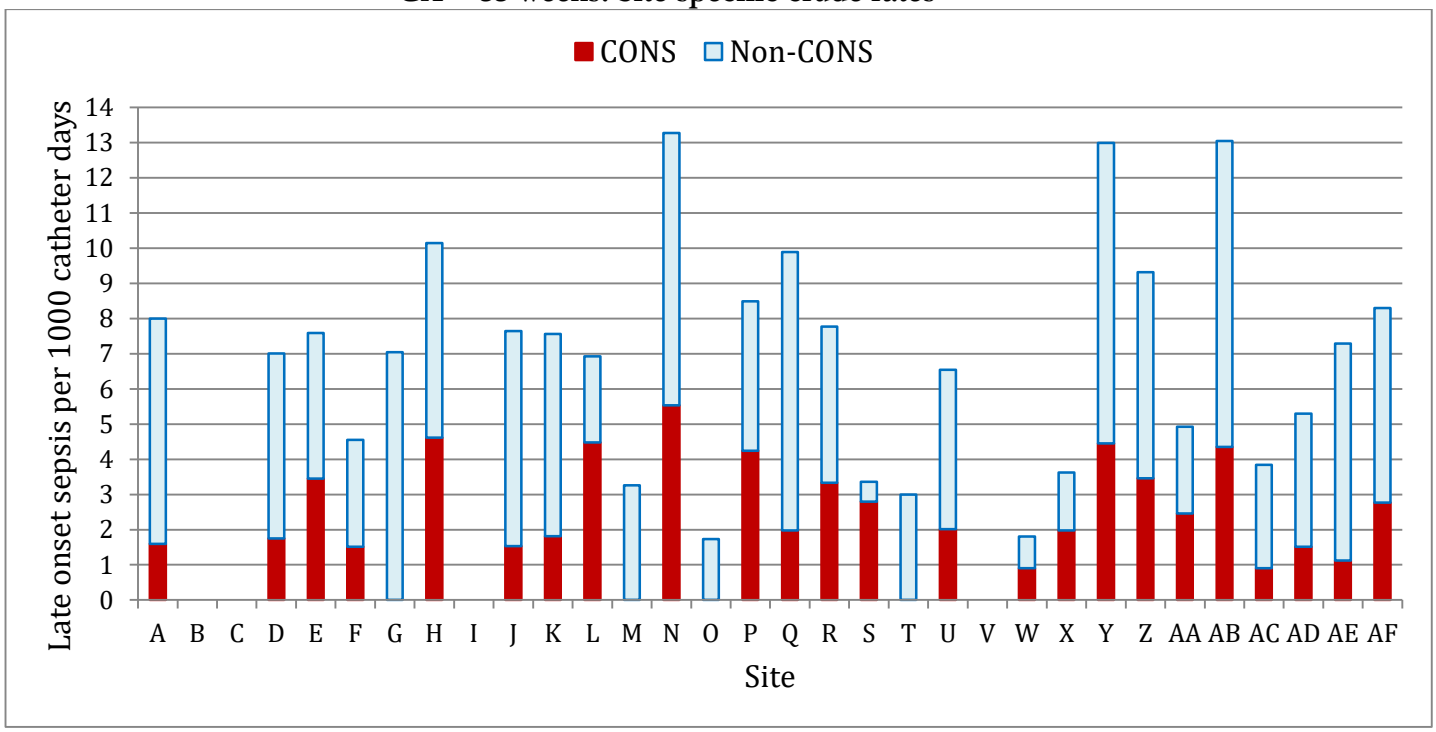
Site	Infections per 1000 patient days	Site	Infections per 1000 patient days	Site	Infections per 1000 patient days
A	2.0	**L**	2.8	**W**	1.0
B	0.0	**M**	1.3	**X**	2.8
C	0.5	**N**	2.6	**Y**	3.7
D	3.9	**O**	1.7	**Z**	4.4
E	2.6	**P**	1.7	**AA**	2.4
F	1.5	**Q**	2.0	**AB**	2.4
G	2.5	**R**	3.2	**AC**	5.6
H	2.1	**S**	2.7	**AD**	2.6
I	0.0	**T**	0.4	**AE**	5.4
J	1.5	**U**	2.3	**AF**	2.3
K	2.9	**V**	0.0	**CNN**	2.8

Total number of neonates = 4 446

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.

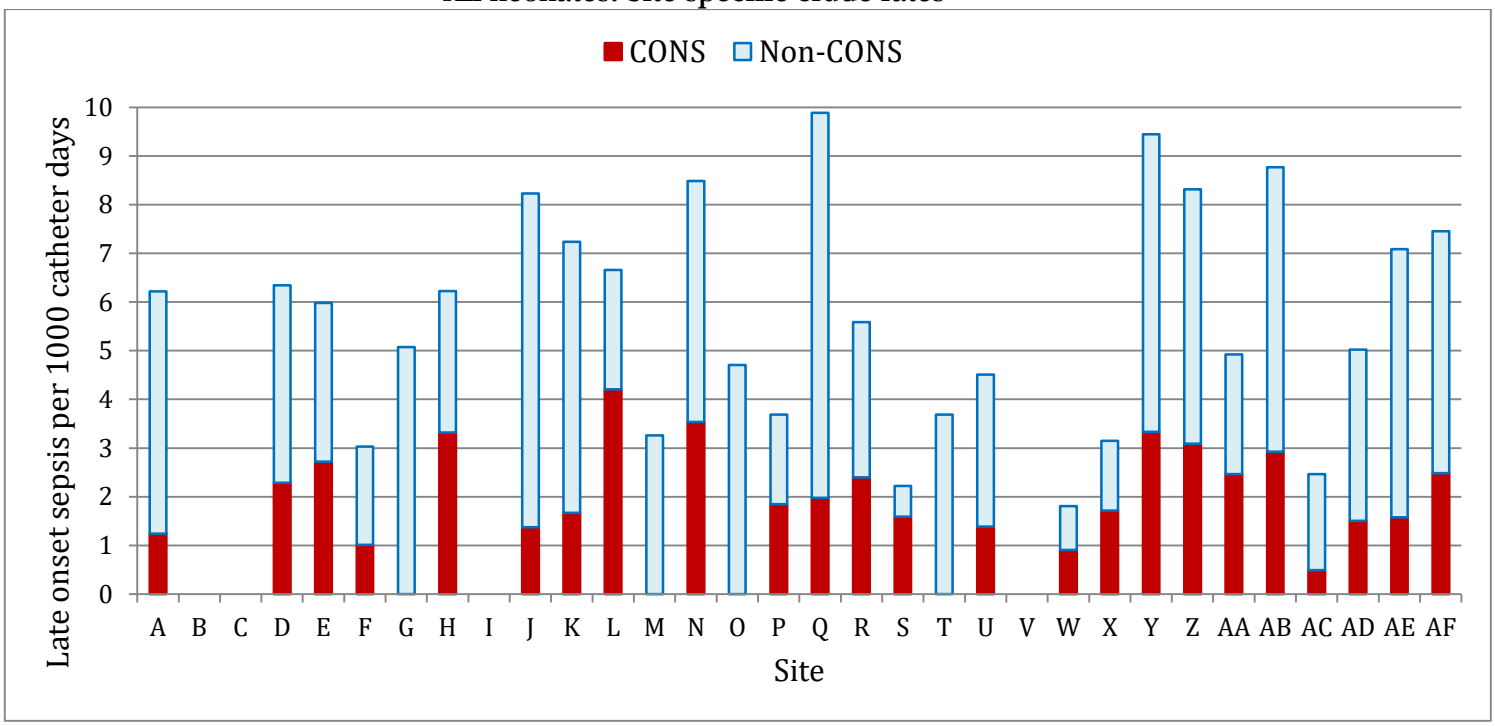
Presentation #36a
Central Line-Associated Bloodstream Infections per 1000 central line* days:
GA < 33 weeks: Site specific crude rates



Site	CLABSI**		Central line days	CLABSI per 1000 central line days		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	4	625	1.6	6.4	**Q**	2	8	1011	2.0	7.9
B	0	0	36	0.0	0.0	**R**	3	4	901	3.3	4.4
C	0	0	216	0.0	0.0	**S**	5	1	1788	2.8	0.6
D	6	18	3425	1.8	5.3	**T**	0	1	334	0.0	3.0
E	5	6	1449	3.5	4.1	**U**	4	9	1986	2.0	4.5
F	1	2	659	1.5	3.0	**V**	0	0	19	0.0	0.0
G	0	1	142	0.0	7.0	**W**	2	2	2216	0.9	0.9
H	5	6	1084	4.6	5.5	**X**	6	5	3032	2.0	1.6
I	0	0	23	0.0	0.0	**Y**	12	23	2693	4.5	8.5
J	1	4	654	1.5	6.1	**Z**	13	22	3755	3.5	5.9
K	6	19	3307	1.8	5.7	**AA**	5	5	2030	2.5	2.5
L	11	6	2454	4.5	2.4	**AB**	2	4	460	4.3	8.7
M	0	2	613	0.0	3.3	**AC**	4	13	4428	0.9	2.9
N	5	7	904	5.5	7.7	**AD**	8	20	5288	1.5	3.8
O	0	1	578	0.0	1.7	**AE**	4	22	3567	1.1	6.2
P	2	2	471	4.2	4.2	**AF**	5	10	1807	2.8	5.5
						CNN	118	227	51955	2.3	4.4

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

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

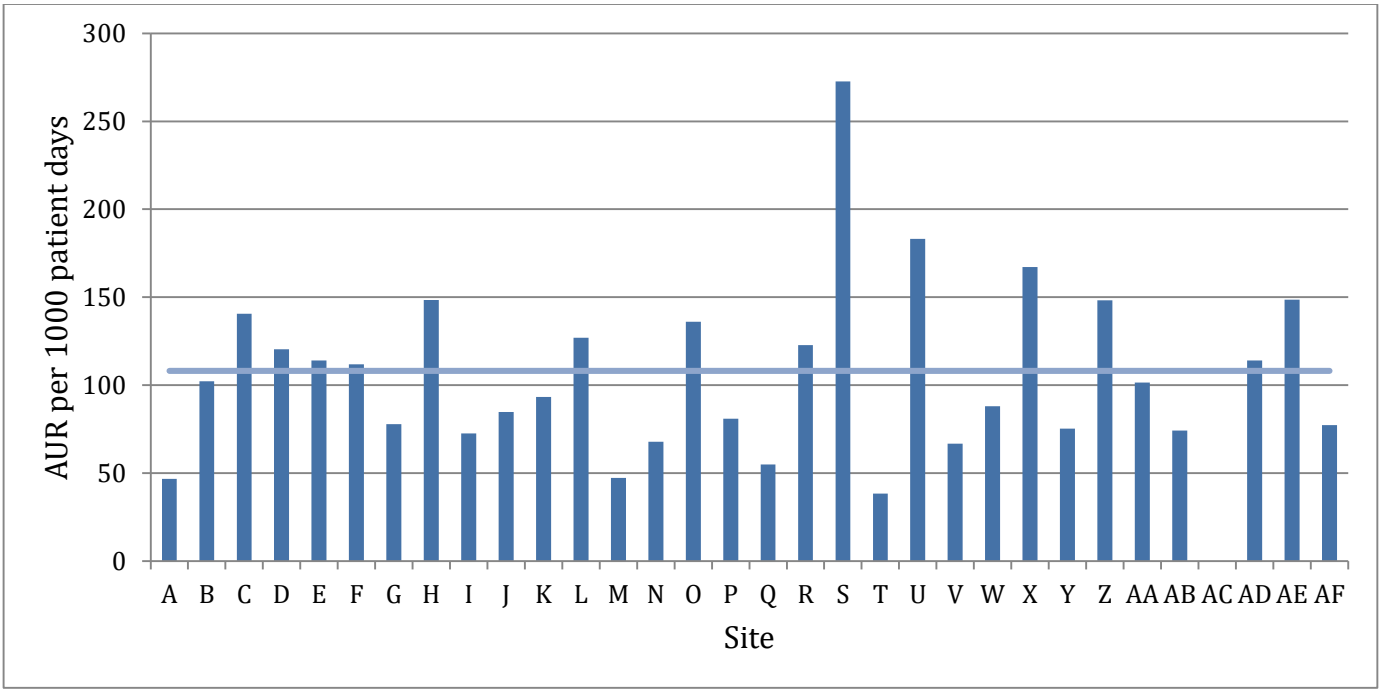


Site	CLABSI**		Central line days	CLABSI per 1000 central line days	
	CONS	Non-CONS		CONS	Non-CONS
A	1	4	804	1.2	5.0
B	0	0	69	0.0	0.0
C	0	0	381	0.0	0.0
D	13	23	5677	2.3	4.1
E	5	6	1838	2.7	3.3
F	1	2	990	1.0	2.0
G	0	1	197	0.0	5.1
H	8	7	2410	3.3	2.9
I	0	0	61	0.0	0.0
J	1	5	729	1.4	6.9
K	9	30	5387	1.7	5.6
L	12	7	2854	4.2	2.5
M	0	2	613	0.0	3.3
N	5	7	1414	3.5	5.0
O	0	3	637	0.0	4.7
P	2	2	1085	1.8	1.8

Site	CLABSI**		Central line days	CLABSI per 1000 central line days	
	CONS	Non-CONS		CONS	Non-CONS
Q	2	8	1011	2.0	7.9
R	3	4	1252	2.4	3.2
S	5	2	3148	1.6	0.6
T	0	2	542	0.0	3.7
U	4	9	2883	1.4	3.1
V	0	0	29	0.0	0.0
W	2	2	2216	0.9	0.9
X	6	5	3495	1.7	1.4
Y	18	33	5398	3.3	6.1
Z	13	22	4208	3.1	5.2
AA	5	5	2030	2.5	2.5
AB	2	4	684	2.9	5.8
AC	4	16	8123	0.5	2.0
AD	9	21	5973	1.5	3.5
AE	8	28	5078	1.6	5.5
AF	5	10	2011	2.5	5.0
CNN	143	270	73227	2.0	3.7

*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*

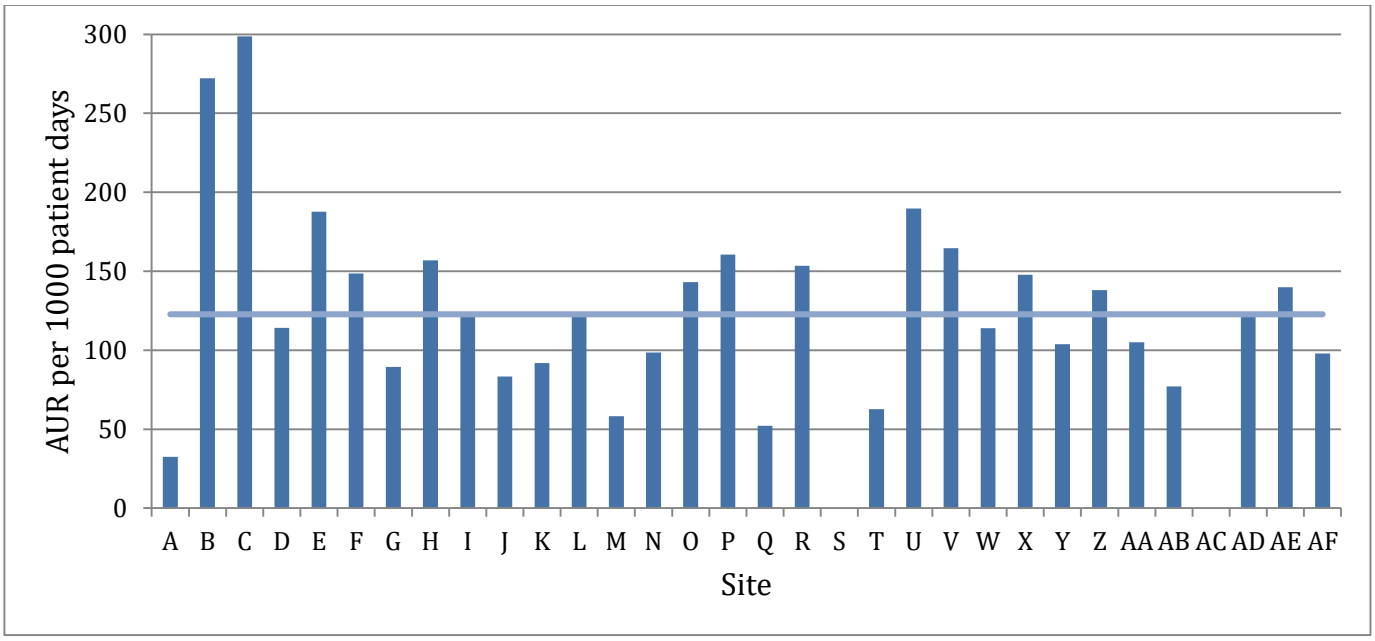


Site	Days of antimicrobial use per 1000 patient days	Site	Days of antimicrobial use per 1000 patient days	Site	Days of antimicrobial use per 1000 patient days
A	46.7	**L**	126.8	**W**	88.0
B	102.2	**M**	47.3	**X**	167.2
C	140.6	**N**	67.7	**Y**	75.2
D	120.3	**O**	136.0	**Z**	148.2
E	113.9	**P**	80.9	**AA**	101.4
F	111.7	**Q**	54.9	**AB**	74.2
G	77.8	**R**	122.8	**AC**	0.0
H	148.4	**S**	272.7	**AD**	114.0
I	72.5	**T**	38.4	**AE**	148.5
J	84.7	**U**	183.1	**AF**	77.2
K	93.3	**V**	66.8	**CNN**	108.1

*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*

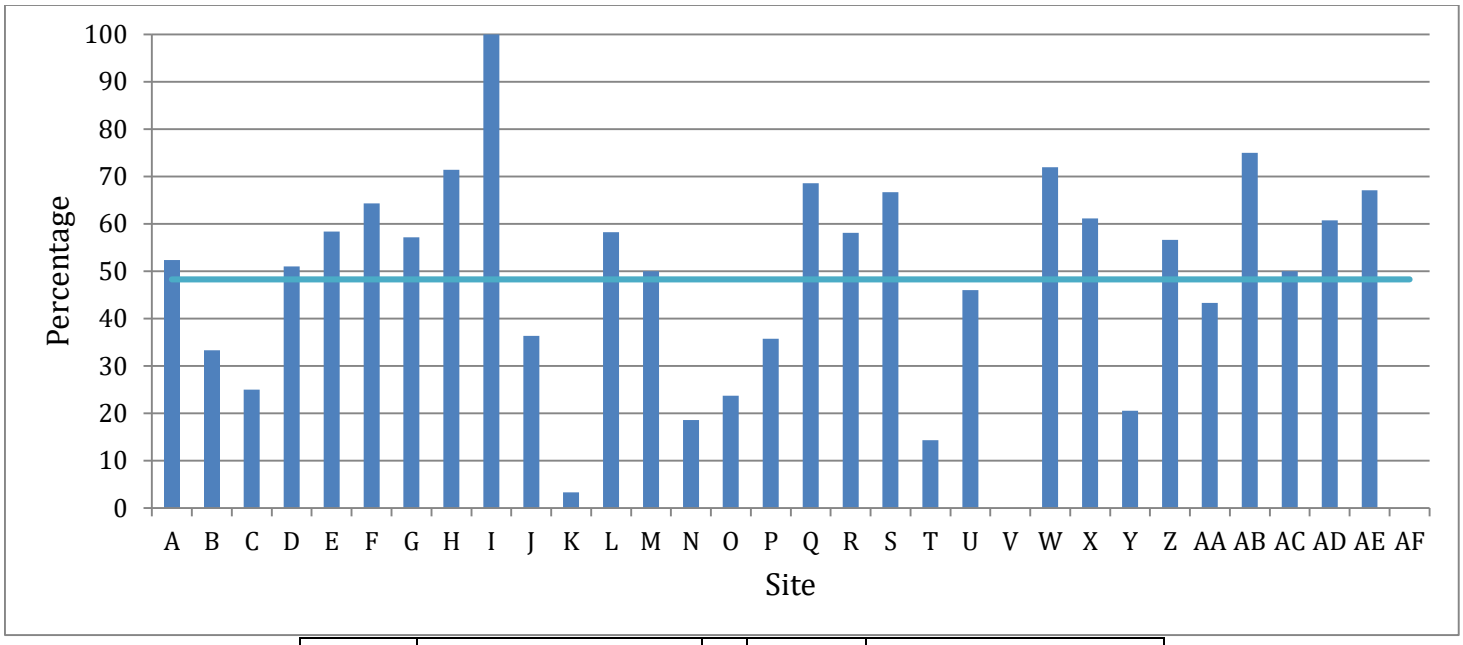


Site	Days of antimicrobial use per 1000 patient days	Site	Days of antimicrobial use per 1000 patient days	Site	Days of antimicrobial use per 1000 patient days
A	32.5	**L**	123.4	**W**	113.8
B	272.3	**M**	58.1	**X**	147.9
C	298.7	**N**	98.5	**Y**	103.9
D	114.1	**O**	143.1	**Z**	138.0
E	187.7	**P**	160.6	**AA**	105.0
F	148.5	**Q**	52.0	**AB**	77.0
G	89.4	**R**	153.5	**AC**	0.0
H	156.9	**S**	0.0	**AD**	123.0
I	123.2	**T**	62.8	**AE**	139.8
J	83.3	**U**	189.8	**AF**	97.9
K	91.8	**V**	164.6	**CNN**	122.7

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

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

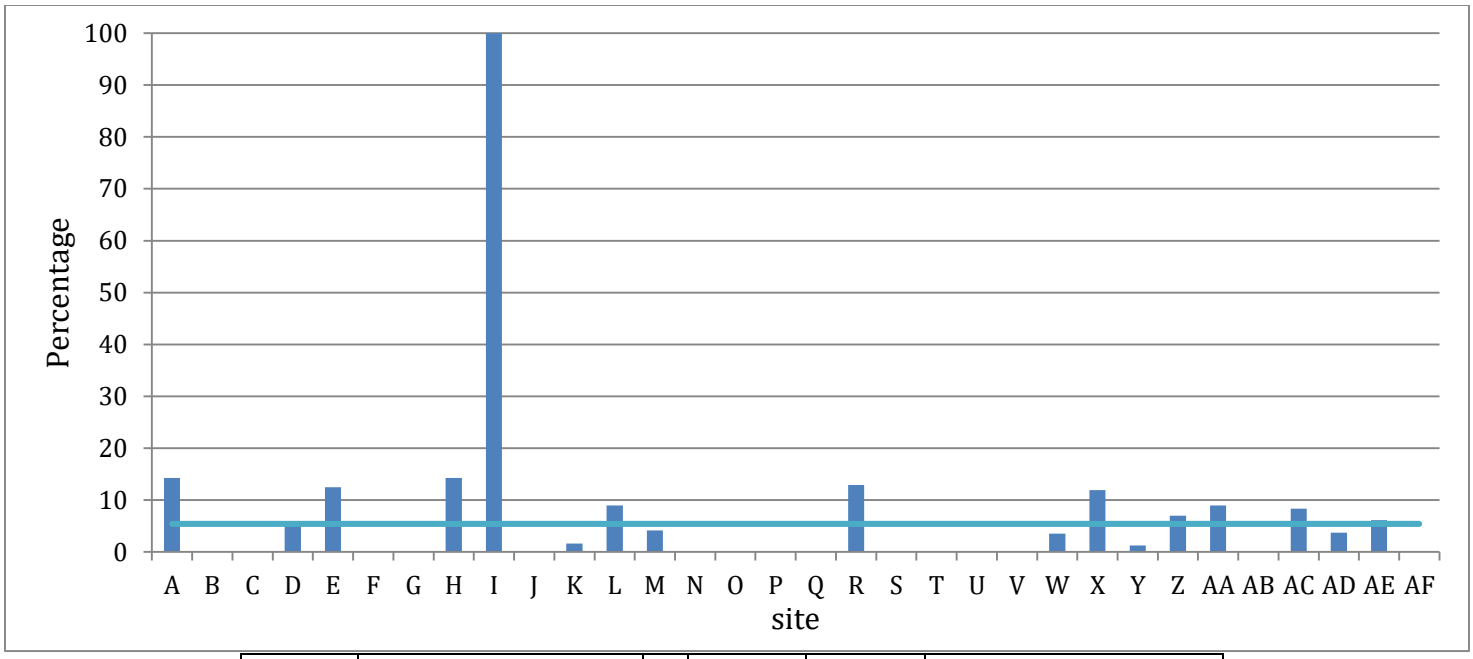
Presentation #39
Rate of treatment# for patent ductus arteriosus (PDA): GA<33 weeks who had PDA*:
Site specific crude rates



Site	Treatment# for PDA among neonates who had PDA (%)		Site	Treatment# for PDA among neonates who had PDA (%)
A	52.4		**Q**	68.6
B	33.3		**R**	58.1
C	25.0		**S**	66.7
D	51.0		**T**	14.3
E	58.3		**U**	46.0
F	64.3		**V**	0.0
G	57.1		**W**	71.9
H	71.4		**X**	61.1
I	100.0		**Y**	20.5
J	36.4		**Z**	56.6
K	3.3		**AA**	43.3
L	58.2		**AB**	75.0
M	50.0		**AC**	50.0
N	18.6		**AD**	60.8
O	23.7		**AE**	67.1
P	35.7		**AF**	0.0
			CNN	48.3

Total number of neonates who had PDA = 1 258
*PDA diagnosis is based on clinical suspicion and/or echocardiography findings.
#Treatment of PDA includes any of indomethacin, ibuprofen, acetaminophen, or ligation.
The percentage of neonates with treated PDA was attributed to the site where the neonate was first admitted.

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

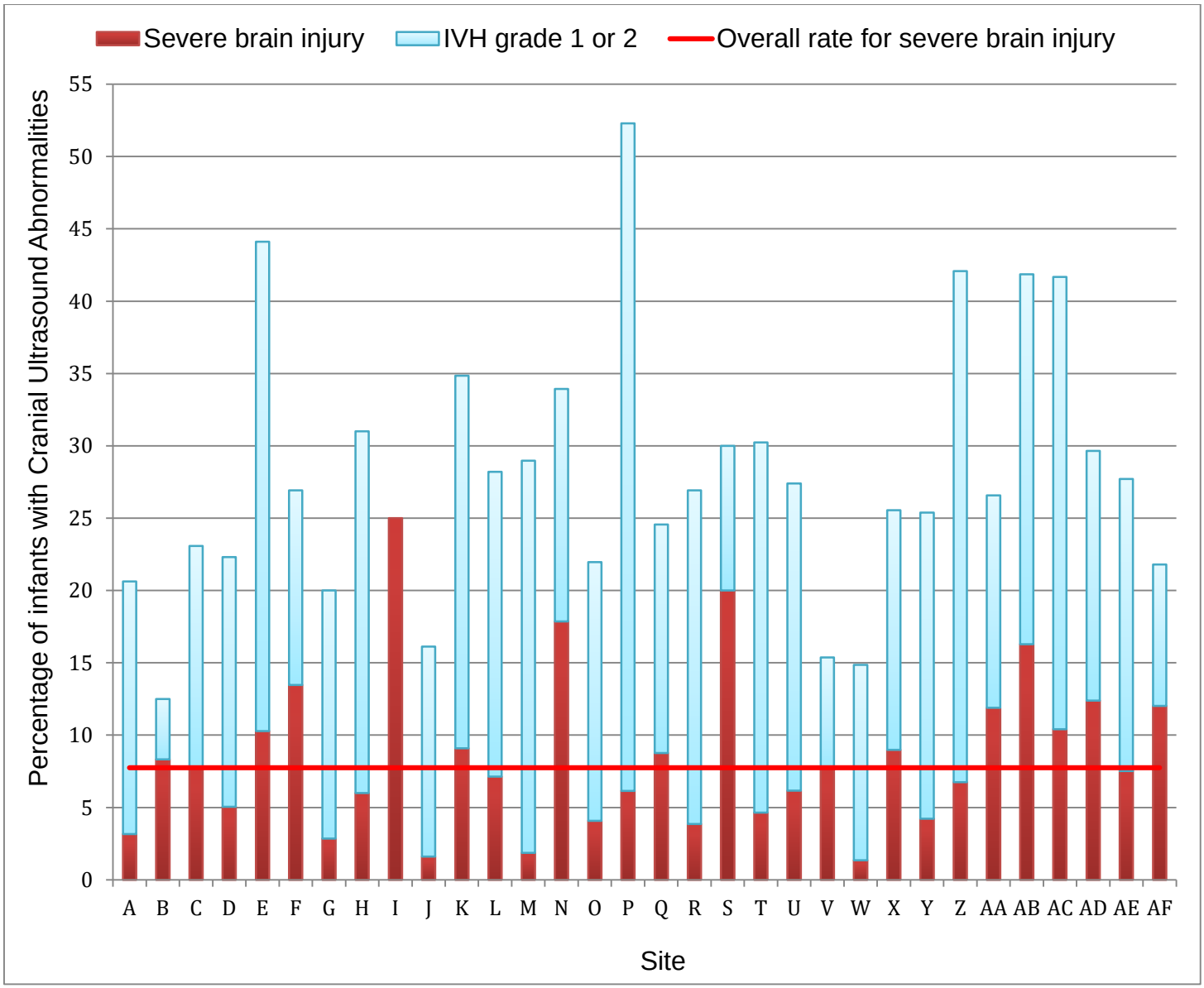


Site	Surgical ligation for PDA among neonates who had PDA (%)			Site	Surgical ligation for PDA among neonates who had PDA (%)
A	14.3			**Q**	0.0
B	0.0			**R**	12.9
C	0.0			**S**	0.0
D	5.9			**T**	0.0
E	12.5			**U**	0.0
F	0.0			**V**	0.0
G	0.0			**W**	3.5
H	14.3			**X**	11.9
I	100.0			**Y**	1.3
J	0.0			**Z**	7.0
K	1.6			**AA**	9.0
L	9.0			**AB**	0.0
M	4.2			**AC**	8.3
N	0.0			**AD**	3.7
O	0.0			**AE**	6.1
P	0.0			**AF**	0.0
				CNN	5.4

Total number of neonates who had PDA = 1 258

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

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

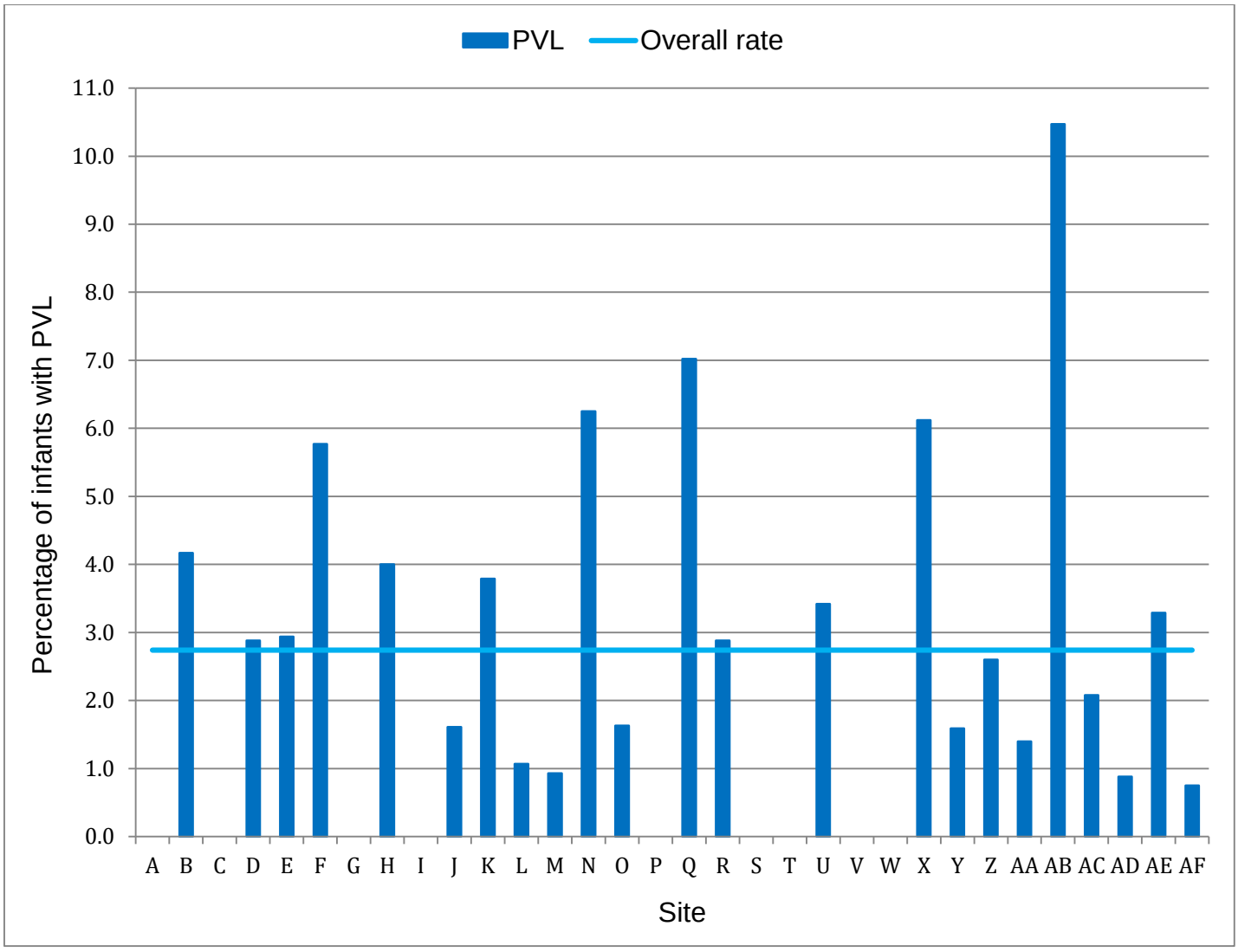
Presentation #41 (continued)
Severe brain injury rate: GA<33 weeks: Site specific crude rates

Site	<25	25-26	27-28	29-30	31-32	Overall rate* per site %
A	0.0	0.0	5.9	7.7	0.0	3.2
B	0.0	0.0	0.0	25.0	6.3	8.3
C	66.7	NA	12.5	0.0	0.0	7.7
D	16.7	8.3	2.9	0.0	5.4	5.0
E	36.4	0.0	6.3	5.9	6.7	10.3
F	66.7	33.3	0.0	7.1	6.3	13.5
G	0.0	0.0	0.0	11.1	0.0	2.9
H	16.7	17.7	0.0	2.8	3.3	6.0
I	NA	33.3	NA	NA	0.0	25.0
J	0.0	0.0	0.0	5.9	0.0	1.6
K	27.3	10.0	10.0	7.1	3.0	9.1
L	21.1	13.6	5.7	1.1	2.7	7.1
M	100.0	0.0	0.0	0.0	0.0	1.9
N	53.3	50.0	10.0	11.5	0.0	17.9
O	10.0	20.0	4.0	0.0	2.5	4.1
P	66.7	40.0	0.0	0.0	0.0	6.2
Q	0.0	6.7	16.7	4.7	8.7	8.8
R	18.2	0.0	6.3	0.0	2.7	3.9
S	NA	NA	0.0	0.0	50.0	20.0
T	0.0	25.0	11.1	0.0	0.0	4.7
U	21.1	14.3	6.7	0.0	0.0	6.2
V	NA	100.0	0.0	0.0	0.0	7.7
W	11.1	0.0	3.9	0.0	0.0	1.4
X	21.1	21.1	8.8	3.1	1.5	9.0
Y	12.5	3.9	12.1	0.0	1.5	4.2
Z	21.3	12.5	7.5	0.9	1.3	6.8
AA	14.3	25.0	13.6	5.4	7.1	11.9
AB	66.7	25.0	18.2	12.5	8.3	16.3
AC	0.0	0.0	40.0	8.3	8.3	10.4
AD	50.0	14.9	9.3	3.6	3.6	12.4
AE	17.4	12.2	6.4	4.0	2.8	7.5
AF	33.3	17.7	11.1	7.5	2.7	12.0
Overall rate per GA group %**	25.7	14.3	7.9	3.2	2.6	7.7

Total number of neonates = 4 446

Severe brain injury includes Grade 3 or 4 IVH or PVL
Note that the proportion of neonates with neuroimaging data available varies by GA. 763 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	0.0	0.0	0.0	0.0	0.0	0.0
B	0.0	0.0	0.0	0.0	6.3	4.2
C	0.0	NA	0.0	0.0	0.0	0.0
D	16.7	0.0	2.9	0.0	2.7	2.9
E	9.1	0.0	6.3	0.0	0.0	2.9
F	0.0	11.1	0.0	7.1	6.3	5.8
G	0.0	0.0	0.0	0.0	0.0	0.0
H	0.0	11.8	0.0	2.8	3.3	4.0
I	NA	0.0	NA	NA	0.0	0.0
J	0.0	0.0	0.0	5.9	0.0	1.6
K	0.0	6.7	3.3	3.6	3.0	3.8
L	2.6	2.3	0.0	0.0	2.7	1.1
M	50.0	0.0	0.0	0.0	0.0	0.9
N	6.7	28.6	0.0	7.7	0.0	6.3
O	0.0	10.0	0.0	0.0	2.5	1.6
P	0.0	0.0	0.0	0.0	0.0	0.0
Q	0.0	0.0	13.3	4.7	8.7	7.0
R	9.1	0.0	6.3	0.0	2.7	2.9
S	NA	NA	0.0	0.0	0.0	0.0
T	0.0	0.0	0.0	0.0	0.0	0.0
U	15.8	9.5	0.0	0.0	0.0	3.4
V	NA	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0
X	15.8	14.0	4.4	3.1	1.5	6.1
Y	0.0	0.0	6.1	0.0	1.5	1.6
Z	4.3	6.3	2.5	0.9	1.3	2.6
AA	0.0	5.0	0.0	2.7	0.0	1.4
AB	33.3	12.5	0.0	12.5	8.3	10.5
AC	0.0	0.0	0.0	0.0	4.2	2.1
AD	3.9	2.1	0.0	0.0	0.0	0.9
AE	4.4	7.3	4.8	0.0	0.0	3.3
AF	0.0	0.0	0.0	0.0	2.7	0.8
Overall rate per GA group %**	5.4	5.7	2.4	1.6	1.7	2.7

Total number of neonates = 4 446

Note that the proportion of neonates with neuroimaging data available varies by GA. 762 neonates were excluded due to neuroimaging data not available.

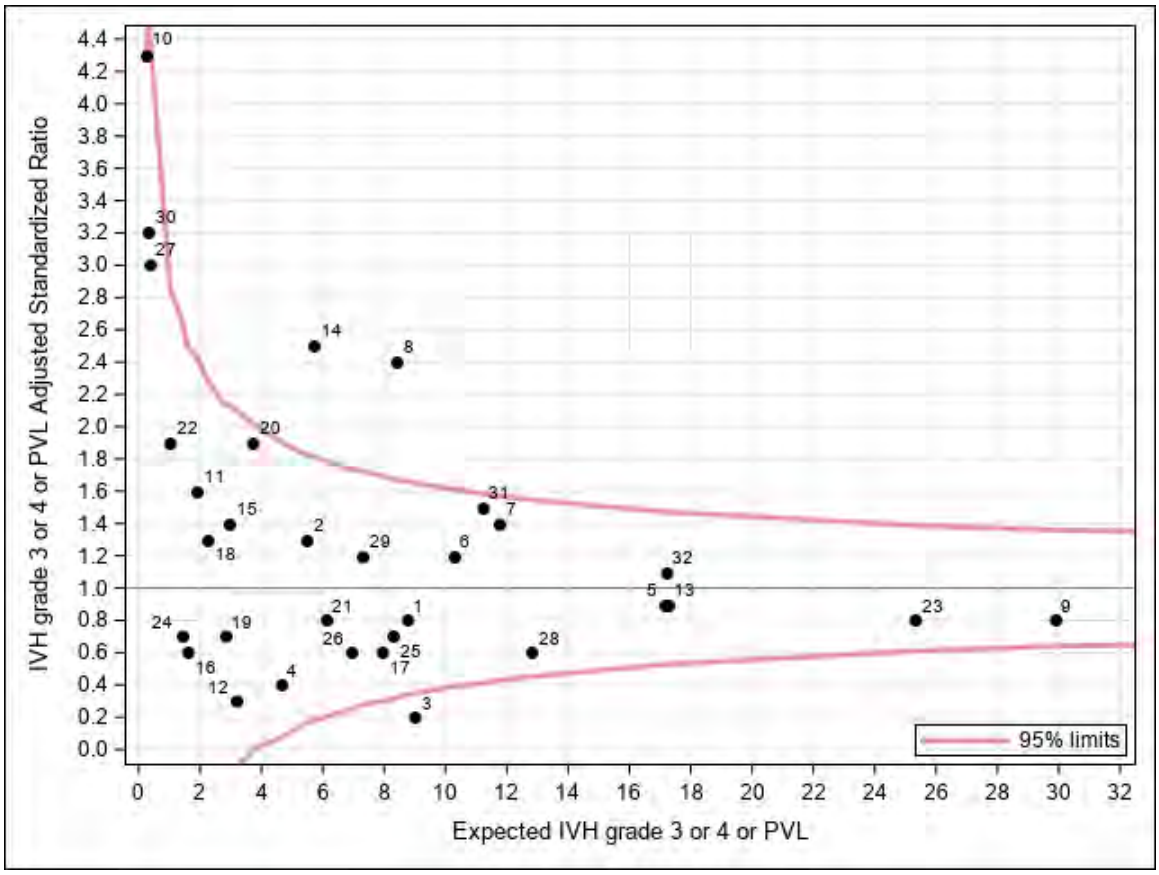
*Overall % = (number of neonates with PVL for site / total number of neonates for site) *100
**Overall % = (number of neonates with PVL for GA category / total number of neonates in GA category) *100
NA = no data available

Presentation #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	172	142	7	8.7	0.8	0.3	1.7
2	107	66	7	5.5	1.3	0.5	2.6
3	156	146	2	9.0	0.2	0.0	0.8
4	120	106	2	4.6	0.4	0.0	1.6
5	296	247	16	17.2	0.9	0.5	1.5
6	155	130	12	10.3	1.2	0.6	2.0
7	154	130	16	11.8	1.4	0.8	2.2
8	147	110	20	8.4	2.4	1.5	3.7
9	431	376	25	29.9	0.8	0.5	1.2
10	6	5	1	0.2	4.3	0.1	23.9
11	41	39	3	1.9	1.6	0.3	4.7
12	71	60	1	3.2	0.3	0.0	1.8
13	263	206	15	17.2	0.9	0.5	1.4
14	133	85	14	5.7	2.5	1.3	4.1
15	63	62	4	2.9	1.4	0.4	3.5
16	45	40	1	1.6	0.6	0.0	3.5
17	120	120	5	7.9	0.6	0.2	1.5
18	53	42	3	2.3	1.3	0.3	3.9
19	88	62	2	2.8	0.7	0.1	2.6
20	64	52	7	3.7	1.9	0.8	3.9
21	130	95	5	6.1	0.8	0.3	1.9
22	27	23	2	1.0	1.9	0.2	7.0
23	314	274	20	25.3	0.8	0.5	1.2
24	38	35	1	1.4	0.7	0.0	4.0
25	172	132	6	8.3	0.7	0.3	1.6
26	127	103	4	6.9	0.6	0.2	1.5
27	8	4	1	0.3	3.0	0.0	16.9
28	201	186	8	12.8	0.6	0.3	1.2
29	120	111	9	7.3	1.2	0.6	2.3
30	14	13	1	0.3	3.2	0.0	17.8
31	173	140	17	11.2	1.5	0.9	2.4
32	276	207	19	17.2	1.1	0.7	1.7

Numeric site codes were used in Presentations 43a-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 43a
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 43b
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.

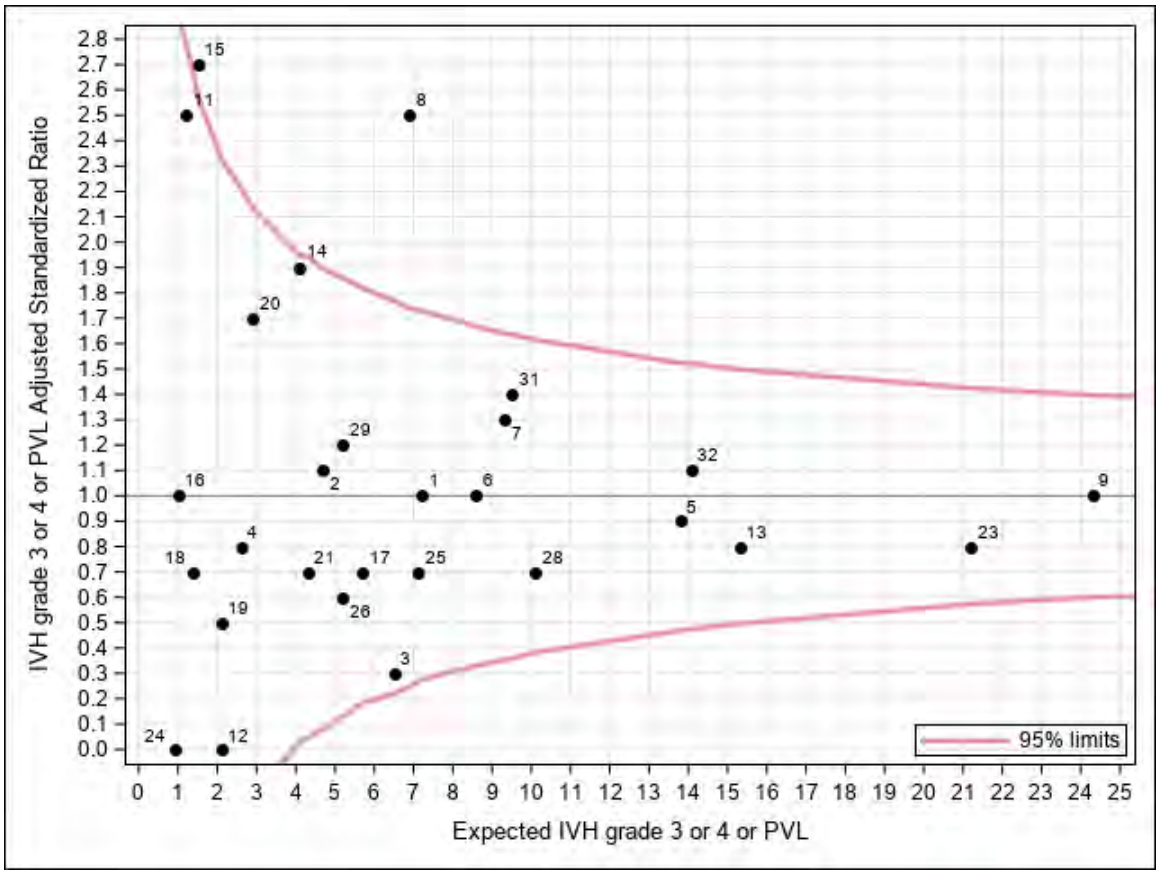
Presentation# 43c
IVH grade 3 or 4 or PVL: GA<29 weeks: Adjusted standardized ratios by site

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	69	67	7	7.2	1.0	0.4	2.0
2	39	36	5	4.7	1.1	0.3	2.5
3	55	53	2	6.5	0.3	0.0	1.1
4	33	30	2	2.6	0.8	0.1	2.8
5	122	120	13	13.8	0.9	0.5	1.6
6	72	71	9	8.6	1.0	0.5	2.0
7	54	54	12	9.3	1.3	0.7	2.3
8	54	49	17	6.9	2.5	1.4	4.0
9	192	189	24	24.3	1.0	0.6	1.5
11	13	11	3	1.2	2.5	0.5	7.2
12	17	17	0	2.1	0.0	.	1.8
13	131	124	12	15.3	0.8	0.4	1.4
14	34	30	8	4.1	1.9	0.8	3.8
15	10	10	4	1.5	2.7	0.7	6.8
16	13	13	1	1.0	1.0	0.0	5.3
17	43	43	4	5.7	0.7	0.2	1.8
18	15	11	1	1.4	0.7	0.0	4.0
19	30	26	1	2.1	0.5	0.0	2.7
20	22	22	5	2.9	1.7	0.6	4.0
21	34	32	3	4.3	0.7	0.1	2.0
23	151	149	18	21.2	0.8	0.5	1.3
24	11	11	0	0.9	0.0	.	3.9
25	69	67	5	7.1	0.7	0.2	1.7
26	40	40	3	5.2	0.6	0.1	1.7
28	75	74	7	10.1	0.7	0.3	1.4
29	49	47	6	5.2	1.2	0.4	2.5
31	84	78	13	9.5	1.4	0.7	2.3
32	109	106	16	14.1	1.1	0.6	1.8

Numeric site codes were used in Presentations 43a-d and they may not correspond to other presentations in this report.
Neonates with major congenital anomalies are excluded.
The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.

Note: Sites 10, 22, 27, 30 were excluded from the analysis due to the small number of eligible neonates.

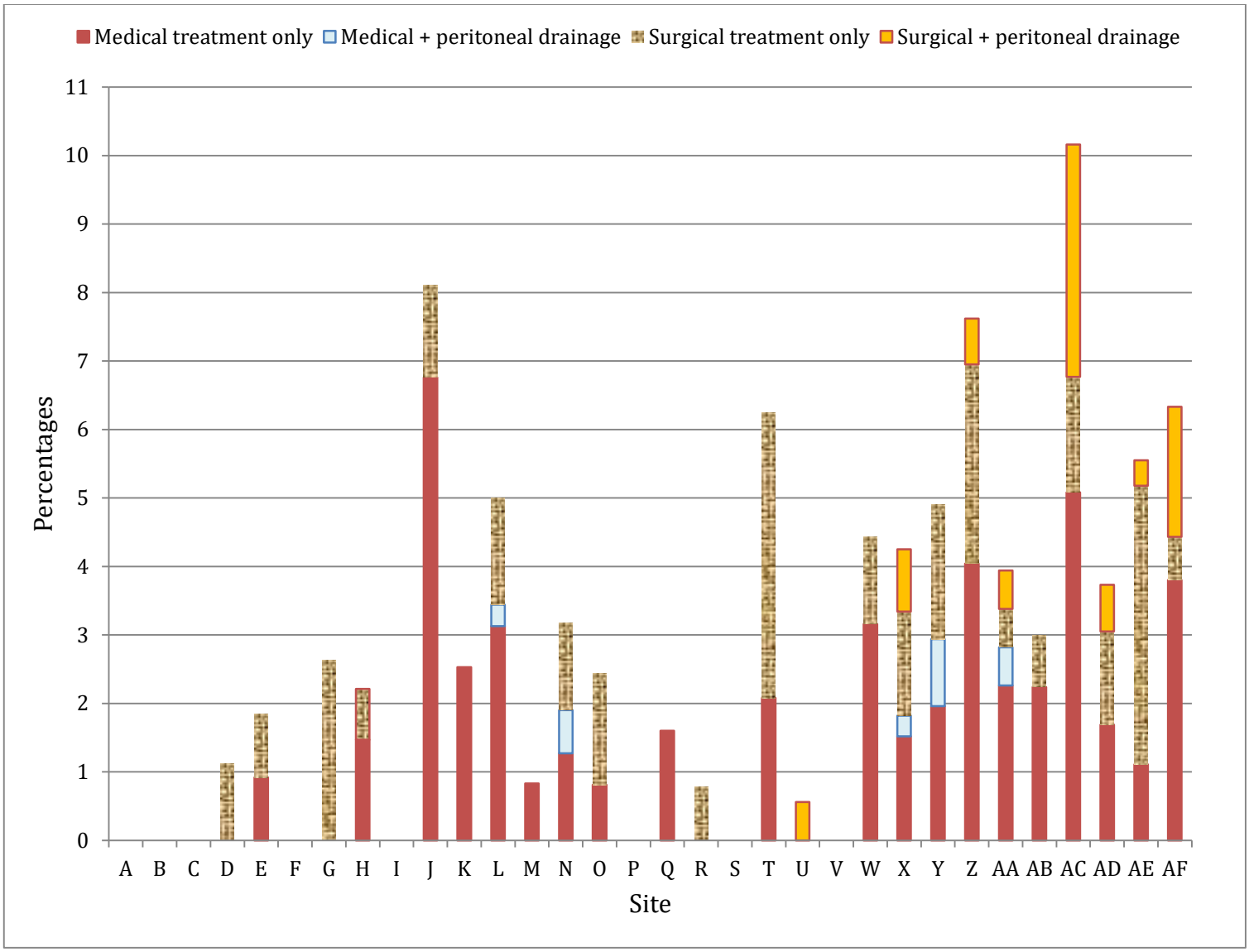
Presentation #43d
IVH grade 3 or 4 or PVL: GA<29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 43c
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 43d
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	0.0	0.0	0.0	0.0	0.0
C	0.0	0.0	0.0	0.0	0.0
D	0.0	0.0	1.1	0.0	1.1
E	0.9	0.0	0.9	0.0	1.8
F	0.0	0.0	0.0	0.0	0.0
G	0.0	0.0	2.6	0.0	2.6
H	1.5	0.0	0.7	0.0	2.2
I	0.0	0.0	0.0	0.0	0.0
J	6.8	0.0	1.4	0.0	8.1
K	2.5	0.0	0.0	0.0	2.5
L	3.1	0.3	1.6	0.0	5.0
M	0.8	0.0	0.0	0.0	0.8
N	1.3	0.6	1.3	0.0	3.2
O	0.8	0.0	1.6	0.0	2.4
P	0.0	0.0	0.0	0.0	0.0
Q	1.6	0.0	0.0	0.0	1.6
R	0.0	0.0	0.8	0.0	0.8
S	0.0	0.0	0.0	0.0	0.0
T	2.1	0.0	4.2	0.0	6.3
U	0.0	0.0	0.0	0.6	0.6
V	0.0	0.0	0.0	0.0	0.0
W	3.2	0.0	1.3	0.0	4.4
X	1.5	0.3	1.5	0.9	4.3
Y	2.0	1.0	2.0	0.0	4.9
Z	4.0	0.0	2.9	0.7	7.6
AA	2.3	0.6	0.6	0.6	3.9
AB	2.2	0.0	0.8	0.0	3.0
AC	5.1	0.0	1.7	3.4	10.2
AD	1.7	0.0	1.4	0.7	3.7
AE	1.1	0.0	4.1	0.4	5.6
AF	3.8	0.0	0.6	1.9	6.3
Total	1.9	0.1	1.4	0.4	3.8

COMMENTS: These analyses include 4 446 neonates from 32 sites.

Presentation #45a

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

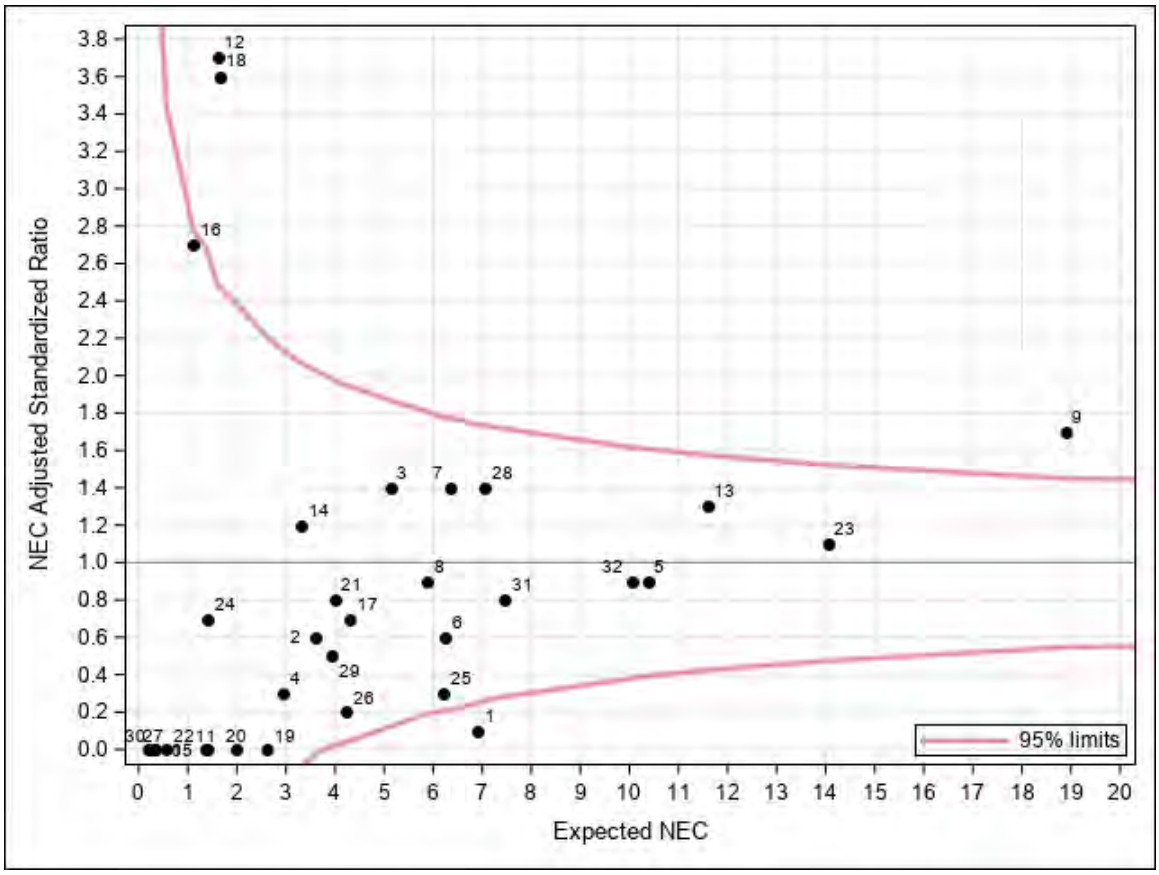
Site	Number of neonates	Number of neonates with NEC	Adjusted# expected number of neonates with NEC	Adjusted# standardized ratio	95% confidence interval for adjusted standardized ratio	
1	172	1	6.9	0.1	0.0	0.8
2	107	2	3.6	0.6	0.1	2.0
3	156	7	5.1	1.4	0.5	2.8
4	120	1	2.9	0.3	0.0	1.9
5	296	9	10.4	0.9	0.4	1.6
6	155	4	6.2	0.6	0.2	1.6
7	154	9	6.3	1.4	0.6	2.7
8	147	5	5.9	0.9	0.3	2.0
9	431	32	18.9	1.7	1.2	2.4
10	6	0	0.2	0.0	.	20.8
11	41	0	1.4	0.0	.	2.7
12	71	6	1.6	3.7	1.4	8.1
13	263	15	11.6	1.3	0.7	2.1
14	133	4	3.3	1.2	0.3	3.1
15	63	0	1.4	0.0	.	2.6
16	45	3	1.1	2.7	0.5	7.8
17	120	3	4.3	0.7	0.1	2.0
18	53	6	1.6	3.6	1.3	7.9
19	88	0	2.6	0.0	.	1.4
20	64	0	2.0	0.0	.	1.8
21	130	3	4.0	0.8	0.2	2.2
22	27	0	0.6	0.0	.	6.5
23	314	16	14.0	1.1	0.7	1.9
24	38	1	1.4	0.7	0.0	4.0
25	171	2	6.2	0.3	0.0	1.2
26	127	1	4.2	0.2	0.0	1.3
27	8	0	0.3	0.0	.	12.0
28	201	10	7.1	1.4	0.7	2.6
29	120	2	3.9	0.5	0.1	1.8
30	14	0	0.3	0.0	.	11.5
31	173	6	7.4	0.8	0.3	1.8
32	276	9	10.1	0.9	0.4	1.7

Numeric site codes were used in Presentations 45a-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 45a
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 45b
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	69	1	5.9	0.2	0.0	0.9
2	39	2	3.0	0.7	0.1	2.4
3	55	5	4.0	1.2	0.4	2.9
4	33	1	2.0	0.5	0.0	2.8
5	122	9	8.7	1.0	0.5	2.0
6	72	3	5.5	0.5	0.1	1.6
7	54	8	5.2	1.5	0.7	3.1
8	54	5	4.9	1.0	0.3	2.4
9	192	30	15.9	1.9	1.3	2.7
11	13	0	1.1	0.0	.	3.5
12	17	4	1.1	3.7	1.0	9.4
13	131	12	10.2	1.2	0.6	2.1
14	34	2	2.5	0.8	0.1	2.9
15	10	0	0.8	0.0	.	4.6
16	13	1	0.8	1.2	0.0	6.7
17	43	3	3.4	0.9	0.2	2.6
18	15	4	1.2	3.2	0.9	8.3
19	30	0	2.0	0.0	.	1.8
20	22	0	1.6	0.0	.	2.3
21	34	1	2.9	0.3	0.0	1.9
23	151	11	11.9	0.9	0.5	1.6
24	11	1	1.0	1.0	0.0	5.4
25	68	2	5.4	0.4	0.0	1.3
26	40	1	3.3	0.3	0.0	1.7
28	75	8	5.9	1.4	0.6	2.7
29	49	1	3.2	0.3	0.0	1.7
31	84	5	6.5	0.8	0.2	1.8
32	109	9	8.4	1.1	0.5	2.0

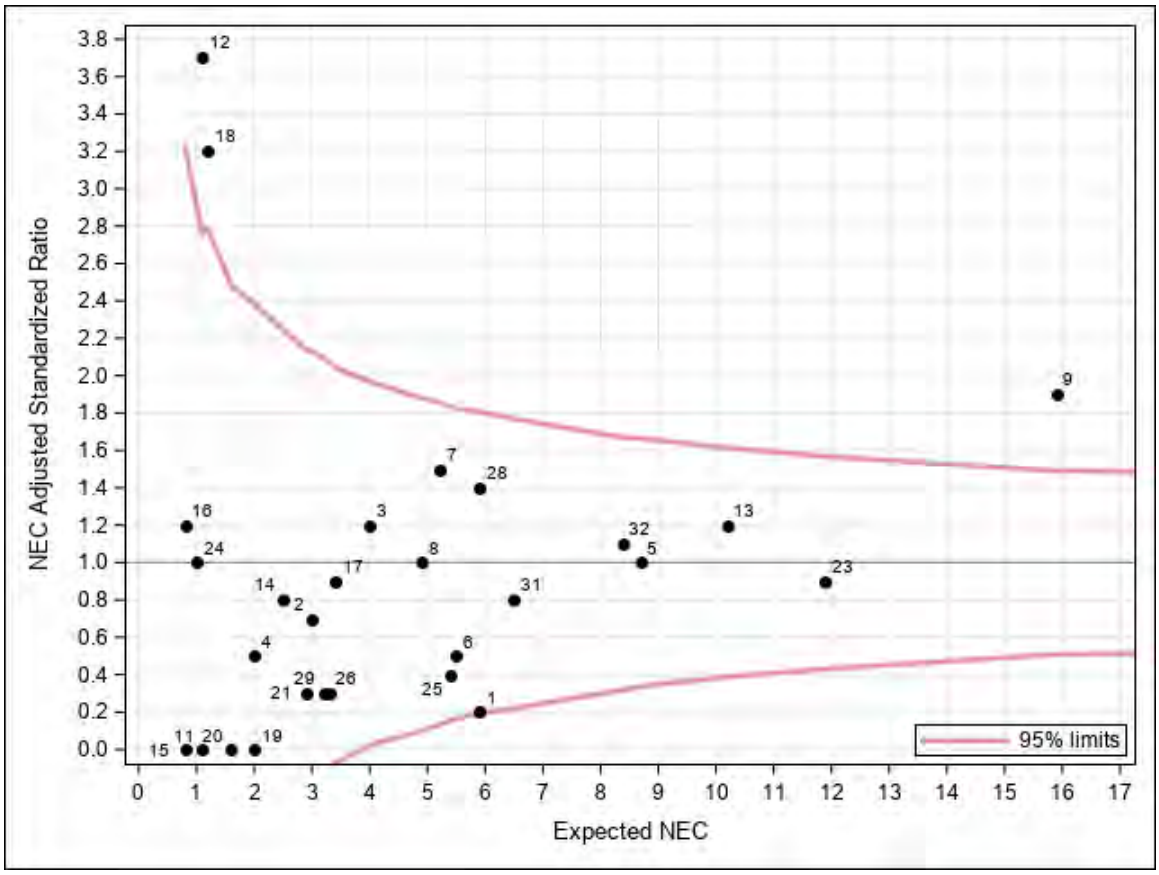
Numeric site codes were used in Presentations 45a-d and they may not correspond to other presentations in this report.

Neonates with major congenital anomalies are excluded.

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

Note: Sites 10, 22, 27, 30 were excluded from the analysis due to the small number of eligible neonates.

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



Explanation for Presentation 45c
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 45d
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	100.0	42.9	11.8	5.6	0.0	8.4
B	NA	50.0	100.0	0.0	0.0	7.4
C	NA	NA	62.5	15.4	0.0	19.4
D	88.9	86.4	41.2	21.2	9.5	32.0
E	100.0	83.3	26.7	11.8	3.9	19.8
F	50.0	62.5	20.0	0.0	3.6	14.8
G	NA	50.0	33.3	0.0	0.0	11.1
H	100.0	46.2	54.6	10.8	9.7	19.8
I	NA	100.0	NA	0.0	0.0	28.6
J	100.0	100.0	44.4	11.8	10.5	22.9
K	81.8	50.0	28.6	19.4	3.6	25.5
L	70.0	23.3	14.5	6.1	4.5	14.5
M	50.0	33.3	34.8	18.4	2.3	16.4
N	100.0	93.8	95.2	76.0	74.3	81.3
O	77.8	66.7	33.3	10.5	5.0	22.5
P	0.0	100.0	50.0	26.3	2.9	16.7
Q	100.0	73.3	25.8	14.0	3.2	22.3
R	80.0	58.3	43.8	21.4	0.0	22.6
S	NA	NA	66.7	0.0	40.0	40.0
T	NA	66.7	55.6	33.3	0.0	21.7
U	100.0	68.4	46.7	23.5	8.5	34.3
V	NA	NA	0.0	0.0	11.1	8.3
W	100.0	82.4	64.0	46.0	21.5	44.7
X	100.0	94.4	51.6	22.1	12.4	41.0
Y	91.7	90.9	46.4	29.2	9.0	34.6
Z	81.8	70.0	48.7	16.8	6.6	32.8
AA	75.0	64.3	26.8	9.1	4.1	20.5
AB	100.0	84.6	20.0	14.3	3.3	17.5
AC	100.0	100.0	50.0	25.0	40.7	42.6
AD	90.5	60.5	39.0	26.1	7.0	31.4
AE	100.0	89.2	56.5	42.6	12.8	47.2
AF	71.4	58.8	23.5	12.5	4.9	21.5
Overall CLD rate for GA group	86.6	69.6	40.8	20.1	10.6	29.8

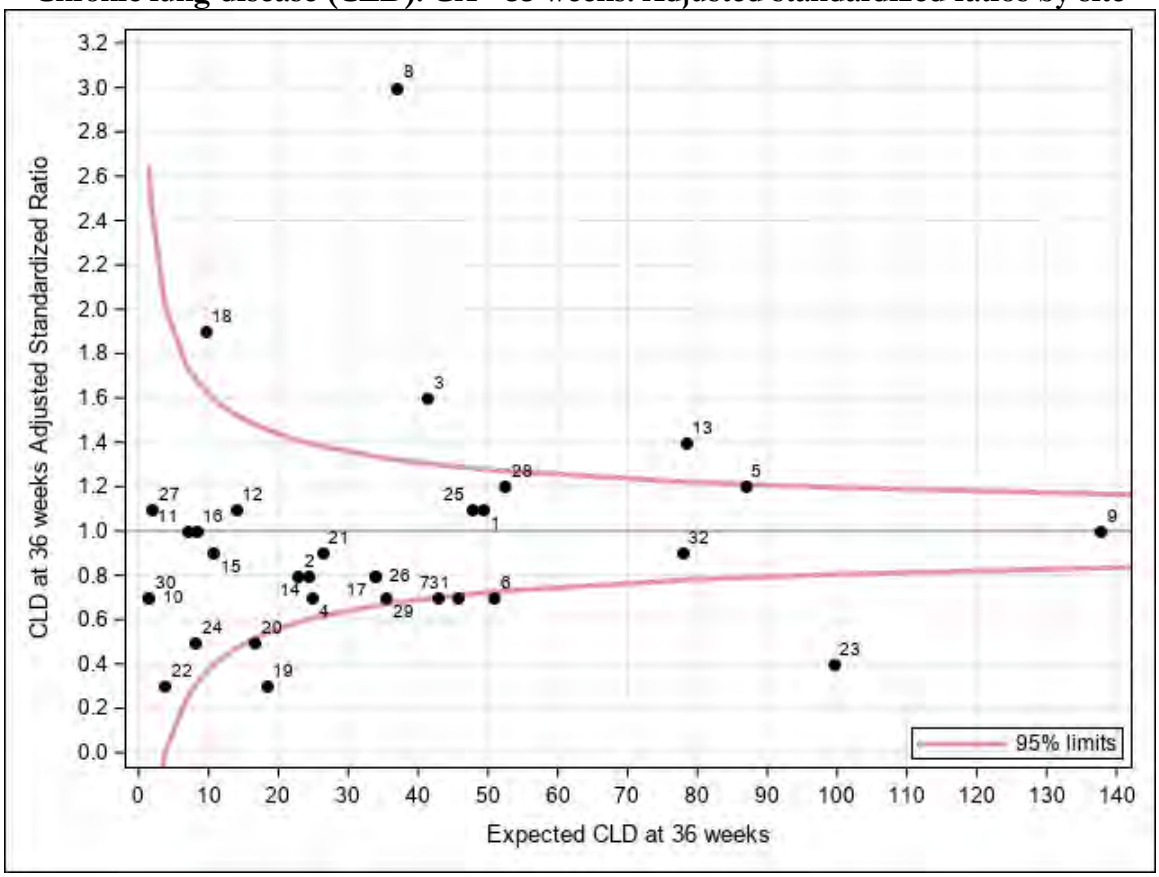
Total number of neonates = 4 140
306 neonates were excluded due to death prior to week 36 or first admission after week 36
NA = Data not available

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	172	166	54	49.2	1.1	0.8	1.4
2	107	95	18	22.7	0.8	0.5	1.3
3	156	148	65	41.3	1.6	1.2	2.0
4	120	109	18	24.7	0.7	0.4	1.1
5	296	285	107	86.9	1.2	1.0	1.5
6	155	150	38	50.9	0.7	0.5	1.0
7	154	146	29	42.8	0.7	0.5	1.0
8	147	134	111	37.0	3.0	2.5	3.6
9	431	402	131	137.7	1.0	0.8	1.1
10	6	5	1	1.4	0.7	0.0	3.9
11	41	36	7	6.9	1.0	0.4	2.1
12	71	68	15	13.8	1.1	0.6	1.8
13	263	239	113	78.4	1.4	1.2	1.7
14	133	119	20	24.2	0.8	0.5	1.3
15	63	59	10	10.7	0.9	0.4	1.7
16	45	43	8	8.2	1.0	0.4	1.9
17	120	118	26	33.8	0.8	0.5	1.1
18	53	44	18	9.5	1.9	1.1	3.0
19	88	82	6	18.2	0.3	0.1	0.7
20	64	61	9	16.6	0.5	0.2	1.0
21	130	121	23	26.2	0.9	0.6	1.3
22	27	26	1	3.8	0.3	0.0	1.5
23	314	291	41	99.6	0.4	0.3	0.6
24	38	36	4	8.1	0.5	0.1	1.3
25	172	167	52	47.7	1.1	0.8	1.4
26	127	123	27	33.9	0.8	0.5	1.2
27	8	7	2	1.8	1.1	0.1	4.0
28	201	185	64	52.3	1.2	0.9	1.6
29	120	117	26	35.5	0.7	0.5	1.1
30	14	12	1	1.4	0.7	0.0	3.9
31	173	152	30	45.7	0.7	0.4	0.9
32	276	257	74	77.9	0.9	0.7	1.2

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.

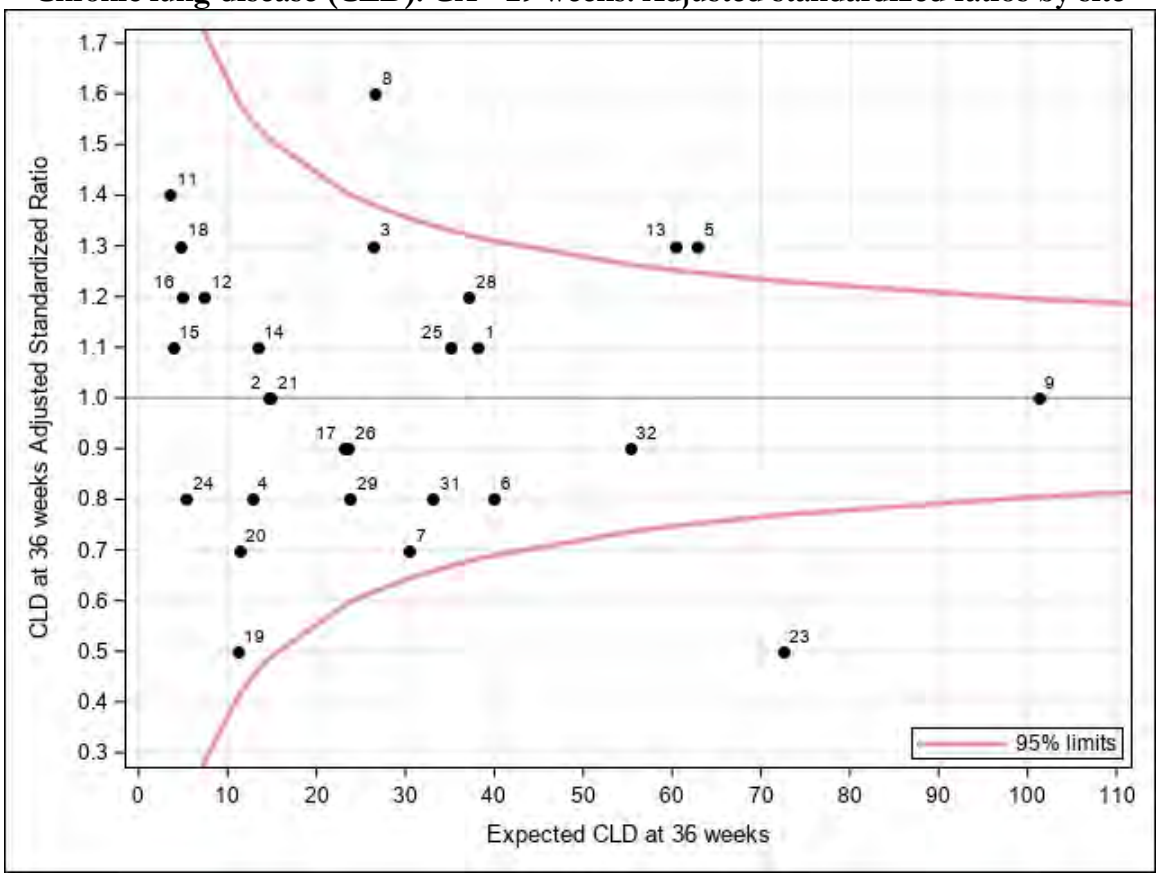
Presentation #47c
Chronic lung disease (CLD): GA <29 weeks: Adjusted standardized ratios by site

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	69	64	43	38.1	1.1	0.8	1.5
2	39	27	15	14.7	1.0	0.6	1.7
3	55	47	35	26.3	1.3	0.9	1.9
4	33	28	10	12.7	0.8	0.4	1.5
5	122	111	81	62.9	1.3	1.0	1.6
6	72	67	31	40.0	0.8	0.5	1.1
7	54	46	22	30.4	0.7	0.5	1.1
8	54	44	42	26.6	1.6	1.1	2.1
9	192	169	106	101.2	1.0	0.9	1.3
11	13	8	5	3.5	1.4	0.5	3.3
12	17	14	9	7.3	1.2	0.6	2.3
13	131	111	80	60.4	1.3	1.0	1.6
14	34	24	14	13.3	1.1	0.6	1.8
15	10	6	4	3.8	1.1	0.3	2.7
16	13	11	6	4.9	1.2	0.5	2.7
17	43	41	20	23.2	0.9	0.5	1.3
18	15	8	6	4.7	1.3	0.5	2.8
19	30	24	5	11.1	0.5	0.1	1.1
20	22	20	8	11.3	0.7	0.3	1.4
21	34	26	15	14.9	1.0	0.6	1.7
23	151	129	33	72.5	0.5	0.3	0.6
24	11	9	4	5.3	0.8	0.2	1.9
25	69	64	40	35.1	1.1	0.8	1.6
26	40	38	22	23.5	0.9	0.6	1.4
28	75	61	43	37.1	1.2	0.8	1.6
29	49	46	20	23.8	0.8	0.5	1.3
31	84	63	26	33.0	0.8	0.5	1.2
32	109	95	52	55.4	0.9	0.7	1.2

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: Sites 10, 22, 27, 30 were excluded from the analysis due to the small number of eligible neonates.

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

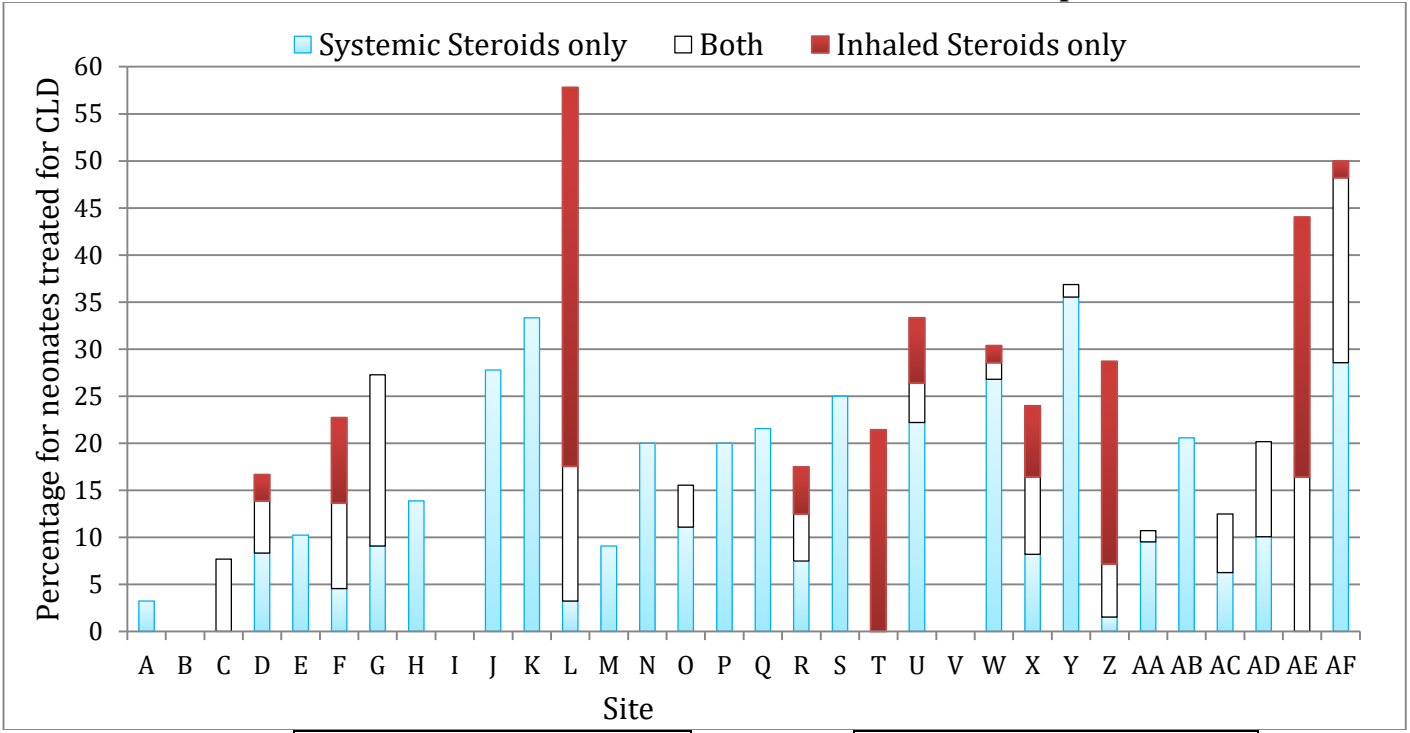


Explanation for Presentation 47c
Column 1: Numeric site codes
Column 2: Total number of neonates at each site (<29 weeks GA and no major anomaly)
Column 3: Number of eligible neonates at each site (<29 weeks GA and no major anomaly) who were actually used to fit the model
Column 4: Number of neonates 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	3.2	0.0	0.0
B	0.0	0.0	0.0
C	0.0	7.7	0.0
D	8.3	5.6	2.8
E	10.3	0.0	0.0
F	4.6	9.1	9.1
G	9.1	18.2	0.0
H	13.9	0.0	0.0
I	0.0	0.0	0.0
J	27.8	0.0	0.0
K	33.3	0.0	0.0
L	3.3	14.3	40.3
M	9.1	0.0	0.0
N	20.0	0.0	0.0
O	11.1	4.4	0.0
P	20.0	0.0	0.0

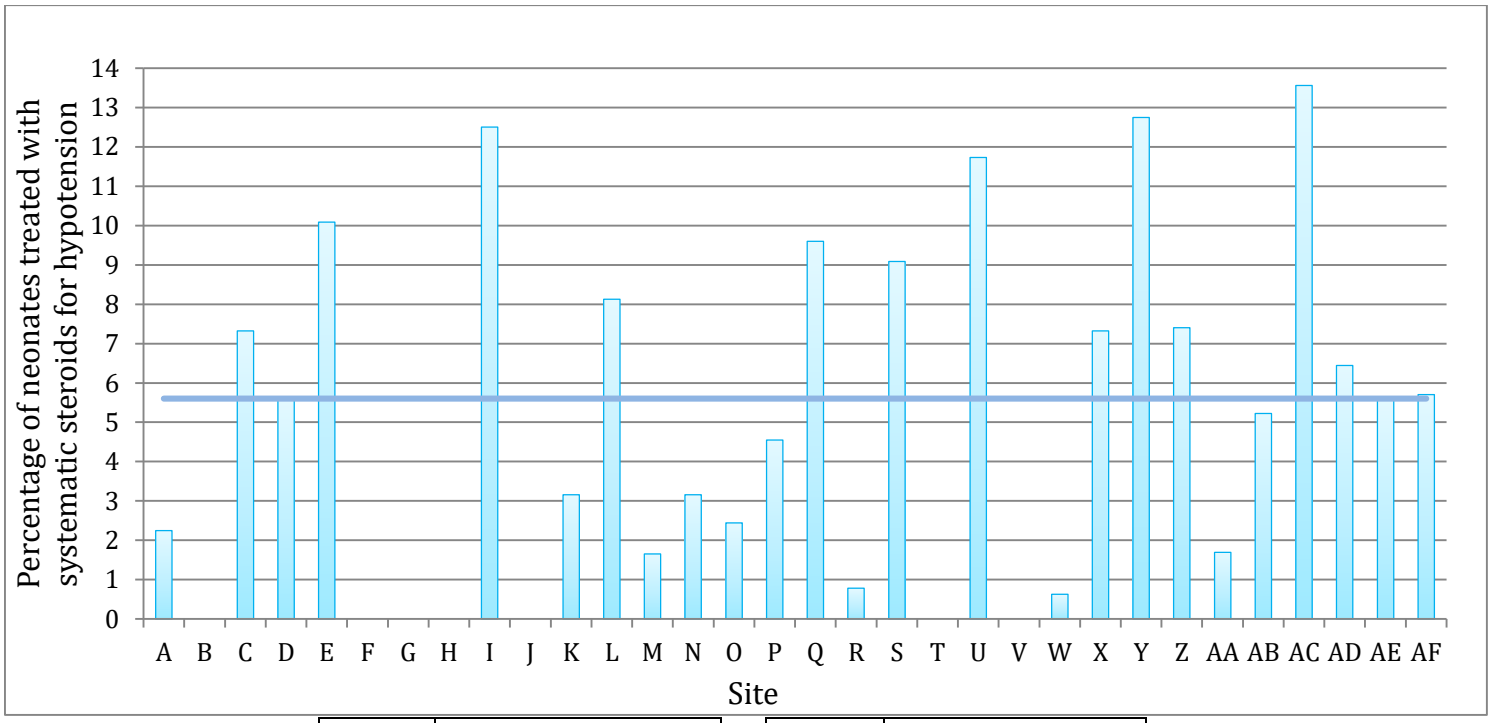
Site	Postnatal steroid use (%)		
	Systemic Steroids only	Both	Inhaled Steroids only
Q	21.6	0.0	0.0
R	7.5	5.0	5.0
S	25.0	0.0	0.0
T	0.0	0.0	21.4
U	22.2	4.2	6.9
V	0.0	0.0	0.0
W	26.8	1.8	1.8
X	8.2	8.2	7.5
Y	35.5	1.3	0.0
Z	1.5	5.6	21.5
AA	9.5	1.2	0.0
AB	20.6	0.0	0.0
AC	6.3	6.3	0.0
AD	10.1	10.1	0.0
AE	0.0	16.4	27.6
AF	28.6	19.6	1.8
Total	11.9	6.4	9.8

Total number of neonates = 1 718

† 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	2.3
B	0.0
C	7.3
D	5.6
E	10.1
F	0.0
G	0.0
H	0.0
I	12.5
J	0.0
K	3.2
L	8.1
M	1.7
N	3.2
O	2.4
P	4.6

Site	Postnatal systemic steroids use for hypotension (%)
Q	9.6
R	0.8
S	9.1
T	0.0
U	11.7
V	0.0
W	0.6
X	7.3
Y	12.8
Z	7.4
AA	1.7
AB	5.2
AC	13.6
AD	6.4
AE	5.6
AF	5.7
Total	5.6

Total number of neonates = 4 446

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

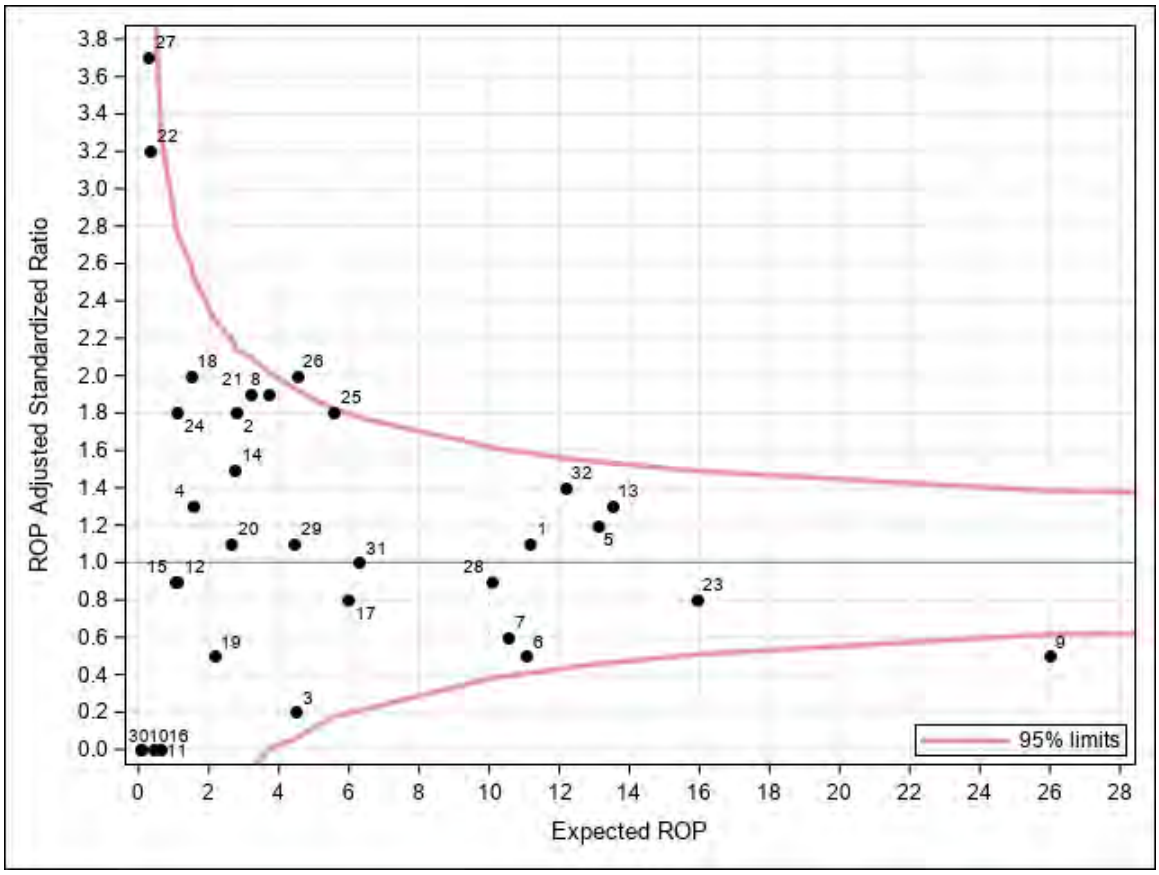
COMMENTS: Specific criteria for these treatments at each site were not documented here.

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	172	92	12	11.1	1.1	0.6	1.9
2	107	26	5	2.8	1.8	0.6	4.2
3	156	73	1	4.5	0.2	0.0	1.2
4	120	55	2	1.5	1.3	0.1	4.7
5	296	126	16	13.1	1.2	0.7	2.0
6	155	93	5	11.1	0.5	0.1	1.1
7	154	99	6	10.6	0.6	0.2	1.2
8	147	49	7	3.7	1.9	0.8	3.9
9	431	179	13	26.0	0.5	0.3	0.9
10	6	3	0	0.1	0.0	.	46.8
11	41	27	0	0.4	0.0	.	9.2
12	71	31	1	1.1	0.9	0.0	5.1
13	263	106	17	13.5	1.3	0.7	2.0
14	133	58	4	2.7	1.5	0.4	3.8
15	63	25	1	1.1	0.9	0.0	5.3
16	45	22	0	0.6	0.0	.	5.7
17	120	70	5	6.0	0.8	0.3	2.0
18	53	11	3	1.5	2.0	0.4	5.9
19	88	51	1	2.1	0.5	0.0	2.6
20	64	34	3	2.6	1.1	0.2	3.3
21	130	60	6	3.2	1.9	0.7	4.1
22	27	18	1	0.3	3.2	0.0	17.6
23	314	131	12	15.9	0.8	0.4	1.3
24	38	10	2	1.1	1.8	0.2	6.7
25	172	37	10	5.5	1.8	0.9	3.3
26	127	21	9	4.5	2.0	0.9	3.8
27	8	4	1	0.3	3.7	0.0	20.8
28	201	119	9	10.1	0.9	0.4	1.7
29	120	88	5	4.4	1.1	0.4	2.6
30	14	7	0	0.0	0.0	.	83.6
31	173	72	6	6.3	1.0	0.3	2.1
32	276	96	17	12.2	1.4	0.8	2.2

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.

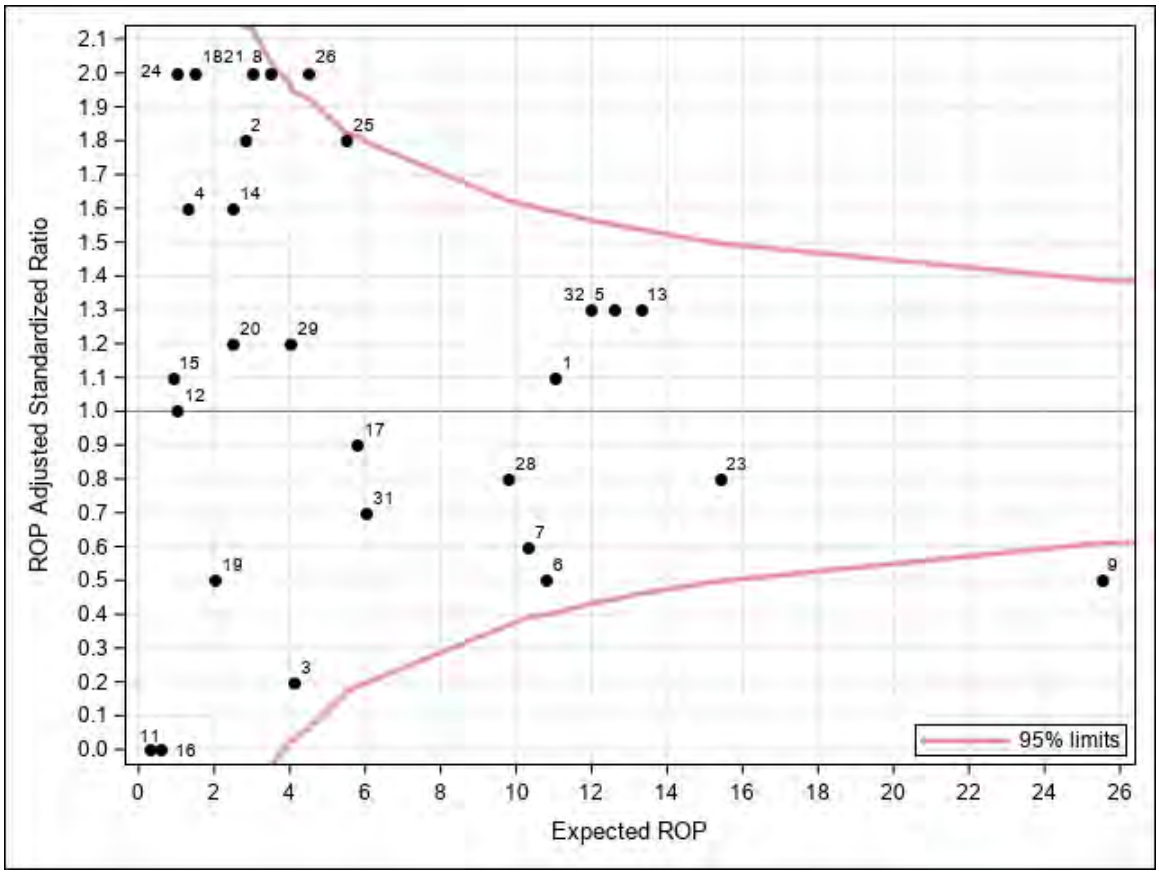
Presentation# 49c
ROP ≥ Stage 3: GA<29 weeks: Adjusted standardized ratios by site

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	69	63	12	11.0	1.1	0.6	1.9
2	39	18	5	2.8	1.8	0.6	4.2
3	55	35	1	4.1	0.2	0.0	1.3
4	33	27	2	1.3	1.6	0.2	5.7
5	122	104	16	12.6	1.3	0.7	2.1
6	72	66	5	10.8	0.5	0.1	1.1
7	54	47	6	10.3	0.6	0.2	1.3
8	54	32	7	3.5	2.0	0.8	4.1
9	192	153	13	25.5	0.5	0.3	0.9
11	13	8	0	0.3	0.0	.	12.5
12	17	12	1	1.0	1.0	0.0	5.7
13	131	93	17	13.3	1.3	0.7	2.1
14	34	25	4	2.5	1.6	0.4	4.0
15	10	6	1	0.9	1.1	0.0	6.1
16	13	11	0	0.6	0.0	.	6.5
17	43	38	5	5.8	0.9	0.3	2.0
18	15	9	3	1.5	2.0	0.4	6.0
19	30	25	1	2.0	0.5	0.0	2.9
20	22	20	3	2.5	1.2	0.2	3.5
21	34	25	6	3.0	2.0	0.7	4.4
23	151	109	12	15.4	0.8	0.4	1.4
24	11	8	2	1.0	2.0	0.2	7.1
25	69	30	10	5.5	1.8	0.9	3.4
26	40	15	9	4.5	2.0	0.9	3.8
28	75	61	8	9.8	0.8	0.4	1.6
29	49	44	5	4.0	1.2	0.4	2.9
31	84	49	4	6.0	0.7	0.2	1.7
32	109	69	16	12.0	1.3	0.8	2.2

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: Sites 10, 22, 27, 30 were excluded from the analysis due to the small number of eligible neonates.

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	172	59	61.9	1.0	0.7	1.2
2	107	34	35.7	1.0	0.7	1.3
3	156	77	57.1	1.3	1.1	1.7
4	120	26	35.3	0.7	0.5	1.1
5	296	124	113.5	1.1	0.9	1.3
6	155	61	63.4	1.0	0.7	1.2
7	154	48	57.6	0.8	0.6	1.1
8	147	125	53.7	2.3	1.9	2.8
9	431	171	185.4	0.9	0.8	1.1
10	6	2	2.2	0.9	0.1	3.3
11	41	13	12.3	1.1	0.6	1.8
12	71	21	19.3	1.1	0.7	1.7
13	263	152	112.8	1.3	1.1	1.6
14	133	37	38.0	1.0	0.7	1.3
15	63	15	16.7	0.9	0.5	1.5
16	45	13	11.7	1.1	0.6	1.9
17	120	33	42.2	0.8	0.5	1.1
18	53	30	17.5	1.7	1.2	2.5
19	88	13	27.3	0.5	0.3	0.8
20	64	17	22.0	0.8	0.5	1.2
21	130	40	39.3	1.0	0.7	1.4
22	27	5	5.5	0.9	0.3	2.1
23	314	81	138.8	0.6	0.5	0.7
24	38	9	11.5	0.8	0.4	1.5
25	172	59	61.3	1.0	0.7	1.2
26	127	36	42.4	0.8	0.6	1.2
27	8	4	2.9	1.4	0.4	3.5
28	201	87	72.9	1.2	1.0	1.5
29	120	37	45.6	0.8	0.6	1.1
30	14	3	2.7	1.1	0.2	3.3
31	173	58	73.7	0.8	0.6	1.0
32	276	101	105.9	1.0	0.8	1.2

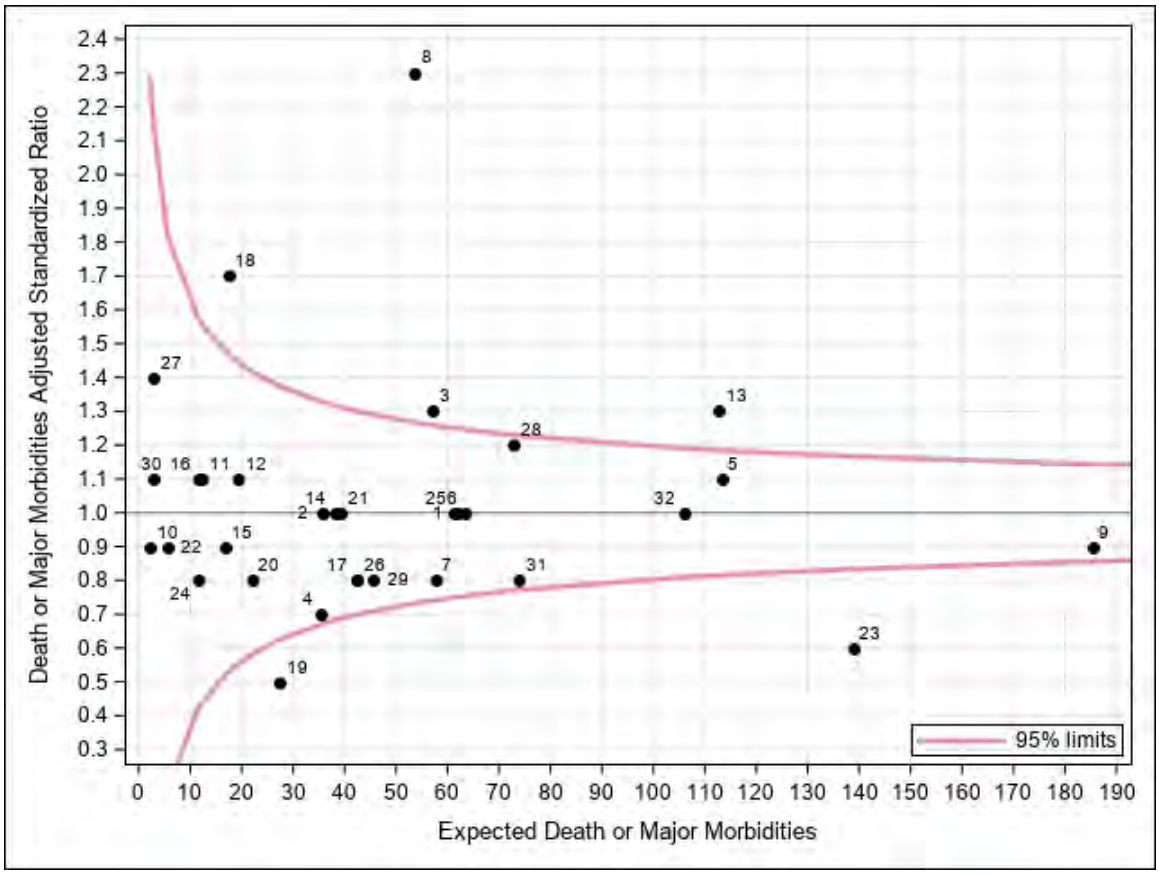
Major morbidity = IVH 3 or 4 or PVL or BPD or ROP >stage 2 or NEC or nosocomial sepsis

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.

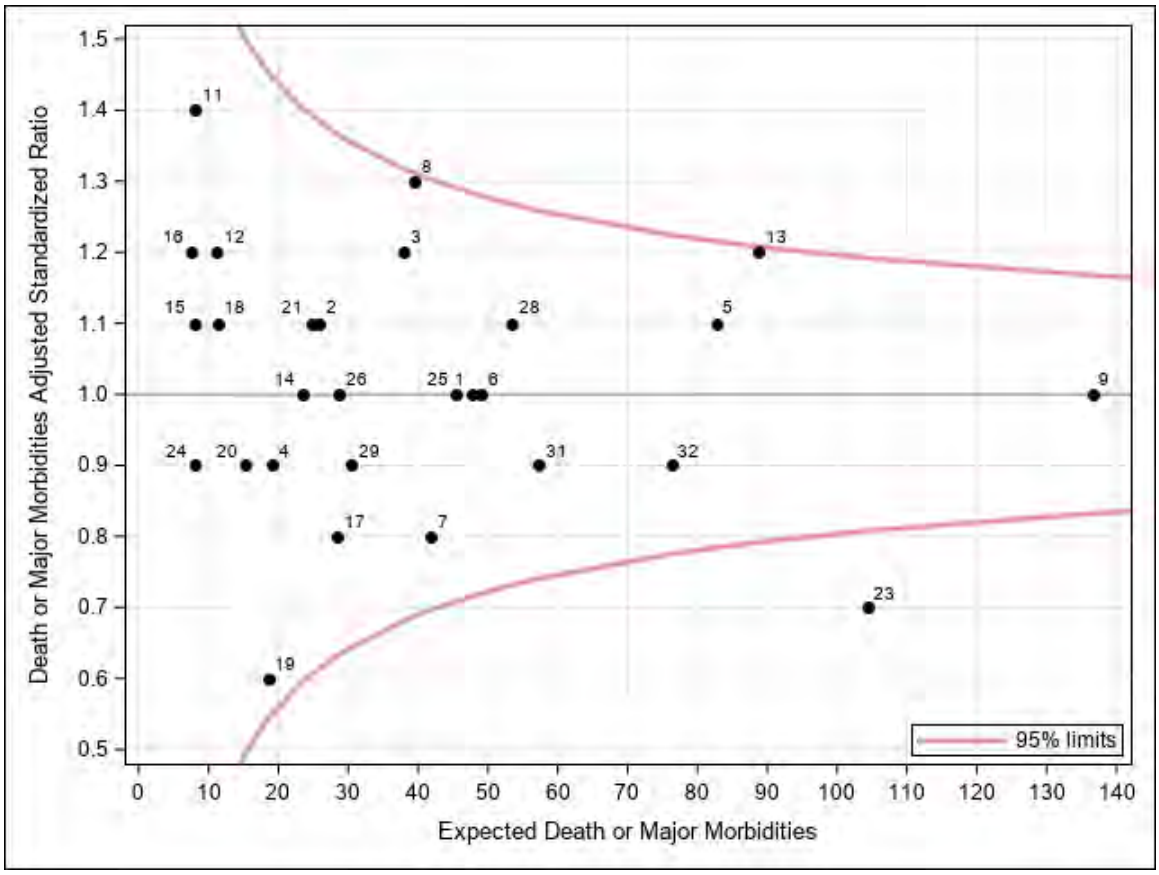
Presentation #50c
Mortality or major morbidity: GA < 29 weeks: Adjusted standardized ratios by site

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	69	48	47.8	1.0	0.7	1.3
2	39	29	25.8	1.1	0.8	1.6
3	55	45	37.9	1.2	0.9	1.6
4	33	18	19.2	0.9	0.6	1.5
5	122	94	82.7	1.1	0.9	1.4
6	72	50	49.1	1.0	0.8	1.3
7	54	35	41.8	0.8	0.6	1.2
8	54	53	39.5	1.3	1.0	1.8
9	192	140	136.6	1.0	0.9	1.2
11	13	11	8.1	1.4	0.7	2.4
12	17	13	11.1	1.2	0.6	2.0
13	131	109	88.8	1.2	1.0	1.5
14	34	24	23.5	1.0	0.7	1.5
15	10	9	7.9	1.1	0.5	2.2
16	13	9	7.5	1.2	0.5	2.3
17	43	24	28.4	0.8	0.5	1.3
18	15	12	11.3	1.1	0.5	1.9
19	30	12	18.5	0.6	0.3	1.1
20	22	13	15.2	0.9	0.5	1.5
21	34	26	24.7	1.1	0.7	1.5
23	151	70	104.3	0.7	0.5	0.8
24	11	7	8.1	0.9	0.3	1.8
25	69	45	45.5	1.0	0.7	1.3
26	40	28	28.7	1.0	0.6	1.4
28	75	61	53.4	1.1	0.9	1.5
29	49	26	30.5	0.9	0.6	1.3
31	84	49	57.2	0.9	0.6	1.1
32	109	72	76.3	0.9	0.7	1.2

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: Sites 10, 22, 27, 30 were excluded from the analysis due to the small number of eligible neonates.

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

Final discharge destination: All GA: Crude rates

		GA (completed weeks)								
		< 25	**25-26**	**27-28**	**29-30**	**31-32**	**33-34**	**35-36**	**≥37**	**Total**
Home	N	107	239	300	416	719	1035	1285	3462	7563
	%	29.7	41.5	38.4	38.4	43.7	53.3	55.6	56.1	50.9
Community hospital	N	63	170	364	586	776	667	444	710	3780
	%	17.5	29.5	46.6	54.1	47.2	34.4	19.2	11.5	25.4
Tertiary hospital	N	20	20	20	11	22	20	42	193	348
	%	5.6	3.5	2.6	1.0	1.3	1.0	1.8	3.1	2.3
Died	N	133	80	44	21	23	19	28	81	429
	%	36.9	13.9	5.6	1.9	1.4	1.0	1.2	1.3	2.9
Palliative care (home/other institute)	N	0	2	3	4	0	1	5	22	37
	%	0.0	0.4	0.4	0.4	0.0	0.1	0.2	0.4	0.2
Another inpatient area in site	N	37	63	50	45	105	199	506	1701	2706
	%	10.3	10.9	6.4	4.2	6.4	10.3	21.9	27.6	18.2
Out of country discharge	N	0	2	1	0	0	1	0	0	4
	%	0.0	0.4	0.1	0.0	0.0	0.1	0.0	0.0	0.0
Total neonates included	N	360	576	782	1083	1645	1942	2310	6169	14867
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Discharge destination missing	N									1
GA missing	N									0
Total number of neonates	N									14868

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	360	576	782	1083	1645	1942	2310	6170	14868
Number of neonates who survived and were discharged home directly from the NICU	**N**	**107**	**239**	**300**	**416**	**719**	**1035**	**1285**	**3462**	**7563**
Oxygen	N	42	55	33	24	37	43	22	95	351
	%	39.3	23.0	11.0	5.8	5.2	4.2	1.7	2.7	4.6
Monitor	N	13	10	21	26	32	22	21	136	281
	%	12.2	4.2	7.0	6.3	4.5	2.1	1.6	3.9	3.7
Enterostomy	N	1	1	0	0	1	1	5	3	12
	%	0.9	0.4	0.0	0.0	0.1	0.1	0.4	0.1	0.2
Gavage	N	12	24	21	14	22	10	13	46	162
	%	11.2	10.0	7.0	3.4	3.1	1.0	1.0	1.3	2.1
Tracheostomy	N	3	2	0	1	0	0	1	1	8
	%	2.8	0.8	0.0	0.2	0.0	0.0	0.1	0.0	0.1
Gastrostomy	N	6	4	6	5	2	7	5	18	53
	%	5.6	1.7	2.0	1.2	0.3	0.7	0.4	0.5	0.7
Ventilation	N	3	1	0	1	0	0	0	2	7
	%	2.8	0.4	0.0	0.2	0.0	0.0	0.0	0.1	0.1
CPAP	N	1	0	2	1	1	0	1	7	13
	%	0.9	0.0	0.7	0.2	0.1	0.0	0.1	0.2	0.2
Feeding status at discharge directly home										
Breast milk only	N	33	77	110	138	262	382	394	1096	2492
	%	30.8	32.2	36.7	33.2	36.4	36.9	30.7	31.7	32.9
Formula only	N	44	85	119	139	209	259	349	714	1918
	%	41.1	35.6	39.7	33.4	29.1	25.0	27.2	20.6	25.4
Both breast milk and formula	N	29	72	69	131	237	383	532	1620	3073
	%	27.1	30.1	23.0	31.5	33.0	37.0	41.4	46.8	40.6

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**	54	215	60	60	389
	No	73	26	12	45	156
	Unknown	0	2	1	87	90
	Total	**127**	**243**	**73**	**192**	**635**

B. Reason for not receiving hypothermia treatment*

Reason	**Number**
Chromosomal anomalies	0
Major congenital anomalies	3
Weight < 2000g or GA < 35 weeks	32
Extreme condition	14
Head trauma or intracranial hemorrhage	0
Mild HIE	86
Unit policy	9
Health care team preference	5
Delayed transfer	12
Parental request	0
Unknown	8

*One neonate can have more than one reasons.

C. Time of admission

Time	**Number**
<6 hours from birth	404
6 – 12 hours from birth	177
>12 hours from birth	50
Total**	631

**4 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=389)

Characteristics	N		Results
Method	389	Selective head	3 (1%)
		Whole body cooling	386 (99%)
Target temperature	388	< 33^{0}C	2 (1%)
		33-34^{0}C	278 (72%)
		33.5-34.5^{0}C	102 (26%)
		34-35^{0}C	4 (1%)
		34.5-35.5^{0}C	2 (1%)
		Unknown	0 (0%)
Seizures at initiation	389		92 (24%)
Seizures at completion	389		4 (1%)
GA < 33 weeks	389		1 (0%)
Birthweight < 2000g	389		4 (1%)
During hypothermia	361	Hypotension	139 (39%)
	357	Thrombocytopenia	86 (24%)
	362	Coagulopathy	119 (33%)
	342	Persistent metabolic acidosis	60 (18%)
Death	389		43 (11%)
Discharge on palliation	389		5 (1%)

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**	22	7	1	7	24	61
	Stage 2	42	58	3	43	66	212
	Stage 3	3	6	32	20	5	66
	Unknown	0	3	0	36	11	50
	Total	67	74	36	106	106	389

*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=389)

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**	378	4.6	4.5	0.0	1.9	3.9	6.1	48.2	After 6 hours 97 (26%)	
	Target temp achieved	351	7.3	8.4	0.9	3.7	6.0	7.9	78.8	After 10 hours 45 (13%)	After 4 hours of initiation 49 (8%)
	Age at re-warming	385	72.1	18.8	2.8	74.2	76.5	78.6	123.2	After 78 hours 124 (32%)	Re-warming started >72 hours after initiation 80 (23%)
	Age at return to normal temp	337	83.4	19.4	8.9	81.8	84.1	88.0	137.7	After 86 hours 115 (34%)	Took >8 hours to return temperature to normal after starting re-warming 120 (37%)
Temperature during hypothermia	**Lowest temp during hypothermia**	388	32.8	0.7	30.0	32.6	33.0	33.2	36.1	Lowest temp < 32.5C 76 (20%)	
	Highest temp during hypothermia	387	34.2	0.9	31.9	33.7	33.9	34.3	38.9	Highest temp > 35.5C 39 (10%)	

*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 10 years

This section includes trend analyses of specific outcomes from the last 10 years (2010-19) for neonates <33 weeks' GA in CNN sites. The following table describes the number of neonates in the respective GA categories that were included in these trend analyses. Delivery room deaths were excluded.

Number of neonates by admission year and GA

		GA											Total
Year	**Number of Sites**	**<23**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	
2010	27	9	73	172	270	333	388	371	480	611	678	788	4173
2011	30	15	86	166	242	318	332	391	467	553	643	828	4041
2012	30	28	85	184	285	294	348	416	510	610	738	872	4370
2013	29	16	76	197	247	267	357	434	479	620	733	836	4262
2014	31	8	81	226	250	332	362	412	517	585	743	871	4387
2015	30	14	99	177	248	289	317	425	470	536	662	793	4030
2016	30	16	79	214	275	272	380	431	437	551	722	861	4238
2017	31	16	133	215	257	294	325	434	467	606	743	868	4358
2018	32	25	132	215	271	334	380	424	518	576	744	863	4482
2019	32	25	118	217	279	297	342	440	470	613	740	905	4446

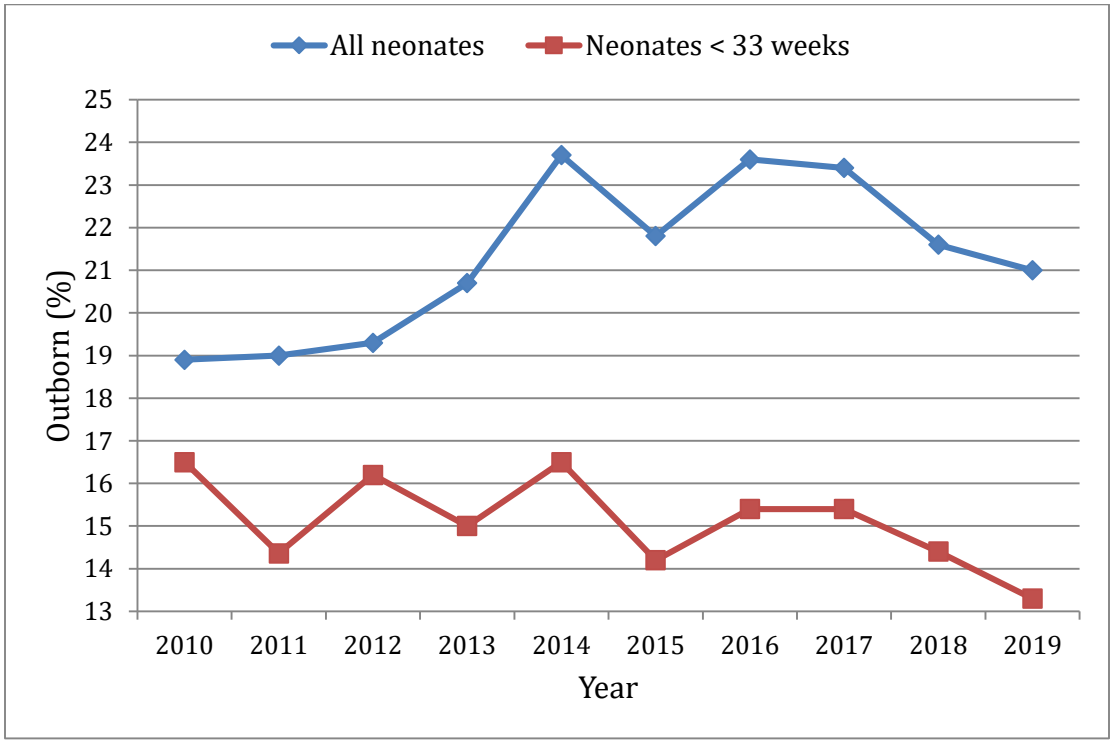
Number of neonates by admission year and birth weight

		Birth weight					Total
Year	**Number of Sites**	**< 500**	**500 - 749**	**750 - 999**	**1000 – 1249**	**1250 – 1499**	
2010	27	32	436	792	819	879	2958
2011	30	31	383	660	680	794	2548
2012	30	48	441	696	815	922	2922
2013	29	36	428	651	842	919	2876
2014	31	36	458	760	804	922	2980
2015	30	40	406	680	792	864	2782
2016	30	40	472	710	744	901	2867
2017	31	38	478	678	806	920	2920
2018	32	55	508	739	807	977	3086
2019	32	50	482	685	802	937	2956

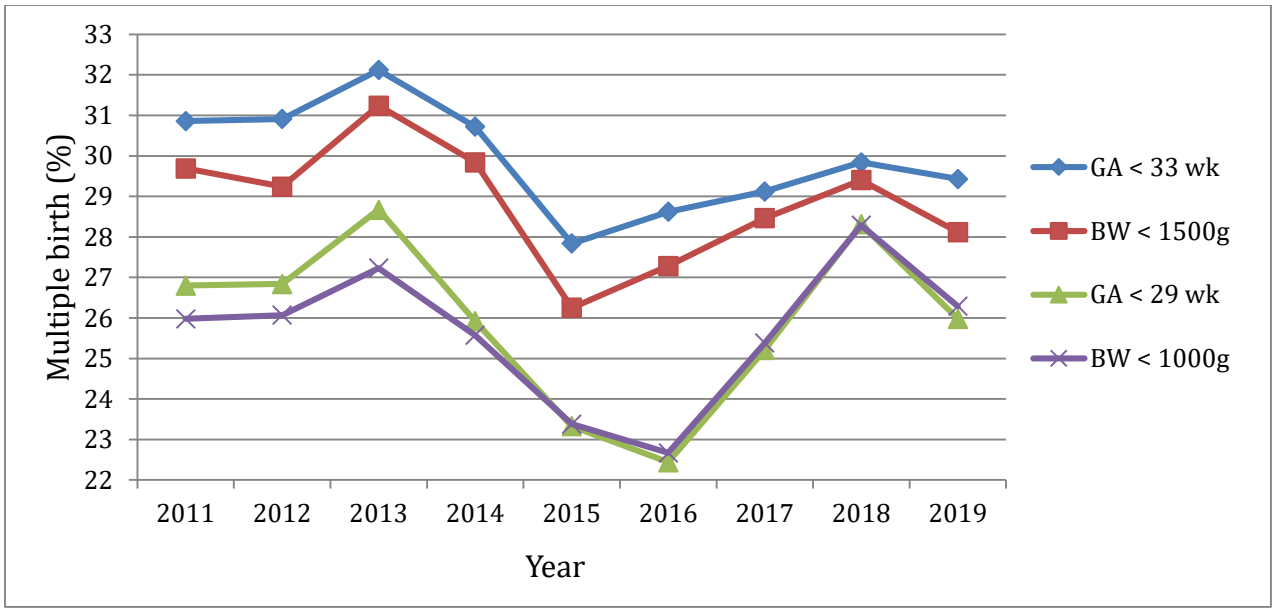
1. Neonates in the participating sites: Admission status:

		All neonates			Infants with GA<33 weeks		
Year	**Number of Sites**	**Total Number of Neonates***	**Inborn (%)**	**Outborn (%)**	**Number of Neonates* with GA<33**	**Inborn (%)**	**Outborn (%)**
2010	**27**	13 147	10 662 (81.1%)	2 485 (18.9%)	3 383	2 824 (83.5%)	559 (16.5%)
2011	**30**	13 548	10 972 (81.0%)	2 576 (19.0%)	4 040	3 460 (85.6%)	580 (14.4%)
2012	**30**	14 222	11 475 (80.7%)	2 747 (19.3%)	4 370	3 663 (83.8%)	707 (16.2%)
2013	**29**	14 489	11 487 (79.2%)	3 002 (20.7%)	4 262	3 624 (85.0%)	638 (15.0%)
2014	**31**	14 038	11 473 (76.3%)	3 565 (23.7%)	4 383	3658 (83.5%)	725 (16.5%)
2015	**30**	14 814	11 583 (78.2%)	3 231 (21.8%)	4 030	3 459 (85.8%)	571 (14.2%)
2016	**30**	14 905	11 388 (76.4%)	3 517 (23.6%)	4 238	3 585 (84.6%)	653 (15.4%)
2017	**31**	14 773	11 320 (76.6%)	3 453 (23.4%)	4 358	3 685 (84.6%)	673 (15.4%)
2018	**32**	15 479	12 134 (78.4%)	3 345 (21.6%)	4 481	3 836 (85.6%)	645 (14.4%)
2019	**32**	14 868	11 750 (79.0%)	3 118 (21.0%)	4 446	3 856 (86.7%)	590 (13.3%)

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

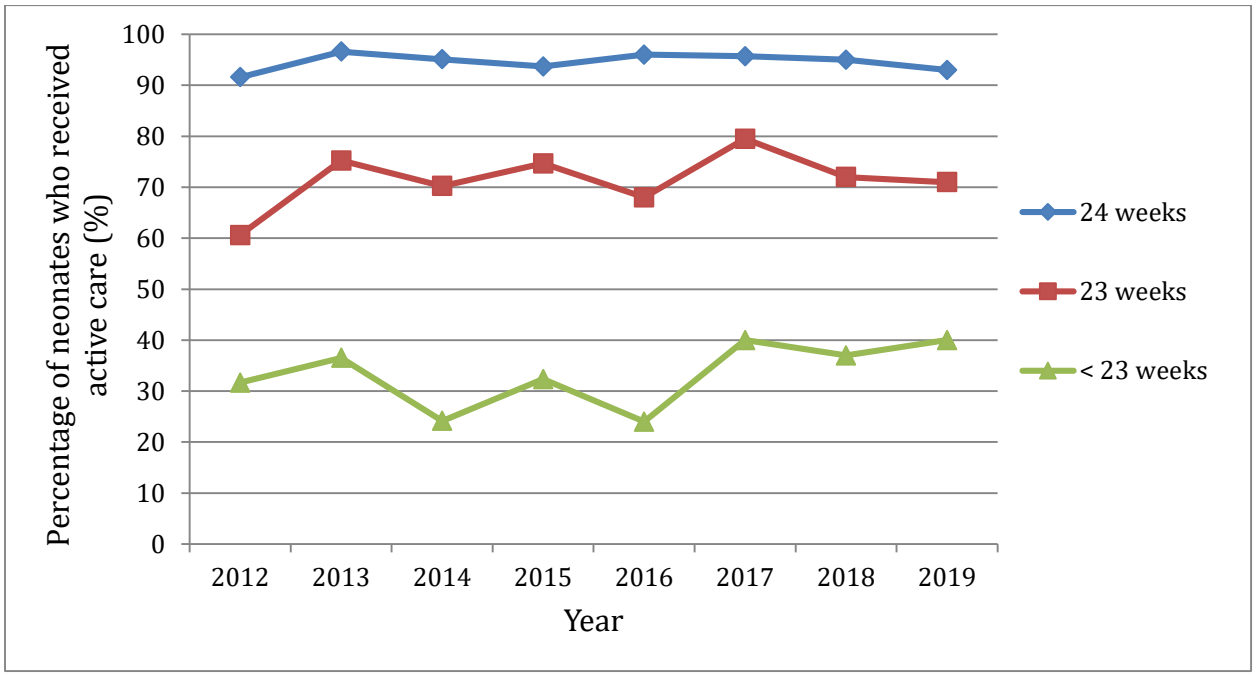


2. Multiple births



		2011	2012	2013	2014	2015	2016	2017	2018	2019
GA < 29 weeks	Total	1550	1639	1594	1671	1569	1667	1674	1780	1717
	Multiple	416 (27%)	437 (27%)	460 (29%)	441 (26%)	366 (23%)	374 (22%)	422 (25%)	504 (28%)	446 (26%)
	Twin	368	397	398	415	321	345	375	466	415
	Higher-Order	48	40	62	26	45	29	47	38	31
GA < 33 weeks	Total	4040	4369	4262	4387	4030	4238	4358	4481	4445
	Multiple	1248 (31%)	1352 (31%)	1380 (32%)	1356 (31%)	1122 (28%)	1213 (29%)	1269 (29%)	1337 (30%)	1308 (29%)
	Twin	1099	1175	1193	1229	996	1094	1156	1202	1191
	Higher-Order	149	177	187	127	126	119	113	135	117
BW < 1000g	Total	1145	1184	1115	1254	1126	1222	1194	1301	1217
	Multiple	299 (26%)	305 (26%)	306 (27%)	329 (26%)	264 (23%)	277 (23%)	303 (25%)	368 (28%)	320 (26%)
	Twin	261	273	259	306	236	260	269	338	295
	Higher-Order	38	32	47	23	28	17	34	30	25
BW < 1500g	Total	2747	2921	2876	2980	2782	2867	2920	3085	2955
	Multiple	816 (30%)	851 (29%)	905 (31%)	900 (30%)	731 (26%)	782 (27%)	831 (28%)	907 (29%)	831 (28%)
	Twin	713	736	769	802	634	703	747	812	757
	Higher-Order	103	115	136	98	97	79	84	95	74

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

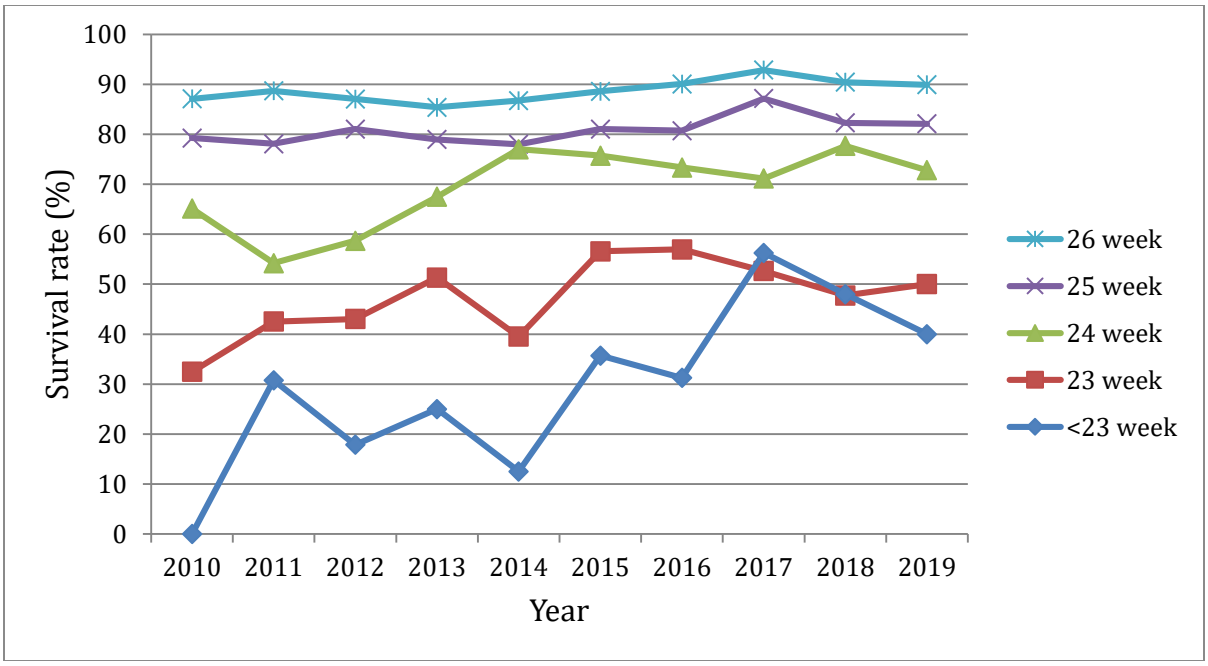


		2012	2013	2014	2015	2016	2017	2018	2019
<23 weeks	Number of neonates who received active care *(a-c)* +*e*	25	23	14	22	16	26	35	35
	Total number of neonates including DR deaths *a*+*d*+*e*	79	63	58	68	67	65	95	88
	Percentage of neonates who received active care	32%	37%	24%	32%	24%	40%	37%	40%
23 weeks	Number of neonates who received active care *(a-c)* +*e*	83	85	92	106	82	136	133	127
	Total number of neonates including DR deaths *a*+*d*+*e*	137	113	131	142	121	171	185	178
	Percentage of neonates who received active care	61%	75%	70%	75%	68%	80%	72%	71%
24 weeks	Number of neonates who received active care *(a-c)* +*e*	185	200	233	178	217	221	224	224
	Total number of neonates including DR deaths *a*+*d*+*e*	202	207	245	190	227	231	235	240
	Percentage of neonates who received active care	92%	97%	95%	94%	96%	96%	95%	93%

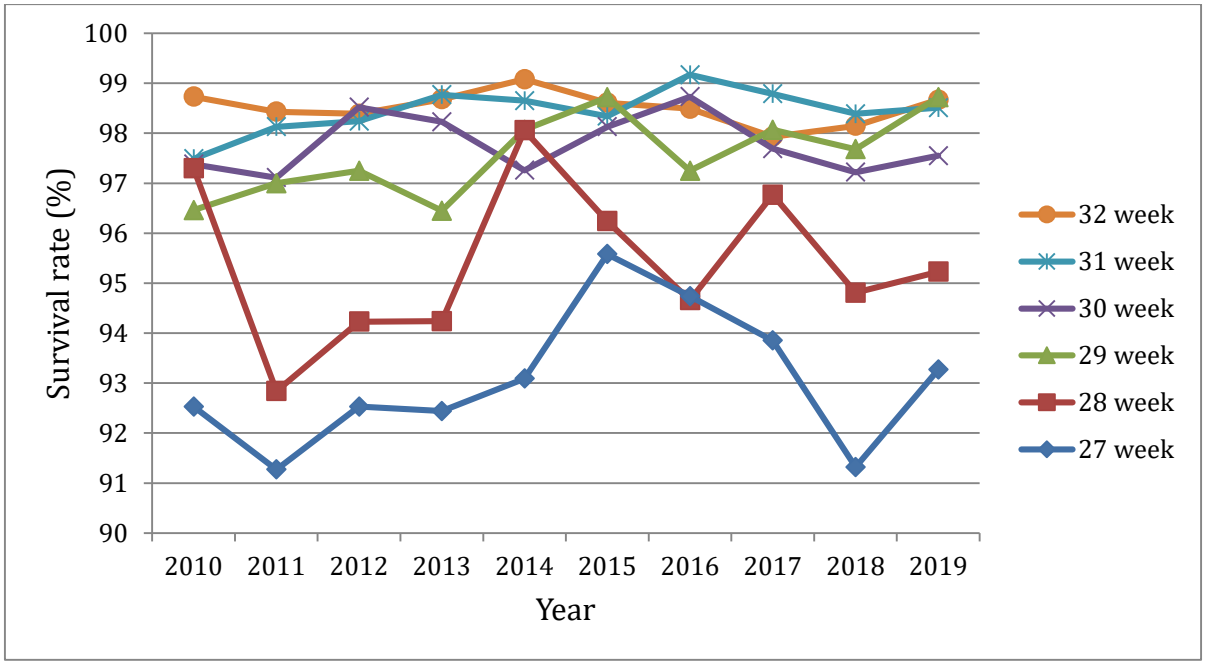
Note: Refer to presentation #4 for detailed breakdown of neonates by GA in 2019.
The alphabet notations used in the table above are carried from presentation #4.
Information should be interpreted with caution as not all sites provided data on delivery room deaths. Active care refers to infants who received cardiopulmonary resuscitation at birth.

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

a. 22-26 weeks' GA:

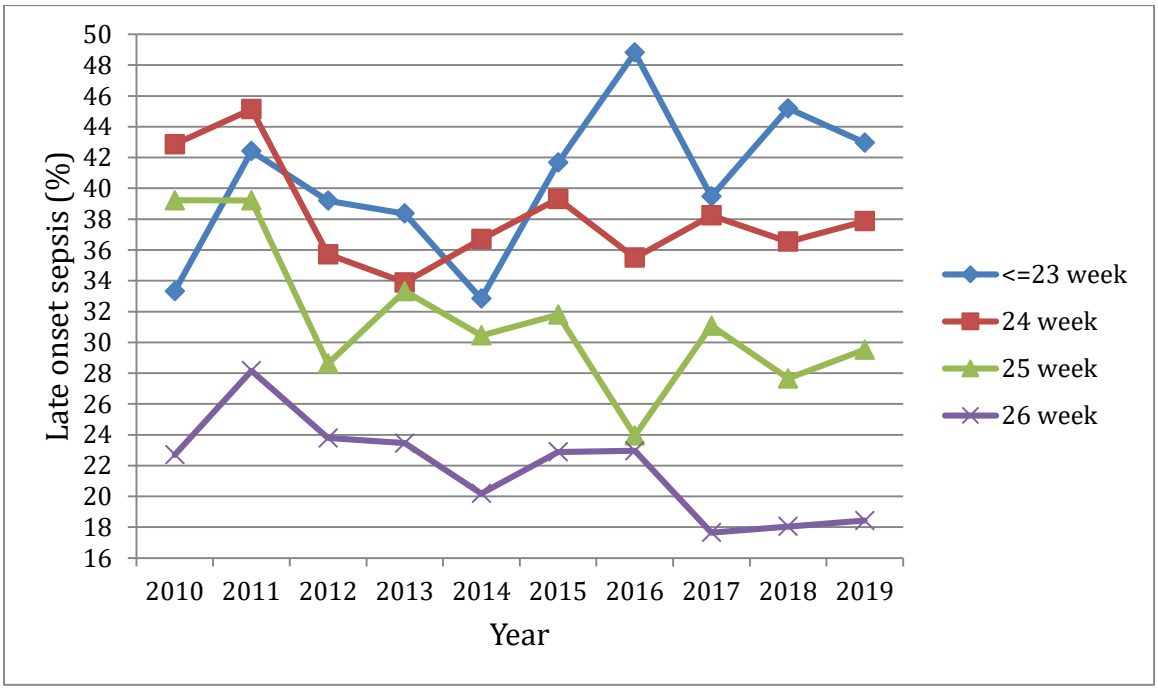


b. 27-32 weeks' GA:

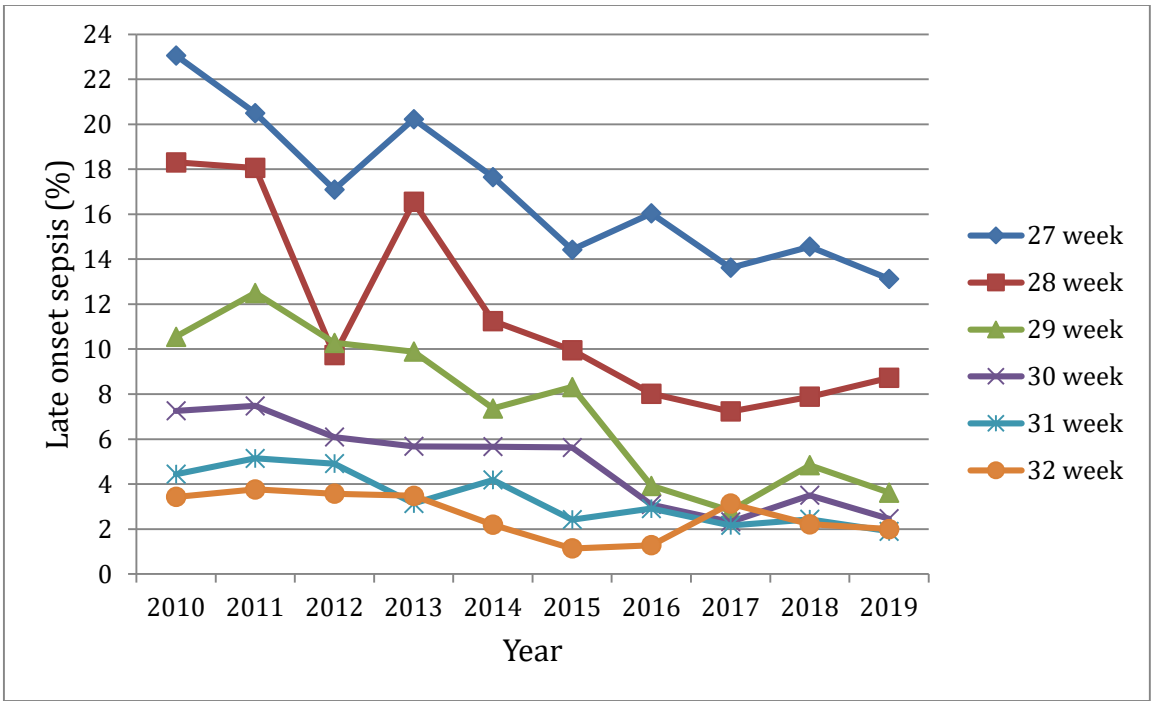


5. Late onset sepsis (with at least one infection) among neonates who survived beyond 2 days post birth

a. 23-26 weeks' GA:

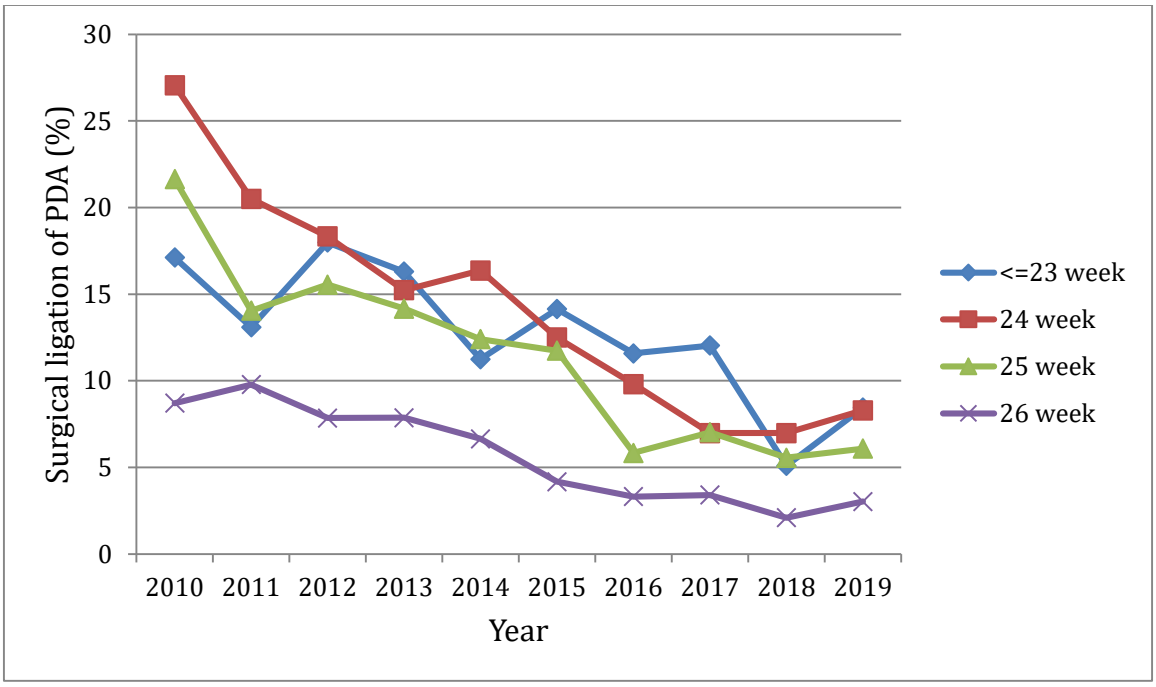


b. 27-32 weeks' GA:

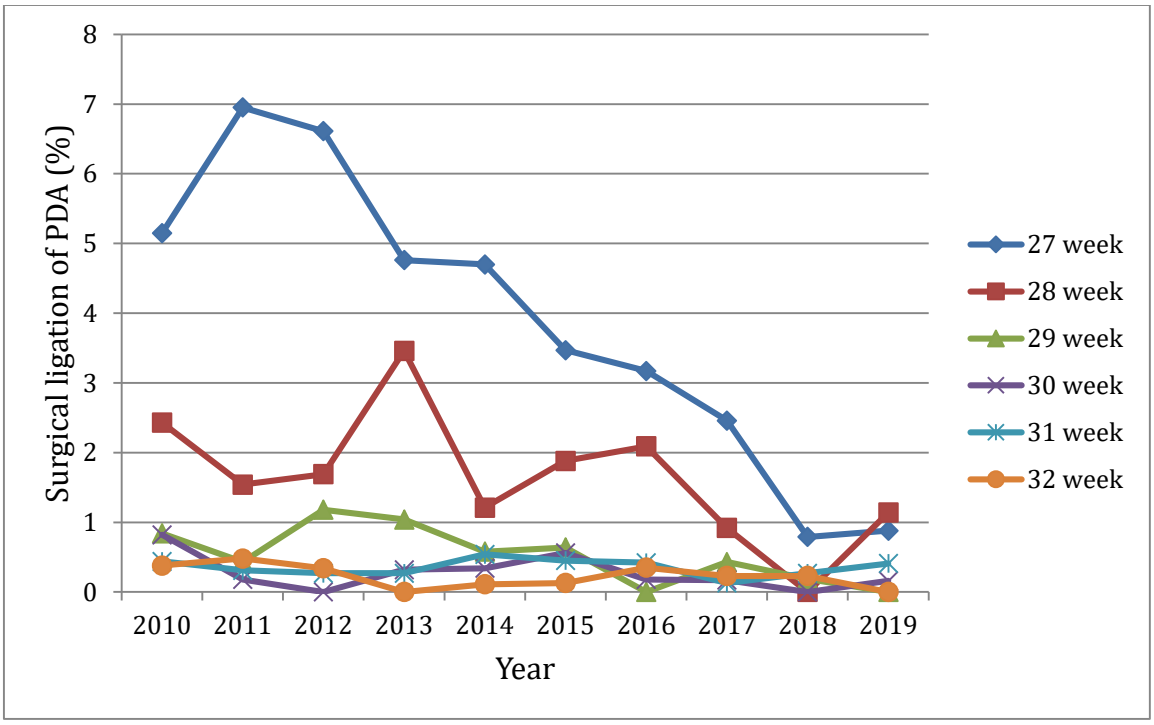


6. Surgical ligation of PDA among all neonates

a. 23-26 weeks' GA:

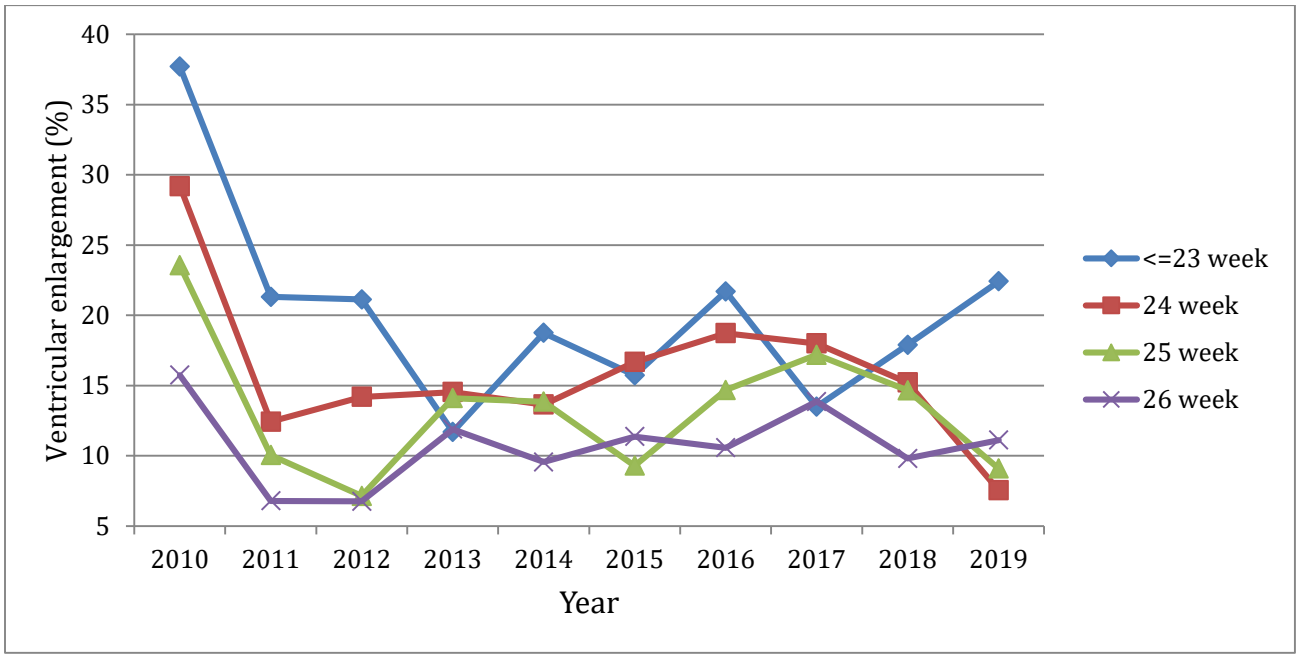


b. 27-32 weeks' GA:

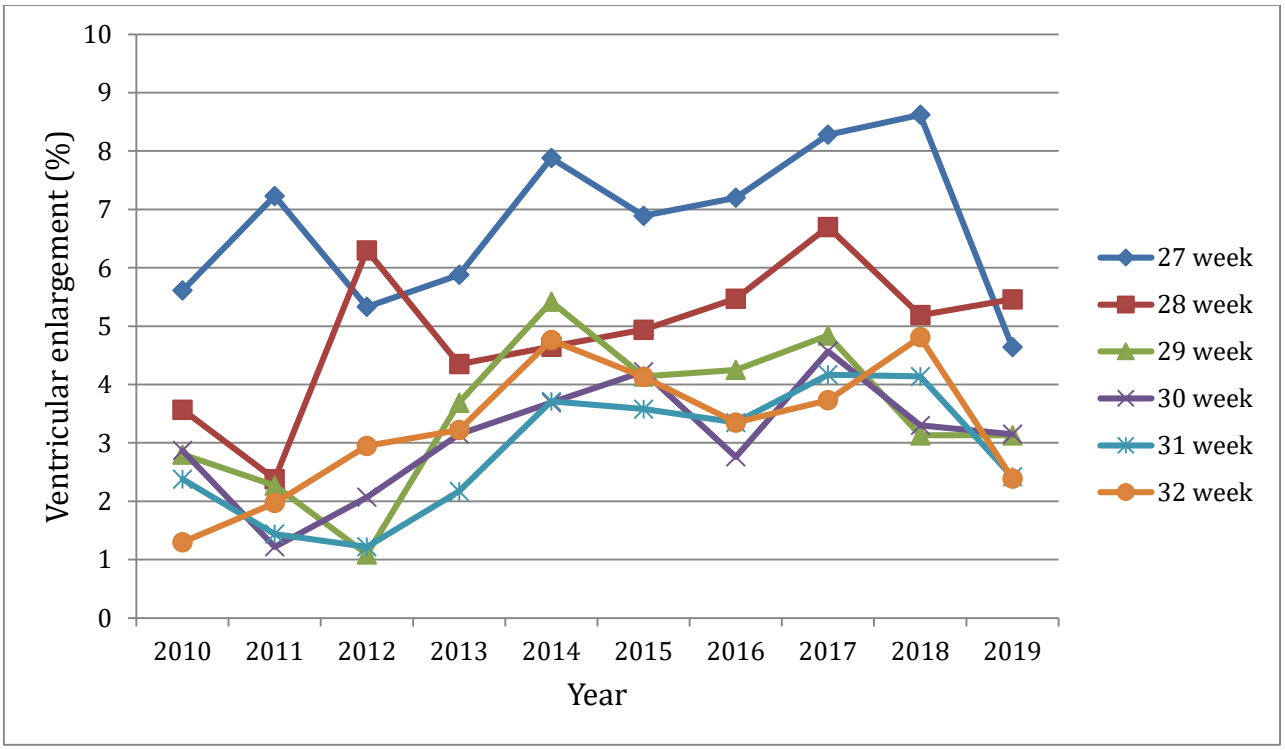


7. Ventricular enlargement (VE): (moderate and severe VE only; among neonates who received ultrasound exams)

a. 23-26 weeks' GA:

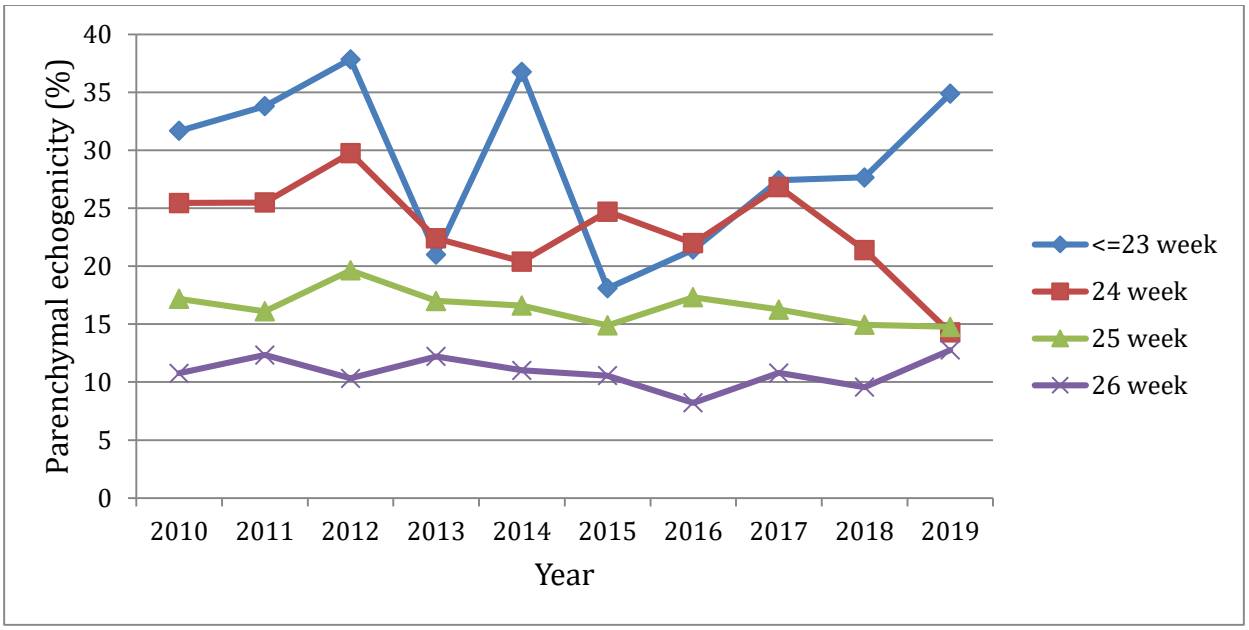


b. 27-32 weeks' GA:

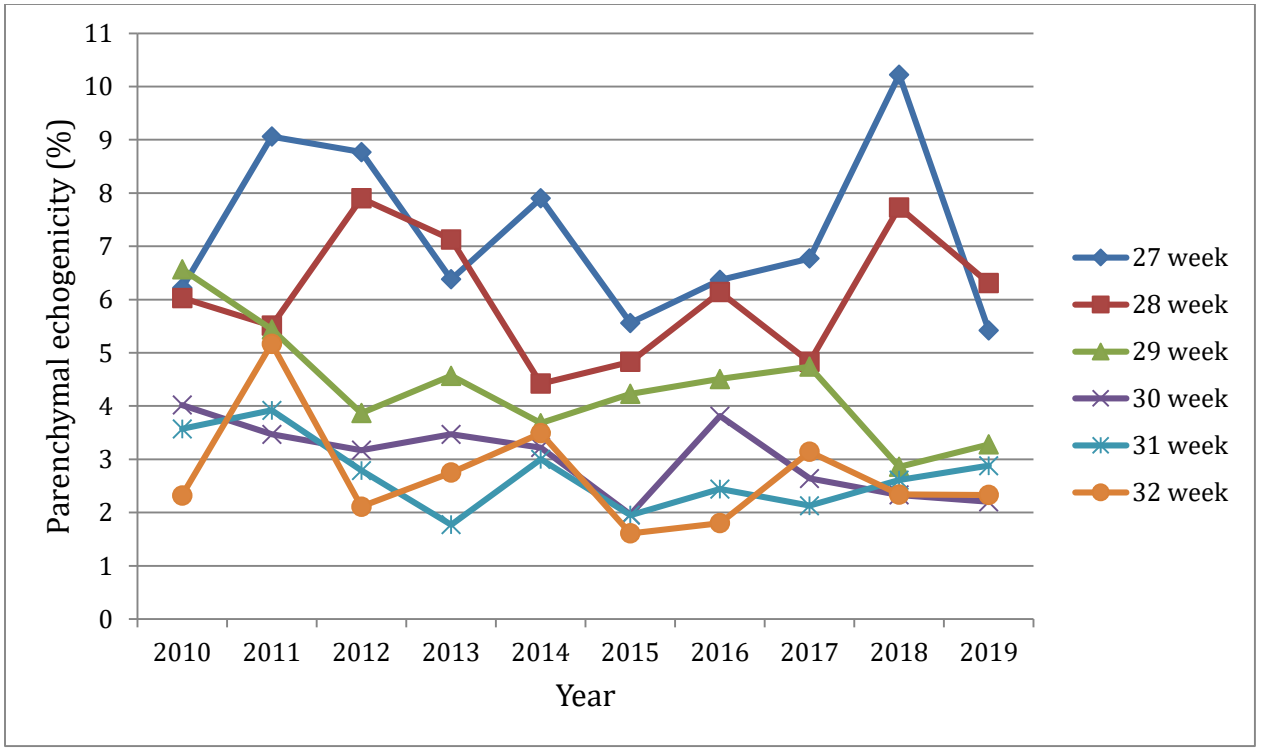


8. Parenchymal echogenicity (among neonates who received ultrasound exams)

a. 23-26 weeks' GA:



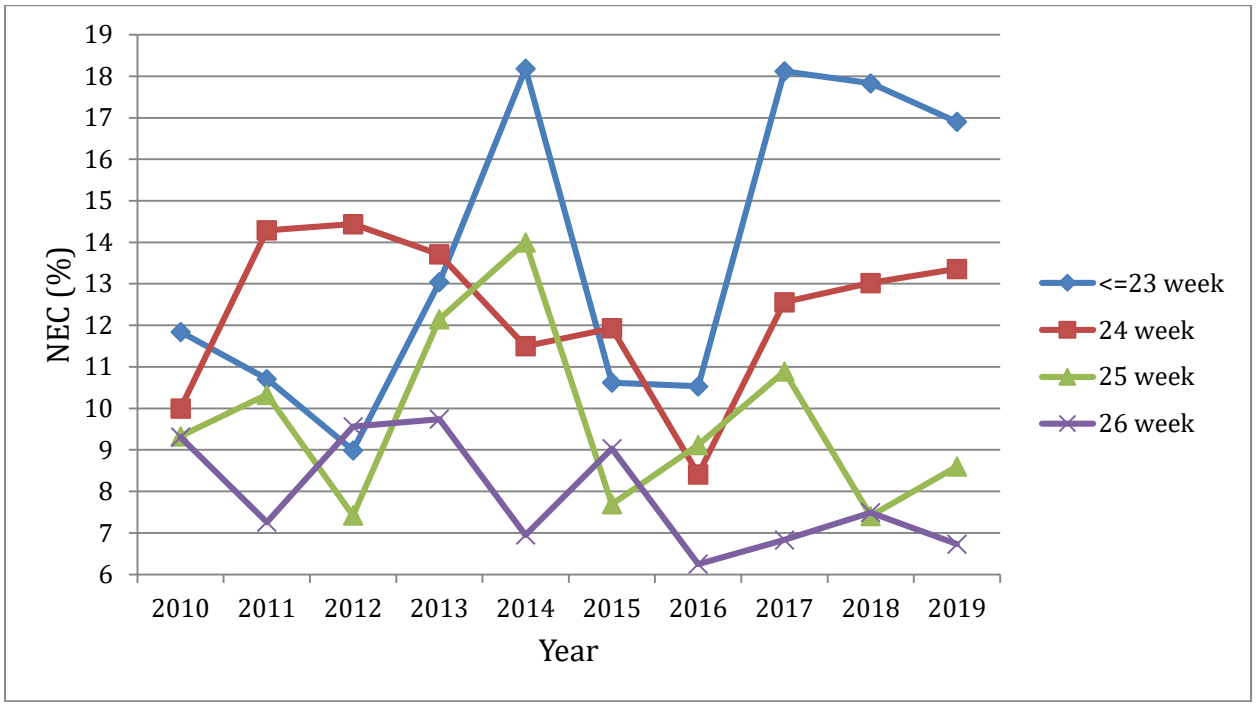
b. 27-32 weeks GA:



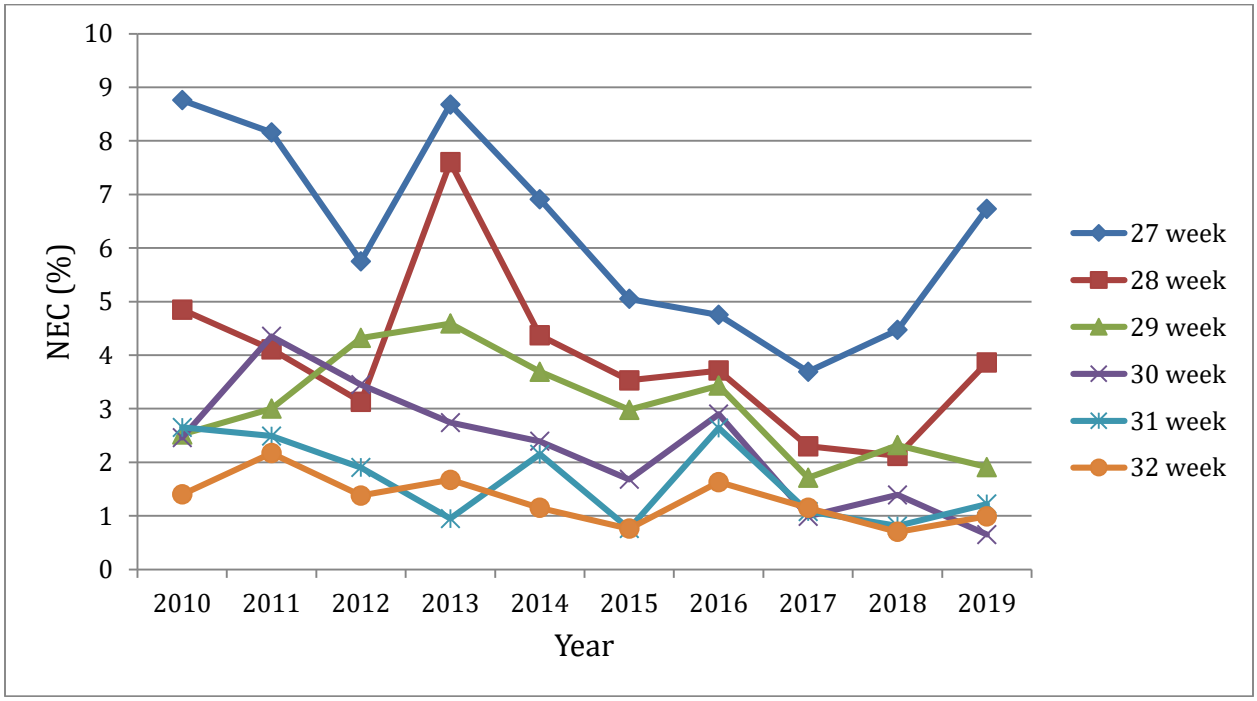
5

9. NEC:

a. 23-26 weeks' GA:

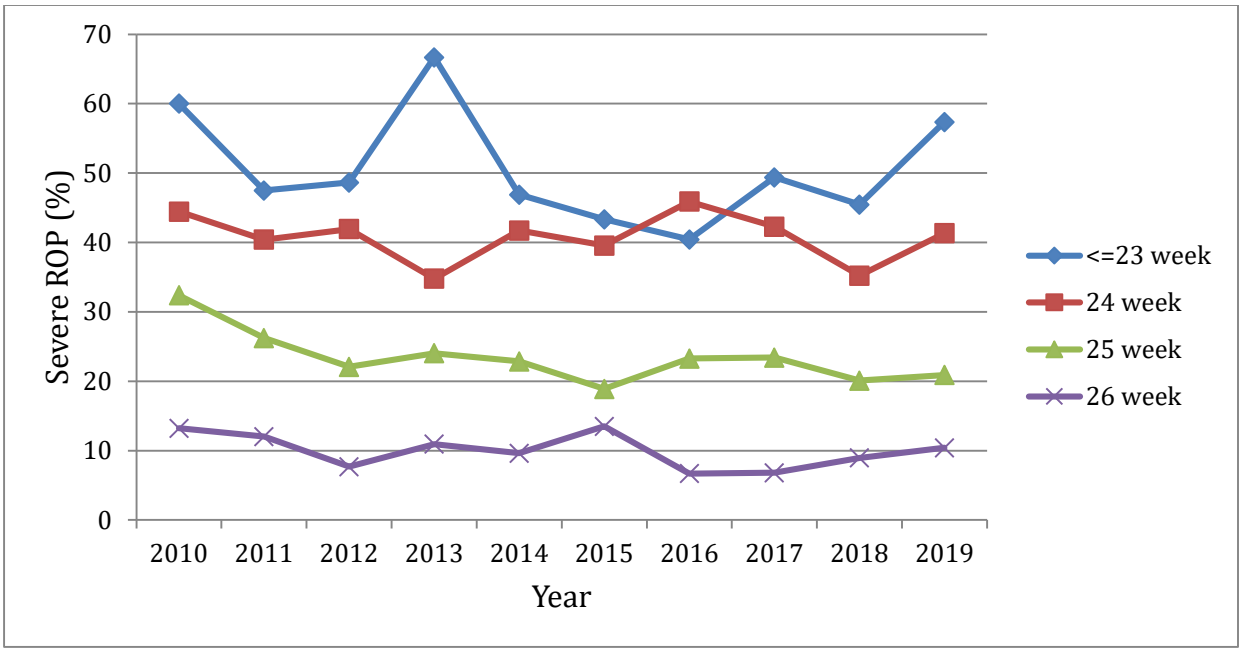


b. 27-32 weeks' GA:

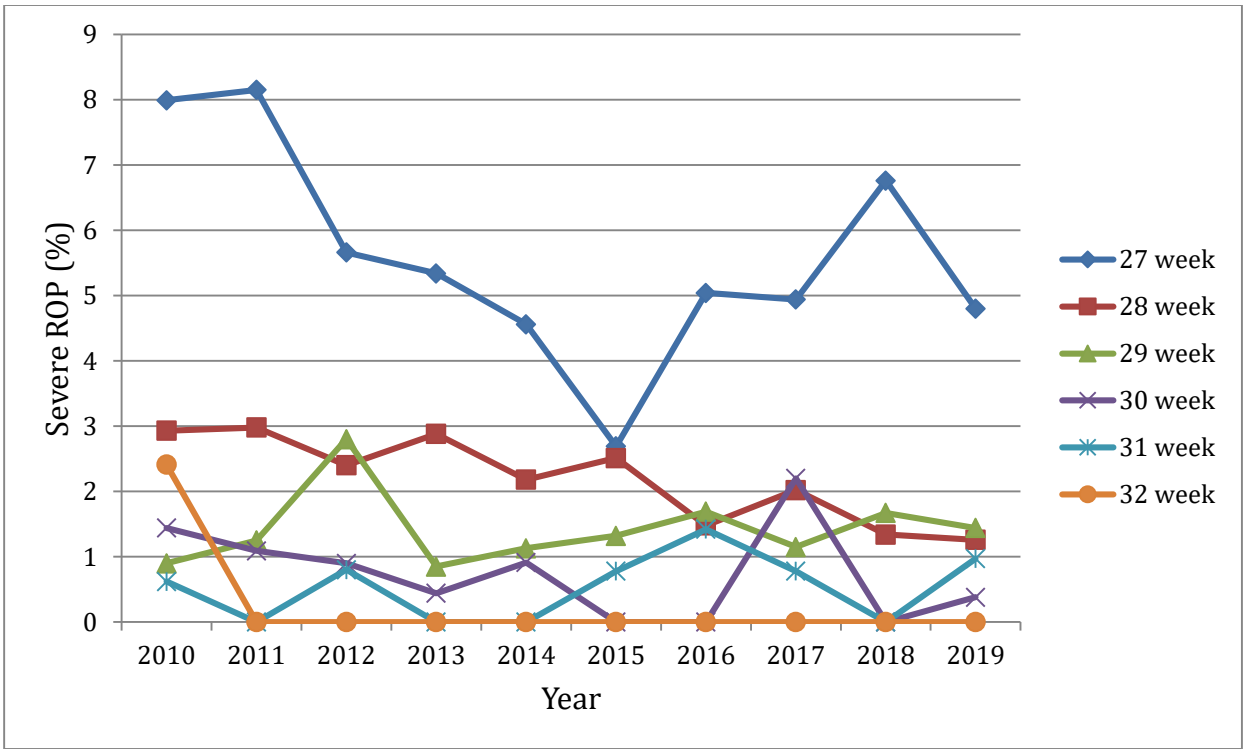


10. Severe ROP (≥ Stage 3 or ROP treatment) among neonates who received eye exams:

a. 23-26 weeks' GA:

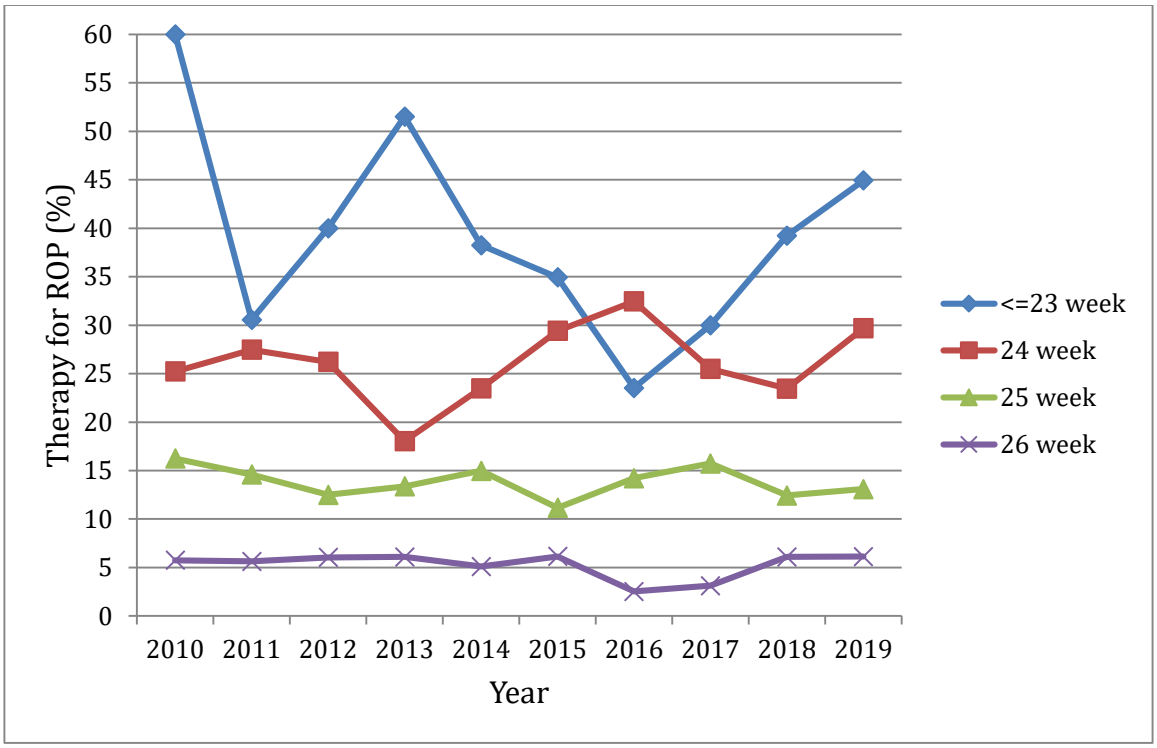


b. 27-32 weeks' GA:

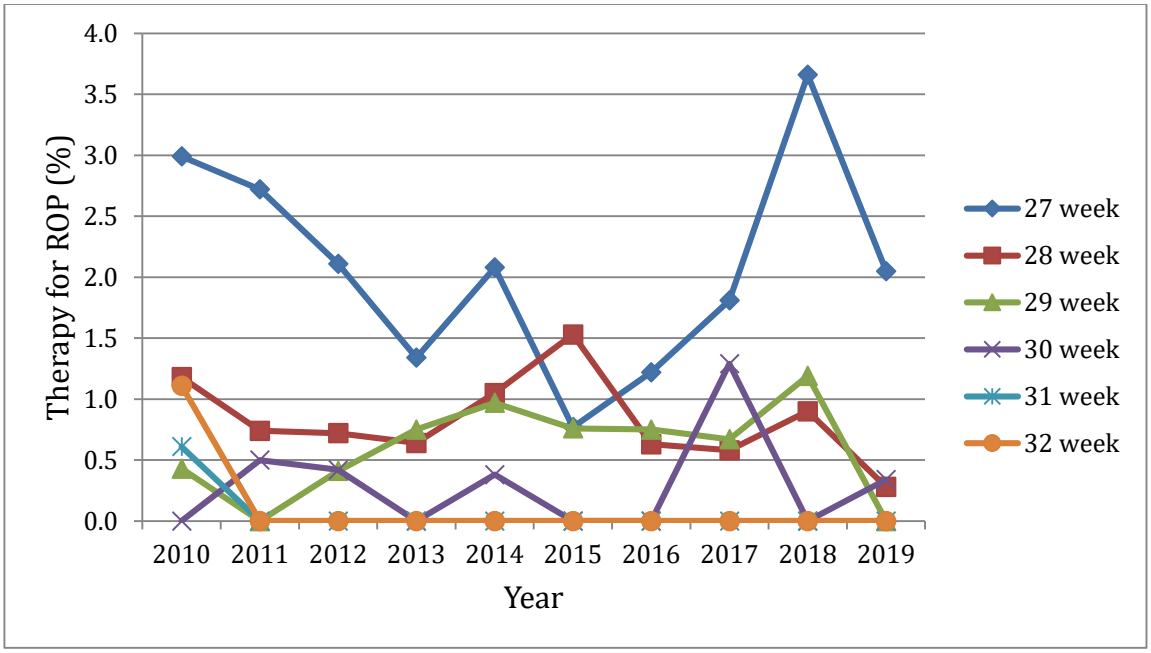


11. Therapy for ROP (among neonates who received eye exams)

a. 23-26 weeks' GA :

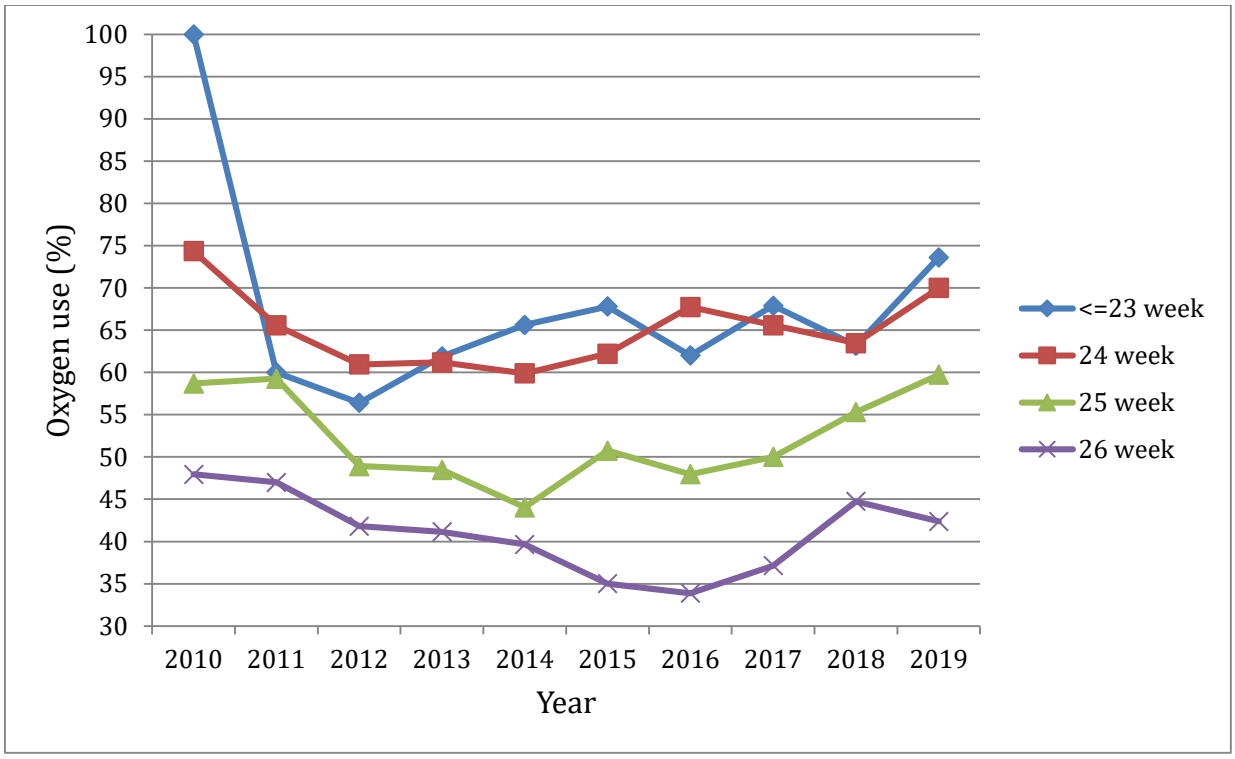


b. 27-32 weeks' GA:

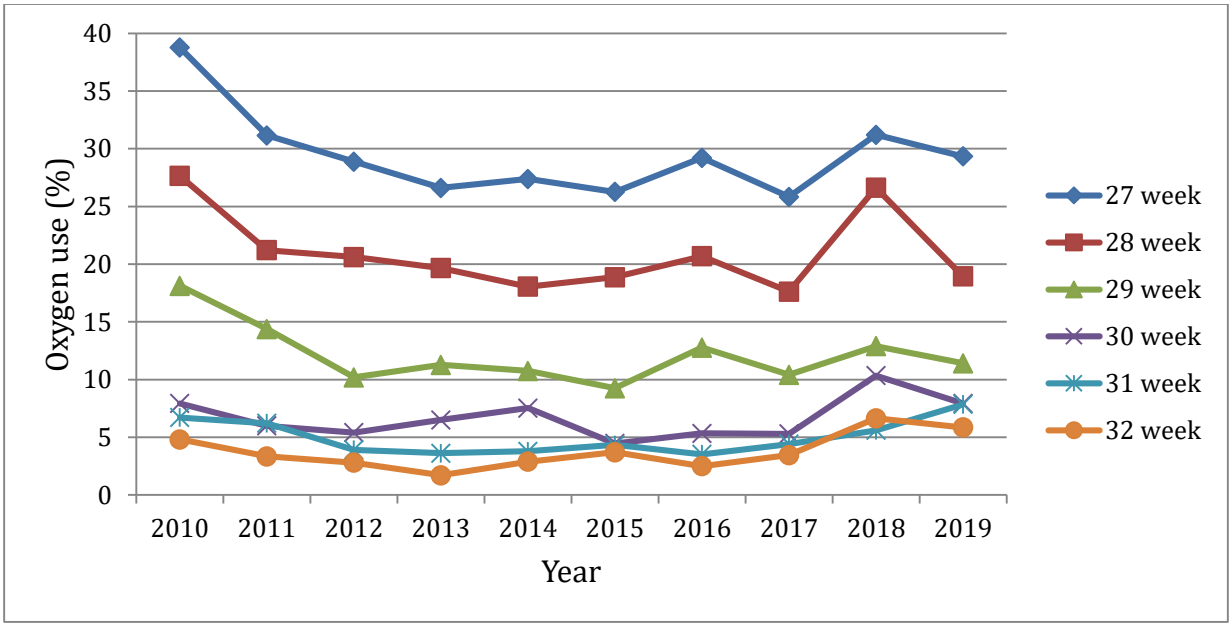


12a. Oxygen use at 36 weeks or at discharge:

a. 23-26 weeks' GA:

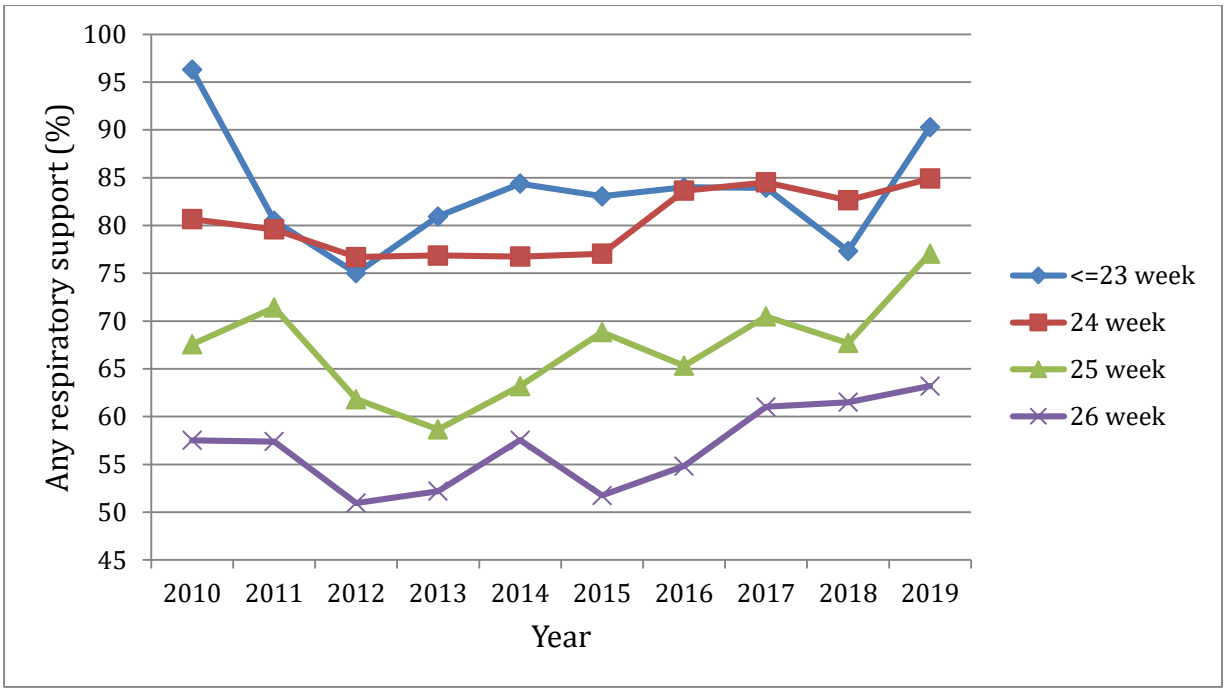


b. 27-32 weeks' GA:

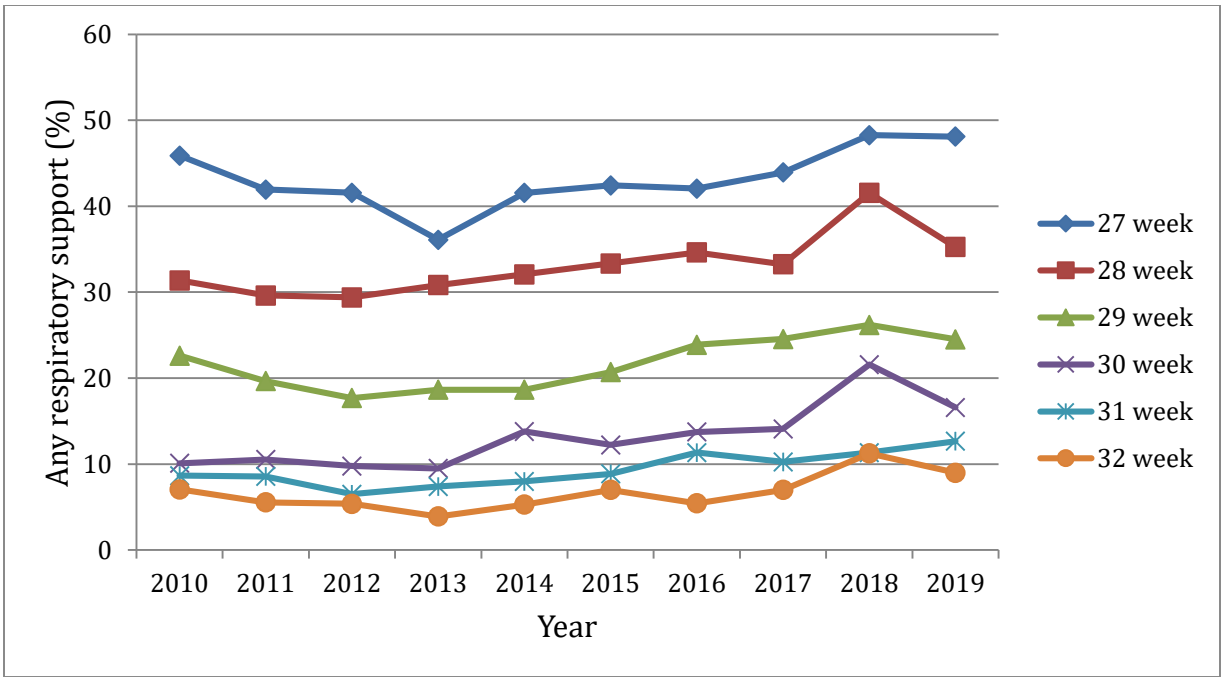


12b. Any respiratory support at 36 weeks or at discharge:

a. 23-26 weeks' GA:

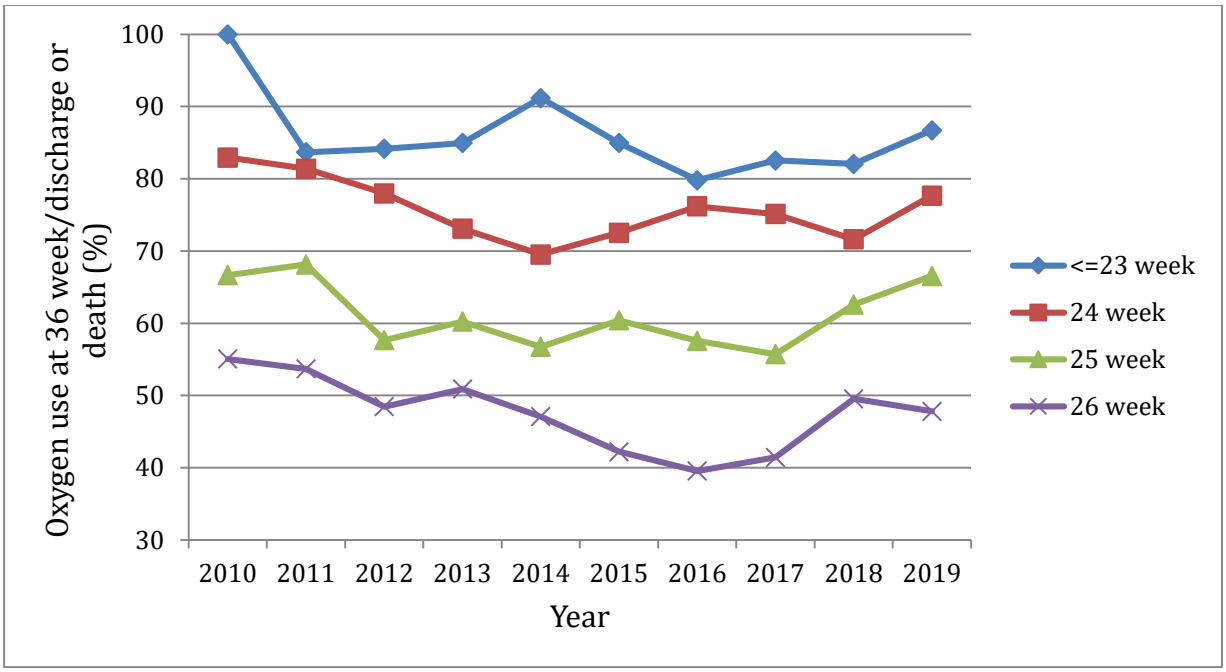


b. 27-32 weeks' GA:

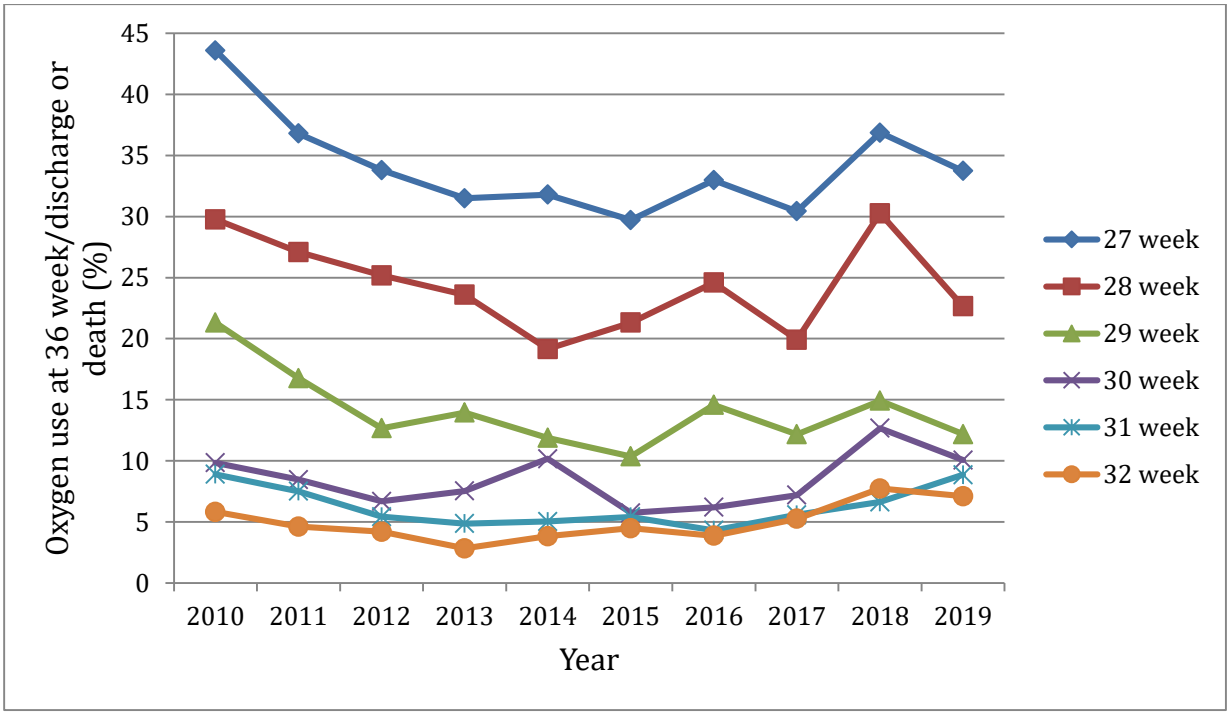


13a. Oxygen use at 36 weeks/discharge or death:

a. 23-26 weeks' GA:

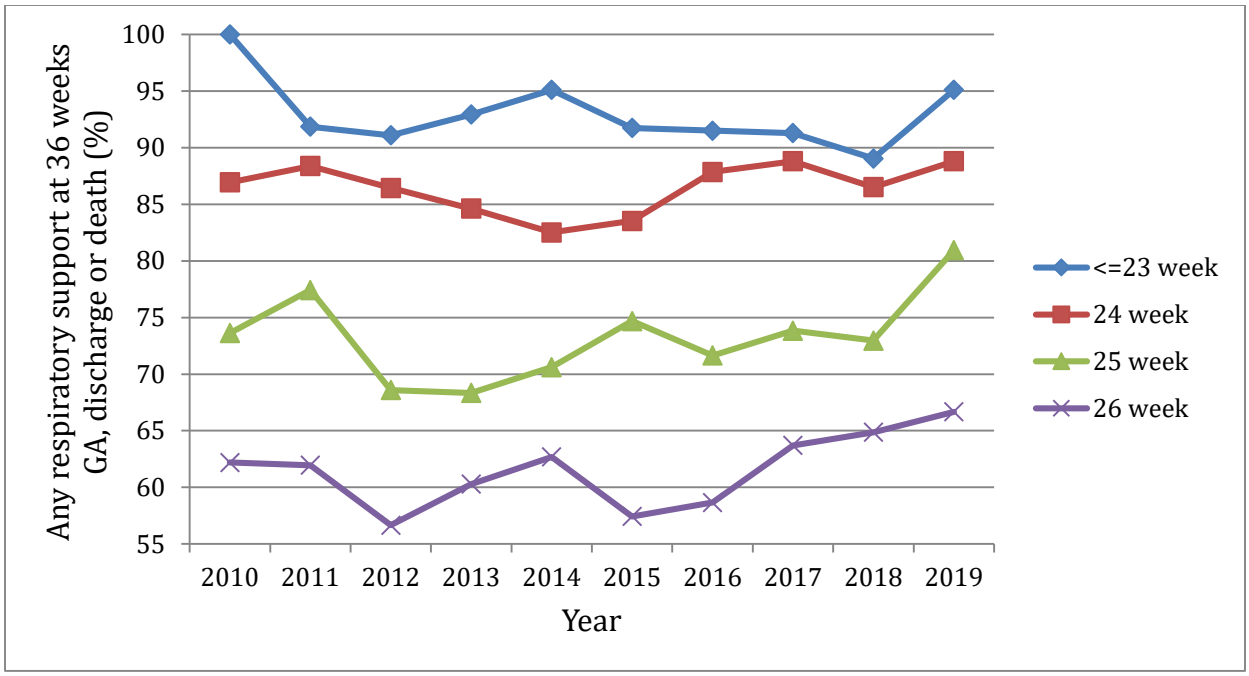


b. 27-32 weeks' GA:

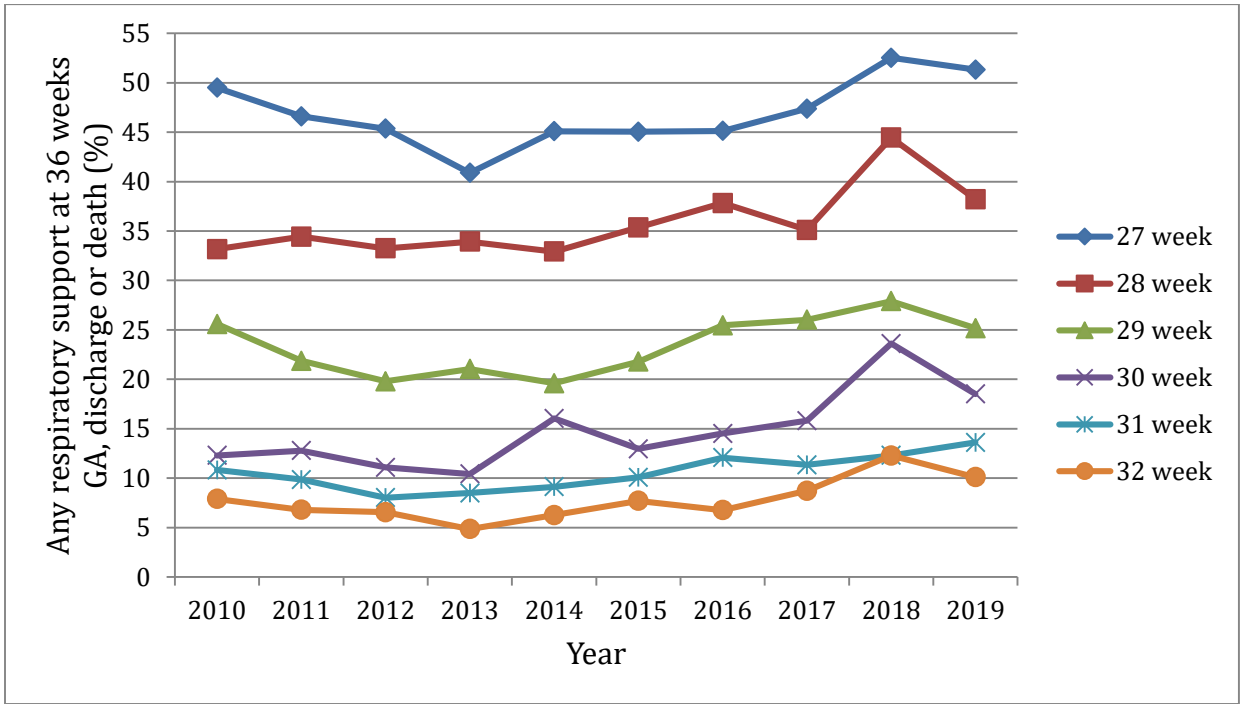


13b. Any respiratory support at 36 weeks/discharge or death:

a. 23-26 weeks' GA:

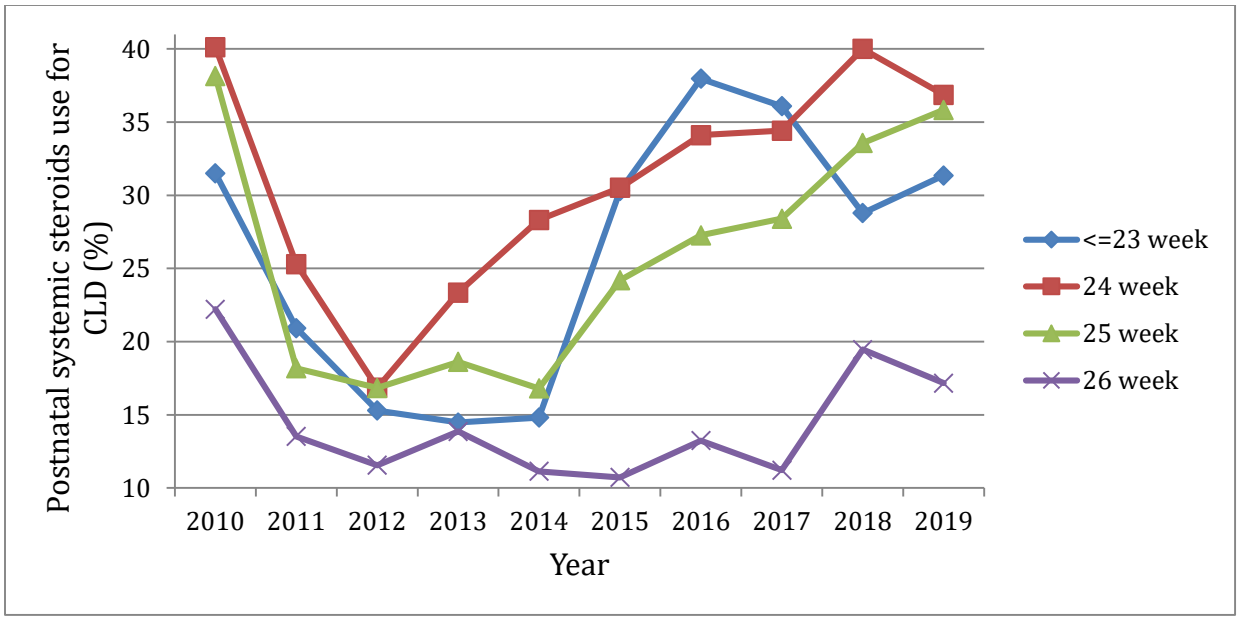


b. 27-32 weeks' GA:

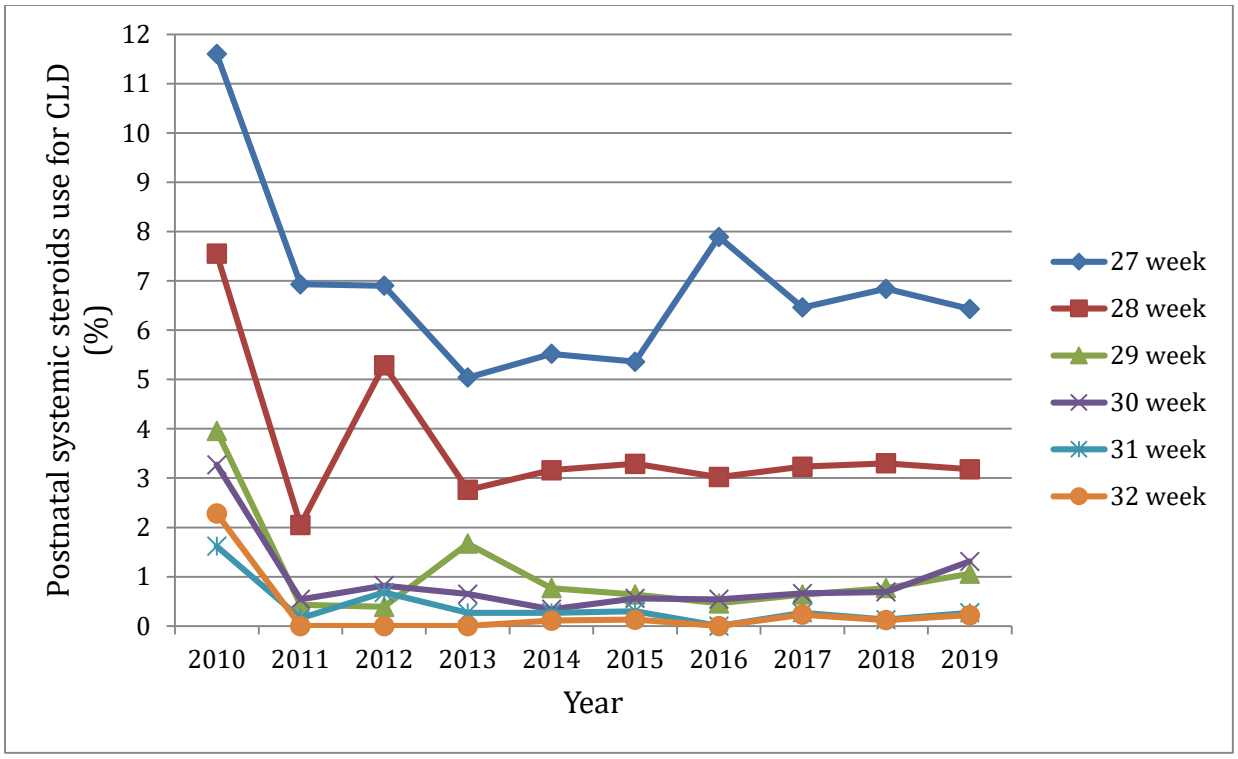


14. Postnatal systemic steroids use for chronic lung disease (CLD)

a. 23-26 weeks' GA:



b. 27-32 weeks' GA:

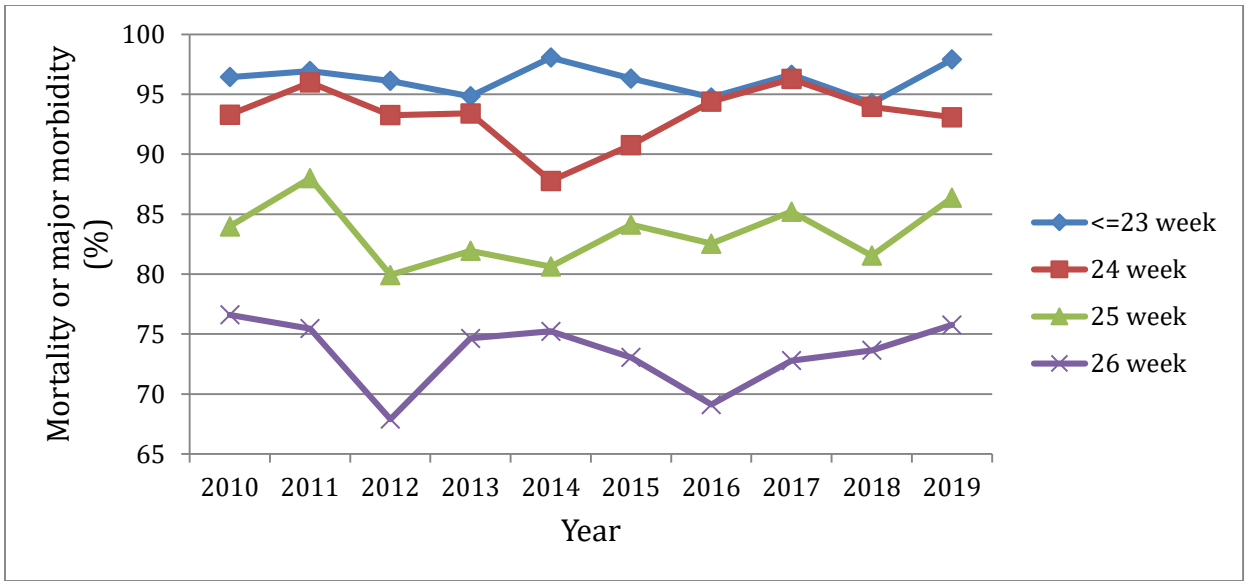


15. Mortality or major morbidity including CLD

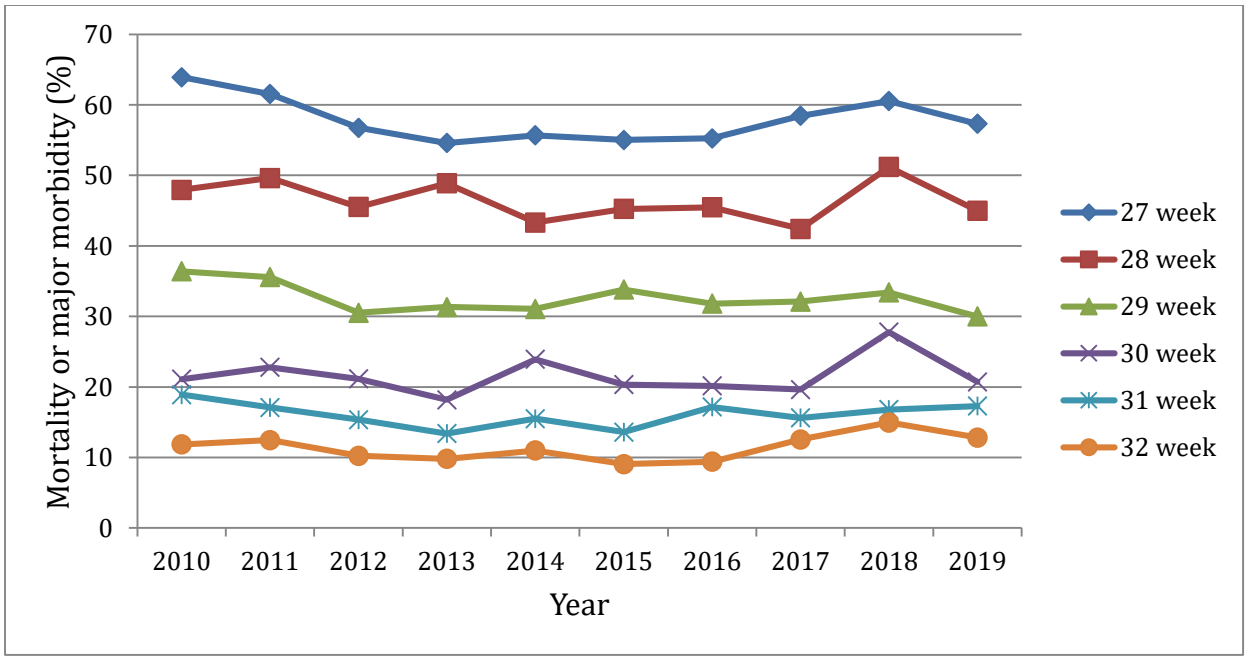
Major morbidity was counted as any one of the following:

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

a. 23-26 weeks' GA:



b. 27-32 weeks' GA:

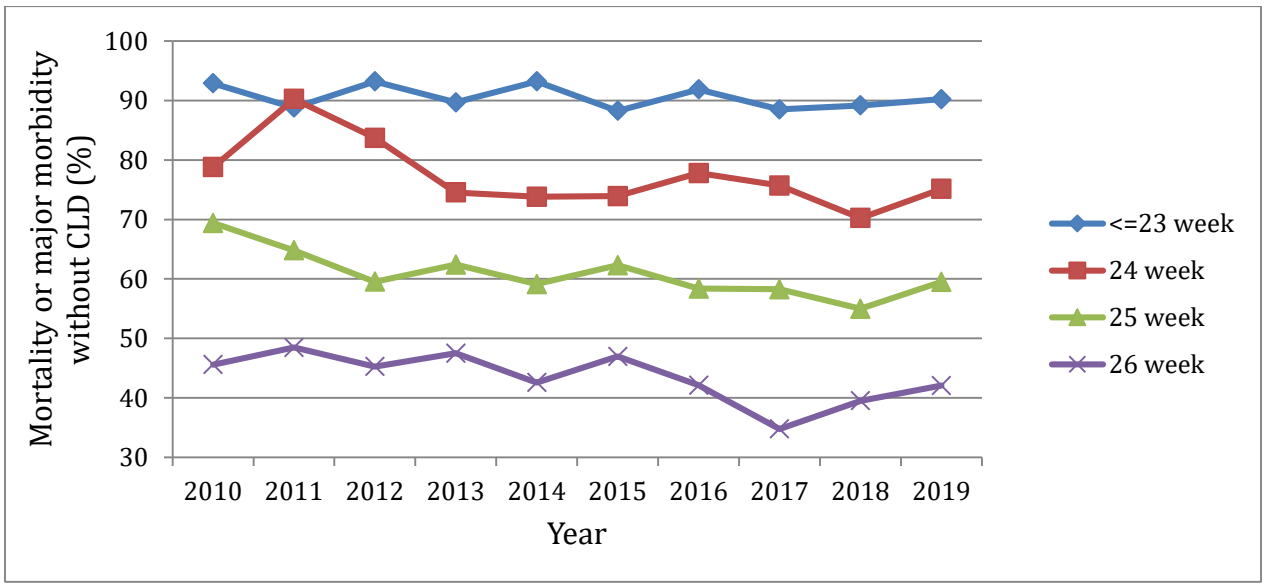


16. Mortality or major morbidity excluding CLD

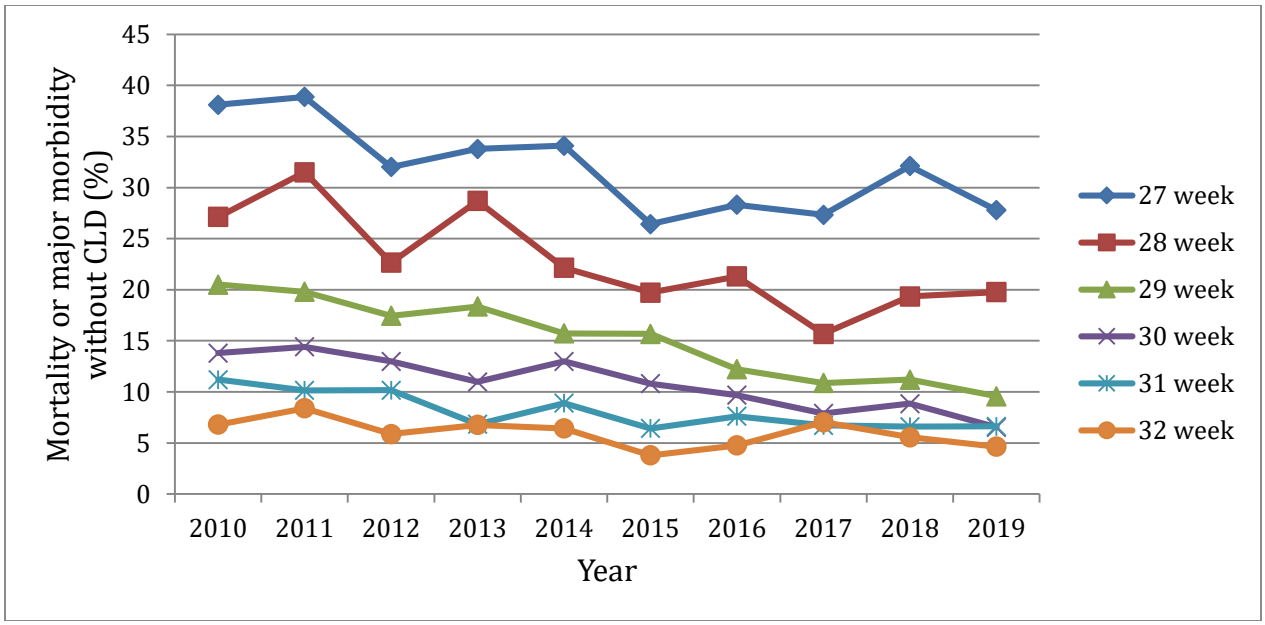
Major morbidity was counted as any one of the following:

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

a. 23-26 weeks' GA:



b. 27-32 weeks' GA:



I. 2019 CNN publications

Peer reviewed publications

1) Iwami H, Isayama T, Lodha A, Canning R, Abou Mehrem A, Lee SK, Synnes A, Shah PS, Canadian Neonatal Network and Canadian Neontal Follow-Up Network Investigators. Outcomes after Neonatal Seizures in Infants Less Than 29 Weeks' Gestation: A Population-Based Cohort Study. Am J Perinatol. 2019 Jan; 36:191-199.
2) Lodha A, Entz R, Synnes A, Creighton D, Ysuf K, Lapointe A, Yang J, Shah PS, Investigators of the Canadaian Neonatal Network and the Canadian Neonatal Follow-Up Network. Early Caffeine Administration and Neurodevelopmental Outcomes in Preterm Infants. Pediatrics. 2019 Jan; 143(1).
3) Fischer N, Soraisham A, Shah PS, Synnes A, Rabi Y, Singhal N, Ting JY, Creighton D, Dewey D, Ballantyne M, Lodha A, Canadian Neonatal Network and Canadian Neonatal Follow-up Network Site Investigators. Extensive cardiopulmonary resuscitation of preterm neonates at birth and mortality and developmental outcomes. Resuscitation. 2019 Feb; 135-57-65.
4) Singh B, Shah PS, Afifi J, Simpson CD, Mitra S, Dow K, El-Naggar W. Probiotics for Preterm Infants: A National Retrospective Cohort Study. J Perinatology. 2019 Jan: 39; 533-539
5) Woodward MA, Williams C, Lodha AK, Shah PS, Shivananda S, Canadian Neonatal Network Investigators. Morbidity, mortality and resource utilization among neonates with Down syndrome admitted to NICUs. Global Scientific Research Journal of Pediatrics. 2018; 1(1), pp. 1-10.
6) Shafey A, Bashir RA, Shah PS, Synne A, Kelly E. Outcomes and resource usage of infants born at ≤ 25 weeks gestation in Canada. Paediatrics & Child Health. 2019 Feb; 25(4): 207-215.
7) Ting JY, Roberts A, Sherlock R, Ojah C, Cieslak Z, Dunn M, Barrington K, Yoon E, Shah PS. Duration of Initial Empirical Antibiotic Therapy and Outcomes in Very Low Birth Weight Infants. Pediatrics. March 2019; 143(3).
8) Zipursky A, Yoon E, Emberley J, Bertelle V, Makary H, Kanungo J, Lee SK, Shah PS. CLABSI and Non-CLABSI Surveillance in Canadian Tertiary Care NICUs. Pediatrics. 2019 May: 208:176-182.e6.
9) El-Naggar W, Afifi J, McMillan D, Toye J, Kajetanowicz A, Yoon E, Shah PS. Epidemiology of Meningitis in Canadian Neonatal Intensive Care Units. Pediatric Infectious Disease Journal. 2019 May; 38(5): 476-480.
10) Beltempo M, Shah PS, Ye XY, Afifi J, Lee S, McMillan DD; Canadian Neonatal Network Investigators. SNAP-II for prediction of mortality and morbidity in extremely preterm infants. J Matern Fetal Neonatal Med. 2019 Aug; 32(16): 2694-2701.
11) Keir AK, Karam O, Hodyl N, Stark MJ, Liley HG, Shah PS, Stanworth SJ; NeoBolus Study Group. International, multicentre, observational study of fluid bolus therapy in neonates. J Paediatr Child Health. 2019 June; 55(6): 632-639.
12) Aldana-Aguirre JC, Toye J, Shah PS, Yoon EW, Kumaran K; Canadian Neonatal Network Investigators. Patent ductus arteriosus and small for gestational age infants: Treatment approaches and outcomes. Early Human Development. 2019 April: 131: 10-14.

13) Thampi N, Shah PS, Nelson S, Agarwal A, Steinberg M, Diambomba Y, Morris AM. Prospective audit and feedback on antibiotic use in neonatal intensive care: a retrospective cohort study. BMC Pediatr. 2019 April; 19(1):105.
14) ElSayed E, Daspal S, Yee W, Pelausa E, Canning R, Shah PS, Yusuf K; Canadian Neonatal Network Investigators. Outcomes of singleton small for gestational age preterm infants exposed to maternal hypertension: a retrospective cohort study. Pediatr Research. 2019 Aug; 86:269-275.
15) Lodha A, Shah PS, Soraisham AS, Rabi Y, Mehrem AA, Singhal N; Canadian Neonatal Network Investigators. Association of Deferred vs Immediate Cord Clamping With Severe Neurological Injury and Survival in Extremely Low-Gestational-Age Neonates. JAMA Netw Open. 2019 Mar; 2(3).
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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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