The Canadian Neonatal Network ™

Le Réseau Néonatal Canadien ™

Annual Report 2016 Rapport Annuel

Acknowledgements

This report is based upon data collected from 30 Canadian Health Care Organizations that were members of the Canadian Neonatal Network™ during the year 2016. In addition to all the investigators and the funding agency, we would like to recognize the invaluable support of the Neonatal Intensive Care Units (NICUs) that collected this information, the support of all of the participating sites and most importantly, the dedication and hard work of the Site Investigators, NICU Medical Directors and Data Abstractors.

Structure of the CNN

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

Funding

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

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Jewish General Hospital, Montréal, Québec	Dr. Ermelinda Pelausa
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Cover page adapted by Priscilla Chan

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A. Executive Summary

Inclusion summary:

This report from the Canadian Neonatal Network™ (CNN) is based on data from 30 tertiary NICU sites that contributed data in the year 2016. Admissions between January 1, 2016 and December 31, 2016 who were discharged by March 31, 2017 were included.

Total number of eligible admissions to participating Canadian sites (See section D.1 for analyses)	15 997
Total number of eligible individual neonates (See section D.2. for analyses)	14 907
Total number of eligible very preterm (GA <33 weeks) neonates	4 238
Total number of eligible extremely preterm (GA <29 weeks) neonates (See section D.3. for analyses)	1 667
Total number of eligible very low birth weight (BW <1500 g) neonates (See section D.3. for analyses)	2 867

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 2016, five (5) sites had resource limitations and were only able to contribute data from a subset of eligible neonates admitted to their NICUs. Each of these 5 centers included at minimum all neonates born at less than 33 weeks' GA.
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. 28 out of 30 sites collected data on delivery room deaths in 2016.

Noteworthy findings (continued):

b. 25% of the total admissions were outborn neonates and 15% of neonates <33 weeks' GA were outborn.
c. The rates of multiple births decreased from 27% in 2011 to 22% in 2016.
d. The survival rate increased at lower GAs:
    i. At 22 weeks' GA, 7% of all neonates and 31% of neonates who received intensive care survived.
    ii. At 23 weeks' GA, 37% of all neonates and 57% of neonates who received intensive care survived.
e. The survival rate also increased at lower BWs:
    i. At 400-499g, 27% of all neonates and 59% of neonates who received intensive care survived.
    ii. At 500-599g, 51% of all neonates and 68% of neonates who received intensive care survived.
f. Among neonates <29 weeks' GA at birth:
    i. 95% received a partial or complete course of antenatal steroids.
    ii. 69% received MgSO4 for neuroprotection.
    iii. 48% received deferred cord clamping.
    iv. 32% were hypothermic (temperature $<36.5^{0}$C) on admission.
    v. 16% had an Apgar score of <5 at 5 minutes.
    vi. 95% received antibiotics at some time during their stay.
    vii. 36% were exclusively breast milk feeding at discharge and 23% were exclusively formula feeding at discharge.
g. A majority of neonates received <40% oxygen at the start of resuscitation.
h. Coagulase-Negative Staphylococcal infection accounted for 40% of late onset sepsis.
i. Surgical ligation for PDA was done in 85 neonates.
j. NEC rates were 4% in neonates <33 weeks' GA and 5% for VLBW neonates.
k. Stage 4 or 5 ROP was not observed in 2016.
l. Stage 3 ROP occurred in 7% of neonates <33 weeks' GA (5% required treatment) and in 8% of neonates <1500g BW (6% required treatment).
m. A total of 498 neonates were diagnosed with HIE and of whom 295 received hypothermia.

B. CNN Site Characteristics

SITE	CNN data collection criteria	Level II / Step-down nursery	Level II / Step-down data included in CNN	Delivery room deaths included in CNN data	ROP surgical / laser service?	PDA surgical service?
Victoria General Hospital	All eligible admissions	y	y	y	y	y
BC Women's Hospital	All eligible admissions	y	n	n	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	n	y	y
Alberta Children's Hospital	All eligible admissions	n	n/a	n/a	y	y
Royal Alexandra Hospital (Edmonton)*	< 33 weeks GA & HIE	y	y	y	y	n
University of Alberta Hospital - Stollery (Edmonton)*	All eligible admissions	n	n/a	n/a	n	y
Regina General Hospital	All eligible admissions	y	y	y	n	n
Royal University Hospital	All eligible admissions	n	n/a	n	n	y
Health Sciences Centre Winnipeg	< 33 weeks GA, < 1500g, HIE, 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	n	n
Children's Hospital of Eastern Ontario and the Ottawa Hospital**	< 33 weeks GA	y	y	y	y	y
Kingston General Hospital	All eligible admissions	y	y	y	y	y
Jewish General Hospital	All eligible admissions	y	y	y	y	n
Hôpital Sainte-Justine	All eligible admissions	y	n	y	y	y
Centre Hospitalier Universitaire de Quebec	< 33 weeks GA	y	n	y	y	y
Montreal Children's Hospital - MUHC	All eligible admissions	n	n/a	y	y	y
Centre Hospitalier Universitaire de Sherbrooke	< 33 weeks GA	y	n	y	n	n
The Moncton Hospital	All eligible admissions	n	n/a	y	n	n
Dr. Everett Chalmers Hospital	All eligible admissions	n	n/a	y	n	n
Saint John Regional Hospital	All eligible admissions	n	n	y	n	n
Janeway Children's Health and Rehabilitation Centre	All eligible admissions	y	y	y	y	y
IWK Health Centre	All eligible admissions	y	y	y	y	y
Cape Breton Regional Hospital	All eligible admissions	n	n/a	y	n	n

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

** Children's Hospital of Eastern Ontario and the Ottawa Hospital transmit data as one site

C. Information Systems

Neonates included in this report are those who were admitted to a CNN participating site between January 1, 2016 and December 31, 2016, and were discharged by March 31, 2017. 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. A total of 14 907 patients accounted for 15 997 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. 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 15 997 eligible admissions (including readmissions) to 30 sites. 25 of these sites submitted complete data (n=14 399) on all admissions and 5 sites submitted data on a selected admission cohort (n=1 598).

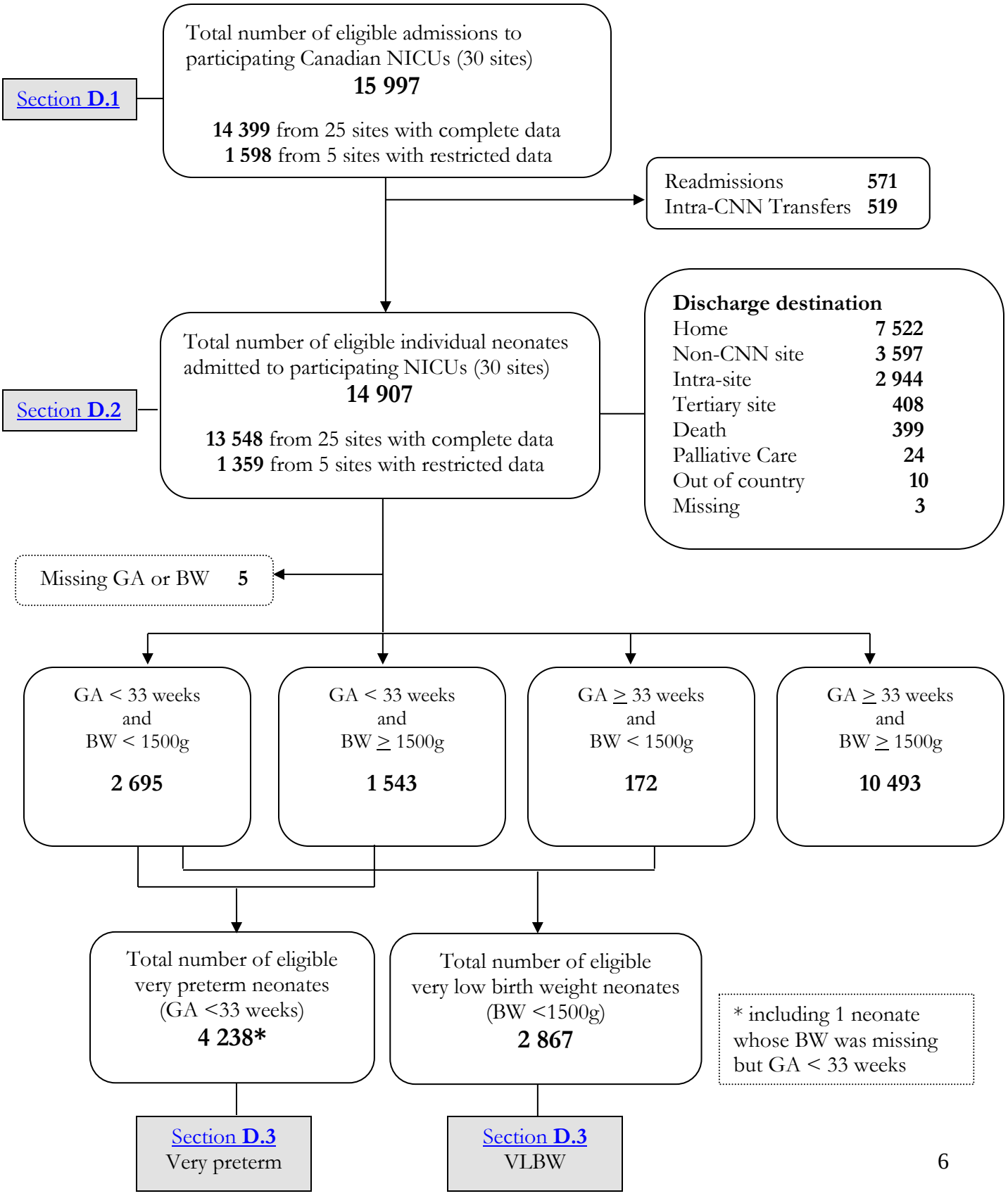
Section D.2. Analyses based on number of eligible neonates admitted to participating sites

These include data from 14 907 eligible neonates admitted to 30 sites. 25 of these sites submitted complete data (n=13 548) on all eligible admitted neonates and 5 sites submitted data on selected eligible admitted neonates (n=1 359).

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 4 238 eligible very preterm neonates and 2 867 eligible very low birth weight (VLBW) neonates.

Canadian Neonatal Network™ Database: Admissions between January 1, 2016 and December 31, 2016 who were discharged by March 31, 2017. Delivery room deaths, moribund neonates, and readmissions from 2015 were excluded.

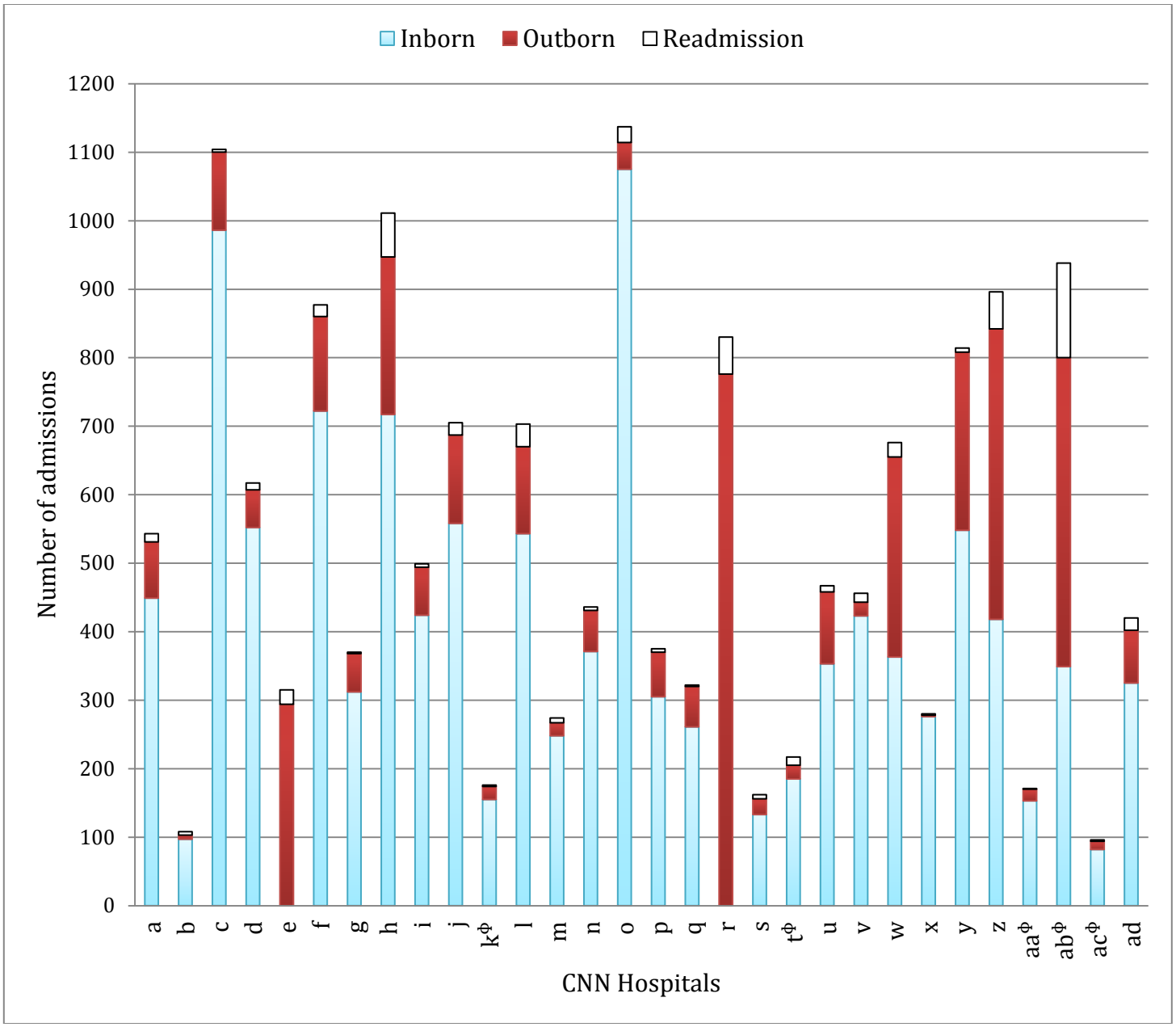


Section D.1

Analyses based on number of eligible admissions to participating sites

These include data from 15 997 eligible admissions (including readmissions) to 30 sites. 25 of these sites submitted complete data (n=14 399) on all admissions and 5 sites submitted data on a selected admission cohort (n=1 598).

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



Φ Data collected on selected cohort of eligible admissions only.

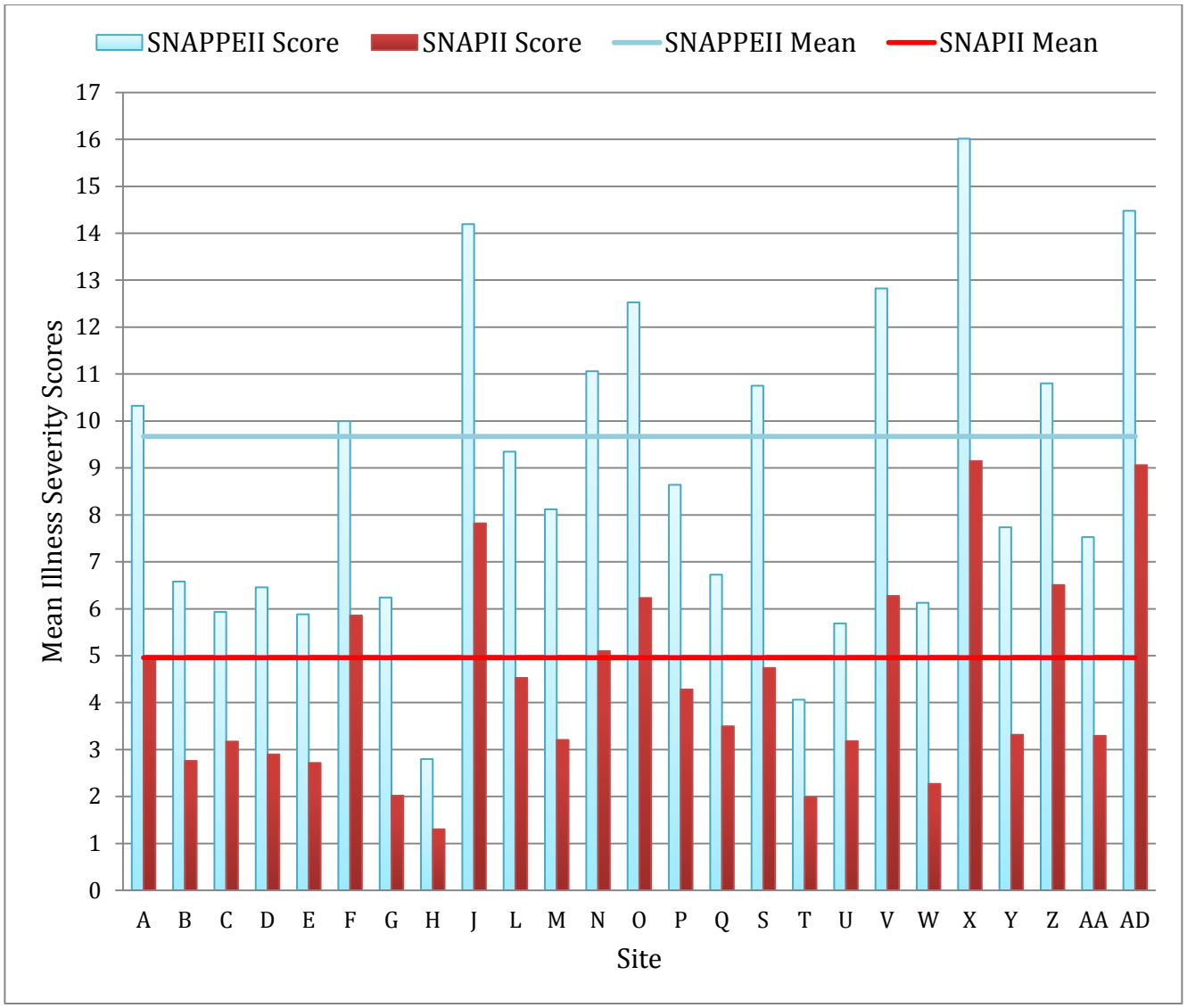
Presentation #1 (continued)
All admissions: Type of admissions: All Sites

Sites		Admission Status			Total	Sites		Admission status			Total
		Inborn	Outborn	Readmission				Inborn	Outborn	Readmission	
a	Count	449	82	12	543	p	Count	305	65	5	375
	%	82.7	15.1	2.2	(100.0)		%	81.3	17.3	1.3	(100.0)
b	Count	97	6	5	108	q	Count	261	59	2	322
	%	89.8	5.6	4.6	(100.0)		%	81.1	18.3	0.6	(100.0)
c	Count	986	114	4	1104	r	Count	0	776	54	830
	%	89.3	10.3	0.4	(100.0)		%	0.0	93.5	6.5	(100.0)
d	Count	552	55	10	617	s	Count	133	23	6	162
	%	89.5	8.9	1.6	(100.0)		%	82.1	14.2	3.7	(100.0)
e	Count	0	294	21	315	t$^{\phi}$	Count	185	20	12	217
	%	0.0	93.3	6.7	(100.0)		%	85.3	9.2	5.5	(100.0)
f	Count	722	138	17	877	u	Count	353	105	9	467
	%	82.3	15.7	1.9	(100.0)		%	75.6	22.5	1.9	(100.0)
g	Count	312	56	2	370	v	Count	423	20	13	456
	%	84.3	15.1	0.5	(100.0)		%	92.8	4.4	2.9	(100.0)
h	Count	717	230	64	1011	w	Count	363	292	21	676
	%	70.9	22.8	6.3	(100.0)		%	53.7	43.2	3.1	(100.0)
i	Count	424	70	5	499	x	Count	276	2	2	280
	%	85.0	14.0	1.0	(100.0)		%	98.6	0.7	0.7	(100.0)
j	Count	558	129	18	705	y	Count	548	260	6	814
	%	79.2	18.3	2.6	(100.0)		%	67.3	31.9	0.7	(100.0)
k$^{\phi}$	Count	155	19	2	176	z	Count	418	424	54	896
	%	88.1	10.8	1.1	(100.0)		%	46.7	47.3	6.0	(100.0)
l	Count	543	127	33	703	aa$^{\phi}$	Count	153	17	1	171
	%	77.2	18.1	4.7	(100.0)		%	89.5	9.9	0.6	(100.0)
m	Count	248	19	7	274	ab$^{\phi}$	Count	349	451	138	938
	%	90.5	6.9	2.6	(100.0)		%	37.2	48.1	14.7	(100.0)
n	Count	371	60	5	436	ac$^{\phi}$	Count	82	12	2	96
	%	85.1	13.8	1.2	(100.0)		%	85.4	12.5	2.1	(100.0)
o	Count	1075	39	23	1137	ad	Count	325	77	18	420
	%	94.6	3.4	2.0	(100.0)		%	77.4	18.3	4.3	(100.0)

Total number of admissions:	15 997
Inborn:	11 383 (71.2%)
Outborn:	4 041 (25.3%)
Readmission:	571 (3.6%)
Missing data on inborn/outborn status:	2 (0.01%)

COMMENTS: These analyses include 15 997 admissions to participating sites across Canada during the period of January 1, 2016 to December 31, 2016. After adjusting for readmission, 14 907 neonates are represented. **Twenty-five sites collected data on all eligible admissions whereas five sites (marked by $^{\phi}$) collected data on selected cohort of eligible admissions only.**

Presentation #2
All admissions: Admission illness severity scores (SNAP-II and SNAP-IIPE):
Sites with complete data
(n=25 sites, 14 399 admissions, 477 missing data on SNAP scores)



Data collection status	Number of sites	Score	Mean	Std Dev	Q1	Median	Q3
Complete	25	SNAPIIPE	9.7	0.1	0	0	18
		SNAPII	5.0	0.1	0	0	7
Restricted	5	SNAPIIPE	17.0	0.5	0	9	27
		SNAPII	8.0	0.3	0	5	10

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	10.3	4.9	**P**	Mean	8.6	4.3
	SEM	0.8	0.5		SEM	0.6	0.4
B	Mean	6.6	2.8	**Q**	Mean	6.7	3.5
	SEM	0.6	0.3		SEM	0.6	0.3
C	Mean	5.9	3.2	**R**ϕ	Mean	18.7	9.8
	SEM	0.7	0.4		SEM	1.3	0.8
D	Mean	6.5	2.9	**S**	Mean	10.7	4.7
	SEM	0.6	0.4		SEM	1.1	0.6
E	Mean	5.9	2.7	**T**	Mean	4.1	2.0
	SEM	0.5	0.3		SEM	0.4	0.2
F	Mean	10.0	5.9	**U**	Mean	5.7	3.2
	SEM	0.5	0.3		SEM	0.6	0.4
G	Mean	6.2	2.0	**V**	Mean	12.8	6.3
	SEM	0.6	0.3		SEM	0.7	0.4
H	Mean	2.8	1.3	**W**	Mean	6.1	2.3
	SEM	0.7	0.4		SEM	0.4	0.2
Iϕ	Mean	19.3	9.9	**X**	Mean	16.0	9.1
	SEM	1.5	0.9		SEM	0.7	0.4
J	Mean	14.2	7.8	**Y**	Mean	7.7	3.3
	SEM	0.7	0.4		SEM	0.5	0.3
Kϕ	Mean	14.4	7.5	**Z**	Mean	10.8	6.5
	SEM	2.0	1.2		SEM	0.5	0.3
L	Mean	9.3	4.5	**AA**	Mean	7.5	3.3
	SEM	0.6	0.3		SEM	0.5	0.3
M	Mean	8.1	3.2	**AB**ϕ	Mean	16.5	7.2
	SEM	0.6	0.3		SEM	0.6	0.4
N	Mean	11.1	5.1	**AC**ϕ	Mean	16.6	8.7
	SEM	0.5	0.3		SEM	1.6	1.0
O	Mean	12.5	6.2	**AD**	Mean	14.5	9.1
	SEM	0.6	0.4		SEM	0.6	0.3

All eligible admissions (25 sites) – Mean (SEM): SNAP-IIPE 9.7 (0.1), SNAP-II 5.0 (0.1)
Selected admissions (5 sites) – Mean (SEM): SNAP-IIPE 17.0 (0.5), SNAP-II 8.0 (0.3)

COMMENTS: These analyses include 15 997 admissions (515 missing data on SNAP scores) to participating sites across Canada during the year 2016. Adjusting for readmission, these analyses represent 14 907 Neonates. **Twenty-five sites collected data on all eligible admissions whereas five sites (marked by ϕ) collected data on a selected cohort of eligible admissions only.** These five sites were not included in the Presentation #2 bar graph but were included in the Presentation #2 Table (above).

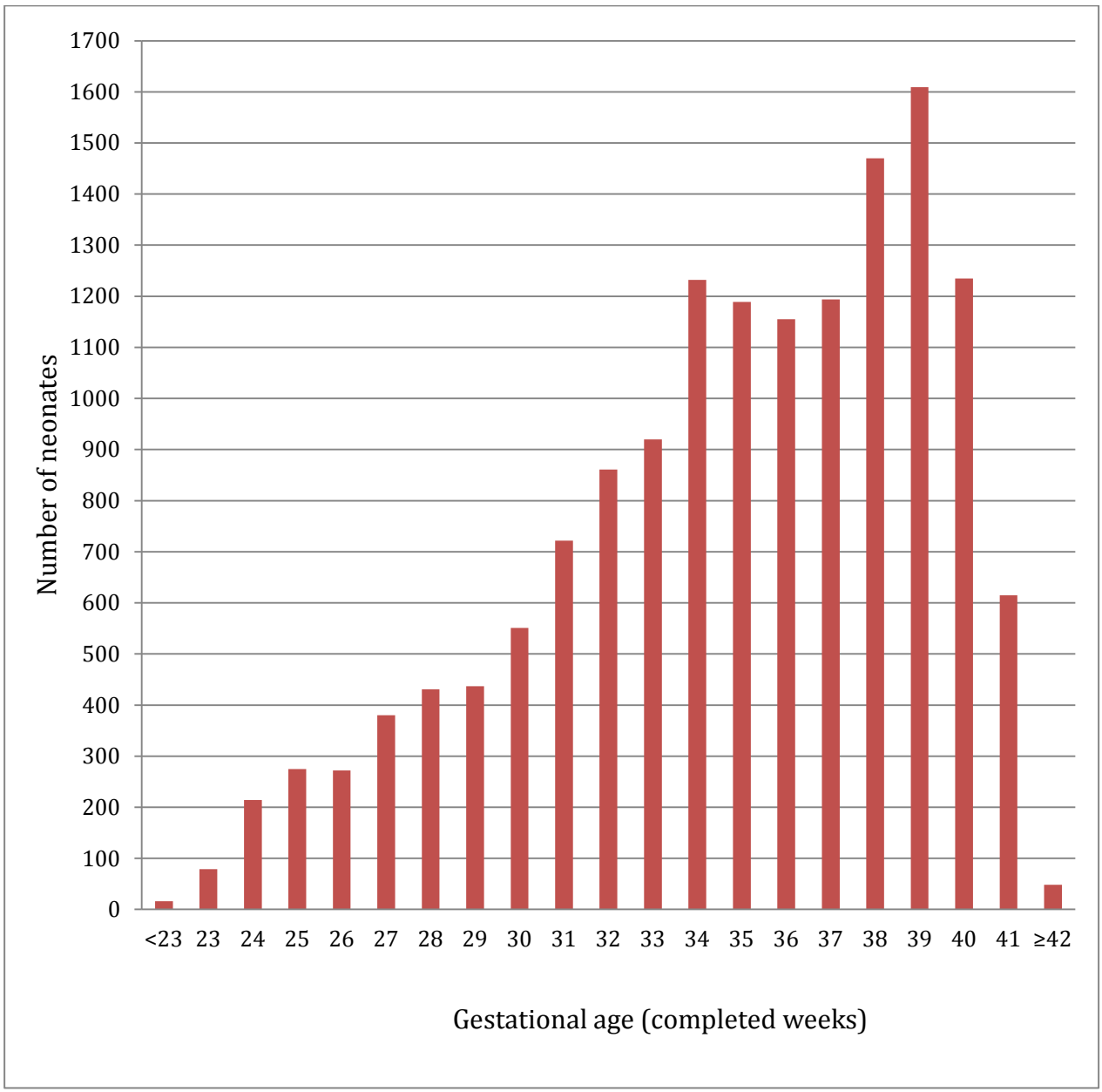
ϕ Please note that the criteria for entering neonates in the CNN dataset are not the same for these five sites and thus, the scores are not comparable with each other or with centers contributing complete data. These five sites may have included neonates at lower GAs and/or lower BWs; thus, their severity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

Section D.2

Analyses based on number of eligible neonates admitted to participating sites

These include data from 14 907 eligible neonates admitted to 30 sites. 25 of these sites submitted complete data (n=13 548) on all eligible admitted neonates and 5 sites submitted data on a selected cohort of eligible admitted neonates (n=1 359).

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

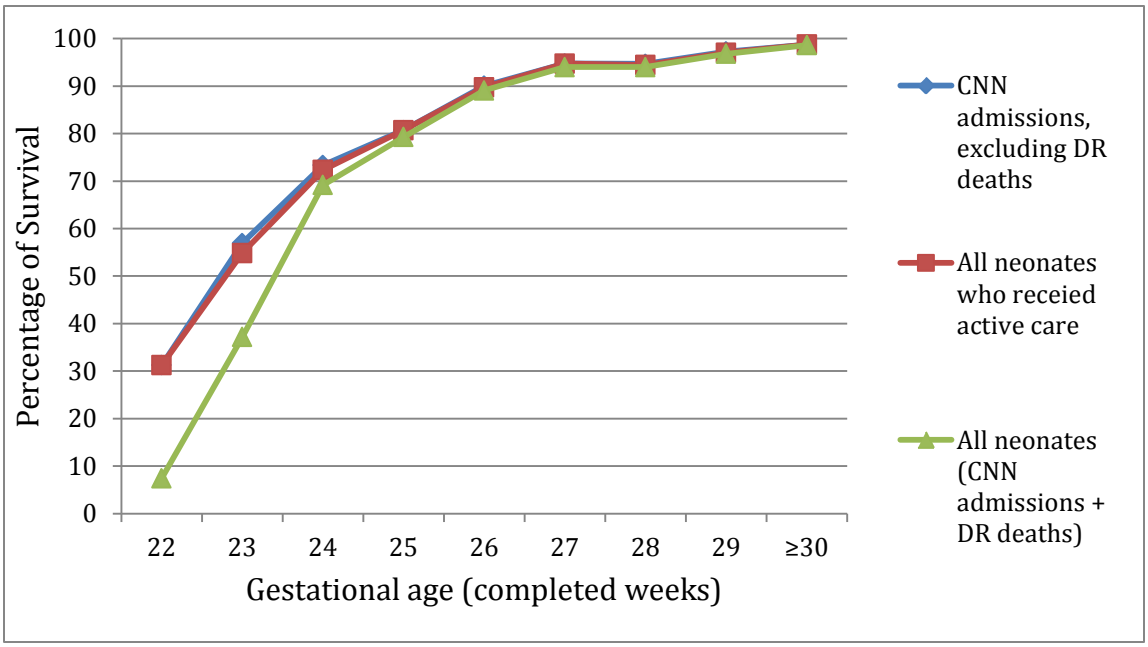


Presentation #3 (continued)
Gestational age distribution: All sites and all admitted neonates

GA in completed weeks at birth	Frequency	Percent	Cumulative percent
22	16	0.1	0.1
23	79	0.5	0.6
24	214	1.4	2.1
25	275	1.9	3.9
26	272	1.8	5.7
27	380	2.6	8.3
28	431	2.9	11.2
29	437	2.9	14.1
30	551	3.7	17.8
31	722	4.8	22.7
32	861	5.8	28.4
33	920	6.2	34.6
34	1232	8.3	42.9
35	1189	8.0	50.9
36	1155	7.8	58.6
37	1194	8.0	66.6
38	1470	9.9	76.5
39	1609	10.8	87.3
40	1235	8.3	95.6
41	615	4.1	99.7
≥42	48	0.3	100.0
Total included	14 905	100.0	
Total # of missing GA	2		
Total # of neonates	14 907		

COMMENTS: The GA distribution of neonates is shown here. Term babies (≥37 weeks) represent 41.4% of the total number of neonates. Twenty-five sites collected data on all eligible admissions whereas five sites collected data on a selected cohort of eligible admissions.

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

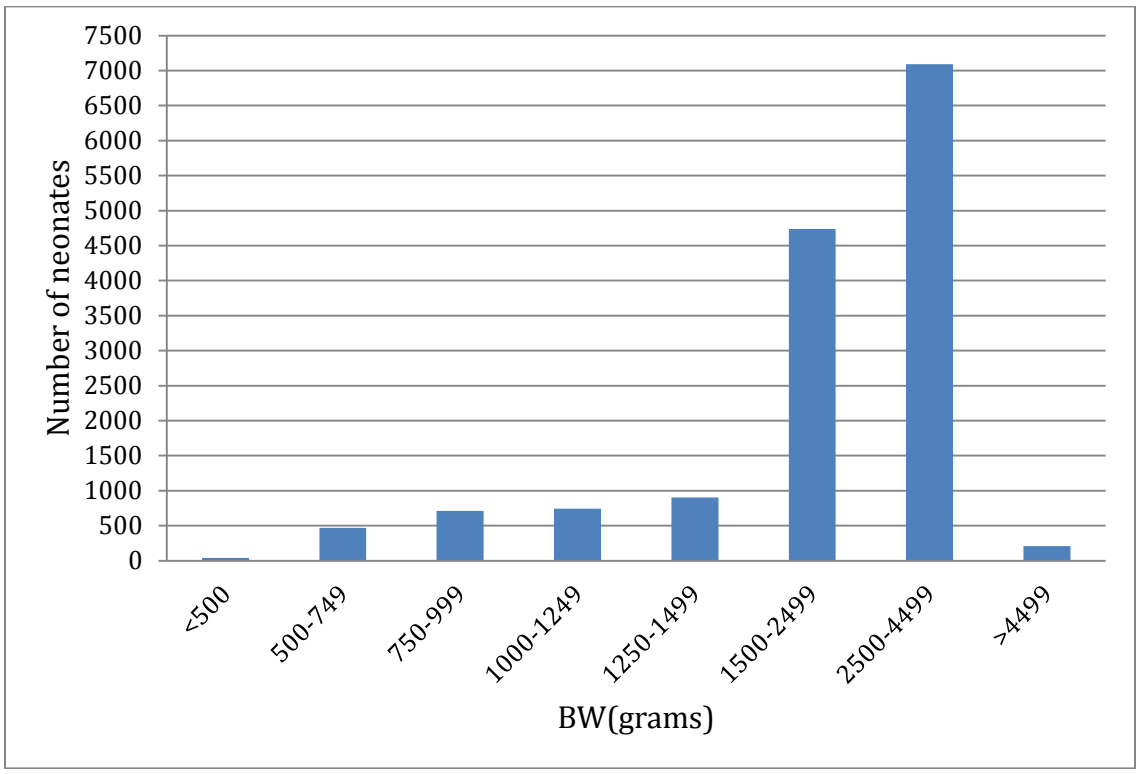


CNN admissions, excluding delivery room deaths					Delivery room deaths*		Total CNN admissions including delivery room deaths*				
GA (completed weeks)	**#of neonates**	**#of survivors**	**Percent survival among CNN admissions, excluding DR deaths**	**#of neonates who received palliative care**	**Palliative care**	**Active care**	**Total**	**#of neonates who received palliative care**	**# of neonates who received active care**	**Percent survival among those who received active care**	**Percent survival among all neonates (CNN admissions + DR deaths)**
	a	*b*	*b/a*	*c*	*d*	*e*	*a+d+e*	*c+d*	*(a-c) +e*	*b/ (a-c)+e*	*b/(a+d+e)*
22	16	5	31	1	50	1	67	51	16	31	7
23	79	45	57	0	39	3	121	39	82	55	37
24	214	157	73	0	10	3	227	10	217	72	69
25	275	222	81	2	3	2	280	5	275	81	79
26	272	245	90	0	2	1	275	2	273	90	89
27	380	360	95	0	3	0	383	3	380	95	94
28	431	408	95	0	2	1	434	2	432	94	94
29	437	425	97	0	1	1	439	1	438	97	97
≥30	12 801	12 639	99	4	11	4	12 816	15	12 801	99	99
Total included	14 905	14 506	97	7	121	16	15 042	128	14 914	97	96
Missing GA	2				4	0	6	4	2		
Total	**14 907**				**125**	**16**	**15 048**	**132**	**14 916**		

***Please note that delivery room deaths are *only included in Presentations #4, #6, and #6b* in this report.**

Note: The results should be used cautiously for antenatal counseling. The survival rates are based upon the final discharge from the participating neonatal site. Note that these rates include only neonates admitted to the sites or dying in the delivery rooms of participating sites and thus are not reflective of the entire Canadian population. Capturing data for delivery room deaths is an ongoing process and not all sites contributed delivery room death data.

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

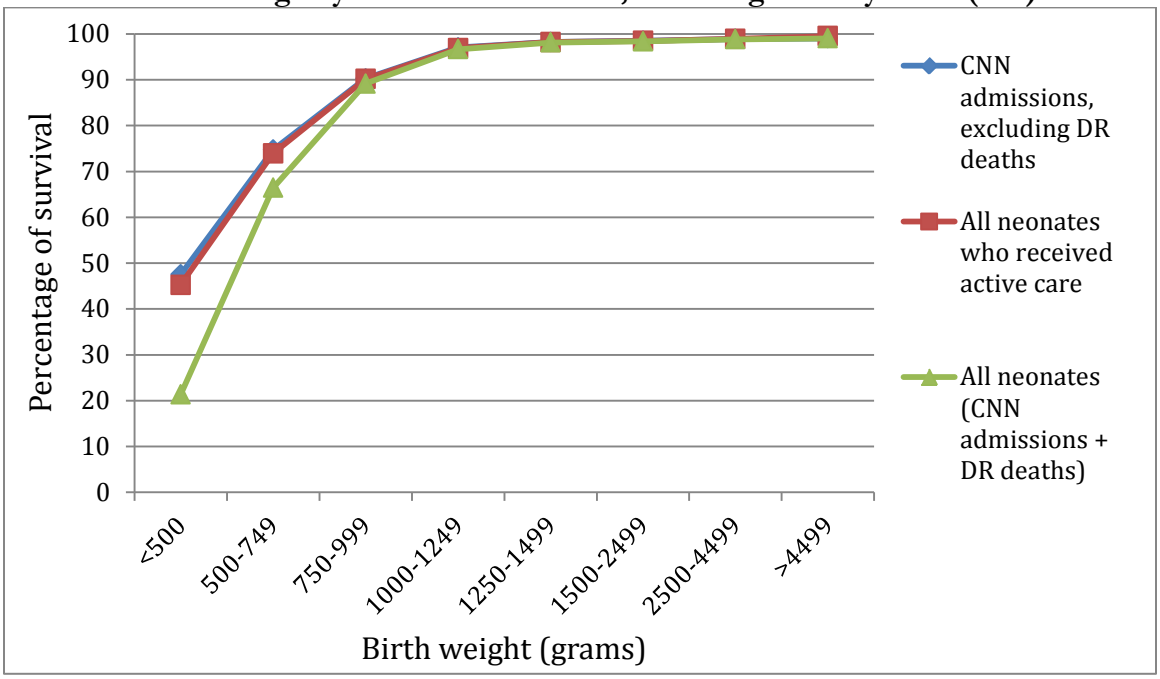


BW (grams)	Frequency	Percent from total number of neonates	Cumulative percent
<500	40	0.3	0.3
500-749	472	3.2	3.4
750-999	710	4.8	8.2
1000-1249	744	5.0	13.2
1250-1499	901	6.1	19.2
1500-2499	4 738	31.8	51.0
2500-4499	7 090	47.6	98.6
>4499	208	1.4	100.0
Total included	14 903	100.0	
Missing BW	4		
Total # of neonates	14 907		

COMMENTS: The BW distribution of neonates admitted to the CNN sites. Eighty-one percent weighed more than 1 500g at birth and 49% weighed more than 2 500g. Twenty-five sites collected data on all admissions whereas five 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

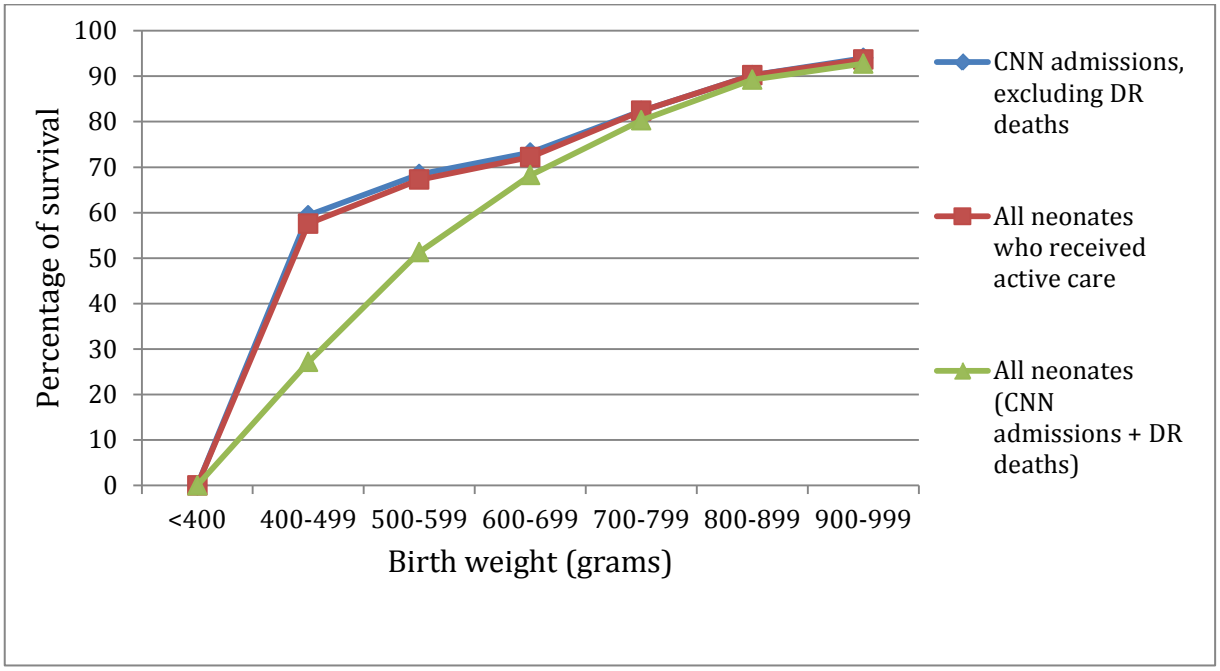


CNN Admissions, excluding delivery room deaths					Delivery room deaths*		Total CNN admissions + Delivery room deaths*				
BW (grams)	**#of neonates**	**# of survivors**	**Percent survival of CNN admissions, excluding DR deaths**	**# of neonates who received palliative care**	**Palliative care**	**Active 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	40	19	48	0	47	2	89	47	42	45	21
500-749	471	352	75	1	53	6	530	54	476	74	66
750-999	710	641	90	1	7	2	719	8	711	90	89
1000-1249	744	722	97	0	2	1	747	2	745	97	97
1250-1499	901	885	98	0	1	0	902	1	901	98	98
1500-2499	4 739	4 669	99	0	5	3	4 747	5	4 742	98	98
2500-4499	7 090	7 012	99	3	4	1	7 095	7	7 088	99	99
>4499	208	206	99	1	0	0	208	1	207	100	99
Total neonates included	14 903	14 506	97	6	119	15	15 037	125	14 912	97	96
Missing BW	4				6	1	11	6	5		
Total # of neonates	**14 907**				**125**	**16**	**15 048**	**131**	**14 917**		

***Please note that delivery room deaths are *only included in Presentations #4, #6 and #6b* in this report.**

Note: The results should be used cautiously for antenatal counseling. The survival rates are based upon the final discharge from the participating neonatal site. Note that these rates include only neonates admitted to the sites or dying in the delivery rooms of participating sites and thus are not reflective of the entire Canadian population. Capturing data for delivery room deaths is an ongoing process and not all sites contributed delivery room death data.

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



CNN Admissions, excluding delivery room deaths					Delivery room deaths*		Total CNN admissions + Delivery room deaths*				
BW (grams)	Number of neonates	Number of survivors	Percent survival of CNN admissions, excluding DR deaths	Number of neonates who received palliative care	Palliative care	Active care	Total	Number of neonates who received palliative care	Number of neonates who received active care	Percent survival of neonates who received active care	Percent survival of all neonates (CNN admissions + DR deaths)
	a	*b*	*b/a*	*c*	*d*	*e*	*a+d+e*	*c+d*	*(a-c) +e*	*b/ (a-c)+e*	*b/(a+d+e)*
<400	8	0	0	0	10	1	19	10	9	0	0
400-499	32	19	59	0	37	1	70	37	33	58	27
500-599	114	78	68	1	35	3	152	36	116	67	51
600-699	221	162	73	0	13	3	237	13	224	72	68
700-799	272	224	82	0	7	0	279	7	272	82	80
800-899	276	249	90	1	2	1	279	3	276	90	89
900-999	299	281	94	0	3	1	303	3	300	94	93
Total included	**1 221**	**1 012**	**84**	**2**	**107**	**10**	**1 338**	**109**	**1 229**	**82**	**76**

***Please note that delivery room deaths are *only included in Presentations #4, #6 and #6b* in this report.**

Note: The results should be used cautiously for antenatal counseling. The survival rates are based upon the final discharge from the participating neonatal site. Note that these rates include only neonates admitted to the sites or died in delivery room of participating sites and thus are not reflective of the entire Canadian population. Capturing data for delivery room deaths is an ongoing process and not all sites contributed delivery room death data.

Presentation #7
Maternal and peripartum characteristics: All neonates

Characteristics				**GA at birth (completed weeks)**					
		Missing/ Unknown		**<26**	**26-28**	**29-32**	**33 - 36**	**≥37**	**Total**
Total		2		**584**	**1083**	**2571**	**4496**	**6171**	**14905**
No prenatal care		502	N	18	65	130	60	68	341
			%	3.2	6.3	5.2	1.4	1.2	2.4
Illicit drug use		2	N	41	56	152	314	439	1002
			%	7.0	5.2	5.9	7.0	7.1	6.7
Smoking		2	N	88	132	330	615	775	1940
			%	15.1	12.2	12.8	13.7	12.6	13.0
Maternal hypertension		454	N	53	213	561	936	585	2348
			%	9.4	20.1	22.4	21.3	9.9	16.2
Maternal diabetes		486	N	36	144	465	880	922	2447
			%	6.7	13.8	18.6	20.1	15.5	17.0
Assisted pregnancy		1367	N	60	104	273	454	281	1172
			%	10.7	10.2	11.3	11.2	5.1	8.7
Multiples		2	N	128	246	839	1186	172	2571
			%	21.9	22.7	32.6	26.4	2.8	17.2
$MgSO_4$ for neuroprotection		558	N	355	689	1276	421	43	2784
			%	64.4	66.3	52.2	9.7	0.7	19.4
Prenatal steroids	None	284	N	60	101	319	2703	5911	9094
			%	10.4	9.5	12.7	61.4	97.6	62.2
	Partial		N	141	239	527	340	13	1260
			%	24.4	22.4	20.9	7.7	0.2	8.6
	Complete		N	376	729	1675	1359	130	4269
			%	65.2	68.2	66.4	30.9	2.2	29.2
Mode of birth	Vaginal	35	N	273	385	887	2079	3644	7268
			%	46.8	35.6	34.6	46.3	59.3	48.9
	C/S		N	310	698	1679	2411	2506	7604
			%	53.2	64.5	65.4	53.7	40.8	51.1
Presentation	Vertex	763	N	300	655	1660	3479	5398	11492
			%	53.1	63.4	67.8	81.5	92.6	81.3
	Breech		N	234	315	667	705	350	2271
			%	41.4	30.5	27.2	16.5	6.0	16.1
	Other		N	31	63	123	85	79	381
			%	5.5	6.1	5.0	2.0	1.4	2.7
Rupture of membranes	<24 h	734	N	430	781	1950	3765	5469	12395
			%	75.7	74.8	78.8	88.0	94.2	87.5
	24h to 1wk		N	83	131	291	374	332	1211
			%	14.6	12.6	11.8	8.7	5.7	8.5
	>1 wk		N	55	132	234	141	5	567
			%	9.7	12.6	9.5	3.3	0.1	4.0

Presentation #7 (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		2		**584**	**1083**	**2571**	**4496**	**6171**	**14905**
Chorioamnionitis*		4942	N	193	181	282	149	434	1239
			%	42.8	22.0	14.2	5.0	11.7	12.4
Delayed cord clamping	≤ 29 sec	3344	N	28	69	92	47	42	278
			%	5.5	7.3	4.2	1.3	1.0	2.4
	30-44 sec		N	47	76	158	149	112	542
			%	9.3	8.0	7.2	4.2	2.6	4.7
	≥45 sec		N	129	349	916	1257	736	3387
			%	25.4	36.9	41.9	35.3	16.9	29.3
	Yes, but timing unknown		N	7	23	72	188	176	466
			%	1.4	2.4	3.3	5.3	4.0	4.0
	No		N	296	430	946	1923	3295	6890
			%	58.4	45.4	43.3	54.0	75.6	59.6

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

Presentation #8a
Resuscitation details: GA < 31 weeks

Action taken			**GA at birth (completed weeks)**								
			≤23	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**Total**
Total			**95**	**214**	**275**	**272**	**380**	**431**	**437**	**551**	**2655**
No resuscitation needed/provided		N	0	0	0	4	4	6	12	38	64
		%	0.0	0.0	0.0	1.5	1.1	1.4	2.8	6.9	2.4
CPAP		N	21	79	127	165	240	294	317	377	1 620
		%	22.1	36.9	46.2	60.7	63.2	68.2	72.5	68.4	61.0
PPV via mask		N	72	173	209	206	269	289	280	292	1 790
		%	75.8	80.8	76.0	75.7	70.8	67.1	64.1	53.0	67.4
PPV via ETT		N	81	154	151	116	122	104	90	78	896
		%	85.3	72.0	54.9	42.7	32.1	24.1	20.6	14.2	33.7
Chest compression		N	7	16	23	16	18	10	8	17	115
		%	7.4	7.5	8.4	5.9	4.7	2.3	1.8	3.1	4.3
Epinephrine		N	4	6	9	9	9	7	6	9	59
		%	4.2	2.8	3.3	3.3	2.4	1.6	1.4	1.6	2.2
Unknown		N	1	1	2	1	2	3	1	4	15
		%	1.1	0.5	0.7	0.4	0.5	0.7	0.2	0.7	0.6
Any resuscitation provided*		N	92	212	269	266	368	415	416	472	2 510
		%	96.8	99.1	97.8	97.8	96.8	96.3	95.2	85.7	94.5
Initial gas	Air	N	17	40	47	52	96	104	143	212	711
		%	17.9	18.7	17.1	19.1	25.3	24.1	32.7	38.5	26.8
	22-40% O_2	N	36	93	129	130	168	209	158	141	1 064
		%	37.9	43.5	46.9	47.8	44.2	48.5	36.2	25.6	40.1
	41-70% O_2	N	2	16	20	20	21	19	22	26	146
		%	2.1	7.5	7.3	7.4	5.5	4.4	5.0	4.7	5.5
	71-99% O_2	N	2	3	8	2	3	2	5	2	27
		%	2.1	1.4	2.9	0.7	0.8	0.5	1.1	0.4	1.0
	100% O_2	N	25	39	37	25	34	30	31	34	255
		%	26.3	18.2	13.5	9.2	9.0	7.0	7.1	6.2	9.6
	Unknown/ Missing	N	13	23	34	43	58	67	78	136	452
		%	13.7	10.8	12.4	15.8	15.3	15.6	17.9	24.7	17.0
Maximum O_2 conc. during resus.	21%	N	0	0	1	1	4	7	6	20	39
		%	0.0	0.0	0.4	0.4	1.1	1.6	1.4	3.6	1.5
	22-40%	N	4	6	32	48	78	114	136	149	567
		%	4.2	2.8	11.6	17.7	20.5	26.5	31.1	27.0	21.4
	41-70%	N	7	27	39	45	80	94	69	106	467
		%	7.4	12.6	14.2	16.5	21.1	21.8	15.8	19.2	17.6
	>70%	N	76	164	168	148	159	153	147	129	1144
		%	80.0	76.6	61.1	54.4	41.8	35.5	33.6	23.4	43.1
	Missing	N	8	17	35	30	59	63	79	147	438
		%	8.4	7.9	12.7	11.0	15.5	14.6	18.1	26.7	16.5

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

NOTE: Please use caution when interpreting these data. Resuscitation time was defined as the first 30 minutes after birth.

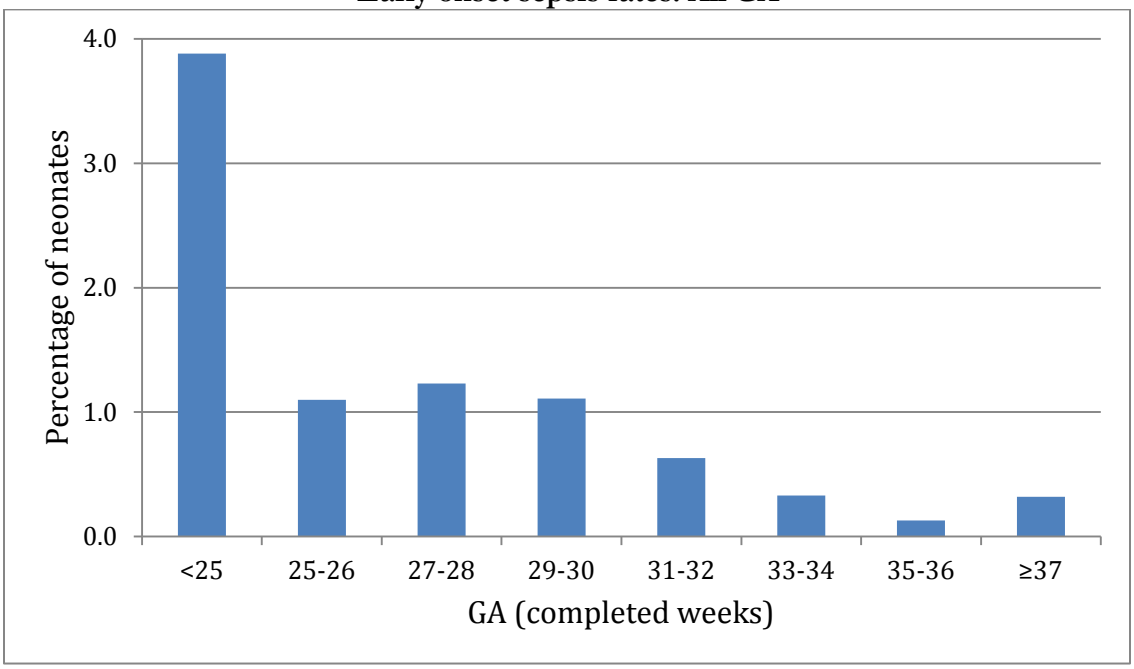
Presentation #8b
Resuscitation details: GA ≥ 31 weeks

Action taken			**GA at birth (completed weeks)**							
			31	**32**	**33**	**34**	**35**	**36**	**≥37**	**Total**
Total			**722**	**861**	**920**	**1232**	**1189**	**1155**	**6171**	**12250**
No resuscitation needed / provided		N	81	142	245	441	458	432	2148	3947
		%	11.2	16.5	26.6	35.8	38.5	37.4	34.8	32.2
CPAP		N	454	468	396	372	311	251	1505	3757
		%	62.9	54.4	43.0	30.2	26.2	21.7	24.4	30.7
PPV via mask		N	347	368	289	280	256	276	1688	3504
		%	48.1	42.7	31.4	22.7	21.5	23.9	27.4	28.6
PPV via ETT		N	52	66	42	44	52	55	428	739
		%	7.2	7.7	4.6	3.6	4.4	4.8	6.9	6.0
Chest compression		N	12	20	8	15	20	20	156	251
		%	1.7	2.3	0.9	1.2	1.7	1.7	2.5	2.0
Epinephrine		N	3	11	5	6	8	11	70	114
		%	0.4	1.3	0.5	0.5	0.7	1.0	1.1	0.9
Unknown		N	5	8	6	13	24	17	167	240
		%	0.7	0.9	0.7	1.1	2.0	1.5	2.7	2.0
Any resuscitation provided*		N	574	603	503	486	433	404	2474	5477
		%	79.5	70.0	54.7	39.5	36.4	35.0	40.1	44.7
Initial gas	Air	N	273	358	243	270	265	265	1510	3184
		%	37.8	41.6	26.4	21.9	22.3	22.9	24.5	26.0
	22-40% O_2	N	202	147	138	134	97	89	418	1225
		%	28.0	17.1	15.0	10.9	8.2	7.7	6.8	10.0
	41-70% O_2	N	19	22	37	22	20	14	90	224
		%	2.6	2.6	4.0	1.8	1.7	1.2	1.5	1.8
	71-99% O_2	N	1	3	0	5	2	3	11	25
		%	0.1	0.4	0.0	0.4	0.2	0.3	0.2	0.2
	100% O_2	N	20	29	30	29	36	27	234	405
		%	2.8	3.4	3.3	2.4	3.0	2.3	3.8	3.3
	Unknown/ Missing	N	207	302	472	772	769	757	3908	7187
		%	28.7	35.1	51.3	62.7	64.7	65.5	63.3	58.7
Maximum O_2 conc. during resus	21%	N	37	53	61	88	101	112	598	1050
		%	5.1	6.2	6.6	7.1	8.5	9.7	9.7	8.6
	22-40%	N	223	235	181	153	149	133	596	1670
		%	30.9	27.3	19.7	12.4	12.5	11.5	9.7	13.6
	41-70%	N	126	116	83	92	53	53	333	856
		%	17.5	13.5	9.0	7.5	4.5	4.6	5.4	7.0
	>70%	N	133	158	110	109	105	109	776	1500
		%	18.4	18.4	12.0	8.9	8.8	9.4	12.6	12.2
	Missing	N	203	299	485	790	781	748	3868	7174
		%	28.1	34.7	52.7	64.1	65.7	64.8	62.7	58.6

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

NOTE: Please use caution while interpreting these data. Resuscitation time was defined as the first 30 minutes after birth.

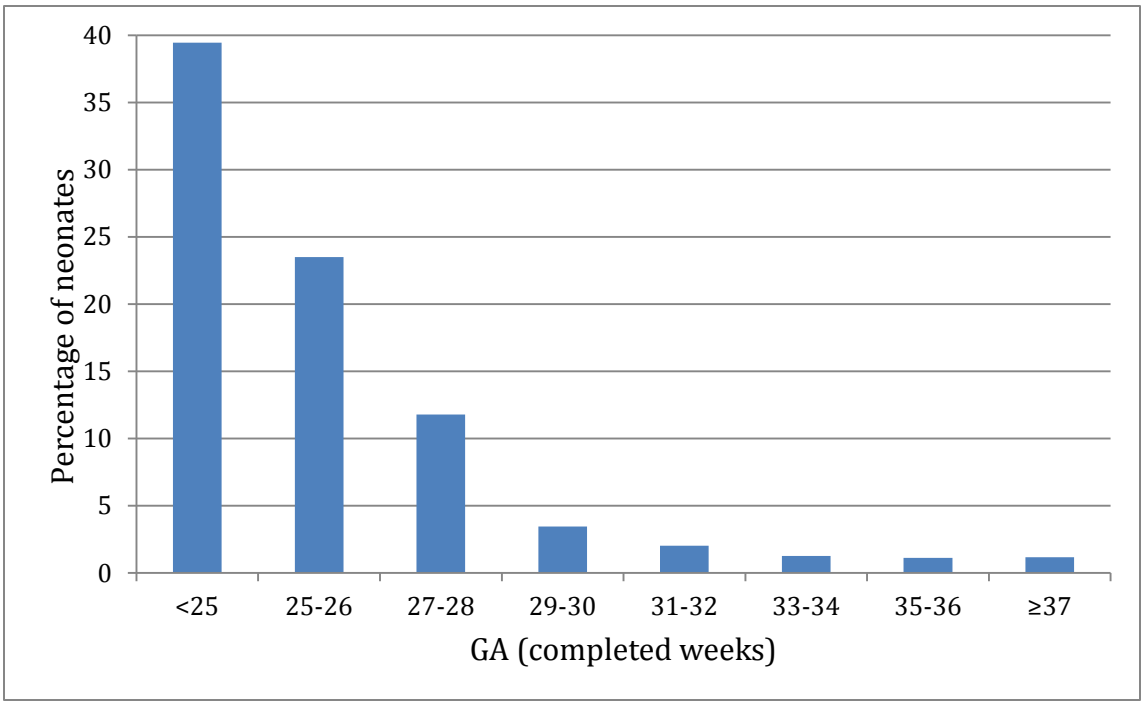
Presentation #9
Early onset sepsis rates: All GA



GA at birth (completed weeks)	Total number of neonates	No. of neonates with infection	% of neonates with infection	Total number of organisms	Organism		
					E. Coli	GBS	Others
<25	309	12	3.9	12	7	2	3
25-26	547	6	1.1	6	4	1	1
27-28	811	10	1.2	10	4	2	4
29-30	988	11	1.1	12	4	2	6
31-32	1 583	10	0.6	10	7	1	2
33-34	2 152	7	0.3	7	2	0	5
35-36	2 343	3	0.1	3	0	1	2
≥37	6 171	20	0.3	20	3	6	11
Total neonates included	**14 904**	**79**	**0.5**	80	31	15	34
Missing	3						
Total # of neonates	**14 907**						

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. One neonate had two organisms isolated. In other category, top five organisms were: Streptococci other than GBS (n=12), Enterococci (n=3), Enterovirus (n=3), Listeria monocytogens (n=3), Cytomegalovirus (n=2). 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.

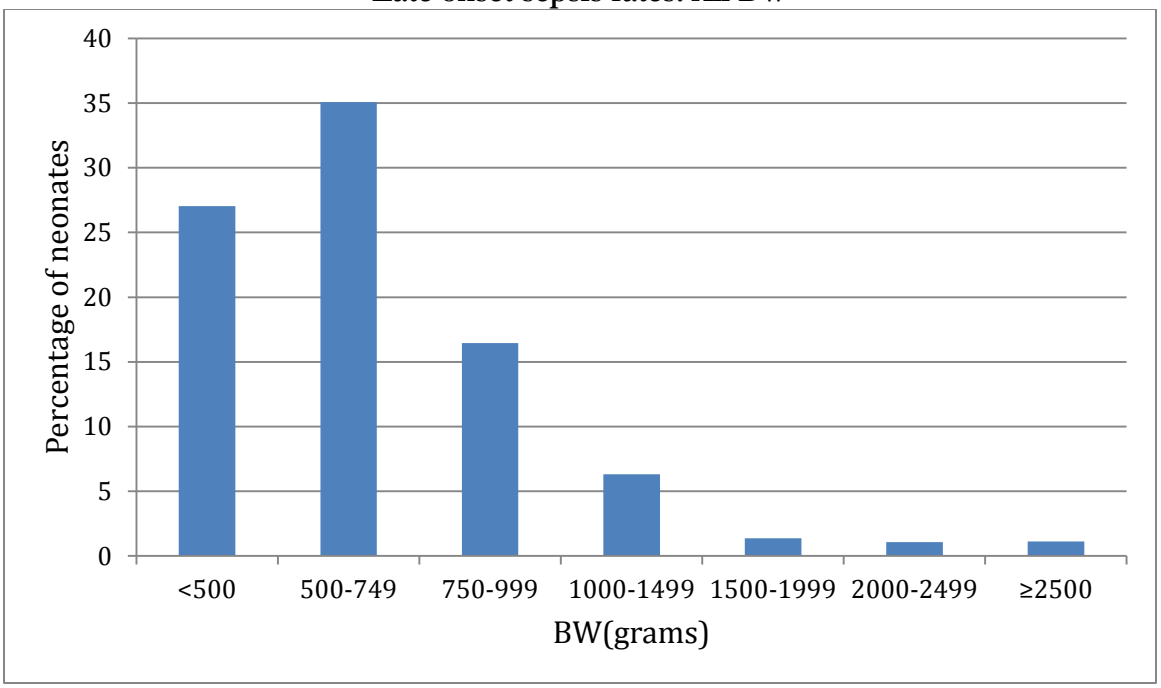
Presentation #10
Late onset sepsis rates: All GA



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	Coag + Staph	Fungal	Other
<25	309	25	284	112	33	39	163	60	23	24	10	46
25-26	547	15	532	125	23	23	157	73	17	26	3	38
27-28	811	13	798	94	14	12	114	65	4	25	2	18
29-30	988	3	985	34	2	3	40	15	7	6	0	12
31-32	1 583	4	1 579	32	3	2	36	20	1	6	0	9
33-34	2 152	7	2 145	27	6	1	36	18	1	4	1	12
35-36	2 344	5	2 339	26	2	1	30	12	4	6	0	8
≥37	6 171	19	6 152	71	3	1	75	29	12	7	1	26
Total included	**14 905**	**91**	**14 814**	**521**	**86**	**4**	**651**	**292**	**69**	**104**	**17**	**169**
Missing	2											
Total # of neonates	**14 907**											

COMMENTS: Late onset sepsis is defined as any positive blood and/or cerebrospinal fluid culture for bacteria, viral or fungi after 2 days of age (analysis is neonate-based). The numbers are adjusted for readmission. Among other category, top 5 organisms were: Klebsiella (n=35), Enterococci (n=33), GBS (n=28), Enterobacter (n=15), Streptococci (n=12).

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	Coag + Staph	Fungal	Other
<500	40	3	37	10	1	27	11	7	0	1	1	2
500-749	472	32	440	154	38	35	208	88	25	30	9	56
750-999	710	10	700	115	28	16	155	71	14	30	4	36
1000-1499	1 645	11	1 634	103	8	6	122	58	14	23	2	25
1500-1999	2 287	5	2 282	31	2	1	33	18	1	3	0	11
2000-2499	2 451	8	2 443	26	3	1	32	15	3	4	0	10
≥2500	7 298	19	7 279	82	6	1	90	35	12	13	1	29
Total included	**14 903**	**88**	**14 815**	**521**	**86**	**4**	**651**	**292**	**69**	**104**	**17**	**169**
Missing (BW)	4											
Total # of neonates	**14 907**											

COMMENTS: Late onset sepsis is defined as any positive blood and/or cerebrospinal fluid culture for bacteria, viral or fungi after 2 days of age (analysis is neonate-based). The numbers are adjusted for readmission and transfer. Among other category, top 5 organisms were: Klebsiella (n=35), Enterococci (n=33), GBS (n=28), Enterobacter (n=15), Streptococci (n=12).

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				584	1083	988	1583	4496	6171	14905
Prophylactic	Indomethacin		N	216	111	9	1	2	3	342
			%	37.0	10.3	0.9	0.1	0.0	0.1	2.3
	Probiotics		N	232	434	363	435	218	34	1716
			%	39.7	40.1	36.7	27.5	4.9	0.6	11.5
RDS	Unknown	4	N	3	0	0	1	5	1	10
			%	0.5	0.0	0.0	0.1	0.1	0.0	0.1
	Uncertain		N	6	11	14	22	52	15	120
			%	1.0	1.0	1.4	1.4	1.2	0.2	0.8
	None		N	42	179	288	901	3842	5983	11235
			%	7.2	16.5	29.2	57.0	85.5	97.0	75.4
	Definite		N	532	892	686	658	596	172	3536
			%	91.3	82.4	69.4	41.6	13.3	2.8	23.7
Surfactant in first 30 min			N	103	81	31	12	7	1	235
			%	17.6	7.5	3.1	0.8	0.2	0.0	1.6
Surfactant in first 60 min			N	223	173	66	34	14	5	515
			%	38.2	16.0	6.7	2.2	0.3	0.1	3.5
Surfactant in first 120 min			N	308	313	119	74	34	12	860
			%	52.7	28.9	12.0	4.7	0.8	0.2	5.4
Surfactant at any time			N	478	629	370	285	299	153	2214
			%	81.9	58.1	37.5	18.0	6.7	2.5	14.9
Pneumothorax diagnosis			N	48	48	47	44	127	386	700
			%	8.2	4.4	4.8	2.8	2.8	6.3	4.7
Pneumothorax treatment**	Observation		N	11	10	16	15	59	262	373
			%	17.5	16.1	25.4	29.4	42.8	66.0	48.2
	Needle drainage		N	23	14	19	11	25	54	146
			%	36.5	22.6	30.2	21.6	18.1	13.6	18.9
	Chest tube		N	29	38	28	25	54	81	255
			%	46.0	61.3	44.4	49.0	39.1	20.4	32.9
Seizures	Definite /suspected	4	N	37	23	17	18	84	400	579
			%	6.4	2.1	1.7	1.1	1.9	6.5	3.9

** One neonate can have multiple treatments. Denominators 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				584	1 083	988	1 583	4 496	6 171	14 905
Operations	Laparotomy		N	47	39	20	36	102	155	399
			%	8.1	3.6	2.0	2.3	2.3	2.5	2.7
	Thoracotomy		N	12	10	5	11	34	127	199
			%	2.1	0.9	0.5	0.7	0.8	2.1	1.3
	VP shunt		N	16	10	5	5	7	13	56
			%	2.7	0.9	0.5	0.3	0.2	0.2	0.4
Gastro-intestinal perforation	Spontaneous	69	N	25	21	5	5	9	8	73
			%	4.3	1.9	0.5	0.3	0.2	0.1	0.5
	NEC related		N	26	13	8	5	6	4	62
			%	4.5	1.2	0.8	0.3	0.1	0.1	0.4
Acquired stricture			N	8	7	2	8	8	0	33
			%	1.4	0.7	0.2	0.5	0.2	0.0	0.2
Acute bilirubin encephalopathy			N	0	0	1	0	0	2	3
			%	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Exchange transfusion			N	1	1	1	0	8	19	30
			%	0.2	0.1	0.1	0.0	0.2	0.3	0.2
Congenital anomaly*	None		N	420	810	827	1 344	3 713	4 492	11 606
			%	71.9	74.8	83.7	84.9	82.6	72.8	77.9
	Minor		N	142	229	133	178	494	935	2 111
			%	24.3	21.1	13.5	11.2	11.0	15.2	14.2
	Major		N	22	44	28	61	289	744	1 188
			%	3.8	4.1	2.8	3.9	6.4	12.1	8.0

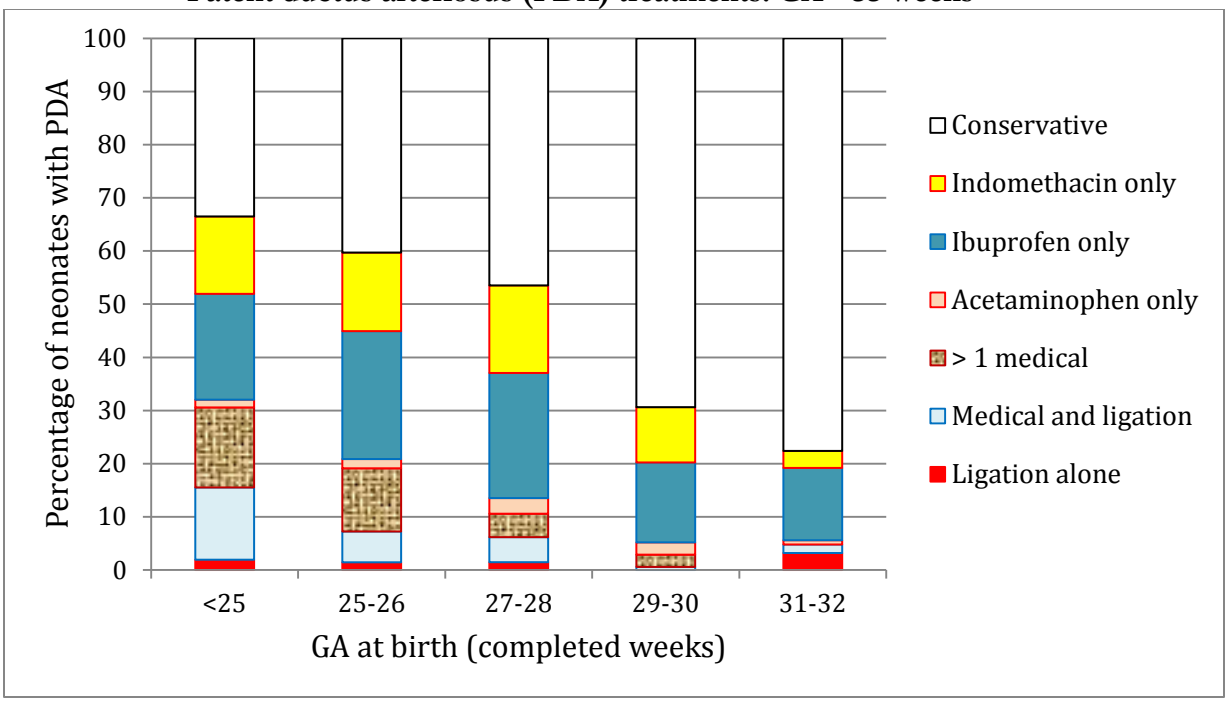
*A list of major anomalies can be found in the 2013 annual report, pages 124-127. It is available via the following link: http://www.canadianneonatalnetwork.org/Portal/LinkClick.aspx?fileticket=lreR0871sjA%3d&tabid=39

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 4 238 eligible very preterm neonates and 2 867 eligible VLBW neonates.

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

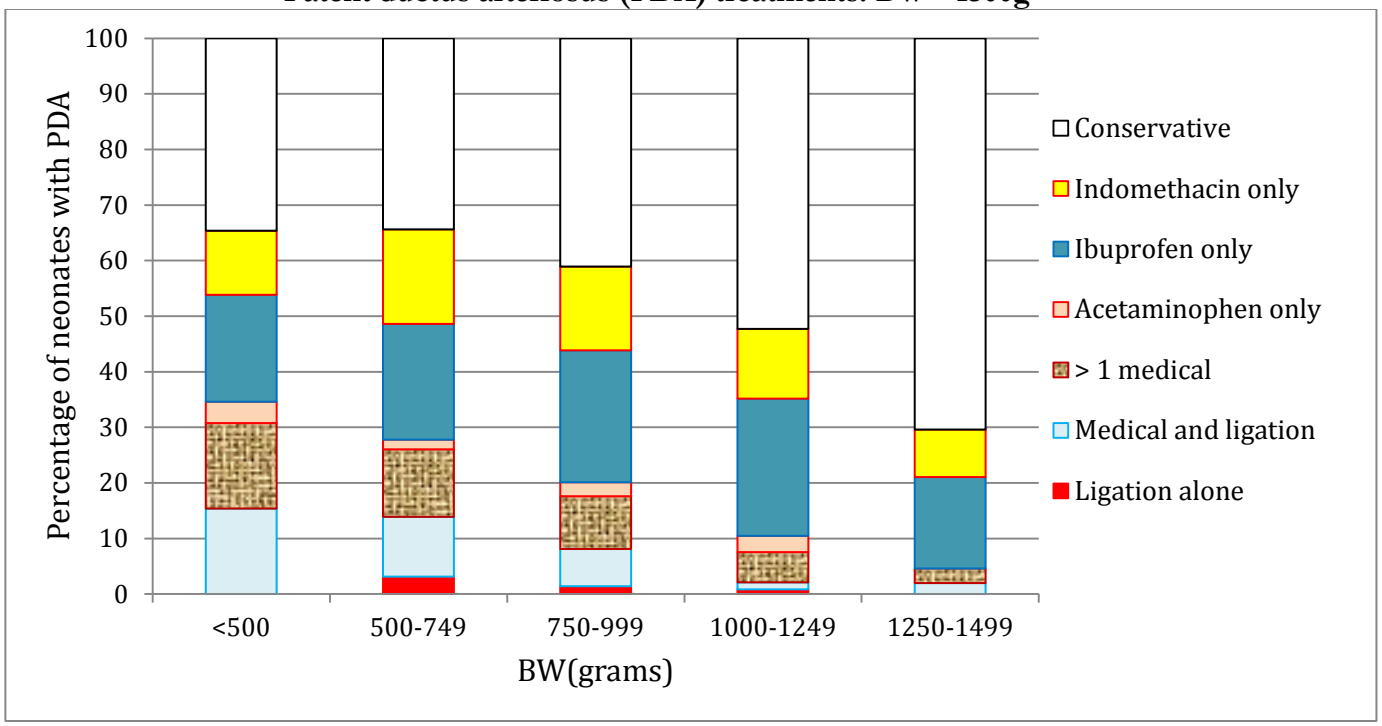


Birth GA (completed weeks)		Total	Missing data on PDA	PDA unknown	No PDA	Neonates with PDA	Treatment†						
							Conservative	Indo	Ibu	Acetaminophen	> 1 medical*	Medical and ligation#	Ligation alone
<25	**N**	309	0	12	91	206	69	30	41	3	31	28	4
	%						34%	15%	20%	1%	15%	14%	2%
25-26	**N**	547	1	4	197	345	139	51	83	6	41	20	5
	%						40%	15%	24%	2%	12%	6%	1%
27-28	**N**	811	1	2	468	340	158	56	80	10	15	16	5
	%						46%	16%	24%	3%	4%	5%	1%
29-30	**N**	988	0	5	810	173	120	18	26	4	4	1	0
	%						69%	10%	15%	2%	2%	1%	0%
31-32	**N**	1583	1	2	1455	125	97	4	17	1	0	2	4
	%						78%	3%	14%	1%	0%	2%	3%
Total neonates included	**N**	4238	3	25	3021	1189	583	159	247	24	91	67	18
	%						49%	13%	21%	2%	8%	6%	2%

†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

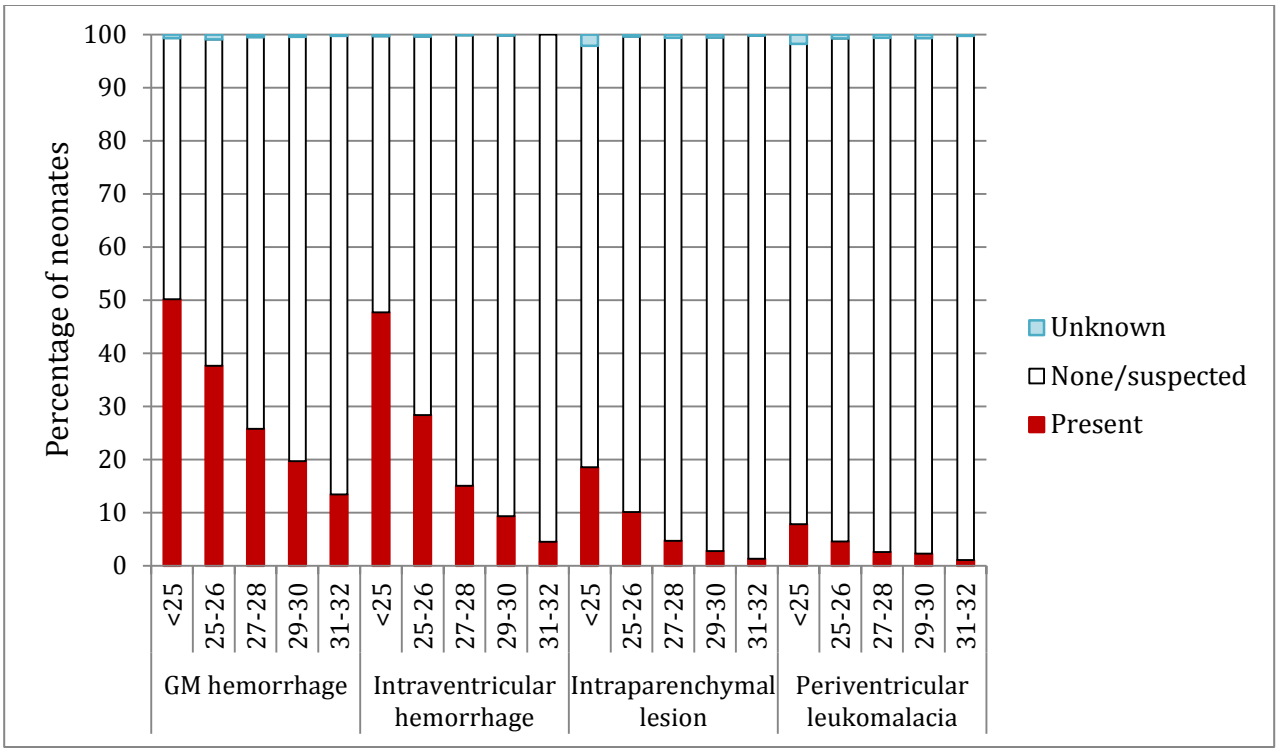


BW (grams)		Total	Missing data on PDA	PDA information unknown	No PDA	Neonates with PDA	Treatment†						
							Conservative	Indo	Ibu	Acetaminophen	> 1 medical*	Medical and ligation#	Ligation alone
<500	**N**	40	0	2	12	26	9	3	5	1	4	4	0
	%						35%	12%	19%	4%	15%	15%	0%
500-749	**N**	472	0	15	168	288	99	49	61	5	35	31	9
	%						34%	17%	21%	2%	12%	11%	3%
750-999	**N**	710	1	2	349	358	147	54	85	9	34	24	5
	%						41%	15%	24%	3%	10%	7%	1%
1000-1249	**N**	744	0	3	502	239	125	30	59	7	13	3	2
	%						52%	13%	25%	3%	5%	1%	1%
1250-1499	**N**	901	0	2	747	152	107	13	25	0	4	3	0
	%						70%	9%	16%	0%	3%	2%	0%
Total neonates included	**N**	2867	1	24	1778	1064	487	149	235	22	90	65	16
	%						46%	14%	22%	2%	8%	6%	2%

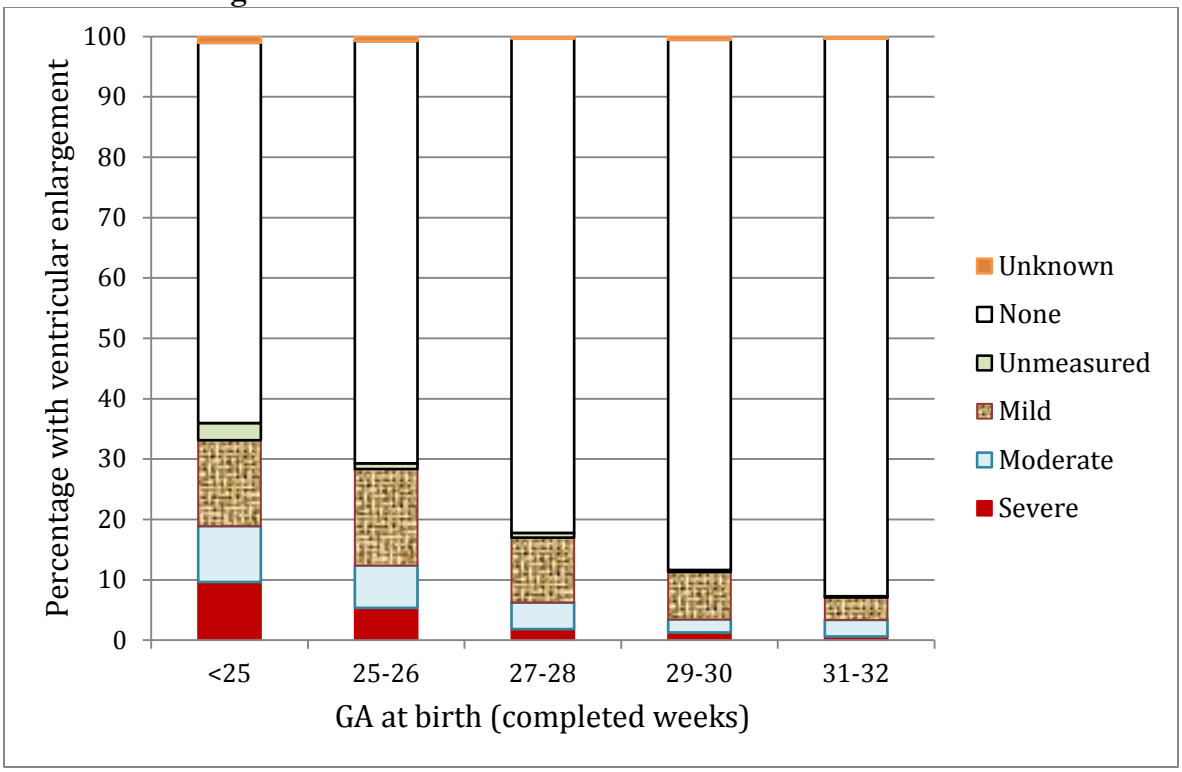
† The percentage of neonates receiving each PDA treatment was calculated using the total number of neonates diagnosed with PDA as the denominator.
*>1 medical = 2 or 3 of (Indomethacin or Ibuprofen or Acetaminophen)
#Medical and ligation = Ligation + at least one of the drugs (Indomethacin or Ibuprofen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

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

Presentation #15
Neuroimaging findings: GA <33 weeks



Ventricular enlargement



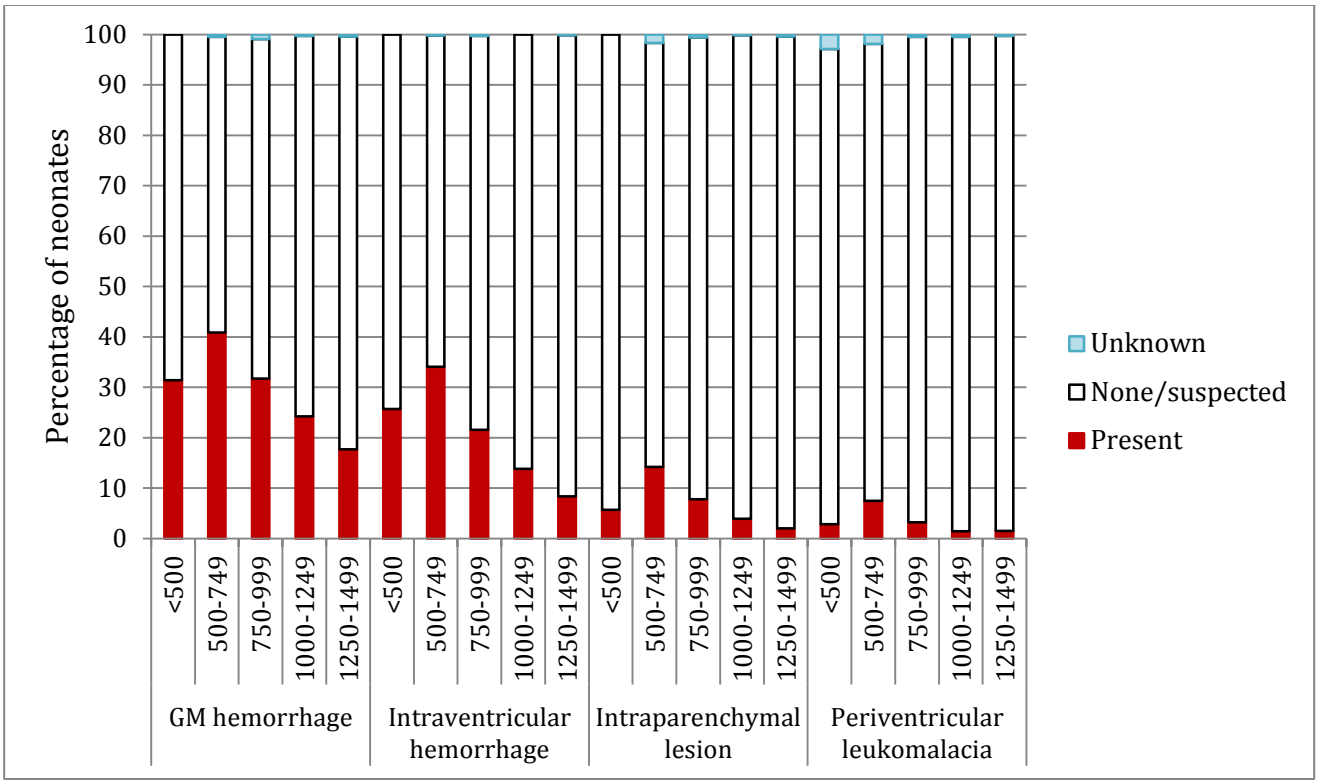
See page 126 for classifications of ventricular enlargement

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

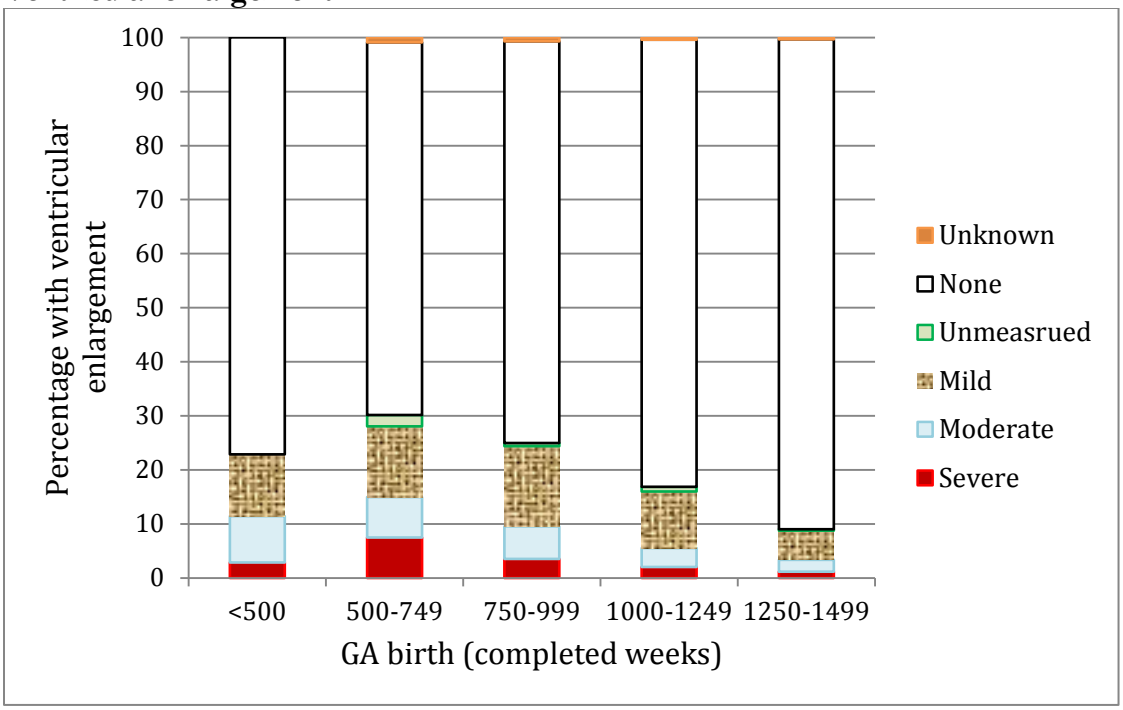
GA at birth (completed weeks)		Total	Neuro-imaging available	Neuroimaging findings																	
				GM hemorrhage			Intraventricular hemorrhage			Ventricular enlargement						Intraparenchymal lesion			Periventricular leukomalacia		
				Present	None/suspected	Unknown	Present	None/suspected	Unknown	Mild	Moderate	Severe	Unmeasured	None	Unknown	Present	None/suspected	Unknown	Present	None/suspected	Unknown
<25	N	309	281	141	138	2	134	146	1	40	26	27	8	177	3	52	223	6	22	254	5
	%			50%	49%	1%	48%	52%	0%	14%	9%	10%	3%	63%	1%	19%	79%	2%	8%	90%	2%
25-26	N	547	526	198	323	5	149	375	2	84	37	28	5	368	4	53	471	2	24	498	4
	%			38%	61%	1%	28%	71%	0%	16%	7%	5%	1%	70%	1%	10%	90%	0%	5%	95%	1%
27-28	N	811	772	199	569	4	116	655	1	83	34	14	6	632	3	36	731	5	20	747	5
	%			26%	74%	1%	15%	85%	0%	11%	4%	2%	1%	82%	0%	5%	95%	1%	3%	97%	1%
29-30	N	988	879	173	702	4	82	795	2	69	19	11	3	772	5	24	850	5	20	853	6
	%			20%	80%	0%	9%	90%	0%	8%	2%	1%	0%	88%	1%	3%	97%	1%	2%	97%	1%
31-32	N	1583	1021	137	881	3	46	975	0	38	28	6	2	943	4	13	1006	2	11	1007	3
	%			13%	86%	0%	5%	95%	0%	4%	3%	1%	0%	92%	0%	1%	99%	0%	1%	99%	0%
Total number of neonates	N	4238	3479	848	2613	18	527	2946	6	314	144	86	24	2892	19	178	3281	20	97	3359	23
	%			24%	75%	1%	15%	85%	0%	9%	4%	2%	1%	83%	1%	5%	94%	1%	3%	97%	1%

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

Presentation #16
Neuroimaging findings: BW <1500g



Ventricular enlargement



See page 126 for classifications of ventricular enlargement

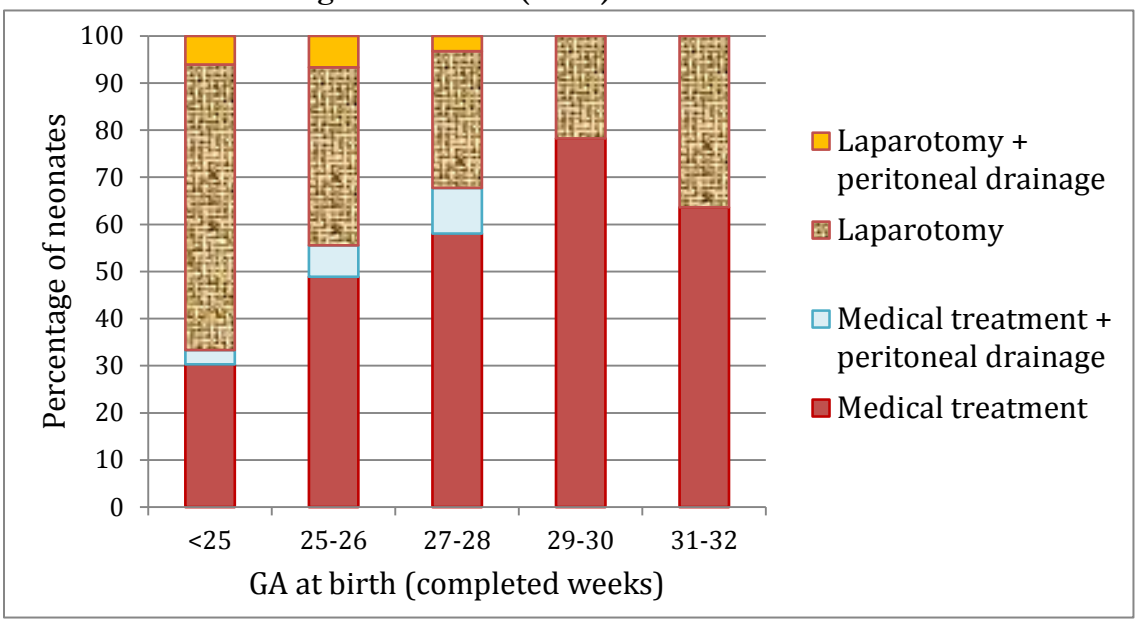
Presentation #16 (continued)
Neuroimaging findings: BW <1500g

BW (grams)		Total	Neuro-imaging available	Neuroimaging findings																	
				GM hemorrhage			Intraventricular hemorrhage			Ventricular enlargement						Intraparenchymal lesion			Periventricular leukomalacia		
				Present	None/suspected	Unknown	Present	None/suspected	Unknown	Mild	Moderate	Severe	Unmeasured	None	Unknown	Present	None/suspected	Unknown	Present	None/suspected	Unknown
<500	N	40	35	11	24	0	9	26	0	4	3	1	0	27	0	2	33	0	1	33	1
	%			31%	69%	0%	26%	74%	0%	11%	9%	3%	0%	77%	0%	6%	94%	0%	3%	94%	3%
500-749	N	472	429	175	252	2	146	282	1	56	32	32	9	296	4	61	361	7	32	389	8
	%			41%	59%	0%	34%	66%	0%	13%	7%	7%	2%	69%	1%	14%	84%	2%	7%	91%	2%
750-999	N	710	681	216	459	6	147	532	2	101	41	24	4	506	5	53	624	4	22	656	3
	%			32%	67%	1%	22%	78%	0%	15%	6%	4%	1%	74%	1%	8%	92%	1%	3%	96%	0%
1000-1249	N	744	688	167	519	2	95	593	0	72	24	14	6	569	3	27	660	1	10	675	3
	%			24%	75%	0%	14%	86%	0%	10%	3%	2%	1%	83%	0%	4%	96%	0%	1%	98%	0%
1250-1499	N	901	778	138	637	3	65	712	1	42	17	9	2	705	3	16	759	3	12	764	2
	%			18%	82%	0%	8%	92%	0%	5%	2%	1%	0%	91%	0%	2%	98%	0%	2%	98%	0%
Total neonates	N	2867	2611	707	1891	13	462	2145	4	275	117	80	21	2103	15	159	2437	15	77	2517	17
	%			27%	72%	0%	18%	82%	0%	11%	4%	3%	1%	81%	1%	6%	93%	1%	3%	96%	1%

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

Presentation #17

Necrotizing enterocolitis (NEC) treatments: GA <33weeks



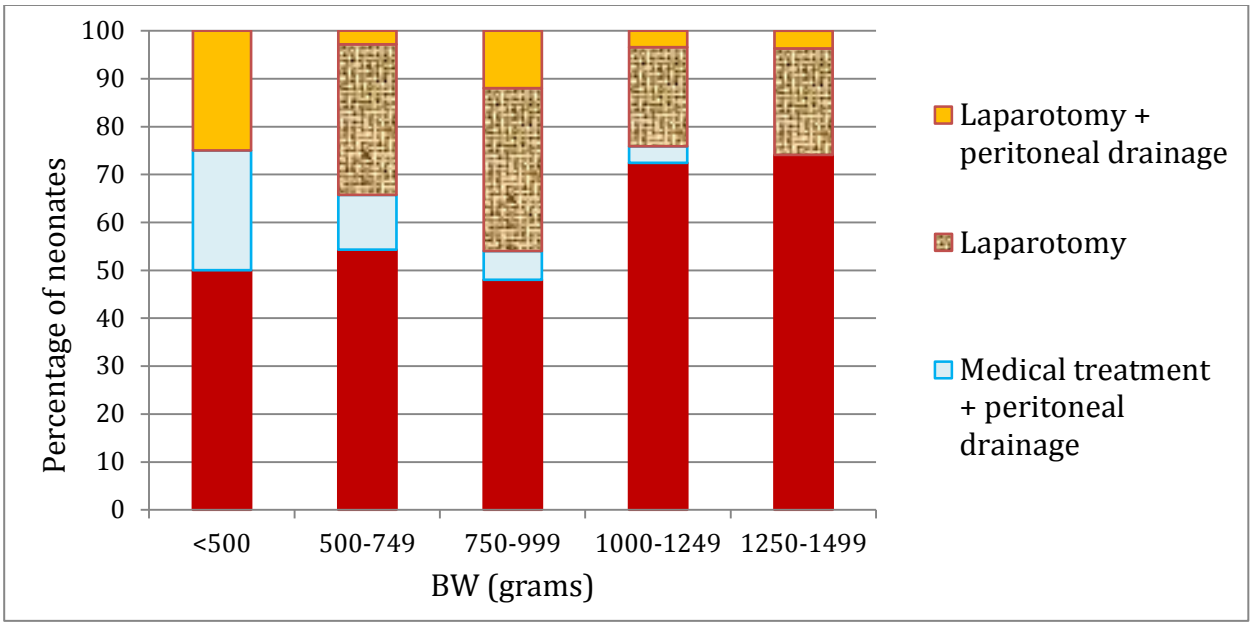
GA at birth (completed weeks)		Total number of neonates	Missing data on NEC	No NEC	NEC*	Neonates with necrotizing enterocolitis**				Death among infants with NEC**
						Medical treatment only	Medical + peritoneal drainage	Laparotomy	Laparotomy + peritoneal drainage	
<25	N	309	0	281	28	13	4	10	1	12
	%			91%	9%	46%	14%	36%	4%	43%
25-26	N	547	1	504	42	20	4	11	7	16
	%			92%	8%	48%	10%	26%	17%	38%
27-28	N	811	1	776	34	24	1	9	0	6
	%			96%	4%	71%	3%	26%	0%	18%
29-30	N	988	0	957	31	23	0	8	0	3
	%			97%	3%	74%	0%	26%	0%	10%
31-32	N	1583	1	1549	33	23	0	8	2	5
	%			98%	2%	70%	0%	24%	6%	15%
Total number of neonates	N	4238	3	4067	168	103	9	46	10	42
	%			96%	4%	61%	5%	27%	6%	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.

Number (%) of neonates with NEC for GA > 33 weeks:
GA 33 - 36 weeks: 47 neonates (1.1%)
GA ≥ 37 weeks: 17 neonates (0.3%)

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



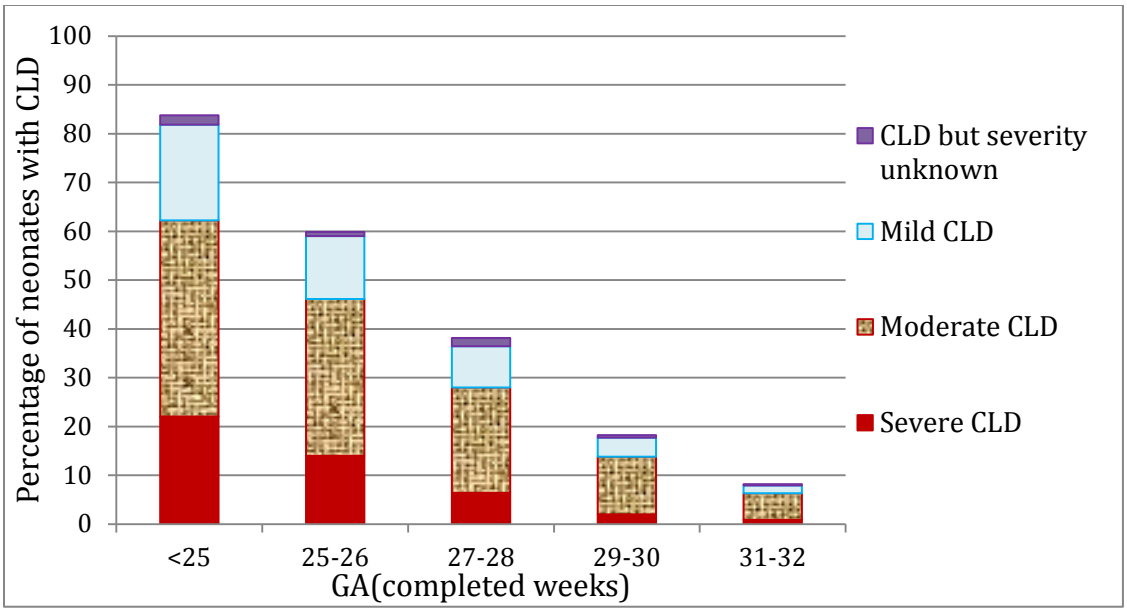
Birth weight (grams)		Total number of neonates	Missing data on NEC	No NEC	NEC*	Neonates with necrotizing enterocolitis**				Death among infants with NEC**
						Medical treatment only	Medical + peritoneal drainage	Laparotomy	laparotomy + peritoneal drainage	
<500	N	40	0	36	4	2	1	0	1	1
	%			90%	10%	50%	25%	0%	25%	25%
500-749	N	472	0	437	35	19	4	11	1	15
	%			93%	7%	54%	11%	31%	3%	43%
750-999	N	710	1	659	50	24	3	17	6	16
	%			93%	7%	48%	6%	34%	12%	32%
1000-1249	N	744	0	715	29	21	1	6	1	6
	%			96%	4%	72%	3%	21%	3%	21%
1250-1499	N	901	0	874	27	20	0	6	1	1
	%			97%	3%	74%	0%	22%	4%	4%
Total number of neonates	N	2867	1	2721	145	86	9	40	10	39
	%			95%	5%	59%	6%	28%	7%	27%

*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: 56 neonates (1.2%)
BW ≥ 2500g: 31 neonates (0.4%)

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

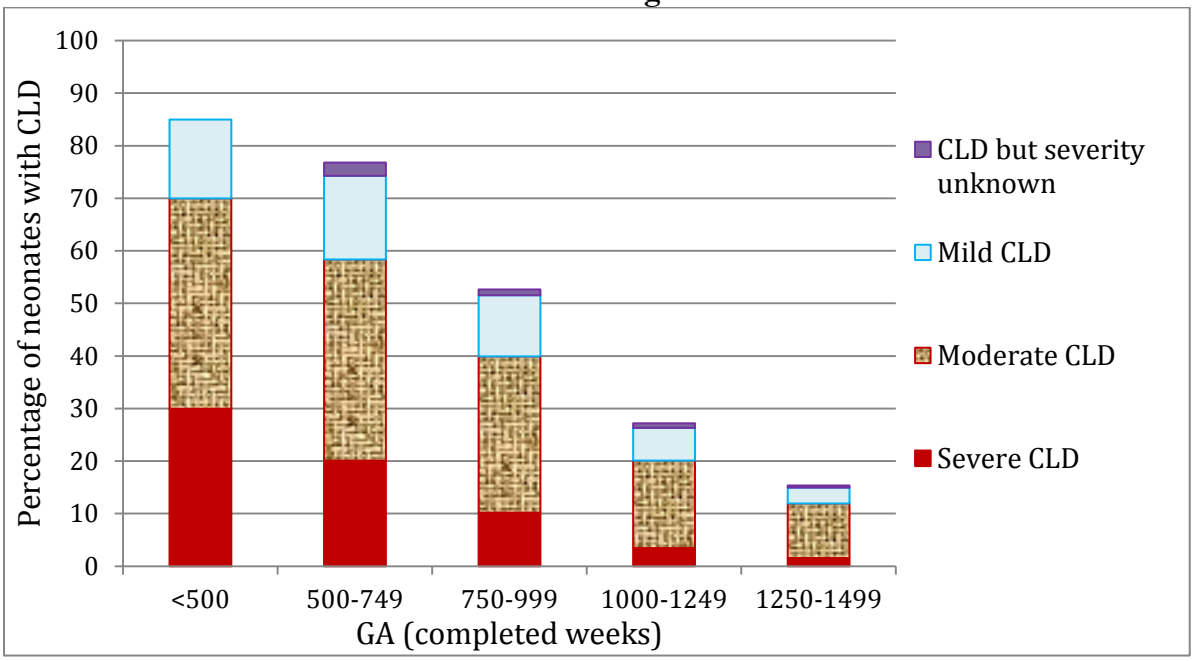


GA	Total number of neonates	Number of neonates who died before 36 weeks PMA	Number of surviving neonates whose respiratory support is unknown*	CLD from**	Number of neonates with known results	Number of neonates with severe CLD	Number of neonates with moderate CLD	Number of neonates with mild CLD	Number of neonates with CLD but severity unknown	Number of neonates without CLD
<25	309	99	1	36w	185	40	80	34	3	28
				Disch	24	6	4	7	1	6
25-26	547	73	1	36w	360	59	135	47	3	116
				Disch	113	7	17	14	1	74
27-28	811	41	1	36w	452	47	121	40	9	235
				Disch	317	2	45	25	4	241
29-30	988	14	1	36w	398	18	66	26	3	285
				Disch	575	1	49	12	2	511
31-32	1 583	18	5	36w	559	11	47	18	4	479
				Disch	1 001	2	38	7	0	954
Total	**4 238**	**245**	**9**	36w	**1 954**	**175**	**449**	**165**	**22**	**1 143**
				Disch	**2 030**	**18**	**153**	**65**	**8**	**1 786**

COMMENTS: See pages 127-128 for the definition of CLD.
*unknown = first admission was after 36 weeks' PMA
** w = weeks' PMA, Disch = Discharge prior to 36 weeks' PMA

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

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



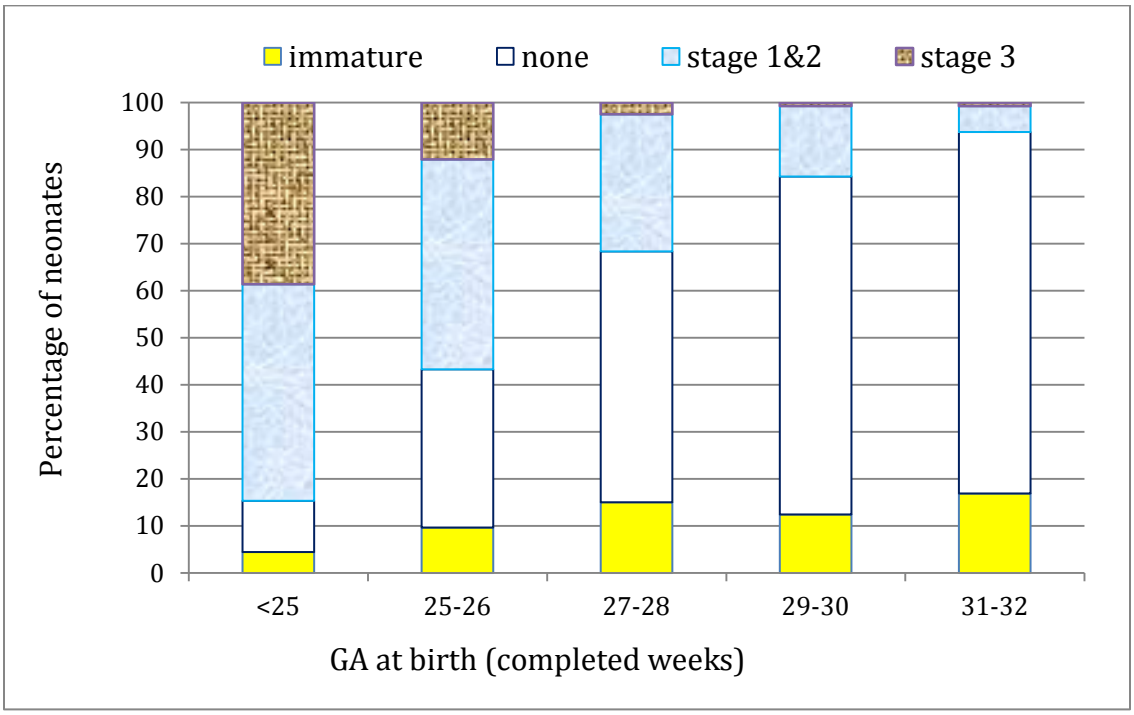
BW	Total number of neonates	Number of neonates who died before 36 weeks' PMA	Number of surviving neonates whose respiratory support is unknown*	CLD from**	Number of neonates with known results	Number of neonates with severe CLD	Number of neonates with moderate CLD	Number of neonates with mild CLD	Number of neonates with CLD but severity unknown	Number of neonates without CLD
<500	40	20	0	36w	20	6	8	3	0	3
				Disch	0	0	0	0	0	0
500-749	472	113	1	36w	307	64	133	48	6	56
				Disch	51	8	4	9	3	27
750-999	710	72	2	36w	457	59	160	57	6	175
				Disch	179	6	29	17	1	126
1000-1249	744	53	0	36w	367	23	72	25	4	243
				Disch	324	1	43	18	2	260
1250-1499	901	139	1	36w	311	11	43	14	2	241
				Disch	450	1	36	9	1	403
Total number of neonates	**2 867**	**397**	**4**	36w	**1 462**	**163**	**416**	**147**	**18**	**718**
				Disch	**1 004**	**16**	**112**	**53**	**7**	**816**

COMMENTS: See pages 127-128 for the definition 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

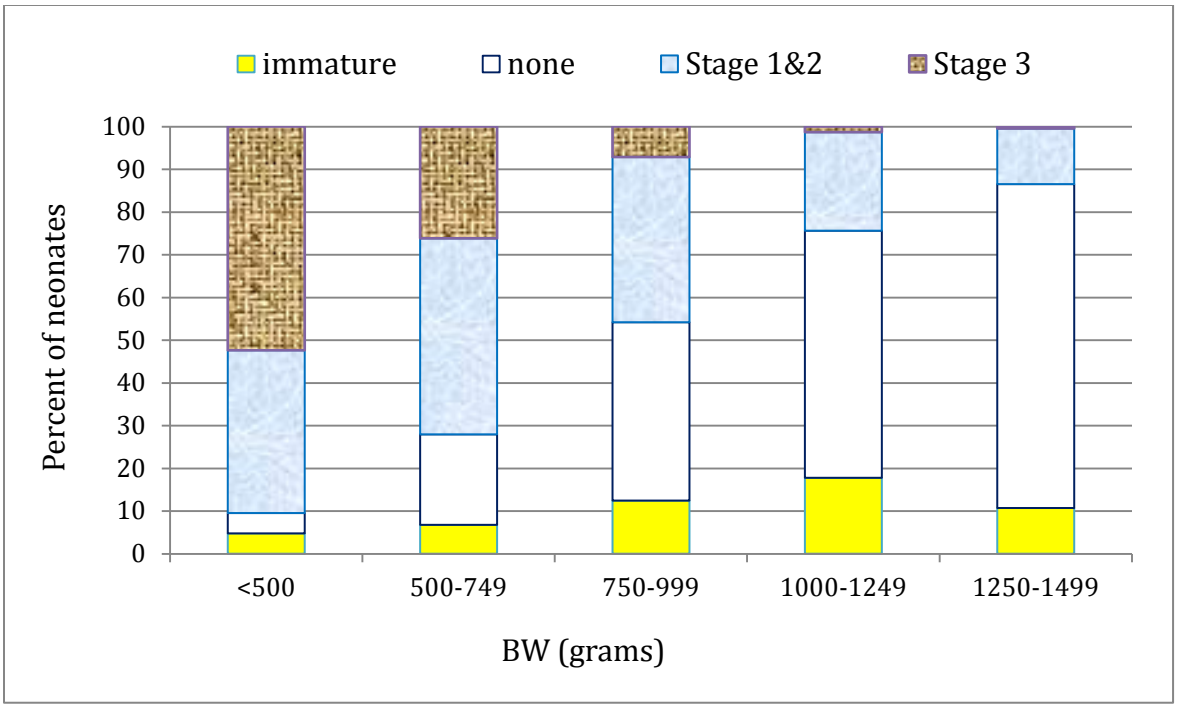


GA (completed weeks)		Total number of neonates	Number of neonates alive at 6 weeks of age	Number of neonates with known eye examination results	Retinopathy of prematurity*				
					Immature	None	Stages 1 & 2	Stage 3	Stages 4 & 5
<25	N	309	219	202	9	22	93	78	0
	%				4%	11%	46%	39%	0%
25-26	N	547	475	455	44	153	203	55	0
	%				10%	34%	45%	12%	0%
27-28	N	811	774	645	97	344	188	16	0
	%				15%	53%	29%	2%	0%
29-30	N	988	975	554	69	398	83	4	0
	%				12%	72%	15%	1%	0%
31-32	N	1 583	1 564	272	46	209	15	2	0
	%				17%	77%	6%	1%	0%
Total neonates included	N	4 238	4 007	2 128	265	1126	582	155	0
	%				12%	53%	27%	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



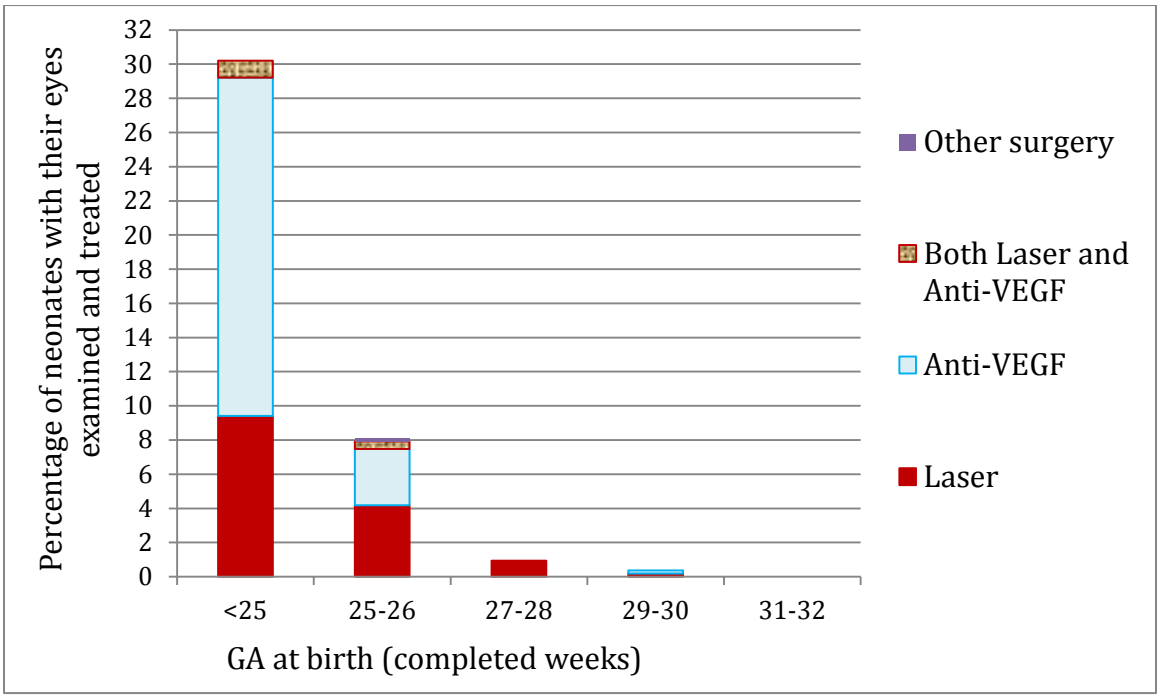
BW (grams)		Total number of neonates	Number of neonates alive at 6 weeks of age	Number of neonates with known eye examination results	Retinopathy of prematurity*				
					Immature	None	Stages 1 & 2	Stage 3	Stages 4 & 5
<500	N	40	21	21	1	1	8	11	0
	%				5%	5%	38%	52%	0%
500-749	N	472	369	341	23	72	157	89	0
	%				7%	21%	46%	26%	0%
750-999	N	710	649	587	73	245	227	42	0
	%				12%	42%	39%	7%	0%
1000-1249	N	744	726	529	94	306	122	7	0
	%				18%	58%	23%	1%	0%
1250-1499	N	901	886	430	46	326	56	2	0
	%				11%	76%	13%	0%	0%
Total neonates included	N	2 867	2 651	1 908	237	950	569	151	0
	%				12%	50%	30%	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

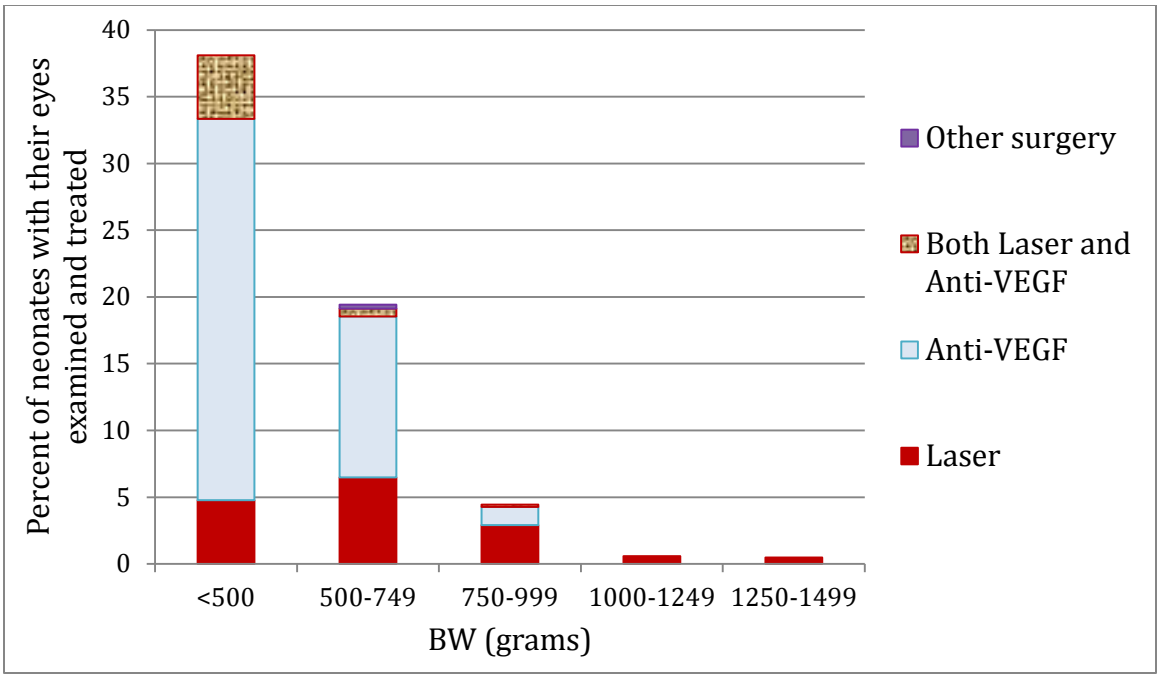


Birth GA (completed weeks)		Total number of neonates	Number of neonates with known eye examination results	Therapy for retinopathy of prematurity (ROP)*	Therapy for ROP			
					Laser	Anti-VEGF	Both Laser and Anti-VEGF	Other surgery
<25	N	309	202	61	19	40	2	0
	%			30%				
25-26	N	547	455	37	19	15	2	1
	%			8%				
27-28	N	811	645	6	6	0	0	0
	%			1%				
29-30	N	988	554	2	1	1	0	0
	%			0%				
31-32	N	1 583	272	0	0	0	0	0
	%			0%				
Total neonates included	N	4 238	2 128	106	45	56	4	1
	%			5%				

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

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	40	21	8	1	6	1	0
	%			38%				
500-749	N	472	341	66	22	41	2	1
	%			19%				
750-999	N	710	587	26	17	8	1	0
	%			4%				
1000-1249	N	744	529	3	3	0	0	0
	%			1%				
1250-1499	N	901	430	2	2	0	0	0
	%			1%				
Total neonates included	N	2 867	1 908	105	45	55	4	1
	%			6%				

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

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

Presentation #25
Mortality or select major morbidity: GA <33 weeks

GA	Number of neonates	Number survived until discharge / transfer (%)	Major morbidity[a] (%)	CLD[b] (%)	Severe ROP[c] (%)	Severe neurological injury[d] (%)	NEC[e] (%)	Late onset sepsis [f]
<24	92	48 (52)	69 (75)	41 (85)	19 (41)	21 (26)	10 (11)	40 (43)
24	205	149 (73)	165 (80)	124 (83)	63 (46)	42 (22)	17 (8)	66 (32)
25	265	214 (81)	196 (74)	141 (65)	46 (24)	47 (19)	25 (9)	60 (23)
26	257	231 (90)	166 (65)	124 (53)	13 (7)	29 (11)	15 (6)	58 (23)
27	365	345 (95)	191 (52)	143 (42)	14 (5)	20 (6)	18 (5)	53 (15)
28	417	397 (95)	168 (40)	133 (34)	4 (2)	27 (7)	16 (4)	32 (8)
29	425	417 (98)	125 (29)	94 (23)	2 (1)	17 (4)	15 (4)	15 (4)
30	535	530 (99)	101 (19)	70 (13)	0	18 (4)	15 (3)	14 (3)
31	695	690 (99)	109 (16)	70 (10)	2 (2)	14 (3)	19 (3)	19 (3)
32	827	816 (99)	61 (7)	37 (5)	0	10 (3)	12 (1)	7 (1)
Total neonates	4083	3837 (94)	1351 (33)	977 (25)	163 (9)	245 (7)	162 (4)	364 (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 or grade 4 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 or grade 4 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. Deaths before 3 days of age were excluded.

E. Site Comparisons

E.1. Site Comparisons – Care Practices

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

Site	Number of neonates	Antenatal $MgSO_4$			Prenatal steroids[a]	Delayed cord clamping[b]			Admission temperature			Apgar <5 at 5 minutes
	N	Yes	No	Missing	Any	Yes	No	Missing	<36.5	36.5-37.2	>37.2	
xxvi	< 20	50.0	50.0	0.0	0.0	0.0	75.0	25.0	25.0	75.0	0.0	0.0
vi		85.7	14.3	0.0	85.7	0.0	57.1	42.9	60.0	40.0	0.0	33.3
ix		77.8	22.2	0.0	100.0	33.3	66.7	0.0	62.5	37.5	0.0	11.1
xxix		93.3	6.7	0.0	100.0	6.7	86.7	6.7	14.3	78.6	7.1	14.3
xxvii		93.3	6.7	0.0	100.0	66.7	20.0	13.3	26.7	20.0	53.3	13.3
xxviii		53.3	40.0	6.7	100.0	6.7	80.0	13.3	33.3	20.0	46.7	26.7
xxiii		81.3	18.8	0.0	81.3	87.5	12.5	0.0	50.0	18.8	31.3	18.8
xxii		5.9	82.4	11.8	80.0	52.9	5.9	41.2	17.7	76.5	5.9	5.9
iv	20 – 40	81.0	19.1	0.0	100.0	9.5	90.5	0.0	42.9	47.6	9.5	14.3
xvii		33.3	61.9	4.8	95.2	28.6	61.9	9.5	23.8	57.1	19.1	33.3
xxiv		73.1	26.9	0.0	88.5	3.9	0.0	96.2	50.0	31.8	18.2	0.0
xxi		77.8	22.2	0.0	96.3	88.9	11.1	0.0	11.1	85.2	3.7	7.4
xix		82.1	17.9	0.0	96.4	78.6	21.4	0.0	64.3	21.4	14.3	14.3
i		50.0	26.7	23.3	93.3	80.0	16.7	3.3	40.0	53.3	6.7	10.0
viii		62.9	37.1	0.0	94.3	77.1	22.9	0.0	22.9	51.4	25.7	17.1
iii	41 – 70	83.3	16.7	0.0	97.9	27.1	39.6	33.3	39.6	45.8	14.6	14.6
xv		36.7	46.9	16.3	95.8	51.0	46.9	2.0	37.5	56.3	6.3	28.6
xxv		47.1	51.0	2.0	96.1	70.6	29.4	0.0	28.0	60.0	12.0	23.5
xiv		74.1	22.4	3.5	93.1	36.2	50.0	13.8	41.4	50.0	8.6	24.1
xiii		89.8	10.2	0.0	94.9	1.7	94.9	3.4	60.5	32.6	7.0	11.9
xviii		74.2	19.7	6.1	93.9	80.3	15.2	4.6	60.0	33.3	6.7	17.5
xi		79.4	20.6	0.0	100.0	29.4	32.4	38.2	31.8	44.4	23.8	13.2
x	> 70	80.5	15.6	3.9	96.1	42.9	54.6	2.6	21.1	52.6	26.3	10.4
ii		64.6	35.4	0.0	93.7	1.3	98.7	0.0	46.2	47.4	6.4	22.8
xx		23.3	76.7	0.0	98.3	74.1	23.3	2.6	26.7	45.7	27.6	6.1
xxx		73.3	18.3	8.4	97.7	61.1	35.9	3.1	31.9	47.4	20.7	17.6
xvi		74.7	24.7	0.7	93.2	45.9	53.4	0.7	30.0	60.0	10.0	9.7
v		90.4	9.6	0.0	94.2	60.9	39.1	0.0	13.6	60.0	26.5	23.7
Total CNN		68.8	28.3	2.9	95.0	48.6	43.5	7.9	32.9	50.0	17.1	16.0

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

[a] Received any prenatal steroid (partial or complete)
[b] Any delayed cord clamping regardless of timing

These are unadjusted rates.

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

Site	Number of neonates	No mechanical ventilation in first 3 days[a]	Never received mechanical ventilation[a]	Fed in first 2 days of admission	Never received antibiotics[b]	Exclusive breast milk feeding at discharge[c]	Exclusive formula feeding at discharge[c]
	N	%	%	%	%	%	%
xxvi	< 20	25.0	25.0	75.0	0.0	25.0	75.0
vi		85.7	71.4	28.6	28.6	14.3	28.6
ix		44.4	44.4	22.2	0.0	11.1	55.6
xxix		13.3	13.3	0.0	6.7	0.0	60.0
xxvii		13.3	6.7	46.7	0.0	40.0	33.3
xxviii		13.3	13.3	20.0	6.7	0.0	20.0
xxiii		18.8	6.3	0.0	0.0	6.3	56.3
xxii		23.5	17.7	94.1	17.7	41.2	29.4
iv	20 – 40	38.1	33.3	9.5	23.8	33.3	57.1
xvii		14.3	4.8	81.0	0.0	14.3	9.5
xxiv		15.4	11.5	0.0	15.4	57.7	19.2
xxi		55.6	48.2	18.5	29.6	37.0	18.5
xix		50.0	28.6	25.0	0.0	42.9	25.0
i		53.3	30.0	50.0	6.7	10.0	26.7
viii		45.7	34.3	22.9	2.9	57.1	14.3
iii	41 – 70	43.8	25.0	14.6	0.0	27.1	31.3
xv		28.6	20.4	38.8	6.1	32.7	16.3
xxv		39.2	33.3	96.1	5.9	15.7	47.1
xiv		24.1	19.0	13.8	1.7	41.4	25.9
xiii		28.8	23.7	8.5	6.8	33.9	23.7
xviii		15.2	9.1	0.0	6.1	27.3	34.9
xi		33.8	25.0	41.2	4.4	48.5	19.1
x	> 70	16.9	15.6	13.0	5.2	58.4	15.6
ii		25.3	19.0	21.5	6.3	17.7	39.2
xx		20.7	17.2	21.6	5.2	0.9	13.8
xxx		40.5	28.2	40.5	6.1	35.1	19.1
xvi		43.8	34.9	78.1	3.4	63.0	11.6
v		37.8	28.9	20.5	3.2	56.4	14.1
Total CNN		32.5	24.4	32.7	5.6	36.3	23.0

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

These are unadjusted rates.

E.2. Site Comparisons – Survival / Mortality

Presentation #28
Survival rates by site: All GA

Site	Percentage survival for each GA (completed weeks)								
	<25	25-26	27-28	29-30	31-32	33-34	35-36	≥37	Overall survival rate for sites*
A	83.3	100.0	90.0	92.3	100.0	100.0	97.1	98.2	97.6
B	100.0	100.0	100.0	94.7	100.0	100.0	100.0	99.3	99.4
C	0.0	100.0	100.0	100.0	100.0	100.0	100.0	99.2	99.2
D	66.7	72.7	81.8	100.0	97.8	98.1	100.0	98.4	97.1
E	50.0	90.0	93.3	96.0	100.0	98.4	100.0	100.0	98.6
F	79.2	96.9	97.2	97.8	100.0	99.1	100.0	99.5	98.8
G	20.0	83.3	87.5	100.0	100.0	98.4	100.0	99.2	97.2
H	NA	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Iϕ	76.5	90.5	94.9	97.2	96.7	NA	NA	NA	93.7
J	69.0	87.5	98.7	96.3	100.0	100.0	100.0	100.0	96.4
Kϕ	60.0	72.7	100.0	100.0	100.0	NA	NA	NA	94.7
L	76.9	76.2	96.4	100.0	100.0	98.9	100.0	99.1	97.3
M	100.0	85.7	94.7	100.0	100.0	100.0	100.0	100.0	99.3
N	45.5	85.0	92.9	93.1	96.2	98.1	97.2	97.4	96.1
O	80.0	88.9	94.7	100.0	90.9	93.3	98.7	96.6	96.1
P	100.0	75.0	90.0	100.0	100.0	100.0	98.9	100.0	99.3
Q	66.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7
Rϕ	62.5	90.0	90.9	97.8	98.9	NA	NA	NA	94.6
S	NA	62.5	100.0	100.0	100.0	100.0	100.0	95.8	96.7
T	100.0	100.0	100.0	100.0	96.0	100.0	100.0	100.0	99.8
U	0.0	33.3	100.0	100.0	100.0	100.0	98.0	100.0	98.2
V	62.5	84.0	86.4	100.0	98.9	97.6	95.1	98.4	95.8
W	66.7	50.0	83.3	95.5	100.0	100.0	99.2	98.1	97.8
X	60.0	88.5	94.3	97.9	98.5	98.7	98.6	97.9	96.9
Y	75.0	81.3	87.5	100.0	98.5	98.5	98.7	99.0	97.8
Z	70.8	69.0	97.3	100.0	96.7	99.3	97.1	98.2	96.5
AA	42.9	100.0	100.0	100.0	98.1	100.0	98.3	99.1	98.4
ABϕ	71.0	93.4	100.0	98.9	99.2	90.5	98.0	97.1	96.4
ACϕ	70.0	94.1	92.6	100.0	100.0	100.0	87.5	87.5	95.1
AD	54.8	77.0	93.0	96.4	100.0	97.8	97.4	98.9	95.5
Overall survival rate for GA**	67.0	85.4	94.7	98.1	98.8	98.8	98.8	98.7	97.3

These analyses included 14 905 neonates from 30 sites (2 neonates had missing GA data).

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

ϕ Please note the data collection criteria were not the same for these five 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	85.7	100.0	100.0	100.0	98.6	97.8	97.6
B	NA	100.0	100.0	100.0	100.0	98.3	100.0	99.4
C	NA	50.0	100.0	100.0	100.0	100.0	99.5	99.2
D	NA	46.2	100.0	88.9	100.0	98.5	98.7	97.1
E	NA	71.4	85.7	100.0	95.2	99.5	99.6	98.6
F	66.7	90.5	98.0	98.6	98.3	99.4	99.6	98.8
G	NA	57.1	50.0	100.0	100.0	99.2	99.3	97.2
H	NA	NA	100.0	100.0	NA	100.0	100.0	100.0
I$^{\phi}$	100.0	87.5	88.0	96.3	100.0	93.4	NA	93.7
J	54.5	78.6	91.0	98.6	100.0	100.0	100.0	96.4
K$^{\phi}$	100.0	42.9	93.3	100.0	100.0	100.0	100.0	94.7
L	50.0	81.3	85.7	100.0	100.0	98.9	100.0	97.3
M	66.7	100.0	92.9	95.0	100.0	100.0	100.0	99.3
N	NA	63.2	82.8	100.0	91.4	98.0	97.5	96.1
O	NA	100.0	88.2	100.0	96.0	93.2	97.3	96.1
P	NA	75.0	100.0	90.9	100.0	100.0	99.6	99.3
Q	NA	85.7	100.0	100.0	100.0	100.0	100.0	99.7
R$^{\phi}$	0.0	75.0	90.3	96.9	100.0	98.8	0.0	94.6
S	NA	50.0	87.5	100.0	100.0	100.0	98.2	97.4
T	NA	100.0	100.0	88.9	100.0	100.0	100.0	99.8
U	NA	0.0	50.0	100.0	100.0	100.0	99.5	98.6
V	66.7	65.8	91.9	86.5	100.0	97.6	98.5	95.8
W	NA	50.0	75.0	90.9	96.0	100.0	98.2	97.8
X	NA	75.0	93.3	96.7	98.0	97.0	98.4	96.9
Y	0.0	75.0	83.3	100.0	97.4	97.7	99.5	97.8
Z	0.0	67.9	86.8	91.2	98.4	97.2	99.0	96.5
AA	0.0	72.7	85.7	100.0	100.0	98.4	99.5	98.4
AB$^{\phi}$	50.0	81.8	96.2	98.6	98.4	98.2	96.9	96.4
AC$^{\phi}$	NA	71.4	100.0	96.6	93.8	100.0	90.0	95.1
AD	0.0	69.2	84.3	97.6	96.9	97.8	99.1	95.5
Overall survival rate for BW**	47.5	74.7	90.3	97.0	98.2	98.5	98.9	97.3

These analyses included 14 903 neonates from 30 sites (4 neonates had missing BW data).

Twenty-five sites collected data on all eligible admissions whereas five sites (marked by $^{\phi}$) collected data on selected eligible admissions only.

$^{\phi}$ Please note the data collection criteria were not the same for these five 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

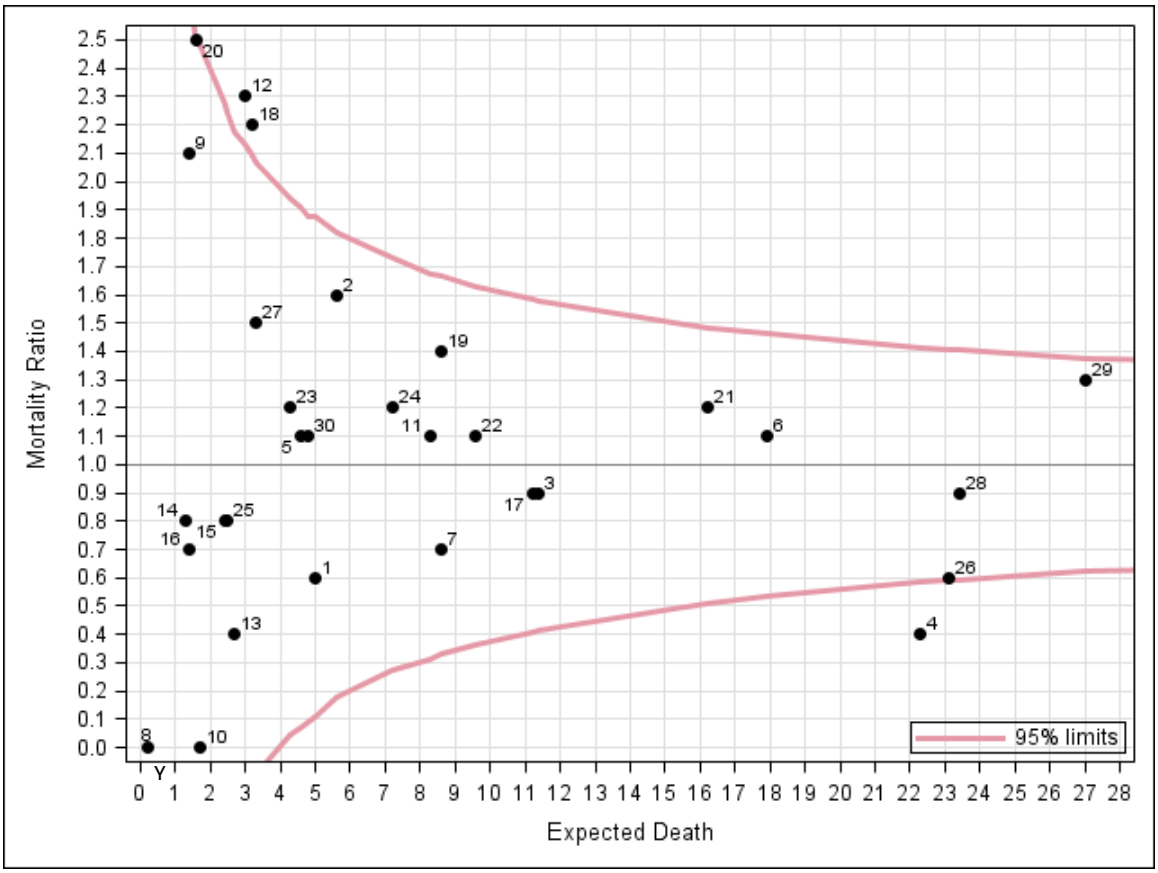
Delivery room deaths were not included

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	111	3	5.0	0.6	0.1	1.8
2	109	9	5.6	1.6	0.7	3.0
3	170	10	11.4	0.9	0.4	1.6
4	308	10	22.3	0.4	0.2	0.8
5	92	5	4.6	1.1	0.3	2.5
6	211	19	17.9	1.1	0.6	1.7
7	132	6	8.6	0.7	0.3	1.5
8	9	0	0.2	0.0	.	16.9
9	36	3	1.4	2.1	0.4	6.1
10	54	0	1.7	0.0	.	2.1
11	137	9	8.3	1.1	0.5	2.0
12	75	7	3.0	2.3	0.9	4.8
13	79	1	2.7	0.4	0.0	2.1
14	24	1	1.3	0.8	0.0	4.2
15	58	2	2.4	0.8	0.1	3.0
16	63	1	1.4	0.7	0.0	3.8
17	179	10	11.2	0.9	0.4	1.6
18	58	7	3.2	2.2	0.9	4.5
19	134	12	8.6	1.4	0.7	2.4
20	25	4	1.6	2.5	0.7	6.5
21	260	20	16.2	1.2	0.8	1.9
22	198	11	9.6	1.1	0.6	2.0
23	98	5	4.3	1.2	0.4	2.7
24	162	9	7.2	1.2	0.6	2.4
25	42	2	2.5	0.8	0.1	2.9
26	358	14	23.1	0.6	0.3	1.0
27	88	5	3.3	1.5	0.5	3.5
28	312	21	23.4	0.9	0.6	1.4
29	394	35	27.0	1.3	0.9	1.8
30	107	5	4.8	1.1	0.3	2.5

Numeric site codes were used in Presentations 30a-f and they may not correspond to other presentations in this report.
Neonates with major congenital anomalies were excluded.
[#] The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.

Presentations #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

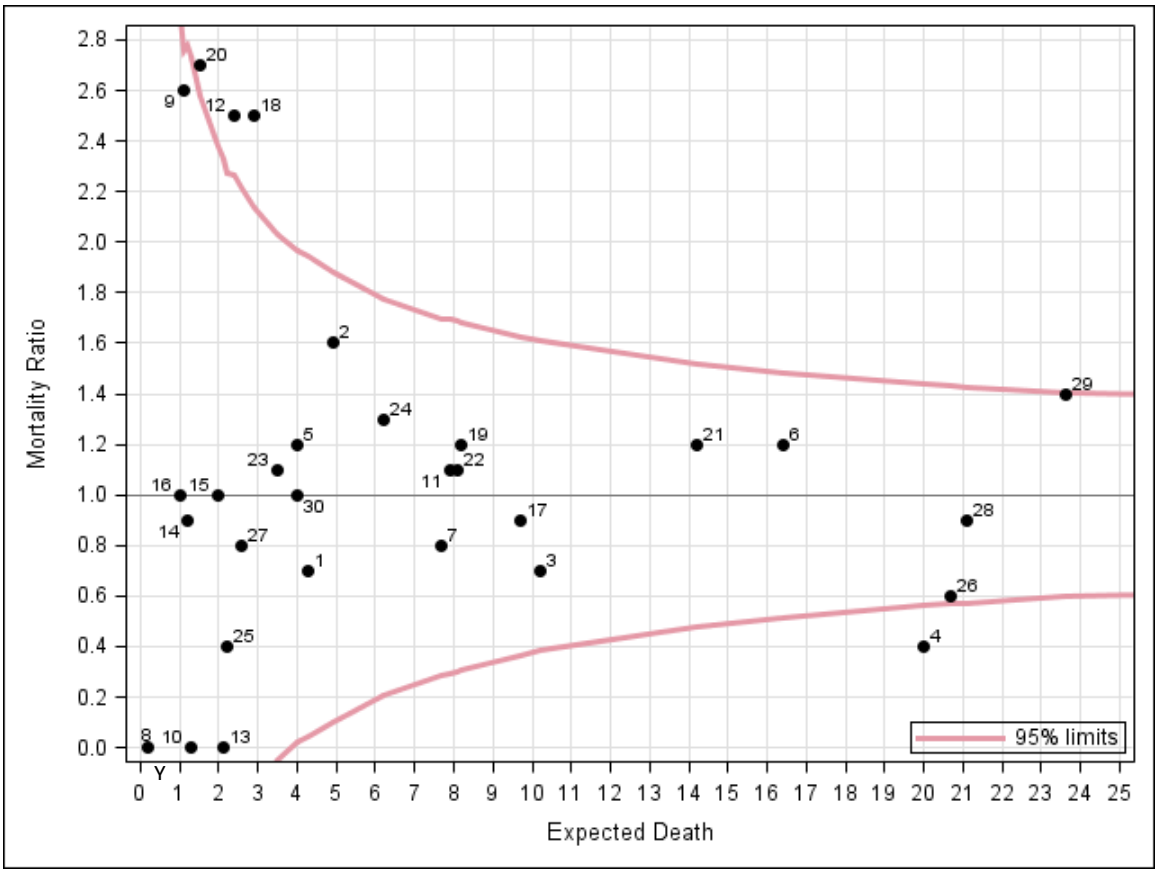
Explanation for Presentation 30b
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red 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	36	3	4.3	0.7	0.1	2.1
2	31	8	4.9	1.6	0.7	3.2
3	74	7	10.2	0.7	0.3	1.4
4	123	8	20.0	0.4	0.2	0.8
5	31	5	4.0	1.2	0.4	2.9
6	92	19	16.4	1.2	0.7	1.8
7	52	6	7.7	0.8	0.3	1.7
8	4	0	0.2	0.0	.	22.7
9	14	3	1.1	2.6	0.5	7.7
10	18	0	1.3	0.0	.	2.8
11	59	9	7.9	1.1	0.5	2.2
12	22	6	2.4	2.5	0.9	5.4
13	29	0	2.1	0.0	.	1.7
14	9	1	1.2	0.9	0.0	4.8
15	16	2	2.0	1.0	0.1	3.7
16	16	1	1.0	1.0	0.0	5.4
17	70	9	9.7	0.9	0.4	1.8
18	25	7	2.9	2.5	1.0	5.1
19	57	10	8.2	1.2	0.6	2.3
20	8	4	1.5	2.7	0.7	7.0
21	87	17	14.2	1.2	0.7	1.9
22	71	9	8.1	1.1	0.5	2.1
23	27	4	3.5	1.1	0.3	2.9
24	56	8	6.2	1.3	0.6	2.5
25	20	1	2.2	0.4	0.0	2.5
26	149	13	20.7	0.6	0.3	1.1
27	31	2	2.6	0.8	0.1	2.8
28	175	18	21.1	0.9	0.5	1.3
29	173	33	23.6	1.4	1.0	2.0
30	26	4	4.0	1.0	0.3	2.5

Numeric site codes were used in Presentations 30a-f and they may not correspond to other presentations in this report.
Neonates with major congenital anomalies were excluded.
The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.

Presentations #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

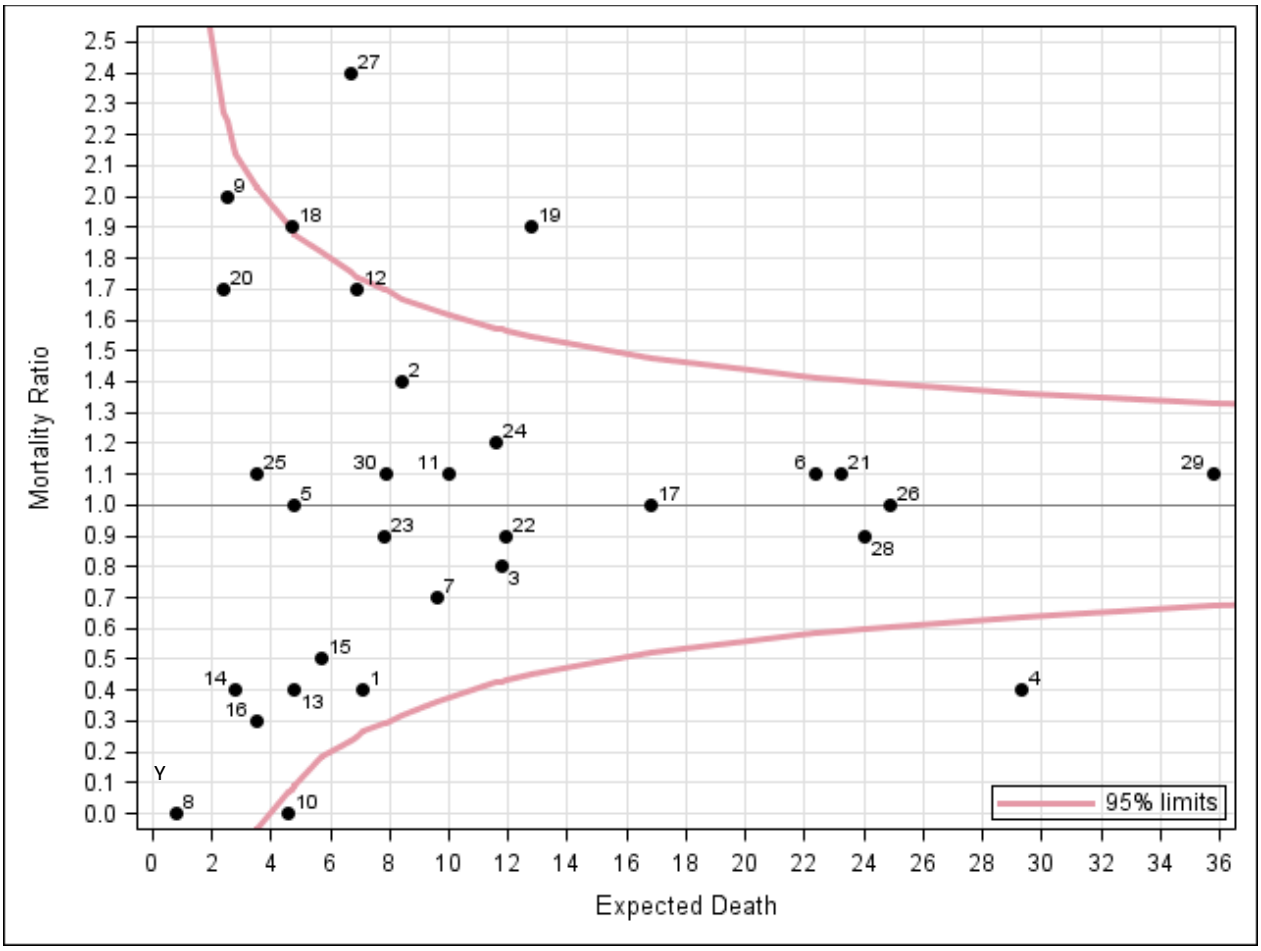
Explanation for Presentation 30d
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red 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	436	3	7.1	0.4	0.1	1.2
2	467	12	8.4	1.4	0.7	2.5
3	170	10	11.8	0.8	0.4	1.6
4	1039	12	29.3	0.4	0.2	0.7
5	92	5	4.8	1.0	0.3	2.4
6	696	24	22.4	1.1	0.7	1.6
7	146	7	9.6	0.7	0.3	1.5
8	98	0	0.8	0.0	.	4.8
9	147	5	2.5	2.0	0.7	4.7
10	425	0	4.6	0.0	.	0.8
11	390	11	10.0	1.1	0.5	2.0
12	637	12	6.9	1.7	0.9	3.0
13	352	2	4.8	0.4	0.0	1.5
14	251	1	2.8	0.4	0.0	2.0
15	396	3	5.7	0.5	0.1	1.5
16	352	1	3.5	0.3	0.0	1.6
17	549	16	16.8	1.0	0.5	1.6
18	319	9	4.7	1.9	0.9	3.7
19	727	24	12.8	1.9	1.2	2.8
20	276	4	2.4	1.7	0.4	4.3
21	890	26	23.2	1.1	0.7	1.6
22	198	11	11.9	0.9	0.5	1.7
23	492	7	7.8	0.9	0.4	1.8
24	795	14	11.6	1.2	0.7	2.0
25	219	4	3.5	1.1	0.3	2.9
26	564	24	24.9	1.0	0.6	1.4
27	484	16	6.7	2.4	1.4	3.9
28	588	21	24.0	0.9	0.5	1.3
29	929	38	35.8	1.1	0.8	1.5
30	595	9	7.9	1.1	0.5	2.2

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	%	%	%	%	%	%	%
U	< 60	16.0	0.0	0.0	4.8	0.0	12.0	32.0
C		3.9	7.7	5.9	12.0	3.9	19.2	23.1
G		11.9	6.1	10.3	26.9	3.4	25.4	42.4
S		8.1	8.8	33.3	14.7	2.7	5.4	32.4
H		0.0	0.0	0.0	0.0	0.0	0.0	0.0
T		1.8	3.9	5.0	18.5	0.0	10.9	27.3
A		5.3	14.3	14.8	57.1	7.0	0.0	64.9
P		3.4	5.2	3.3	14.0	3.4	8.5	22.0
B	60 – 110	1.3	3.3	1.8	9.0	1.3	2.5	13.9
O		6.5	19.8	6.7	20.5	10.9	12.0	48.9
Q		1.5	6.8	6.5	16.9	0.0	10.6	24.2
AA		4.6	7.1	9.1	19.1	0.9	6.4	26.4
W		9.3	5.1	7.4	14.7	0.0	5.3	28.0
K		5.3	7.3	0.0	19.1	6.4	13.8	28.7
E		4.9	3.4	9.3	19.6	1.0	7.8	26.5
D		8.3	5.1	7.4	17.8	5.5	6.4	28.4
M	111 – 200	2.6	3.5	8.5	16.8	3.5	12.1	26.7
I		6.3	7.8	6.9	36.4	4.6	11.5	43.1
X		6.0	7.6	10.0	23.0	0.5	10.8	33.0
L		6.4	5.7	9.1	20.6	3.6	12.1	33.6
AC		4.4	3.9	7.3	22.0	5.8	7.3	31.9
N		10.7	3.6	4.0	27.8	5.0	12.9	42.9
Y		6.6	6.5	7.1	22.9	1.2	9.5	31.6
R	> 200	5.4	9.3	8.8	36.4	4.9	5.9	48.3
Z		7.8	8.8	17.8	44.6	3.4	8.9	52.0
V		9.3	7.5	8.9	33.7	4.7	13.0	43.3
AD		9.2	9.1	8.0	32.5	5.6	12.3	43.5
J		6.9	9.3	9.2	8.3	5.6	9.1	25.7
F		3.1	5.1	7.9	33.0	1.6	4.0	38.5
AB		4.0	15.0	36.2	32.5	6.1	7.9	40.4
Total CNN		6.2	7.9	9.2	26.5	4.0	9.4	36.9

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

These are unadjusted rates.

Presentation #32
Mortality/morbidities: GA<29 weeks: Site specific crude rates

Site	Number of neonates	Mortality	Severe neurological injury	Severe ROP	CLD at 36 weeks PMA or discharge*	NEC stage 2 or 3	Late onset sepsis	Mortality or severe morbidity
	N	%	%	%	%	%	%	%
H	< 20	0.0	0.0	0.0	0.0	0.0	0.0	0.0
U		50.0	0.0	0.0	25.0	0.0	12.5	75.0
Q		5.6	17.7	11.8	47.1	0.0	27.8	61.1
C		11.1	22.2	14.3	37.5	11.1	44.4	55.6
S		20.0	13.3	37.5	33.3	6.7	13.3	66.7
P		12.5	12.5	7.1	42.9	12.5	31.3	68.8
T		0.0	11.1	11.8	38.9	0.0	27.8	55.6
B	20 – 40	0.0	6.9	3.6	24.1	0.0	3.5	34.5
W		27.3	5.6	14.3	43.8	0.0	18.2	68.2
AA		15.4	15.4	21.1	63.6	3.9	23.1	76.9
A		7.4	22.7	15.8	80.8	14.8	0.0	85.2
E		13.8	10.3	18.2	56.0	0.0	27.6	69.0
D		25.8	0.0	16.0	62.5	12.9	19.4	71.0
G		28.0	12.0	16.7	61.1	8.0	48.0	76.0
K		15.2	15.2	0.0	53.6	15.2	30.3	63.6
O		9.1	31.3	9.5	33.3	9.1	24.2	66.7
M	41 – 80	7.3	9.8	12.1	44.7	2.4	29.3	58.5
AC		11.1	4.2	13.0	43.8	7.4	14.8	55.6
Y		16.7	12.7	12.8	58.0	1.7	23.3	68.3
L		14.5	8.6	15.1	43.4	4.8	25.8	62.9
X		12.7	13.2	20.0	45.2	1.4	19.7	62.0
R		12.5	14.5	15.8	53.1	5.6	8.3	69.4
N		18.6	5.5	6.1	57.1	5.1	23.7	72.9
I		10.4	11.8	10.2	71.0	9.2	24.7	80.5
F	> 80	6.3	8.6	12.9	65.8	3.1	7.8	72.7
AB		8.2	22.5	41.0	63.0	10.7	17.0	75.5
Z		18.9	15.9	23.9	73.7	3.3	22.2	83.3
V		20.4	13.2	14.7	59.5	7.5	25.8	72.0
AD		19.1	14.9	9.6	61.1	8.4	23.6	74.2
J		10.6	12.8	10.7	12.3	6.1	15.6	37.8
Total CNN		13.5	13.3	14.3	51.8	6.3	19.9	66.8

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 Antibiotic Use

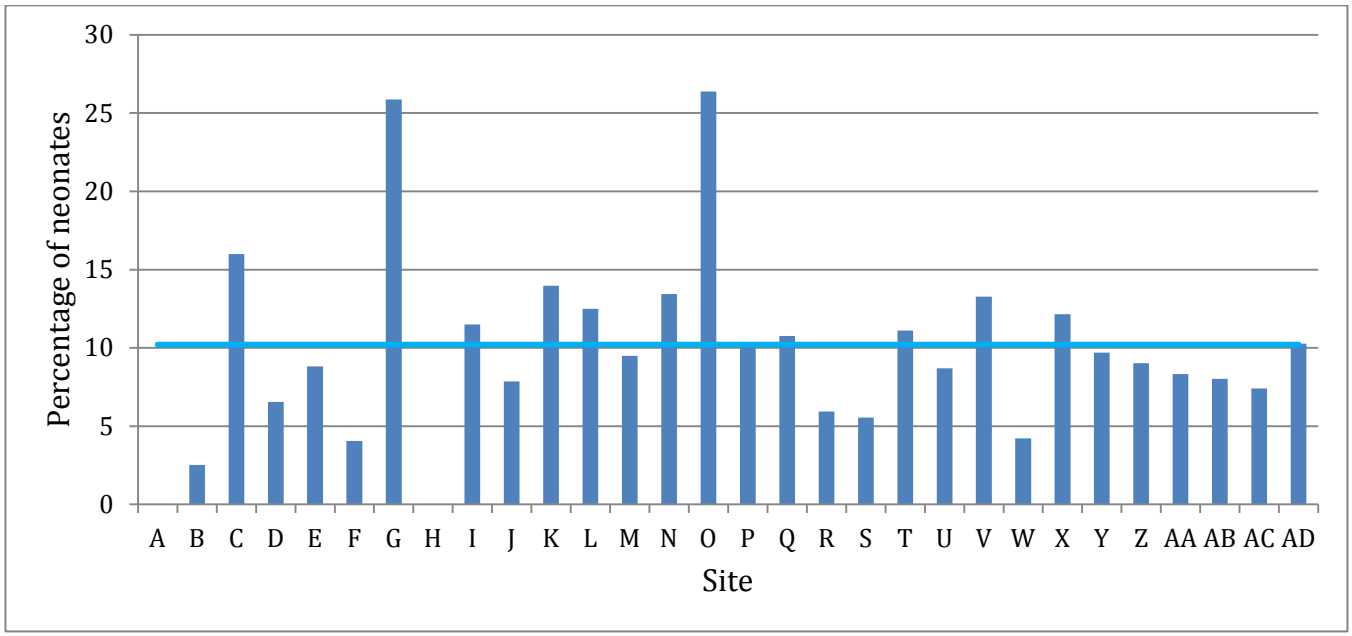
In presentations #33 and #34, late onset sepsis was attributed to the hospital where the first episode of sepsis was acquired. Each neonate was counted only once even if there were multiple episodes of infections.

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=4 178 neonates, 60 excluded due to death before 3 days of age)



Site	A	B	C	D	E	F	G	H	I	J	K
%	0.0	2.5	16.0	6.5	8.8	4.1	25.9	0.0	11.5	7.9	14.0
Site	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**V**
%	12.5	9.5	13.4	26.4	10.2	10.8	5.9	5.6	11.1	8.7	13.3
Site	**W**	**X**	**Y**	**Z**	**AA**	**AB**	**AC**	**AD**	**Whole network**		
%	4.2	12.2	9.7	9.0	8.3	8.0	7.4	10.3	10.2		

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	113	11	9.4	1.2	0.6	2.1
2	107	7	8.8	0.8	0.3	1.6
3	174	20	18.6	1.1	0.7	1.7
4	320	13	32.3	0.4	0.2	0.7
5	93	13	7.4	1.8	0.9	3.0
6	211	28	22.9	1.2	0.8	1.8
7	135	10	12.1	0.8	0.4	1.5
8	9	0	0.6	0.0	.	5.9
9	36	2	3.0	0.7	0.1	2.4
10	54	6	3.7	1.6	0.6	3.5
11	136	17	14.4	1.2	0.7	1.9
12	70	3	4.8	0.6	0.1	1.8
13	79	2	5.4	0.4	0.0	1.3
14	24	4	1.5	2.8	0.7	7.1
15	60	6	3.8	1.6	0.6	3.4
16	65	7	3.9	1.8	0.7	3.7
17	183	22	17.0	1.3	0.8	2.0
18	58	15	6.0	2.5	1.4	4.1
19	134	18	12.8	1.4	0.8	2.2
20	22	2	1.6	1.3	0.1	4.6
21	266	24	23.9	1.0	0.6	1.5
22	202	12	14.9	0.8	0.4	1.4
23	103	9	7.6	1.2	0.5	2.2
24	165	16	14.4	1.1	0.6	1.8
25	57	0	7.1	0.0	.	0.5
26	374	30	39.0	0.8	0.5	1.1
27	104	24	9.7	2.5	1.6	3.7
28	314	25	39.7	0.6	0.4	0.9
29	400	42	40.9	1.0	0.7	1.4
30	110	9	8.0	1.1	0.5	2.1

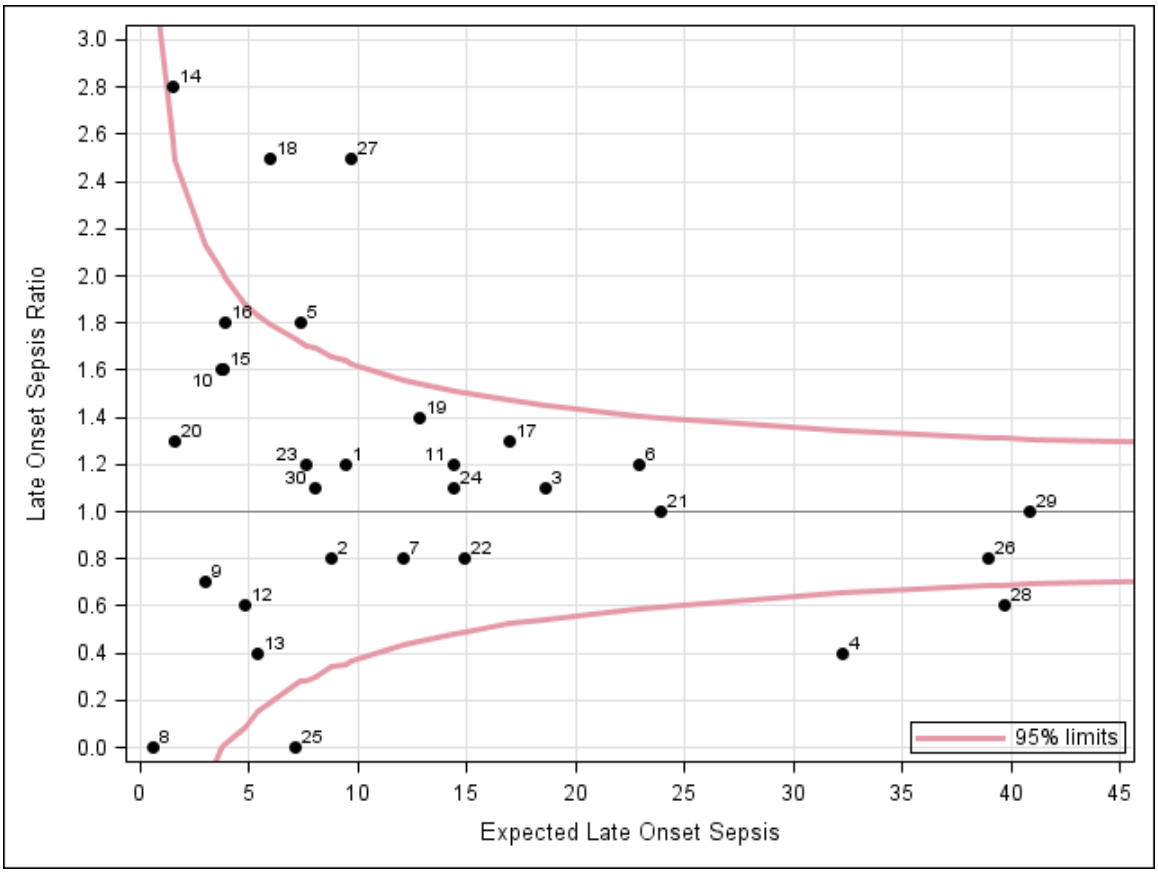
Numeric site codes were used in Presentations 34a-d and they may not correspond to other presentations in this report.

*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	38	9	7.6	1.2	0.5	2.2
2	29	6	6.8	0.9	0.3	1.9
3	77	19	16.2	1.2	0.7	1.8
4	126	10	26.5	0.4	0.2	0.7
5	32	10	6.1	1.6	0.8	3.0
6	89	24	19.6	1.2	0.8	1.8
7	51	8	10.1	0.8	0.3	1.6
8	4	0	0.5	0.0	.	6.9
9	14	2	2.4	0.8	0.1	3.0
10	18	5	2.9	1.7	0.6	4.0
11	58	16	12.6	1.3	0.7	2.1
12	18	3	3.5	0.9	0.2	2.5
13	29	1	4.3	0.2	0.0	1.3
14	7	3	1.1	2.6	0.5	7.6
15	17	6	2.9	2.1	0.8	4.6
16	17	5	2.9	1.7	0.6	4.1
17	70	17	13.9	1.2	0.7	2.0
18	24	12	5.3	2.3	1.2	4.0
19	55	14	11.0	1.3	0.7	2.1
20	6	1	1.2	0.8	0.0	4.7
21	87	20	19.4	1.0	0.6	1.6
22	69	6	11.8	0.5	0.2	1.1
23	29	8	5.9	1.4	0.6	2.7
24	57	14	11.8	1.2	0.7	2.0
25	27	0	6.3	0.0	.	0.6
26	155	27	33.3	0.8	0.5	1.2
27	42	18	8.0	2.2	1.3	3.5
28	175	24	35.5	0.7	0.4	1.0
29	168	36	34.0	1.1	0.7	1.5
30	26	7	5.8	1.2	0.5	2.5

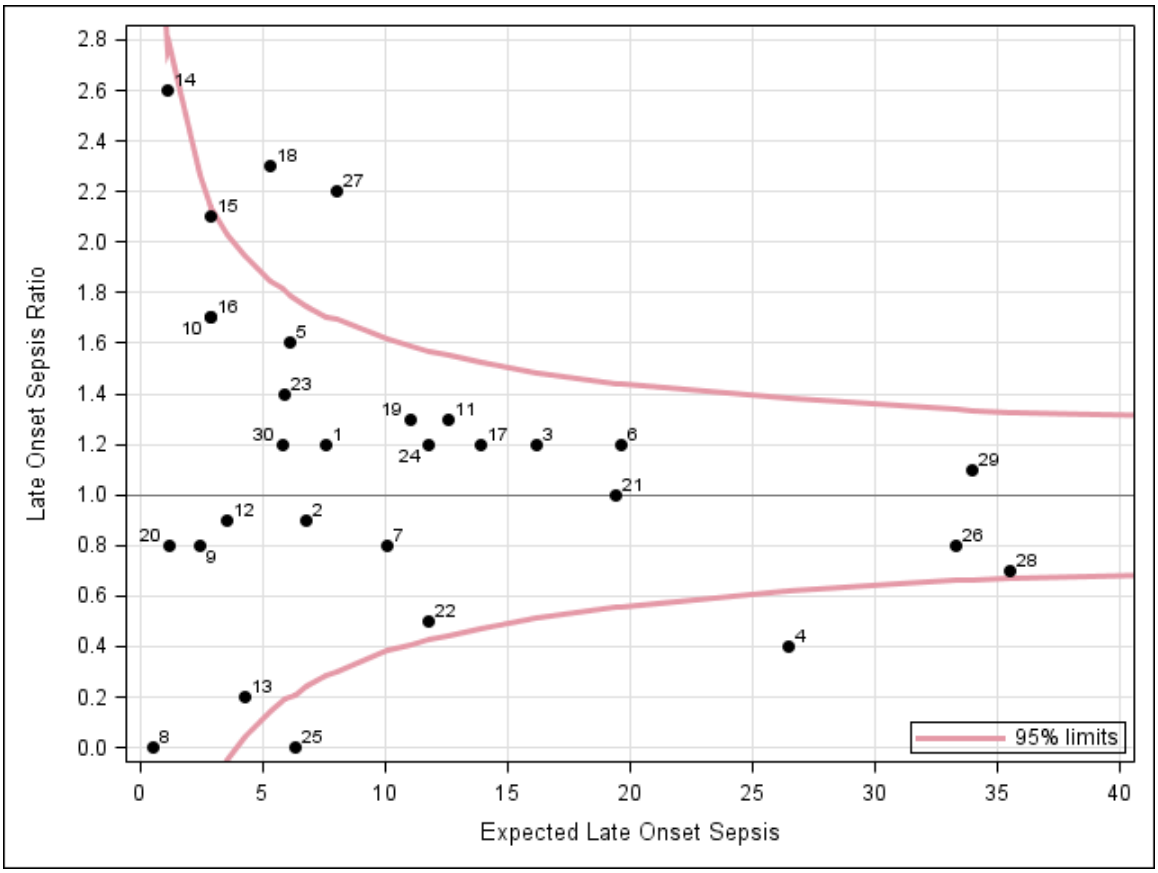
Numeric site codes were used in Presentations 34a-d and they may not correspond to other presentations in this report.

*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.

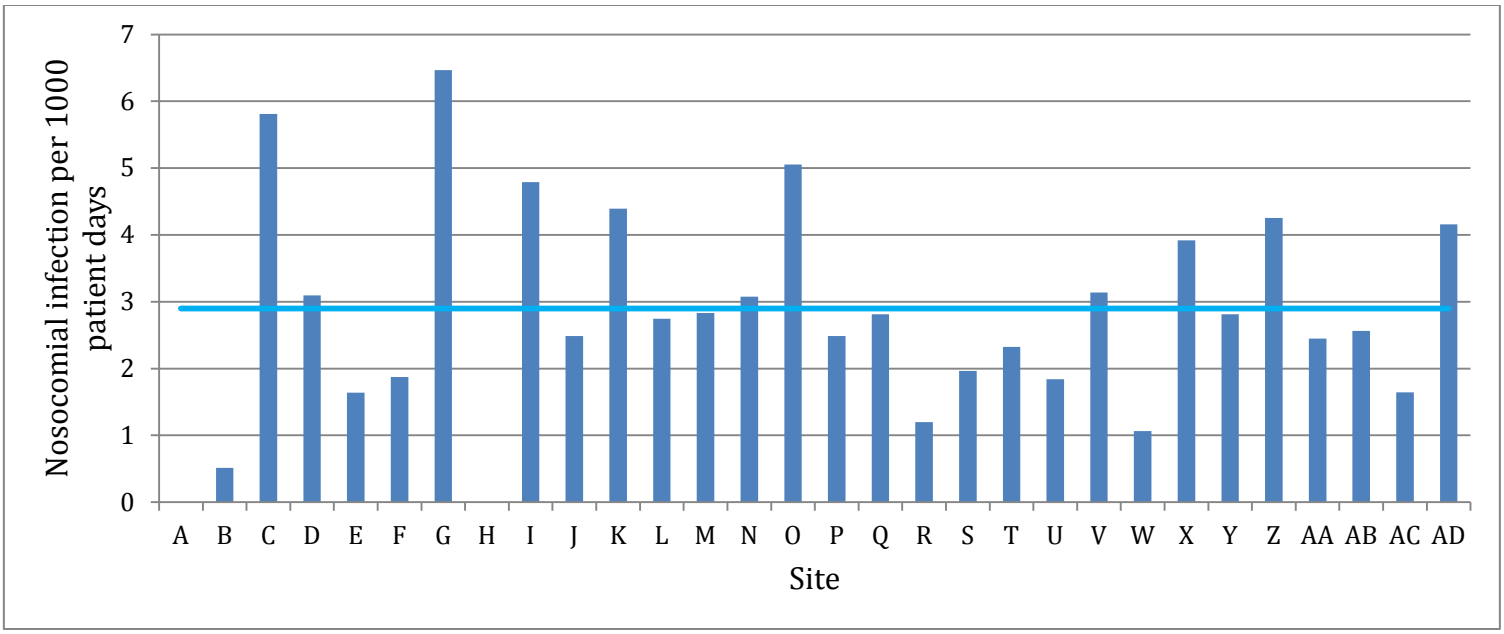
Presentation # 34d
Late onset sepsis: GA<29 weeks: Adjusted standardized ratios by site



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

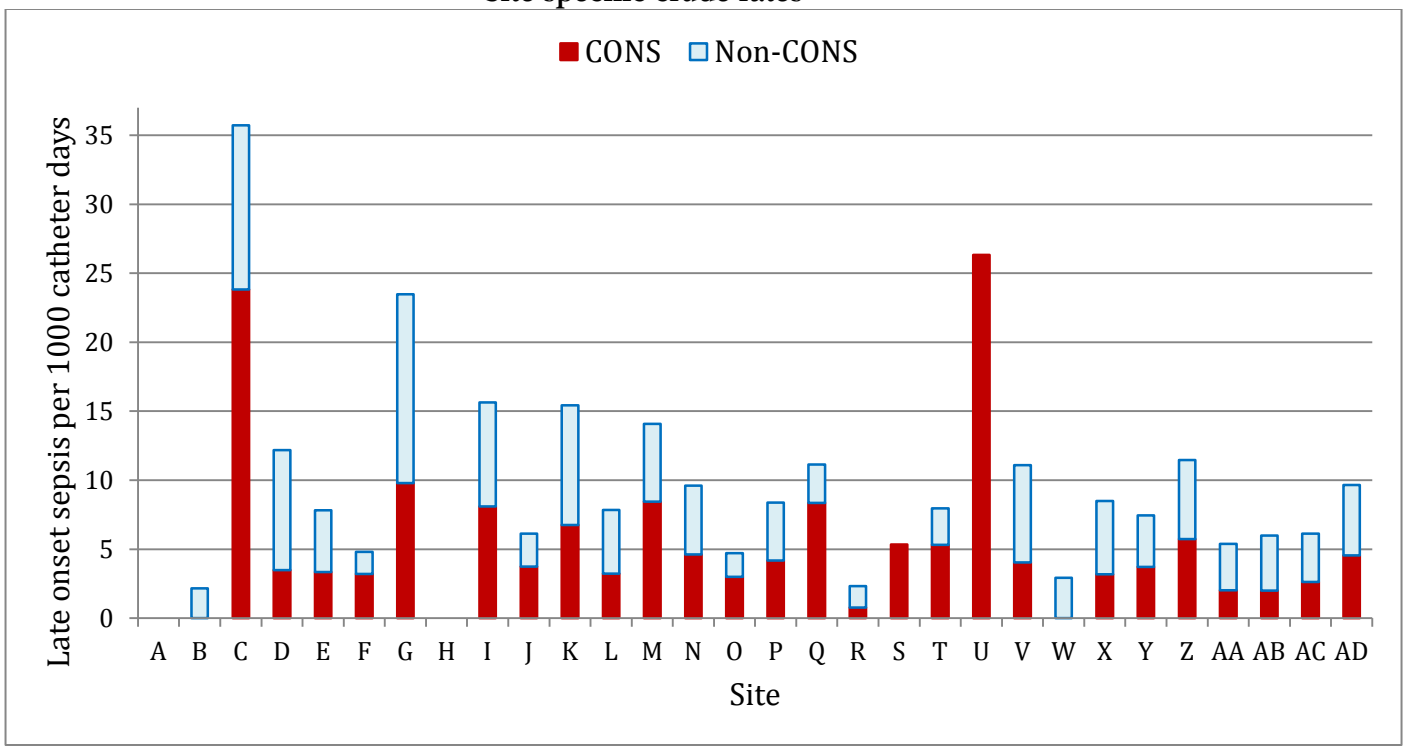


Site	Infections per 1000 patient days	Site	Infections per 1000 patient days	Site	Infections per 1000 patient days
A	0.0	**L**	2.7	**W**	1.1
B	0.5	**M**	2.8	**X**	3.9
C	5.8	**N**	3.1	**Y**	2.8
D	3.1	**O**	5.1	**Z**	4.3
E	1.6	**P**	2.5	**AA**	2.4
F	1.9	**Q**	2.8	**AB**	2.6
G	6.5	**R**	1.2	**AC**	1.6
H	0.0	**S**	2.0	**AD**	4.2
I	4.8	**T**	2.3		
J	2.5	**U**	1.8	**Whole network**	2.9
K	4.4	**V**	3.1		

Total number of neonates = 4 238

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.

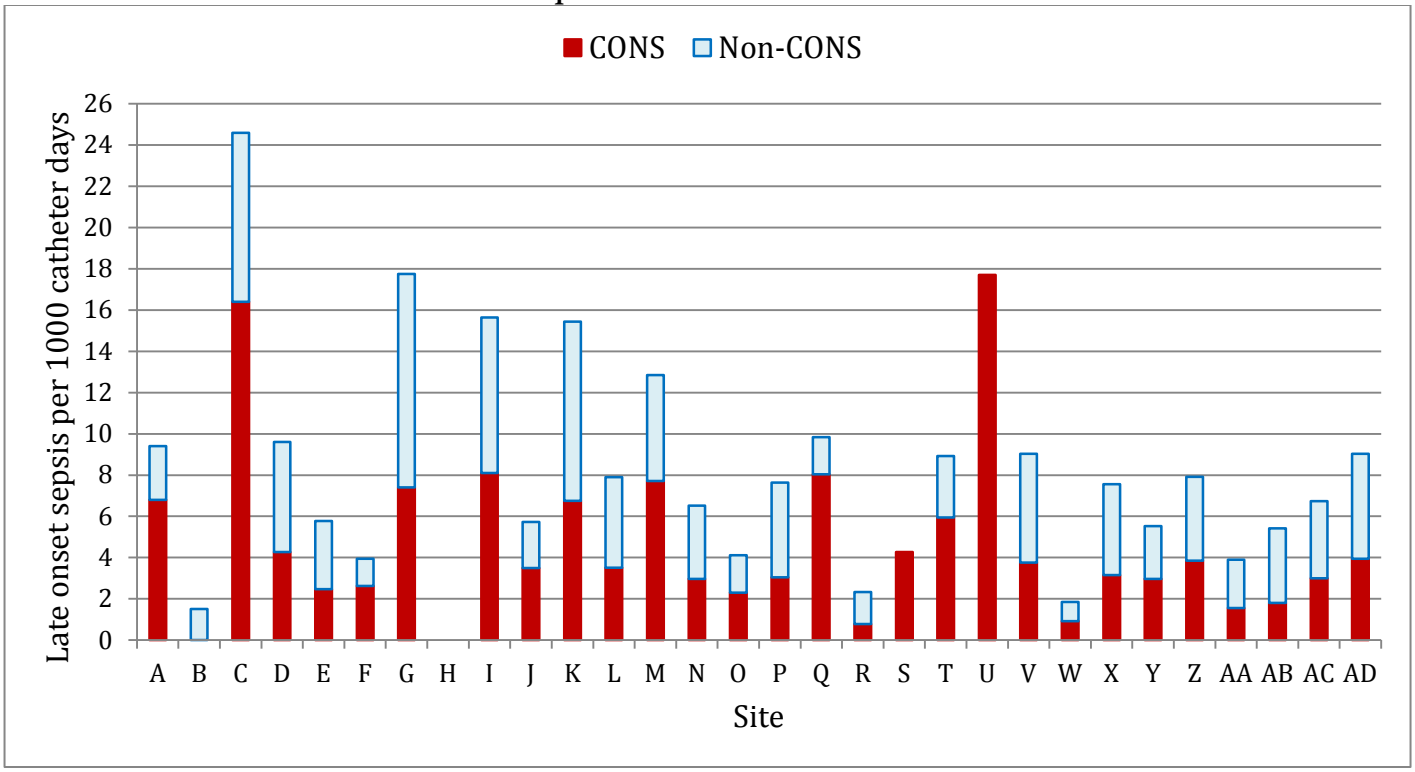
Presentation #36a
Central Line-Associated Bloodstream Infections per 1000 central line* days: GA < 33 weeks: Site specific crude rates



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	0	0	899	0.0	0.0	**P**	3	3	716	4.2	4.2
B	0	1	464	0.0	2.2	**Q**	6	2	718	8.4	2.8
C	2	1	84	23.8	11.9	**R**	2	4	2576	0.8	1.6
D	2	5	575	3.5	8.7	**S**	1	0	187	5.3	0.0
E	3	4	896	3.3	4.5	**T**	2	1	377	5.3	2.7
F	10	5	3116	3.2	1.6	**U**	2	0	76	26.3	0.0
G	5	7	511	9.8	13.7	**V**	12	21	2977	4.0	7.1
H	0	0	76	0.0	0.0	**W**	0	1	341	0.0	2.9
I	14	13	1727	8.1	7.5	**X**	9	15	2825	3.2	5.3
J	11	7	2942	3.7	2.4	**Y**	6	6	1611	3.7	3.7
K	7	9	1037	6.8	8.7	**Z**	15	15	2618	5.7	5.7
L	7	10	2165	3.2	4.6	**AA**	3	5	1487	2.0	3.4
M	3	2	355	8.5	5.6	**AB**	9	18	4504	2.0	4.0
N	12	13	2602	4.6	5.0	**AC**	3	4	1141	2.6	3.5
O	14	8	4661	3.0	1.7	**AD**	17	19	3730	4.6	5.1
						Total	**180**	**199**	**47994**	**3.8**	**4.1**

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

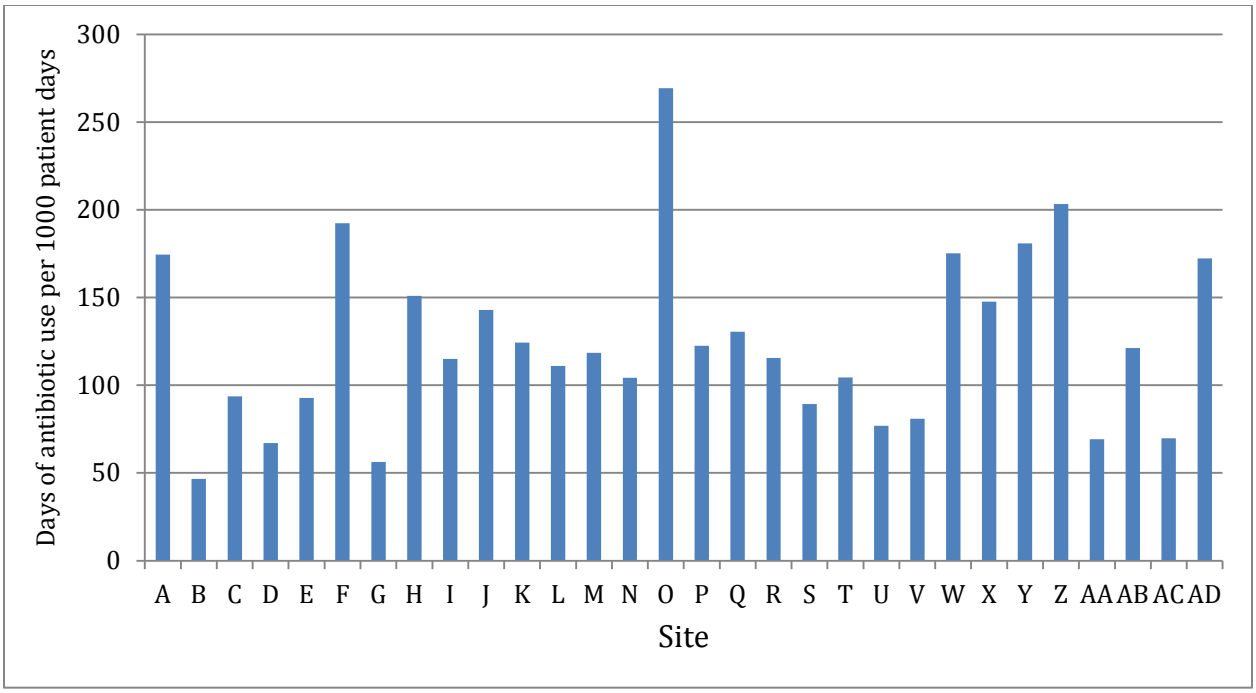
Presentation #36b
Central Line-Associated Bloodstream Infections per 1000 central line* days: All neonates: Site specific crude rates



Site	CLABSI**		Central line days	CLABSI per 1000 central line days	
	CONS	Non-CONS		CONS	Non-CONS
A	13	5	1913	6.8	2.6
B	0	1	660	0.0	1.5
C	2	1	122	16.4	8.2
D	4	5	937	4.3	5.3
E	3	4	1212	2.5	3.3
F	10	5	3803	2.6	1.3
G	5	7	676	7.4	10.4
H	0	0	145	0.0	0.0
I	14	13	1727	8.1	7.5
J	11	7	3146	3.5	2.2
K	7	9	1037	6.8	8.7
L	8	10	2278	3.5	4.4
M	3	2	389	7.7	5.1
N	15	18	5062	3.0	3.6
O	19	15	8246	2.3	1.8
P	4	6	1310	3.1	4.6
Q	9	2	1119	8.0	1.8
R	2	4	2576	0.8	1.6
S	1	0	234	4.3	0.0
T	4	2	673	5.9	3.0
U	2	0	113	17.7	0.0
V	20	28	5313	3.8	5.3
W	1	1	1078	0.9	0.9
X	15	21	4760	3.2	4.4
Y	7	6	2354	3.0	2.5
Z	18	19	4675	3.9	4.1
AA	4	6	2568	1.6	2.3
AB	14	28	7749	1.8	3.6
AC	4	5	1336	3.0	3.7
AD	17	22	4316	3.9	5.1
Total	**223**	**247**	**71527**	**3.1**	**3.5**

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

Presentation #37
Days of antibiotic use per 1000 patient days among neonates who did not develop NEC, early-onset sepsis or late onset sepsis: <u>GA <33 weeks</u>*

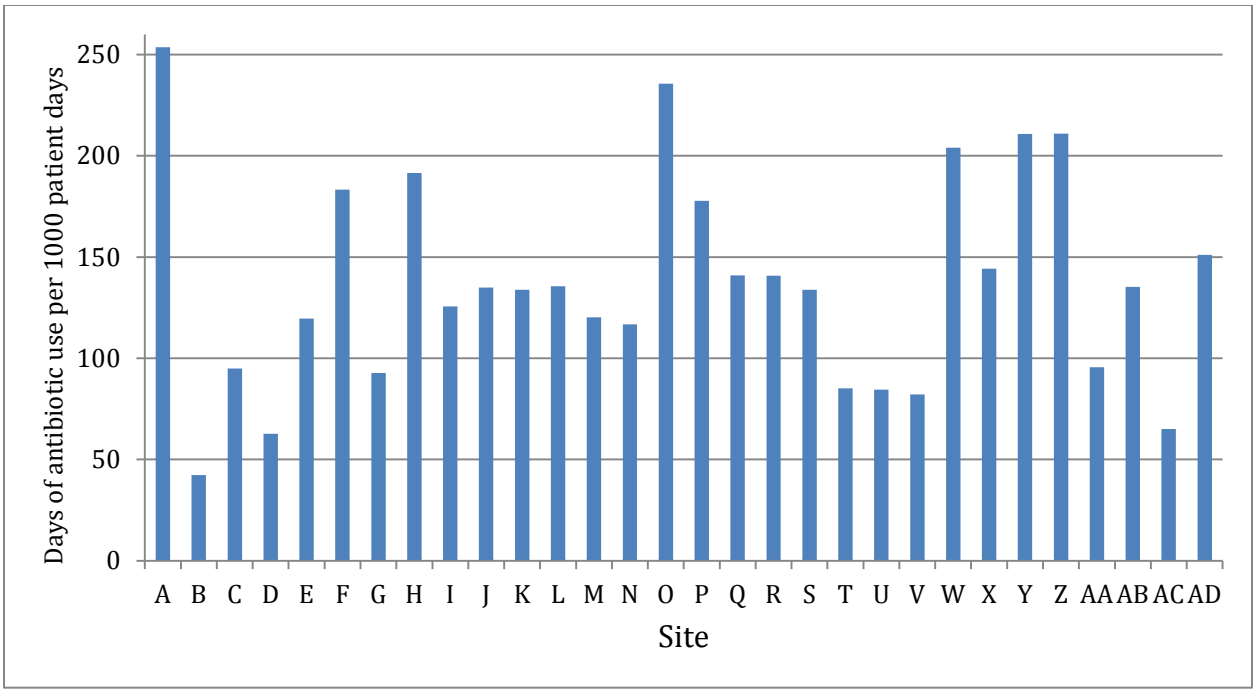


Site	Days of antibiotic use per 1000 patient days	Site	Days of antibiotic use per 1000 patient days	Site	Days of antibiotic use per 1000 patient days
A	174.5	**L**	110.9	**W**	175.2
B	46.7	**M**	118.4	**X**	147.6
C	93.6	**N**	104.2	**Y**	180.9
D	67.0	**O**	269.4	**Z**	203.3
E	92.7	**P**	122.6	**AA**	69.2
F	192.3	**Q**	130.5	**AB**	121.3
G	56.3	**R**	115.6	**AC**	69.8
H	150.9	**S**	89.3	**AD**	172.2
I	115.1	**T**	104.5		
J	143.0	**U**	76.9	**CNN**	126.6
K	124.3	**V**	80.9		

*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 antibiotic use per 1000 patient days among neonates who did not develop NEC, early-onset sepsis or late onset sepsis: <u>GA <29 weeks</u>*

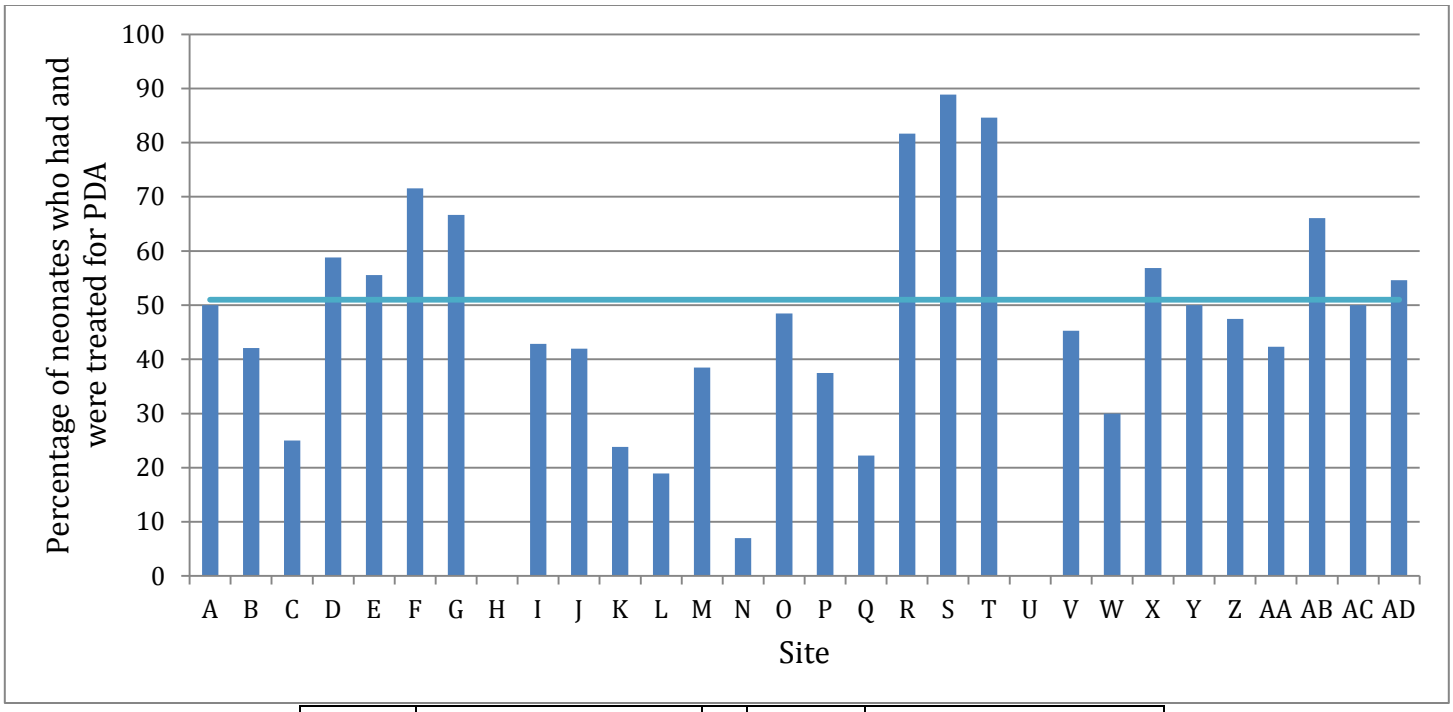


Site	Days of antibiotic use per 1000 patient days	Site	Days of antibiotic use per 1000 patient days	Site	Days of antibiotic use per 1000 patient days
A	253.7	**L**	135.6	**W**	203.9
B	42.2	**M**	120.2	**X**	144.3
C	94.9	**N**	116.8	**Y**	210.8
D	62.7	**O**	235.6	**Z**	210.9
E	119.6	**P**	177.8	**AA**	95.5
F	183.3	**Q**	141.0	**AB**	135.3
G	92.7	**R**	140.7	**AC**	65.1
H	191.5	**S**	133.9	**AD**	151.1
I	125.6	**T**	85.1		
J	134.9	**U**	84.5	**CNN**	136.6
K	133.7	**V**	82.2		

*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

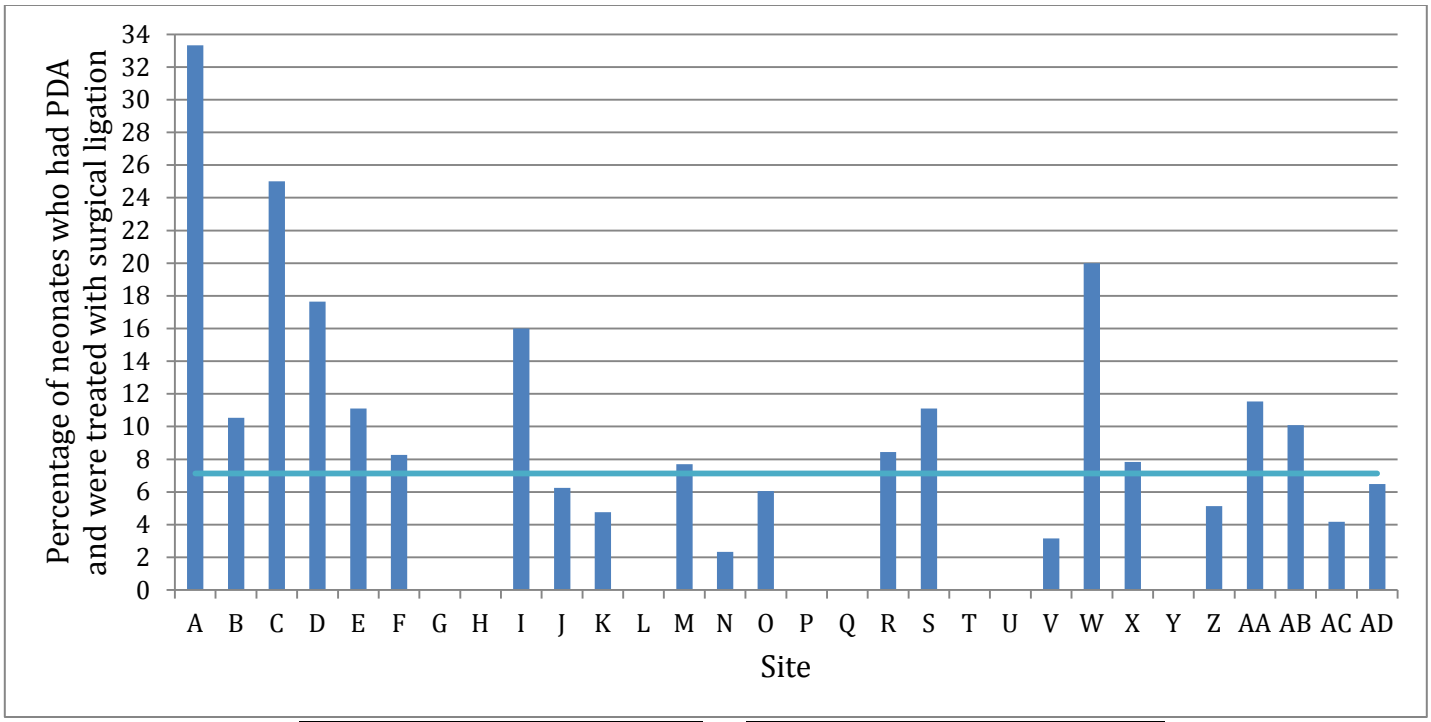


Site	Treatment[#] for PDA among neonates who had PDA (%)		Site	Treatment[#] for PDA among neonates who had PDA (%)
A	50.0		**P**	37.5
B	42.1		**Q**	22.2
C	25.0		**R**	81.7
D	58.8		**S**	88.9
E	55.6		**T**	84.6
F	71.6		**U**	0.0
G	66.7		**V**	45.3
H	0.0		**W**	30.0
I	42.9		**X**	56.9
J	42.0		**Y**	50.0
K	23.8		**Z**	47.4
L	18.9		**AA**	42.3
M	38.5		**AB**	66.1
N	7.0		**AC**	50.0
O	48.5		**AD**	54.6
			Total	51.0

Total number of neonates who had PDA = 1188

[#]Treatment of PDA includes any of indomethacin, ibuprofen, acetaminophen, or ligation
The percentage of neonates with treated PDA was attributed to the site where the neonate was first admitted.

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



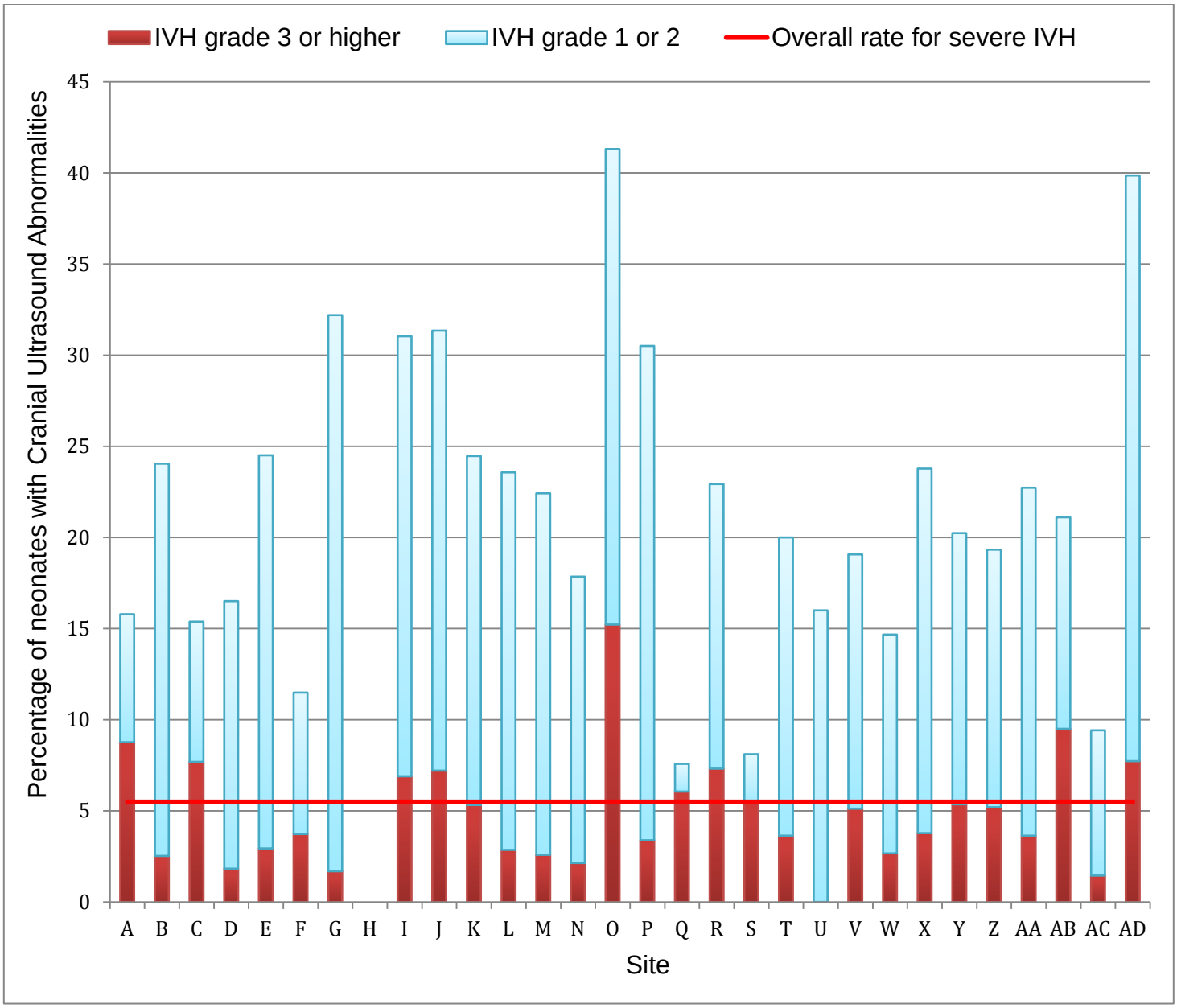
Site	Surgical ligation for PDA among neonates who had PDA (%)
A	33.3
B	10.5
C	25.0
D	17.7
E	11.1
F	8.3
G	0.0
H	0.0
I	16.0
J	6.3
K	4.8
L	0.0
M	7.7
N	2.3
O	6.1

Site	Surgical ligation for PDA among neonates who had PDA (%)
P	0.0
Q	0.0
R	8.5
S	11.1
T	0.0
U	0.0
V	3.2
W	20.0
X	7.8
Y	0.0
Z	5.1
AA	11.5
AB	10.1
AC	4.2
AD	6.5
Total	7.1

Total number of neonates who had PDA = 1188

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

Presentation #41
Neuroimaging abnormalities 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 = Intraventricular hemorrhage **with** ventricular enlargement or persistent parenchymal echogenicity or periventricular leukomalacia

Presentation #41 (continued)
Neuroimaging abnormalities rate: GA<33 weeks: Site specific crude rates

Site	<25	25-26	27-28	29-30	31-32	Overall rate* per site %
A	33.3	9.1	10.0	0.0	5.9	8.8
B	0.0	11.1	5.3	0.0	0.0	2.5
C	0.0	40.0	0.0	0.0	0.0	7.7
D	0.0	0.0	0.0	3.1	2.2	1.8
E	25.0	20.0	0.0	0.0	0.0	2.9
F	16.7	6.3	5.6	2.2	0.0	3.7
G	0.0	8.3	0.0	0.0	0.0	1.7
H	NA	0.0	0.0	0.0	0.0	0.0
I	29.4	19.1	0.0	0.0	4.9	6.9
J	24.1	13.9	3.8	3.8	0.0	7.2
K	0.0	27.3	5.9	5.9	0.0	5.3
L	15.4	4.8	3.6	0.0	0.0	2.9
M	25.0	0.0	5.3	0.0	0.0	2.6
N	9.1	5.0	0.0	0.0	1.9	2.1
O	40.0	33.3	15.8	7.7	12.1	15.2
P	0.0	25.0	0.0	0.0	3.5	3.4
Q	33.3	0.0	16.7	9.1	0.0	6.1
R	25.0	10.0	13.6	2.2	4.6	7.3
S	NA	25.0	0.0	0.0	0.0	5.4
T	0.0	40.0	0.0	0.0	0.0	3.6
U	0.0	0.0	0.0	0.0	0.0	0.0
V	20.8	16.0	4.6	0.0	0.0	5.1
W	0.0	25.0	0.0	0.0	3.2	2.7
X	40.0	11.5	0.0	0.0	0.0	3.8
Y	16.7	25.0	3.1	4.7	0.0	5.4
Z	16.7	10.3	8.1	5.4	0.8	5.2
AA	28.6	16.7	0.0	3.2	0.0	3.6
AB	38.7	26.2	7.5	3.4	0.0	9.5
AC	0.0	5.9	0.0	0.0	1.7	1.5
AD	32.3	8.2	10.5	6.4	0.8	7.7
Overall rate per GA group %**	22.0	13.9	5.3	2.7	1.2	5.5

Total number of neonates = 4 238

VE=ventricular enlargement, PEC=parenchymal echogenicity

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

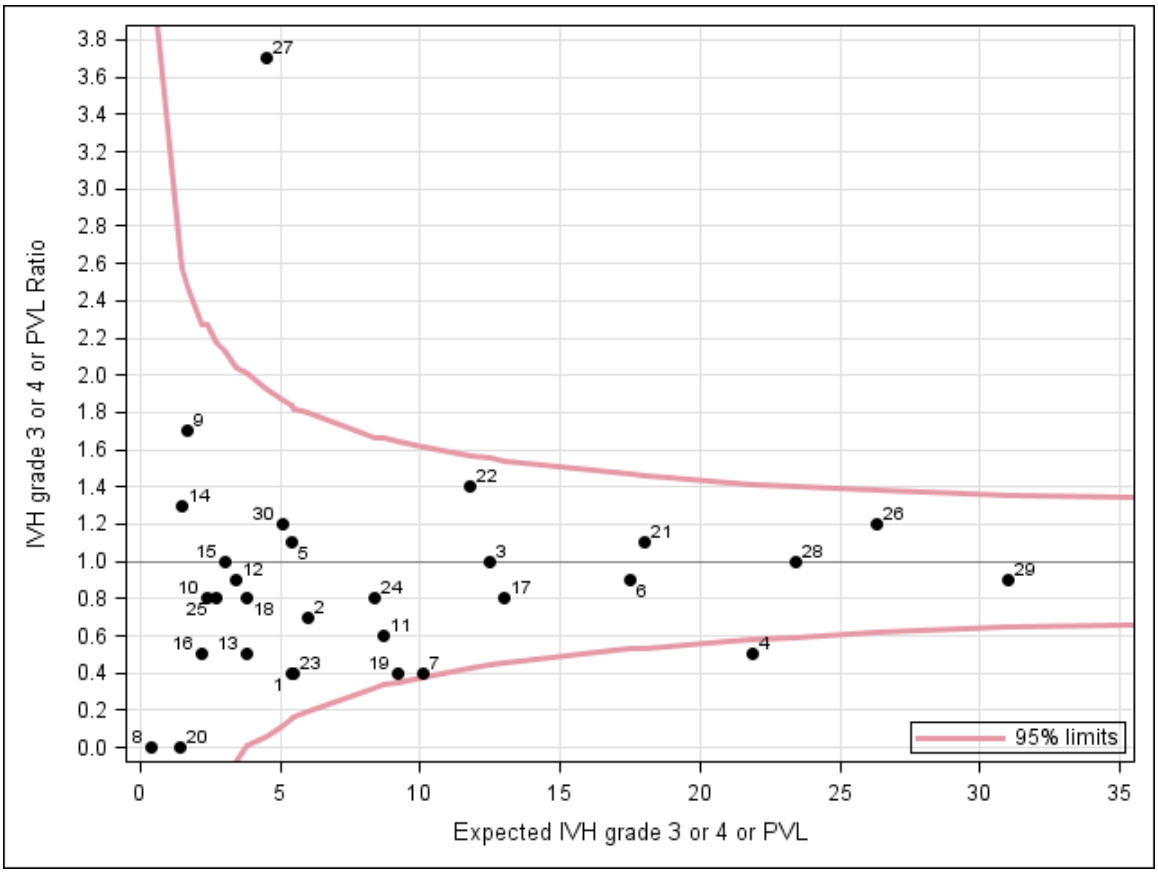
*Overall % = (number of neonates with cranial ultrasound abnormalities for site / total number of neonates for site) *100
**Overall % = (number of neonates with cranial ultrasound abnormalities for GA category / total number of neonates in GA category) *100
NA = no data available

Presentation #42a
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	111	109	2	5.4	0.4	0.0	1.3
2	109	78	4	6.0	0.7	0.2	1.7
3	170	149	12	12.5	1.0	0.5	1.7
4	308	226	10	21.9	0.5	0.2	0.8
5	92	80	6	5.4	1.1	0.4	2.4
6	211	196	15	17.5	0.9	0.5	1.4
7	132	98	4	10.1	0.4	0.1	1.0
8	9	6	0	0.4	0.0	.	9.6
9	36	33	3	1.7	1.7	0.3	5.0
10	54	52	2	2.4	0.8	0.1	3.1
11	137	103	5	8.7	0.6	0.2	1.3
12	75	59	3	3.4	0.9	0.2	2.6
13	79	60	2	3.8	0.5	0.1	1.9
14	24	24	2	1.5	1.3	0.1	4.7
15	58	57	3	3.0	1.0	0.2	2.9
16	63	56	1	2.2	0.5	0.0	2.5
17	179	139	10	13.0	0.8	0.4	1.4
18	58	49	3	3.8	0.8	0.2	2.3
19	134	107	4	9.2	0.4	0.1	1.1
20	25	18	0	1.4	0.0	.	2.6
21	260	208	19	18.0	1.1	0.6	1.6
22	198	186	16	11.8	1.4	0.8	2.2
23	98	86	2	5.5	0.4	0.0	1.3
24	162	132	7	8.4	0.8	0.3	1.7
25	42	28	2	2.7	0.8	0.1	2.7
26	358	234	32	26.3	1.2	0.8	1.7
27	88	82	17	4.5	3.7	2.2	6.0
28	312	251	24	23.4	1.0	0.7	1.5
29	394	352	29	31.0	0.9	0.6	1.3
30	107	82	6	5.1	1.2	0.4	2.5

Numeric site codes were used in Presentations 42a-d and they may not correspond to other presentations in this report.
Neonates with major congenital anomalies are excluded.
The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.

Presentation #42b
IVH grade 3 or 4 or PVL: GA<33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 42a
Column 1: Numeric site codes
Column 2: Total number of neonates at each site (<33 weeks GA and no major anomaly)
Column 3: Number of eligible neonates at each site (<33 weeks GA and no major anomaly) who were actually used to fit the model
Column 4: Number of neonates with outcome of interest among those eligible neonates
Column 5: Expected number of neonates with outcome of interest after adjustment for GA, SGA, sex, and SNAPII > 20
Column 6: Adjusted standardized ratio calculated based on observed IVH or PVL/expected IVH or PVL
Columns 7 and 8: 95% CI around the adjusted standardized ratio for the outcome

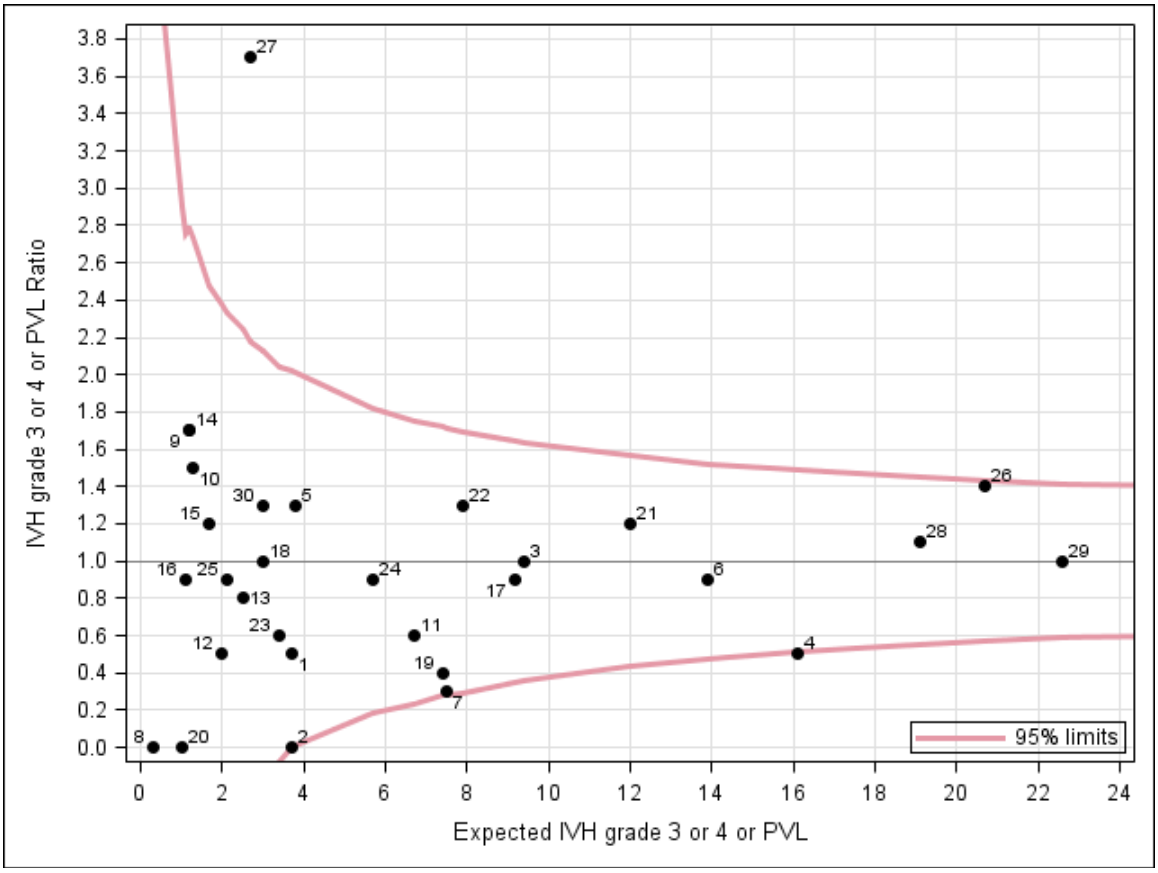
Explanation for Presentation 42b
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

Presentation# 42c
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	36	36	2	3.7	0.5	0.1	2.0
2	31	27	0	3.7	0.0	.	1.0
3	74	73	9	9.4	1.0	0.4	1.8
4	123	114	8	16.1	0.5	0.2	1.0
5	31	31	5	3.8	1.3	0.4	3.0
6	92	90	12	13.9	0.9	0.4	1.5
7	52	46	2	7.5	0.3	0.0	1.0
8	4	4	0	0.3	0.0	.	14.4
9	14	14	2	1.2	1.7	0.2	6.0
10	18	18	2	1.3	1.5	0.2	5.4
11	59	55	4	6.7	0.6	0.2	1.5
12	22	18	1	2.0	0.5	0.0	2.8
13	29	29	2	2.5	0.8	0.1	2.9
14	9	9	2	1.2	1.7	0.2	6.2
15	16	16	2	1.7	1.2	0.1	4.3
16	16	15	1	1.1	0.9	0.0	5.1
17	70	67	8	9.2	0.9	0.4	1.7
18	25	25	3	3.0	1.0	0.2	2.9
19	57	53	3	7.4	0.4	0.1	1.2
20	8	4	0	1.0	0.0	.	3.7
21	87	85	14	12.0	1.2	0.6	2.0
22	71	68	10	7.9	1.3	0.6	2.3
23	27	27	2	3.4	0.6	0.1	2.1
24	56	51	5	5.7	0.9	0.3	2.1
25	20	15	2	2.1	0.9	0.1	3.4
26	149	141	28	20.7	1.4	0.9	2.0
27	31	30	10	2.7	3.7	1.8	6.8
28	175	159	21	19.1	1.1	0.7	1.7
29	173	169	22	22.6	1.0	0.6	1.5
30	26	26	4	3.0	1.3	0.4	3.5

Numeric site codes were used in Presentations 42a-d and they may not correspond to other presentations in this report.
Neonates with major congenital anomalies are excluded.
The prediction model was adjusted for GA, SGA, sex, and SNAPII > 20.

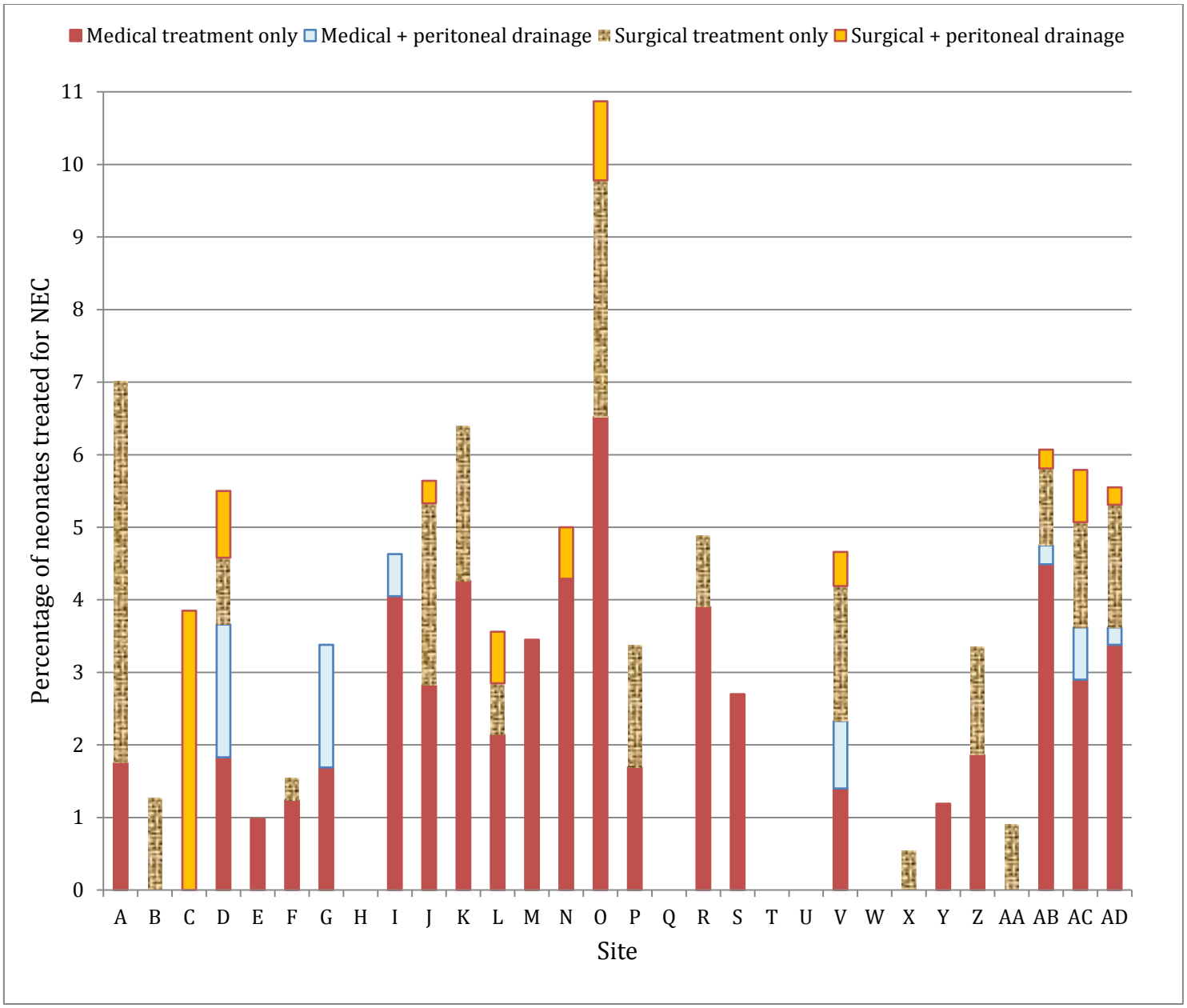
Presentation #42d
IVH grade 3 or 4 or PVL: GA<29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 42c
Column 1: Numeric site codes
Column 2: Total number of neonates at each site (<29 weeks GA and no major anomaly)
Column 3: Number of eligible neonates at each site (<29 weeks GA and no major anomaly) who were actually used to fit the model
Column 4: Number of neonates with outcome of interest among those eligible neonates
Column 5: Expected number of neonates with outcome of interest after adjustment for GA, SGA, sex, and SNAPII > 20
Column 6: Adjusted standardized ratio calculated based on observed IVH or PVL/expected IVH or PVL
Columns 7 and 8: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 42d
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

Presentation #43
Necrotizing enterocolitis (NEC) treatment rates: GA<33 weeks:
Site specific crude rates



Presentation #43 (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	1.8	0.0	5.3	0.0	7.0
B	0.0	0.0	1.3	0.0	1.3
C	0.0	0.0	0.0	3.9	3.9
D	1.8	1.8	0.9	0.9	5.5
E	1.0	0.0	0.0	0.0	1.0
F	1.2	0.0	0.3	0.0	1.6
G	1.7	1.7	0.0	0.0	3.4
H	0.0	0.0	0.0	0.0	0.0
I	4.1	0.6	0.0	0.0	4.6
J	2.8	0.0	2.5	0.3	5.6
K	4.3	0.0	2.1	0.0	6.4
L	2.1	0.0	0.7	0.7	3.6
M	3.5	0.0	0.0	0.0	3.5
N	4.3	0.0	0.0	0.7	5.0
O	6.5	0.0	3.3	1.1	10.9
P	1.7	0.0	1.7	0.0	3.4
Q	0.0	0.0	0.0	0.0	0.0
R	3.9	0.0	1.0	0.0	4.9
S	2.7	0.0	0.0	0.0	2.7
T	0.0	0.0	0.0	0.0	0.0
U	0.0	0.0	0.0	0.0	0.0
V	1.4	0.9	1.9	0.5	4.7
W	0.0	0.0	0.0	0.0	0.0
X	0.0	0.0	0.5	0.0	0.5
Y	1.2	0.0	0.0	0.0	1.2
Z	1.9	0.0	1.5	0.0	3.4
AA	0.0	0.0	0.9	0.0	0.9
AB	4.5	0.3	1.1	0.3	6.1
AC	2.9	0.7	1.5	0.7	5.8
AD	3.4	0.2	1.7	0.2	5.6
Total	2.4	0.2	1.1	0.2	4.0

COMMENTS: These analyses include 4 235 neonates from 30 sites.

Presentation #44a

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

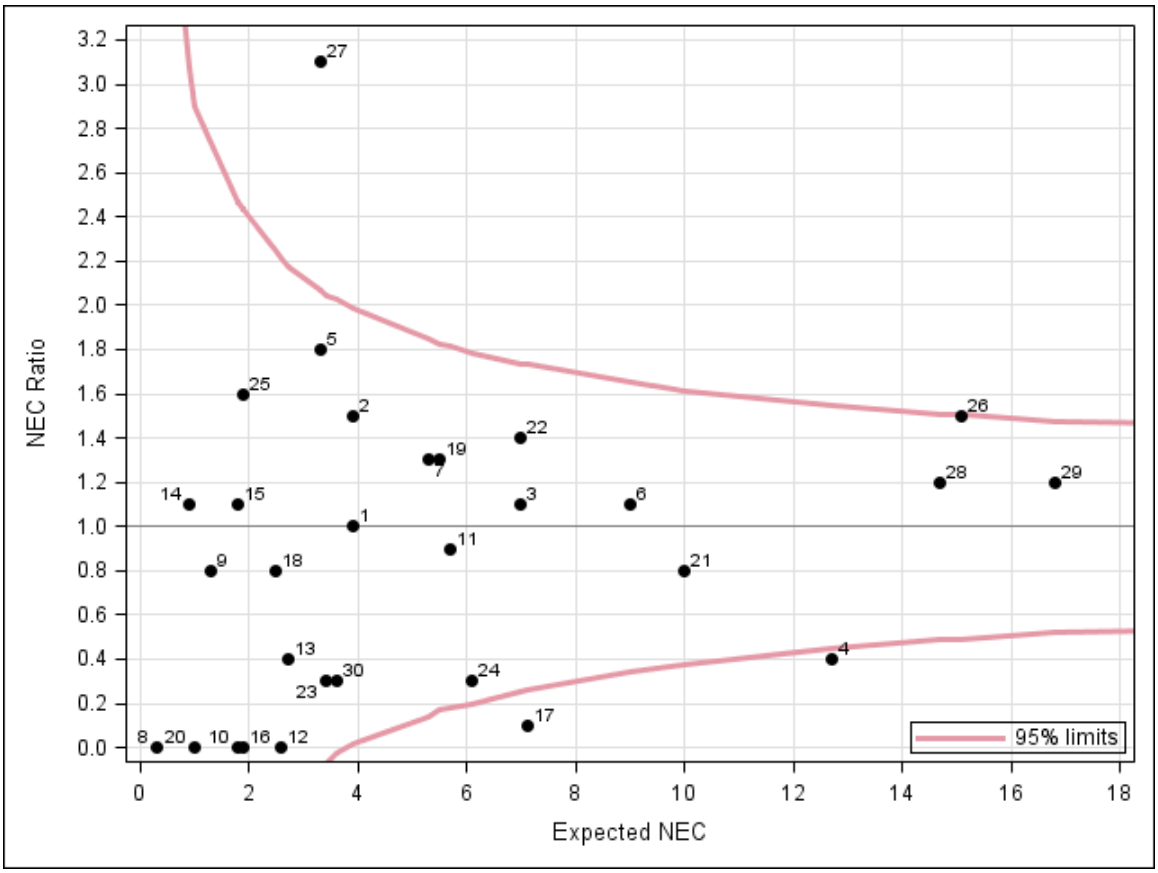
Site	Number of neonates	Number of neonates with NEC	Adjusted# expected number of neonates with NEC	Adjusted# standardized ratio	95% confidence interval for adjusted standardized ratio	
1	111	4	3.9	1.0	0.3	2.6
2	109	6	3.9	1.5	0.6	3.3
3	169	8	7.0	1.1	0.5	2.3
4	308	5	12.7	0.4	0.1	0.9
5	92	6	3.3	1.8	0.7	3.9
6	211	10	9.0	1.1	0.5	2.0
7	132	7	5.3	1.3	0.5	2.7
8	9	0	0.3	0.0	.	11.7
9	36	1	1.3	0.8	0.0	4.3
10	54	0	1.8	0.0	.	2.0
11	137	5	5.7	0.9	0.3	2.0
12	75	0	2.6	0.0	.	1.4
13	79	1	2.7	0.4	0.0	2.1
14	24	1	0.9	1.1	0.0	6.3
15	58	2	1.8	1.1	0.1	3.9
16	63	0	1.9	0.0	.	1.9
17	178	1	7.1	0.1	0.0	0.8
18	58	2	2.5	0.8	0.1	2.9
19	134	7	5.5	1.3	0.5	2.6
20	24	0	1.0	0.0	.	3.8
21	260	8	10.0	0.8	0.3	1.6
22	198	10	7.0	1.4	0.7	2.6
23	98	1	3.4	0.3	0.0	1.6
24	162	2	6.1	0.3	0.0	1.2
25	42	3	1.9	1.6	0.3	4.6
26	358	23	15.1	1.5	1.0	2.3
27	88	10	3.3	3.1	1.5	5.7
28	312	18	14.7	1.2	0.7	1.9
29	394	20	16.8	1.2	0.7	1.8
30	107	1	3.6	0.3	0.0	1.5

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

Neonates with major congenital anomalies are excluded.

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

Presentation #44b
Necrotizing enterocolitis (NEC): GA<33 weeks: Adjusted standardized ratios by site



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

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

Presentation #44c

NEC: GA<29 weeks: Adjusted standardized ratios by site

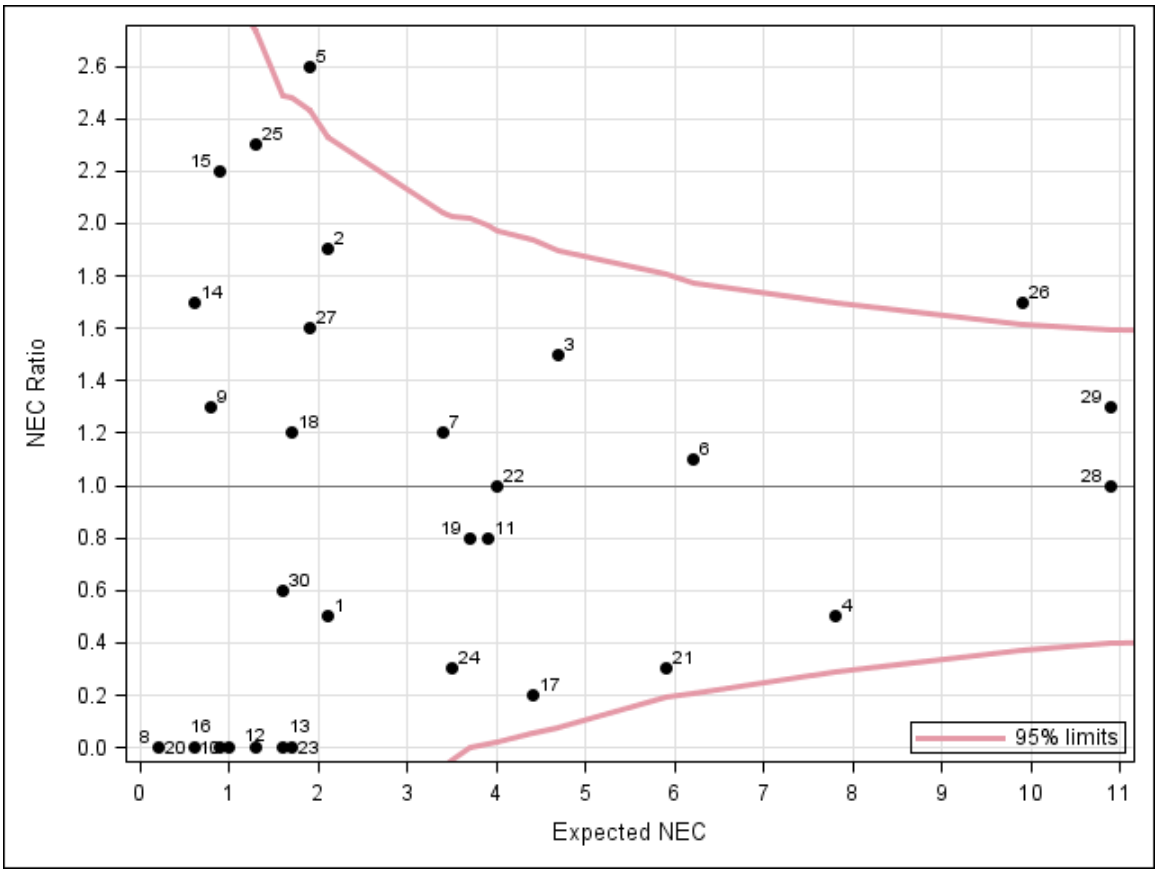
Site	Number of neonates	Number of neonates with NEC	Adjusted[#] expected number of neonates with NEC	Adjusted[#] standardized ratio	95% confidence interval for adjusted standardized ratio	
1	36	1	2.1	0.5	0.0	2.6
2	31	4	2.1	1.9	0.5	4.9
3	73	7	4.7	1.5	0.6	3.1
4	123	4	7.8	0.5	0.1	1.3
5	31	5	1.9	2.6	0.8	6.0
6	92	7	6.2	1.1	0.5	2.3
7	52	4	3.4	1.2	0.3	3.0
8	4	0	0.2	0.0	.	18.3
9	14	1	0.8	1.3	0.0	7.0
10	18	0	1.0	0.0	.	3.8
11	59	3	3.9	0.8	0.2	2.3
12	22	0	1.3	0.0	.	2.8
13	29	0	1.6	0.0	.	2.4
14	9	1	0.6	1.7	0.0	9.6
15	16	2	0.9	2.2	0.2	8.0
16	16	0	0.9	0.0	.	4.2
17	70	1	4.4	0.2	0.0	1.3
18	25	2	1.7	1.2	0.1	4.3
19	57	3	3.7	0.8	0.2	2.4
20	7	0	0.6	0.0	.	6.3
21	87	2	5.9	0.3	0.0	1.2
22	71	4	4.0	1.0	0.3	2.6
23	27	0	1.7	0.0	.	2.2
24	56	1	3.5	0.3	0.0	1.6
25	20	3	1.3	2.3	0.5	6.7
26	149	17	9.9	1.7	1.0	2.7
27	31	3	1.9	1.6	0.3	4.7
28	175	11	10.9	1.0	0.5	1.8
29	173	14	10.9	1.3	0.7	2.2
30	26	1	1.6	0.6	0.0	3.4

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

Neonates with major congenital anomalies are excluded.

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

Presentation #44d
NEC: GA<29 weeks: Adjusted standardized ratios by site



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

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

Presentation #45
Chronic lung disease (CLD) / Death: 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	100.0	50.0	23.1	47.1	57.9
B	0.0	44.4	15.8	5.3	0.0	10.1
C	100.0	60.0	0.0	0.0	0.0	15.4
D	100.0	72.7	45.5	6.3	4.4	23.9
E	100.0	70.0	46.7	20.0	2.1	23.5
F	100.0	71.9	55.6	19.8	7.8	35.1
G	100.0	75.0	50.0	20.0	4.2	35.6
H	.	0.0	0.0	0.0	0.0	0.0
I	88.2	76.2	66.7	13.9	11.5	39.7
J	55.2	25.0	3.8	6.3	3.4	13.8
K	100.0	81.8	35.3	11.8	0.0	23.4
L	69.2	71.4	28.6	7.1	4.0	25.7
M	100.0	64.3	15.8	7.4	0.0	19.0
N	100.0	60.0	53.6	20.7	9.6	35.0
O	80.0	55.6	21.1	19.2	16.7	25.8
P	100.0	50.0	40.0	0.0	6.9	17.0
Q	100.0	33.3	41.7	9.1	5.4	18.2
R	87.5	65.0	50.0	37.8	25.0	39.5
S	.	62.5	28.6	14.3	0.0	21.6
T	100.0	60.0	25.0	8.3	12.0	20.0
U	100.0	100.0	0.0	0.0	0.0	20.0
V	95.8	62.5	53.5	38.2	10.5	39.3
W	66.7	75.0	50.0	13.6	3.2	22.7
X	100.0	57.7	34.3	19.2	7.5	27.6
Y	100.0	81.3	43.8	9.3	6.2	28.0
Z	91.3	82.8	64.9	44.6	28.5	48.1
AA	100.0	83.3	46.2	19.4	1.9	22.7
AB	90.3	85.3	37.3	22.7	6.1	35.2
AC	100.0	52.9	29.6	16.7	6.7	25.4
AD	87.1	72.1	59.3	26.4	6.4	38.4
Overall CLD rate for GA group	89.0	65.2	41.2	19.4	9.2	30.7

Total number of neonates = 4 229
9 neonates were excluded due to first admission after week 36
NA = Data not available

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	100.0	44.4	23.1	47.1	57.1
B	0.0	44.4	15.8	0.0	0.0	9.0
C	.	60.0	0.0	0.0	0.0	12.0
D	100.0	66.7	33.3	6.3	2.2	17.8
E	100.0	66.7	42.9	16.7	2.1	19.6
F	100.0	71.0	54.3	18.0	7.8	33.0
G	100.0	70.0	42.9	20.0	4.2	26.9
H	.	0.0	0.0	0.0	0.0	0.0
I	84.6	73.7	64.9	13.9	10.0	36.4
J	35.0	15.6	3.8	3.9	3.4	8.3
K	100.0	75.0	35.3	11.8	0.0	19.1
L	60.0	62.5	25.9	7.1	4.0	20.6
M	100.0	58.3	11.1	7.4	0.0	16.8
N	100.0	52.9	51.9	14.8	6.0	27.8
O	75.0	50.0	16.7	19.2	7.4	20.5
P	100.0	33.3	33.3	0.0	6.9	14.0
Q	100.0	33.3	41.7	9.1	5.4	16.9
R	80.0	63.2	45.0	36.4	24.1	36.4
S	.	40.0	28.6	14.3	0.0	14.7
T	100.0	60.0	25.0	8.3	8.3	18.5
U	.	100.0	0.0	0.0	0.0	4.8
V	93.8	57.1	46.0	38.2	9.4	33.7
W	50.0	50.0	40.0	9.5	3.2	14.7
X	100.0	52.2	30.3	17.4	6.1	23.0
Y	100.0	76.9	35.7	9.3	4.7	22.9
Z	88.2	78.3	63.9	44.6	26.1	44.6
AA	100.0	83.3	46.2	19.4	0.0	19.1
AB	86.4	84.2	37.3	21.8	5.4	32.5
AC	100.0	50.0	24.0	16.7	6.7	22.0
AD	76.5	63.8	56.3	25.0	6.4	32.5
Overall CLD rate for GA group	83.7	59.8	38.1	18.2	8.1	26.5

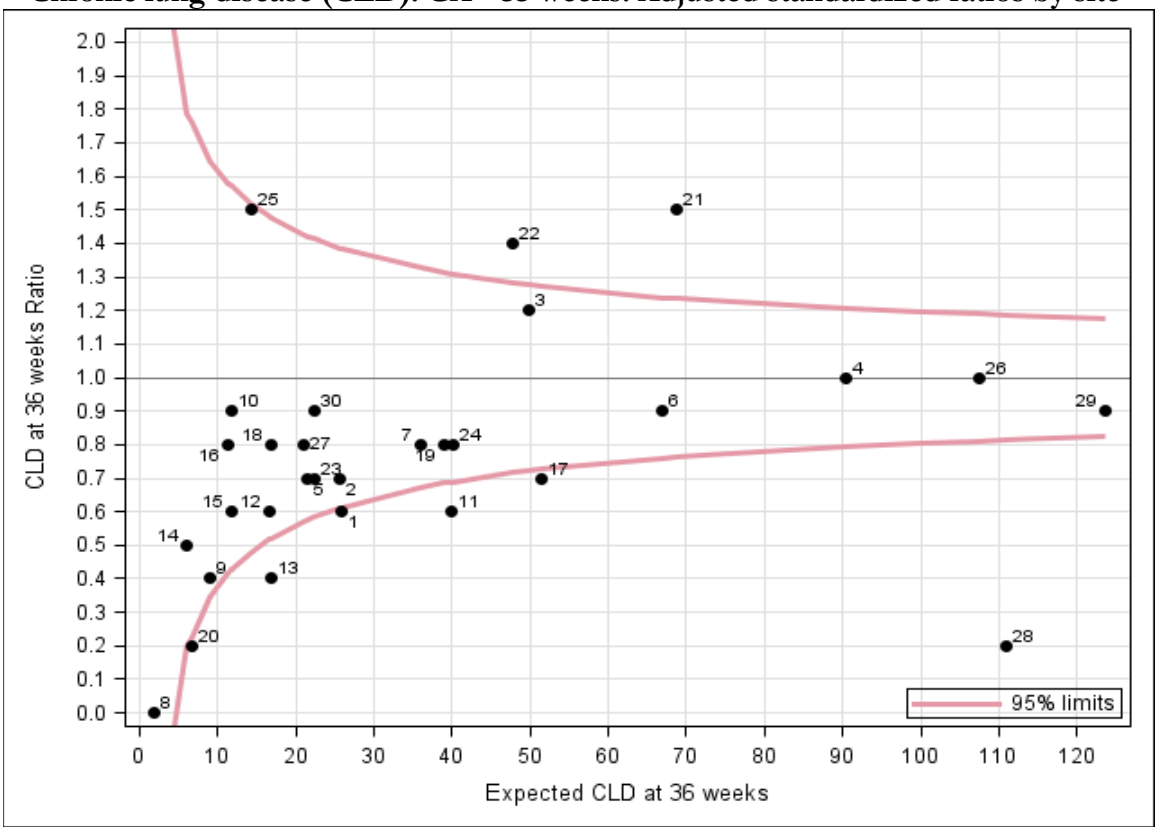
Total number of neonates = 3 984
254 neonates were excluded due to death prior to week 36 or first admission after week 36
NA = Data not available

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	111	108	15	25.8	0.6	0.3	1.0
2	109	101	18	25.7	0.7	0.4	1.1
3	170	162	58	49.8	1.2	0.9	1.5
4	308	298	95	90.5	1.0	0.8	1.3
5	92	87	16	21.5	0.7	0.4	1.2
6	211	190	63	67.0	0.9	0.7	1.2
7	132	126	28	35.9	0.8	0.5	1.1
8	9	9	0	1.9	0.0	.	1.9
9	36	33	4	9.1	0.4	0.1	1.1
10	54	54	10	11.7	0.9	0.4	1.6
11	137	128	24	40.0	0.6	0.4	0.9
12	75	68	10	16.7	0.6	0.3	1.1
13	79	78	7	16.8	0.4	0.2	0.9
14	24	23	3	6.1	0.5	0.1	1.4
15	58	56	7	11.8	0.6	0.2	1.2
16	63	62	9	11.4	0.8	0.4	1.5
17	179	169	36	51.5	0.7	0.5	1.0
18	58	51	13	16.9	0.8	0.4	1.3
19	134	122	33	39.1	0.8	0.6	1.2
20	25	21	1	6.6	0.2	0.0	0.8
21	260	243	106	68.8	1.5	1.3	1.9
22	198	188	66	47.7	1.4	1.1	1.8
23	98	93	16	22.3	0.7	0.4	1.2
24	162	153	34	40.1	0.8	0.6	1.2
25	42	40	22	14.3	1.5	1.0	2.3
26	358	343	111	107.4	1.0	0.9	1.2
27	88	80	17	21.1	0.8	0.5	1.3
28	312	293	22	110.9	0.2	0.1	0.3
29	394	359	114	123.7	0.9	0.8	1.1
30	107	102	19	22.3	0.9	0.5	1.3

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.

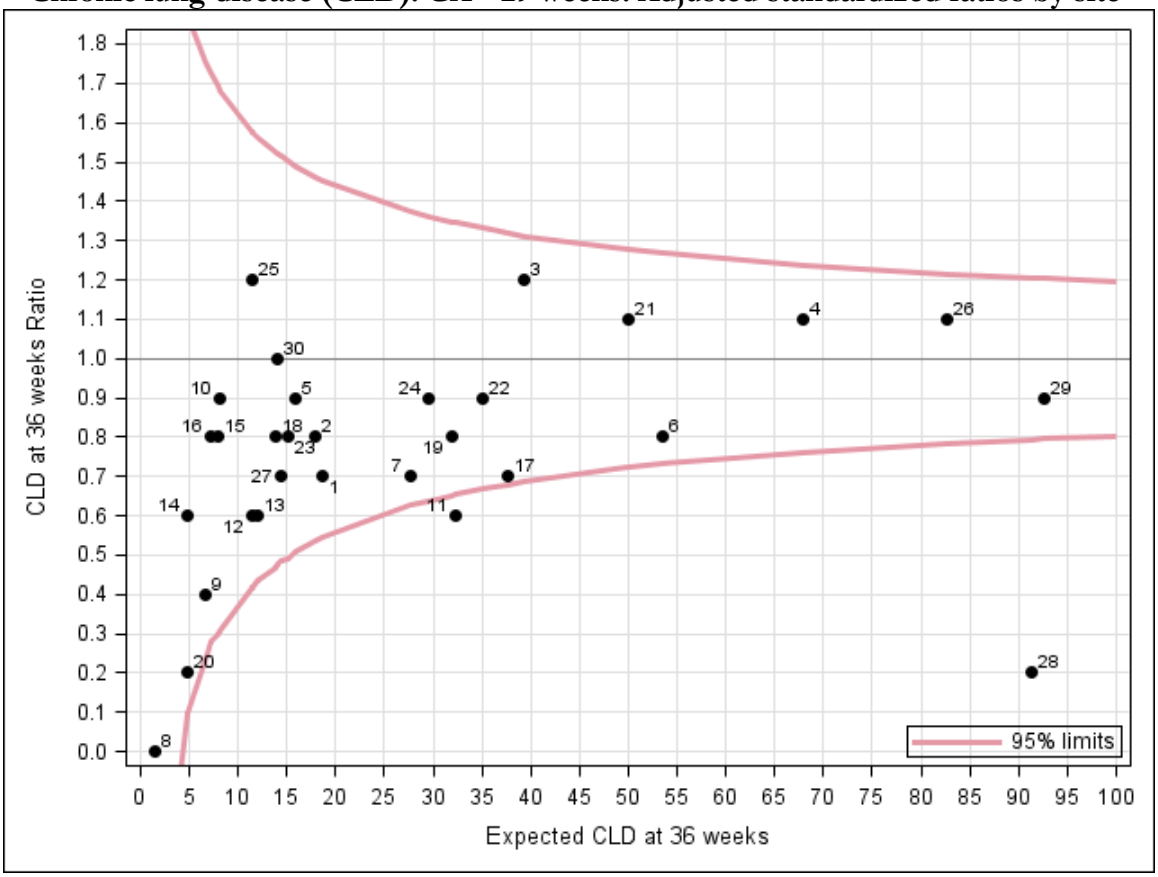
Note: Deaths before 36 weeks were excluded in the denominator.

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	36	33	13	18.6	0.7	0.4	1.2
2	31	24	15	17.9	0.8	0.5	1.4
3	74	67	47	39.3	1.2	0.9	1.6
4	123	115	75	67.9	1.1	0.9	1.4
5	31	26	14	15.9	0.9	0.5	1.5
6	92	73	43	53.6	0.8	0.6	1.1
7	52	46	20	27.6	0.7	0.4	1.1
8	4	4	0	1.5	0.0	.	2.4
9	14	11	3	6.7	0.4	0.1	1.3
10	18	18	7	8.2	0.9	0.3	1.8
11	59	50	20	32.3	0.6	0.4	1.0
12	22	16	7	11.4	0.6	0.2	1.3
13	29	29	7	12.1	0.6	0.2	1.2
14	9	8	3	4.9	0.6	0.1	1.8
15	16	14	6	8.0	0.8	0.3	1.6
16	16	15	6	7.3	0.8	0.3	1.8
17	70	61	27	37.6	0.7	0.5	1.0
18	25	18	11	13.8	0.8	0.4	1.4
19	57	47	26	31.9	0.8	0.5	1.2
20	8	4	1	4.9	0.2	0.0	1.1
21	87	73	53	50.1	1.1	0.8	1.4
22	71	63	33	35.0	0.9	0.6	1.3
23	27	23	12	15.1	0.8	0.4	1.4
24	56	48	28	29.5	0.9	0.6	1.4
25	20	19	14	11.4	1.2	0.7	2.1
26	149	136	87	82.7	1.1	0.8	1.3
27	31	29	10	14.4	0.7	0.3	1.3
28	175	158	18	91.3	0.2	0.1	0.3
29	173	140	86	92.7	0.9	0.7	1.1
30	26	22	14	14.1	1.0	0.5	1.7

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

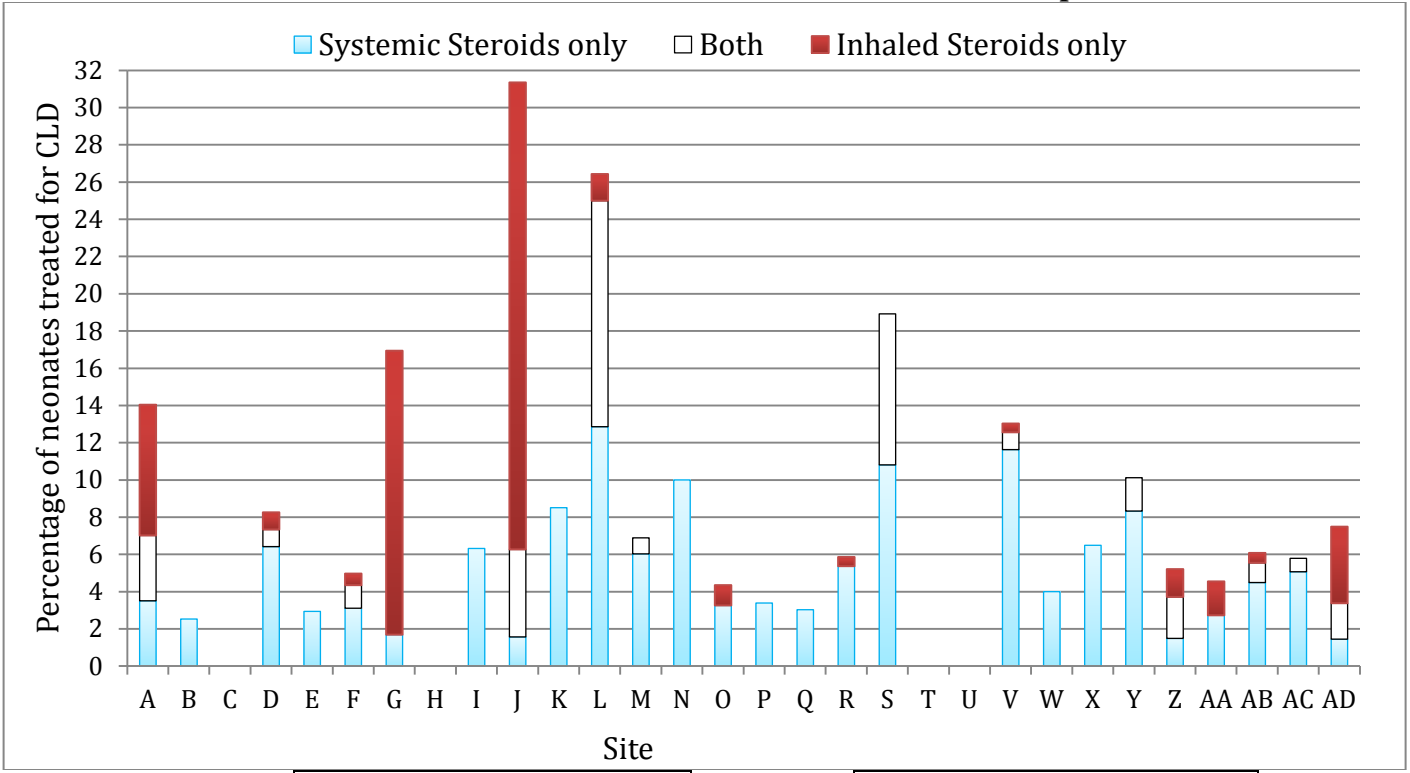


Explanation for Presentation 47c
Column 1: Numeric site codes
Column 2: Total number of neonates at each site (<29 weeks GA and no major anomaly)
Column 3: Number of eligible neonates at each site (<29 weeks GA and no major anomaly) who were actually used to fit the model
Column 4: Number of neonates 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<33 weeks: Site specific crude rates†



Site	Postnatal steroid use (%)		
	Systemic Steroids only	Both	Inhaled Steroids only
A	3.5	3.5	7.0
B	2.5	0.0	0.0
C	0.0	0.0	0.0
D	6.4	0.9	0.9
E	2.9	0.0	0.0
F	3.1	1.2	0.6
G	1.7	0.0	15.3
H	0.0	0.0	0.0
I	6.3	0.0	0.0
J	1.6	4.7	25.1
K	8.5	0.0	0.0
L	12.9	12.1	1.4
M	6.0	0.9	0.0
N	10.0	0.0	0.0
O	3.3	0.0	1.1

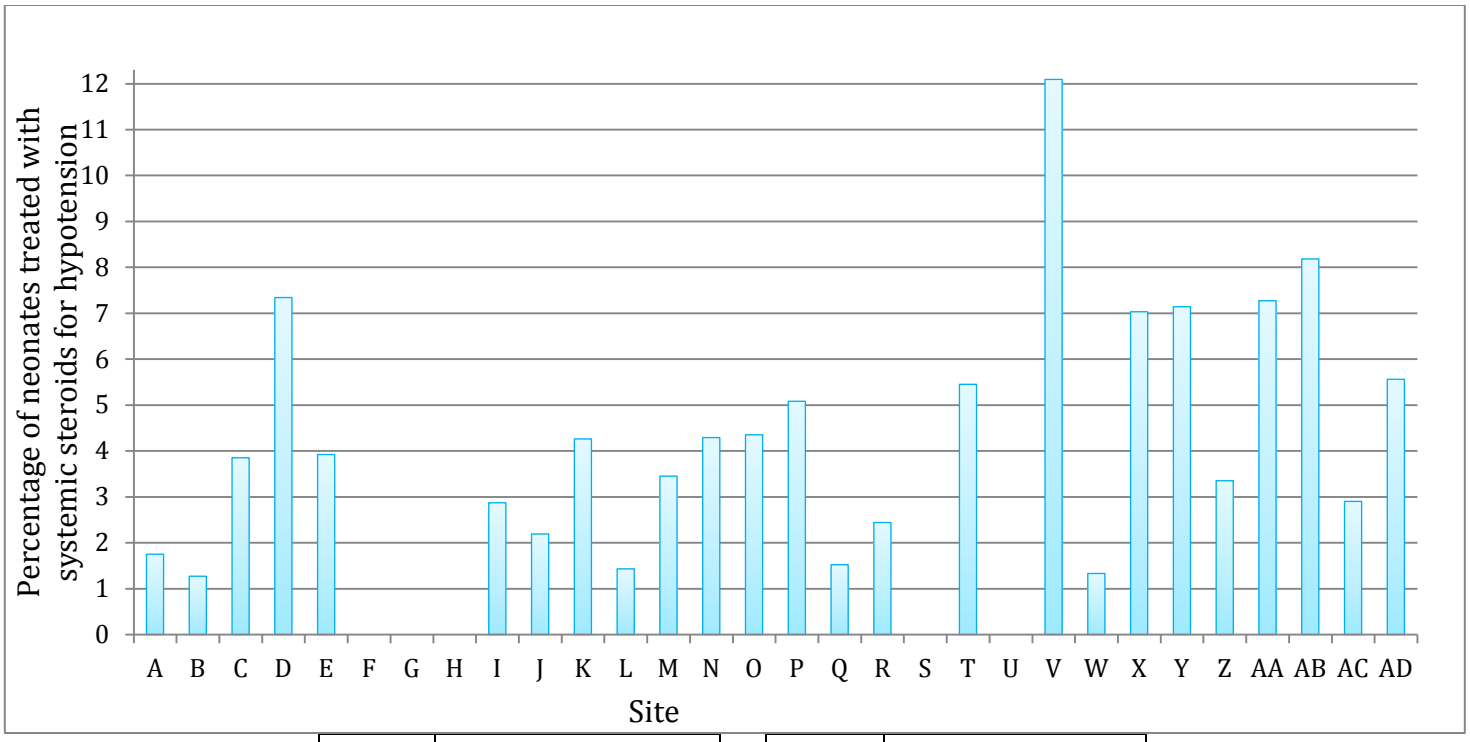
Site	Postnatal steroid use (%)		
	Systemic Steroids only	Both	Inhaled Steroids only
P	3.4	0.0	0.0
Q	3.0	0.0	0.0
R	5.4	0.0	0.5
S	10.8	8.1	0.0
T	0.0	0.0	0.0
U	0.0	0.0	0.0
V	11.6	0.9	0.5
W	4.0	0.0	0.0
X	6.5	0.0	0.0
Y	8.3	1.8	0.0
Z	1.5	2.2	1.5
AA	2.7	0.0	1.8
AB	4.5	1.1	0.5
AC	5.1	0.7	0.0
AD	1.5	1.9	4.1
Total	4.7	1.6	3.0

Total number of neonates = 4 238

† 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	1.8
B	1.3
C	3.9
D	7.3
E	3.9
F	0.0
G	0.0
H	0.0
I	2.9
J	2.2
K	4.3
L	1.4
M	3.5
N	4.3
O	4.4

Site	Postnatal systemic steroids use for hypotension (%)
P	5.1
Q	1.5
R	2.4
S	0.0
T	5.5
U	0.0
V	12.1
W	1.3
X	7.0
Y	7.1
Z	3.4
AA	7.3
AB	8.2
AC	2.9
AD	5.6
Total	4.4

Total number of neonates = 4 238

† 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<33weeks: Site specific crude rates

Site	Total number of neonates	Number of neonates with available data	Number of neonates with ROP ≥Stage 3
1	111	43	2
2	109	54	4
3	170	85	6
4	308	193	15
5	92	24	0
6	211	122	11
7	132	79	6
8	9	4	0
9	36	8	2
10	54	40	2
11	137	85	8
12	75	27	2
13	79	57	1
14	24	17	1
15	58	29	1
16	63	29	2
17	179	20	2
18	58	29	3
19	134	72	3
20	25	17	0
21	260	84	16
22	198	77	7
23	98	50	5
24	162	82	6
25	42	19	2
26	358	66	24
27	88	30	2
28	312	136	13
29	394	165	13
30	107	44	4

Numeric site codes were used in Presentations 49a-b and they may not correspond to other presentations in this report.
Neonates with major congenital anomalies were excluded.

A reliable prediction model for this outcome could not be obtained from possible predictors that were available; therefore, only the raw numbers were presented.

Presentation #49b
ROP ≥ stage 3: GA < 29 weeks: Site specific crude rates

Site	Total number of neonates	Number of neonates with available data	Number of neonates with ROP ≥Stage 3
1	36	29	2
2	31	25	4
3	74	57	6
4	123	112	15
5	31	15	0
6	92	74	11
7	52	44	6
8	4	3	0
9	14	7	2
10	18	17	2
11	59	50	8
12	22	14	2
13	29	28	1
14	9	7	1
15	16	14	1
16	16	15	2
17	70	10	2
18	25	18	3
19	57	47	3
20	8	4	0
21	87	64	16
22	71	37	6
23	27	20	4
24	56	45	6
25	20	12	1
26	149	58	24
27	31	21	2
28	175	116	13
29	173	121	12
30	26	19	4

Numeric site codes were used in Presentations 49a-b and they may not correspond to other presentations in this report.
Neonates with major congenital anomalies were excluded.

A reliable prediction model for this outcome could not be obtained from possible predictors that were available; therefore, only the raw numbers were presented.

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	111	27	33.4	0.8	0.5	1.2
2	109	31	33.3	0.9	0.6	1.3
3	170	72	63.6	1.1	0.9	1.4
4	308	114	115.4	1.0	0.8	1.2
5	92	26	27.8	0.9	0.6	1.4
6	211	90	83.3	1.1	0.9	1.3
7	132	41	46.3	0.9	0.6	1.2
8	9	0	2.7	0.0	.	1.4
9	36	11	11.9	0.9	0.5	1.6
10	54	14	15.7	0.9	0.5	1.5
11	137	44	50.9	0.9	0.6	1.2
12	75	21	21.7	1.0	0.6	1.5
13	79	11	22.8	0.5	0.2	0.9
14	24	6	7.9	0.8	0.3	1.7
15	58	12	15.7	0.8	0.4	1.3
16	63	13	15.3	0.8	0.5	1.5
17	179	57	66.7	0.9	0.6	1.1
18	58	24	21.6	1.1	0.7	1.7
19	134	55	49.6	1.1	0.8	1.4
20	25	8	8.3	1.0	0.4	1.9
21	260	133	88.5	1.5	1.3	1.8
22	198	93	63.1	1.5	1.2	1.8
23	98	24	29.1	0.8	0.5	1.2
24	162	49	51.8	0.9	0.7	1.3
25	42	26	18.0	1.4	0.9	2.1
26	358	145	136.9	1.1	0.9	1.2
27	88	44	28.2	1.6	1.1	2.1
28	312	77	141.0	0.5	0.4	0.7
29	394	168	160.6	1.0	0.9	1.2
30	107	27	29.0	0.9	0.6	1.4

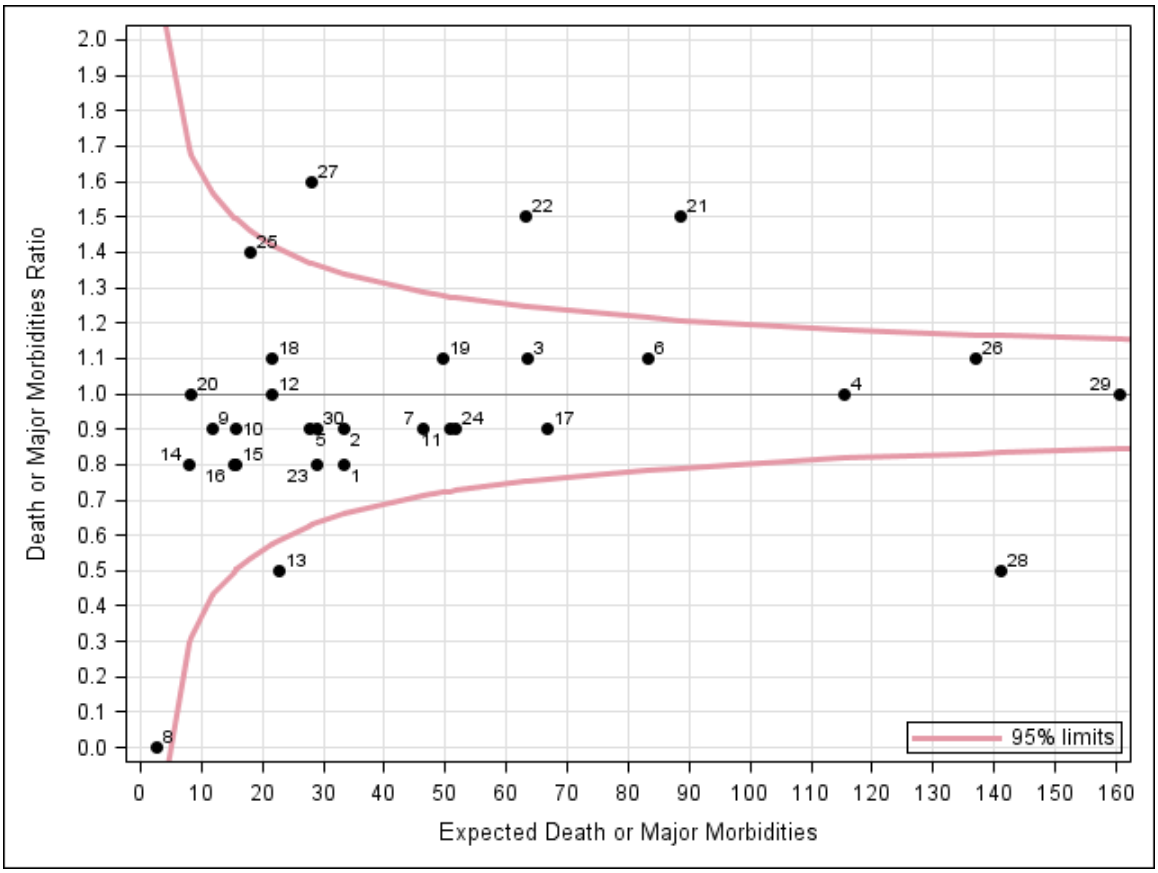
Major morbidity = IVH 3 or 4 or PVL or BPD or ROP >stage 2 or NEC or nosocomial sepsis

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

Neonates with major congenital anomalies were excluded.

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

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



Explanation for Presentation 50a
Column 1: Numeric site codes
Column 2: Number of eligible neonates at each site (<33 weeks GA and no major anomaly)
Column 3: Number of neonates with outcome of interest among those eligible neonates
Column 4: Expected number of neonates with outcome of interest after adjustment for GA, small for gestational age, sex, and SNAPII > 20
Column 5: Adjusted standardized ratio calculated based on observed death or morbidities/expected deaths or morbidities
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

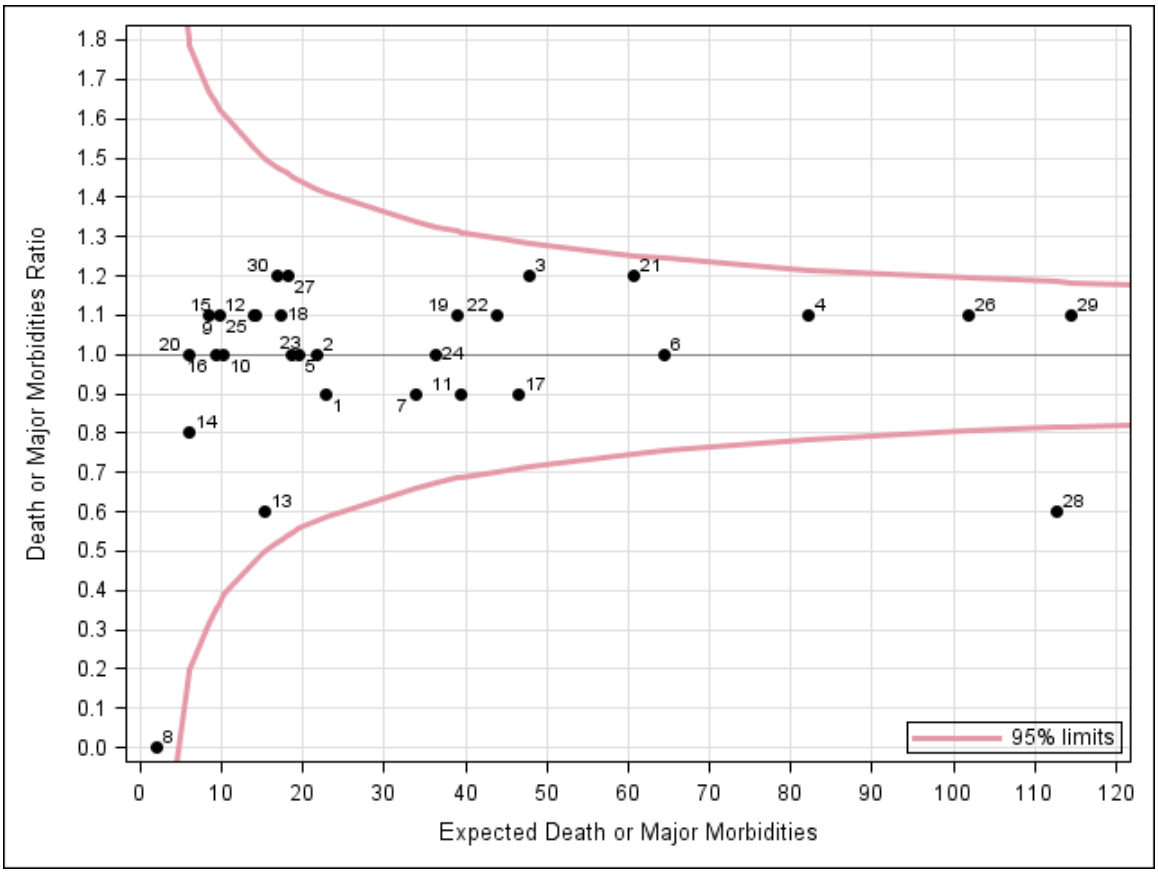
Explanation for Presentation 50b
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red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

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

Site	Number of neonates	Number of neonates with mortality or major morbidities	Adjusted## expected number of neonates with mortality or major morbidities	Adjusted## standardized ratio	95% confidence interval for adjusted standardized ratio	
1	36	20	22.9	0.9	0.5	1.3
2	31	22	21.7	1.0	0.6	1.5
3	74	59	47.8	1.2	0.9	1.6
4	123	88	82.2	1.1	0.9	1.3
5	31	20	19.6	1.0	0.6	1.6
6	92	66	64.4	1.0	0.8	1.3
7	52	29	33.8	0.9	0.6	1.2
8	4	0	2.0	0.0	.	1.8
9	14	9	8.4	1.1	0.5	2.0
10	18	10	10.3	1.0	0.5	1.8
11	59	36	39.5	0.9	0.6	1.3
12	22	15	13.9	1.1	0.6	1.8
13	29	10	15.4	0.6	0.3	1.2
14	9	5	6.1	0.8	0.3	1.9
15	16	11	9.8	1.1	0.6	2.0
16	16	9	9.3	1.0	0.4	1.8
17	70	43	46.4	0.9	0.7	1.2
18	25	19	17.2	1.1	0.7	1.7
19	57	41	39.0	1.1	0.8	1.4
20	8	6	5.9	1.0	0.4	2.2
21	87	72	60.6	1.2	0.9	1.5
22	71	49	43.8	1.1	0.8	1.5
23	27	18	18.6	1.0	0.6	1.5
24	56	38	36.3	1.0	0.7	1.4
25	20	16	14.1	1.1	0.6	1.8
26	149	113	101.8	1.1	0.9	1.3
27	31	21	18.2	1.2	0.7	1.8
28	175	64	112.7	0.6	0.4	0.7
29	173	127	114.4	1.1	0.9	1.3
30	26	20	16.9	1.2	0.7	1.8

Major morbidity = IVH 3 or 4 or PVL or BPD or ROP >stage 2 or NEC or nosocomial sepsis
Numeric site codes were used in Presentations 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 #50d
Mortality or major morbidity: GA < 29 weeks: Adjusted standardized ratios by site



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

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

F. Discharge Disposition and Status

Presentation #51

Discharge destination: All GA: Crude rates

		GA (completed weeks)								
		< 25	**25-26**	**27-28**	**29-30**	**31-32**	**33-34**	**35-36**	**≥37**	**Total**
Home	N	115	223	320	344	634	1127	1280	3479	7522
	%	37.2	40.8	39.5	34.8	40.1	52.4	54.6	56.4	50.5
Community hospital	N	40	163	387	550	800	743	428	486	3597
	%	12.9	29.8	47.7	55.7	50.5	34.5	18.3	7.9	24.1
Tertiary hospital	N	16	31	14	19	15	29	43	241	408
	%	5.2	5.7	1.7	1.9	1.0	1.4	1.8	3.9	2.7
Died	N	102	80	43	19	19	25	28	83	399
	%	33.0	14.6	5.3	1.9	1.2	1.2	1.2	1.4	2.7
Palliative care (home/other institute)	N	3	1	2	0	4	3	3	8	24
	%	1.0	0.2	0.3	0.0	0.3	0.1	0.1	0.1	0.2
Another inpatient area in site	N	33	48	39	55	111	222	562	1874	2944
	%	10.7	8.8	4.8	5.6	7.0	10.3	24.0	30.4	19.8
Out of country discharge	N	0	1	5	1	0	3	0	0	10
	%	0.0	0.2	0.6	0.1	0.0	0.1	0.0	0.0	0.1
Total neonates included	N	309	547	810	988	1583	2152	2344	6171	14904
	%	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									2
Total number of neonates	N									14907

Presentation #52

Support at discharge: Neonates who were discharged home: Crude rates

		GA (completed weeks)								
		< 25	**25-26**	**27-28**	**29-30**	**31-32**	**33-34**	**35-36**	**≥37**	**Total**
Total available	N	309	547	811	988	1583	2152	2344	6171	14905
Number of neonates who survived and were discharged home	**N**	**115**	**223**	**320**	**344**	**634**	**1127**	**1280**	**3479**	**7522**
Oxygen	N	2	1	4	1	1	4	4	9	26
	%	1.7	0.5	1.3	0.3	0.2	0.4	0.3	0.3	0.3
Monitor	N	12	13	15	5	11	6	18	72	152
	%	10.4	5.8	4.7	1.5	1.7	0.5	1.4	2.1	2.0
Enterostomy	N	3	0	1	1	1	0	2	10	18
	%	2.6	0.0	0.3	0.3	0.2	0.0	0.2	0.3	0.2
Gavage	N	13	14	17	6	12	13	9	65	149
	%	11.3	6.3	5.3	1.7	1.9	1.2	0.7	1.9	2.0
Tracheostomy	N	0	0	0	0	1	0	0	1	2
	%	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Gastrostomy	N	0	1	5	1	2	3	3	16	31
	%	0.0	0.5	1.6	0.3	0.3	0.3	0.2	0.5	0.4
Ventilation	N	0	0	0	0	0	0	0	0	0
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CPAP	N	0	0	1	0	0	1	0	1	3
	%	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.0	0.0
Feeding status at discharge										
Breast milk only	N	29	73	94	120	210	434	439	1219	2618
	%	25.2	32.7	29.4	34.9	33.1	38.5	34.3	35.0	34.8
Formula only	N	46	84	113	105	187	254	260	673	1722
	%	40.0	37.7	35.3	30.5	29.5	22.5	20.3	19.3	22.9
Both breast milk and formula	N	35	55	106	112	215	417	553	1532	3025
	%	30.4	24.7	33.1	32.6	33.9	37.0	43.2	44.0	40.2

Note: In this presentation, denominators were based on the number of neonates who survived and were discharged 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**	48	165	56	26	295
	No	104	33	24	40	201
	Unknown	0	1	0	1	2
	Total	**152**	**199**	**80**	**67**	**498**

B. Reason for not receiving hypothermia treatment*

Reason	**Number**
Chromosomal anomalies	1
Major congenital anomalies	1
Weight < 2000g or GA < 35 weeks	30
Extreme condition	11
Head trauma or intracranial hemorrhage	7
Mild HIE	117
Unit policy	29
Health care team preference	9
Delayed transfer	29
Parental request	0
Unknown	8

*One neonate can have more than one reason.

C. Time of admission

Time	**Number**
<6 hours from birth	306
6 – 12 hours from birth	126
>12 hours from birth	61
Total**	493

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

Presentation #53 (continued)

Hypoxic Ischemic Encephalopathy

D. Characteristics of neonates who received hypothermia (N=295)

Characteristics	N		Results
Method	295	Selective head	2 (1%)
		Whole body cooling	293 (99%)
Target temperature	295	< 33^{0}C	0 (0%)
		33-34^{0}C	244 (83%)
		33.5-34.5^{0}C	39 (13%)
		34-35^{0}C	2 (1%)
		34.5-35.5^{0}C	1 (0%)
		Unknown	9 (3%)
Seizures at initiation	295		77 (26%)
Seizures at completion	295		34 (12%)
GA < 33 weeks	295		2 (1%)
Birthweight < 2000g	294		2 (1%)
During hypothermia	287	Hypotension	101 (35%)
	276	Thrombocytopenia	68 (25%)
	283	Coagulopathy	114 (40%)
	278	Persistent metabolic acidosis	66 (24%)
Death	295		39 (13%)

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**	14	3	0	5	12	34
	Stage 2	41	60	6	14	62	183
	Stage 3	0	11	41	3	1	56
	Unknown	0	0	1	15	6	22
	Total	55	74	48	37	81	295

*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=295)

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**	290	4.3	5.4	0.0	1.4	3.1	5.6	53.4	After 6 hours 57 (20%)	
	Target temp achieved	285	6.1	6.2	0.1	3.2	4.7	7.0	54.1	After 10 hours 30 (11%)	After 4 hours of initiation 24 (8%)
	Age at re-warming	289	71.0	17.2	2.8	73.3	75.6	77.8	125.1	After 78 hours 63 (22%)	Re-warming started >72 hours after initiation 51 (18%)
	Age at return to normal temp	272	84.8	18.7	8.4	81.4	84.5	89.2	149.7	After 86 hours 104 (38%)	Took >8 hours to return temperature to normal after starting re-warming 144 (53%)
Temperature during hypothermia	**Lowest temp during hypothermia**	295	32.6	0.9	25.0	32.5	32.9	33.1	34.6	Lowest temp < 32.5C 69 (23%)	
	Highest temp during hypothermia	294	34.1	0.6	33.0	33.8	34.0	34.3	37.1	Highest temp > 35.5C 9 (3%)	

*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 7 years

This section includes trend analyses of specific outcomes from the last 7 years (2010-16) for neonates <33 weeks' GA in CNN sites. The following table describes the number of neonates in the respective GA categories that were included in these trend analyses. Delivery room deaths were excluded.

Number of neonates by admission year and GA

	GA											Total
Year	**<23**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	
2010	9	73	172	270	333	388	371	480	611	678	788	4173
2011	15	86	166	242	318	332	391	467	553	643	828	4041
2012	28	85	184	285	294	348	416	510	610	738	872	4370
2013	16	76	197	247	267	357	434	479	620	733	836	4262
2014	8	81	226	250	332	362	412	517	585	743	871	4387
2015	14	99	177	248	289	317	425	470	536	662	793	4030
2016	16	79	214	275	272	380	431	437	551	722	861	4238

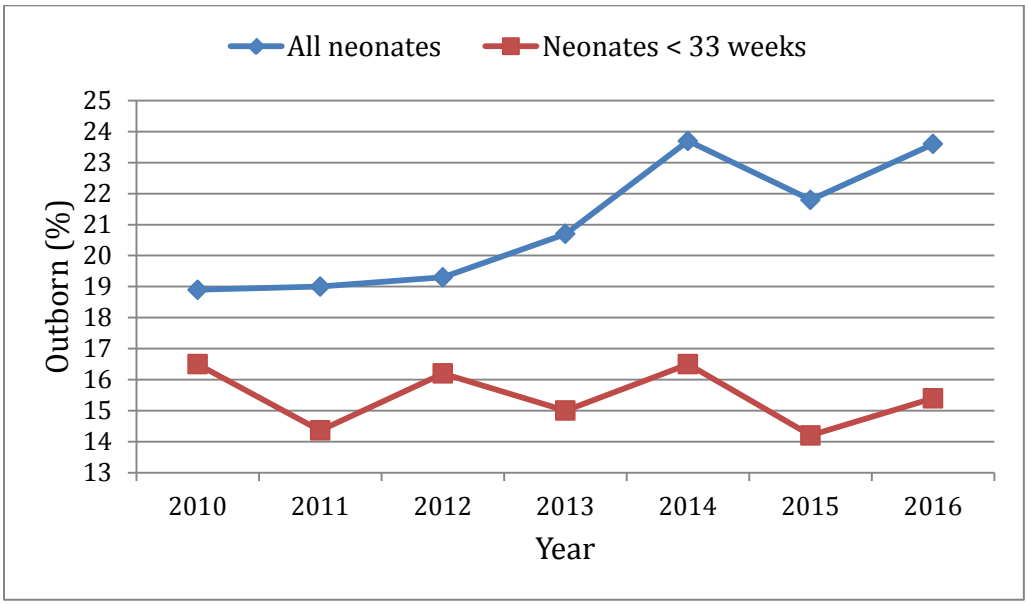
Number of neonates by admission year and birth weight

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

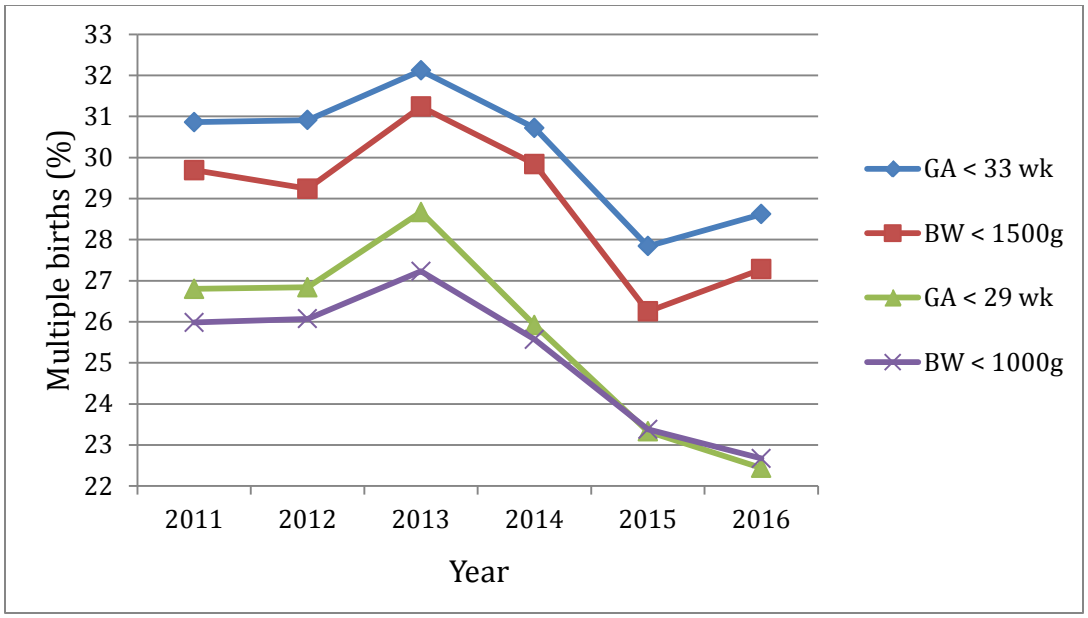
1. Neonates in the participating sites: Admission status:

		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%)

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

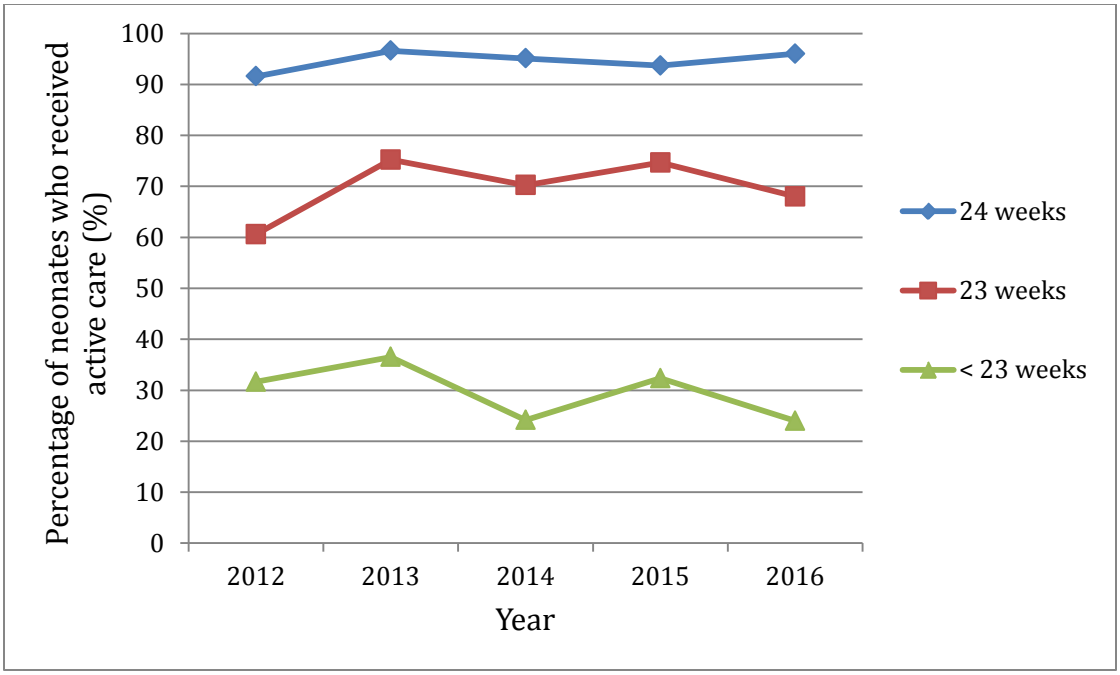


2. Multiple births



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

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

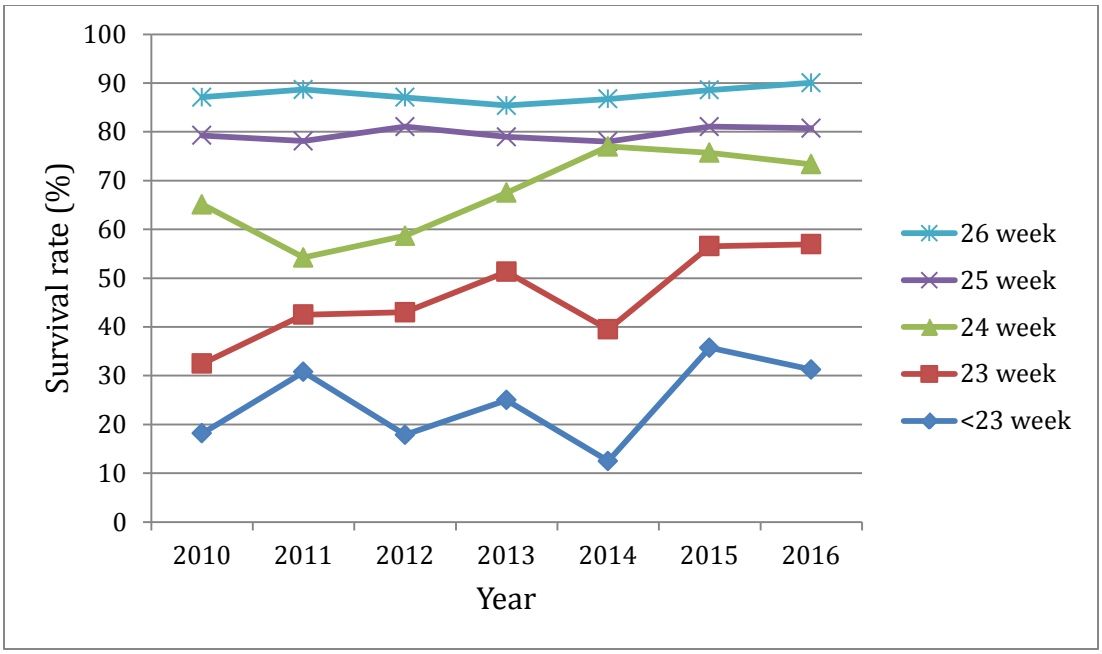


		2012	2013	2014	2015	2016
<23 weeks	Number of neonates who received active care *(a-c) +e*	25	23	14	22	16
	Total number of neonates including DR deaths *a+d+e*	79	63	58	68	67
	Percentage of neonates who received active care	32%	37%	24%	32%	24%
23 weeks	Number of neonates who received active care *(a-c)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

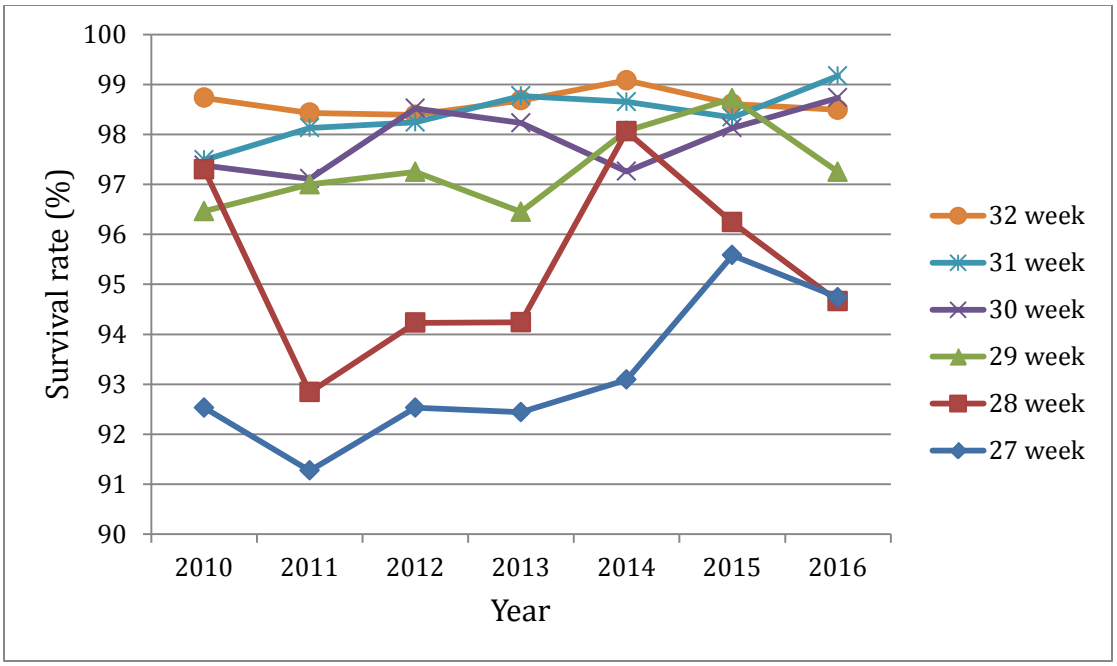
Note: Refer to presentation #4 for detailed breakdown of neonates by GA in 2016.
The alphabet notations used in the table above are carried from presentation #4.

4. Survival rate:

a. 22-26 weeks' GA:

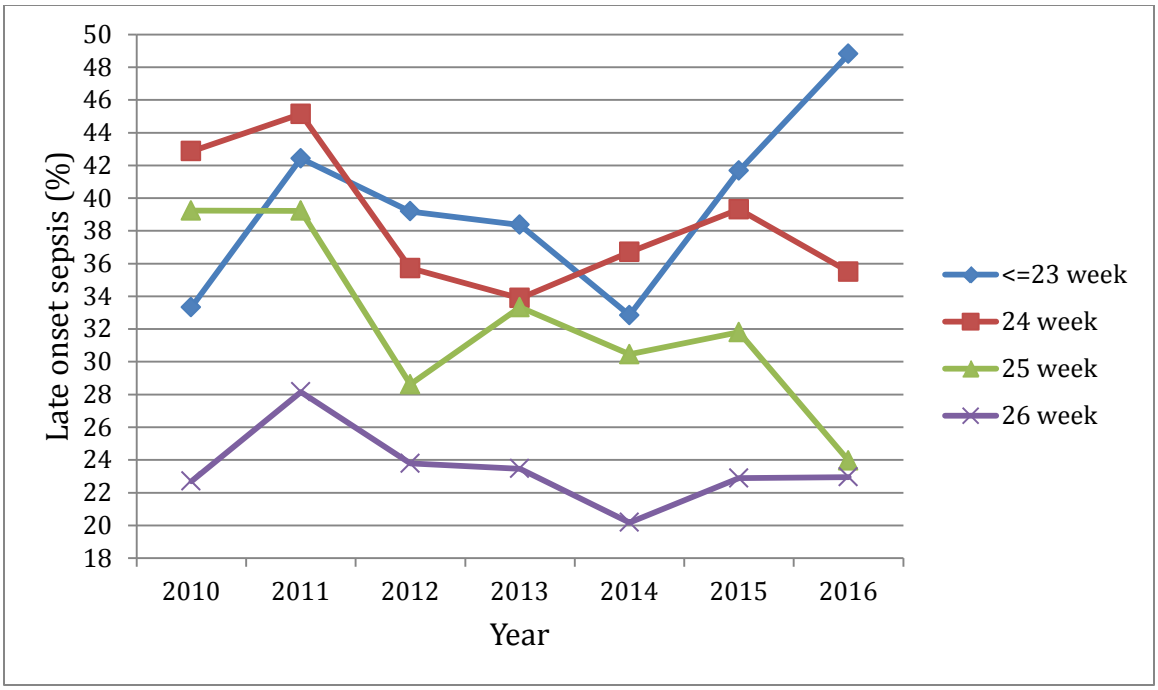


b. 27-32 weeks' GA:

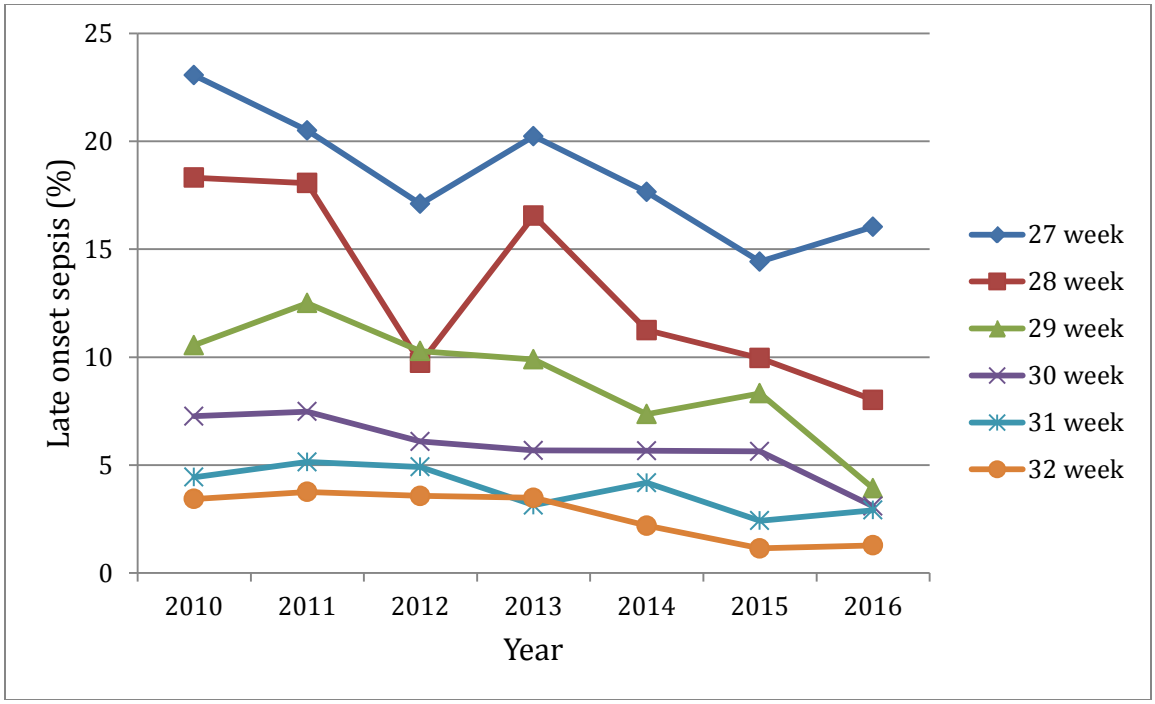


5. Late onset sepsis (with at least one infection) among neonates who survived beyond 2 days post birth

a. 23-26 weeks' GA:

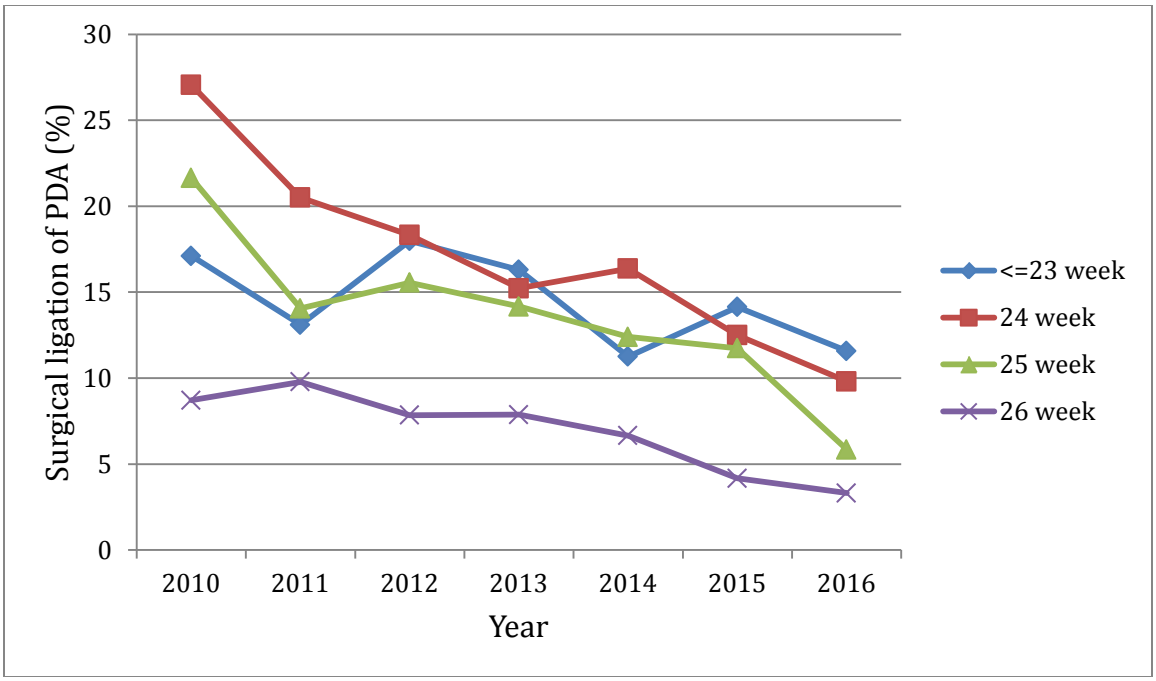


b. 27-32 weeks' GA:

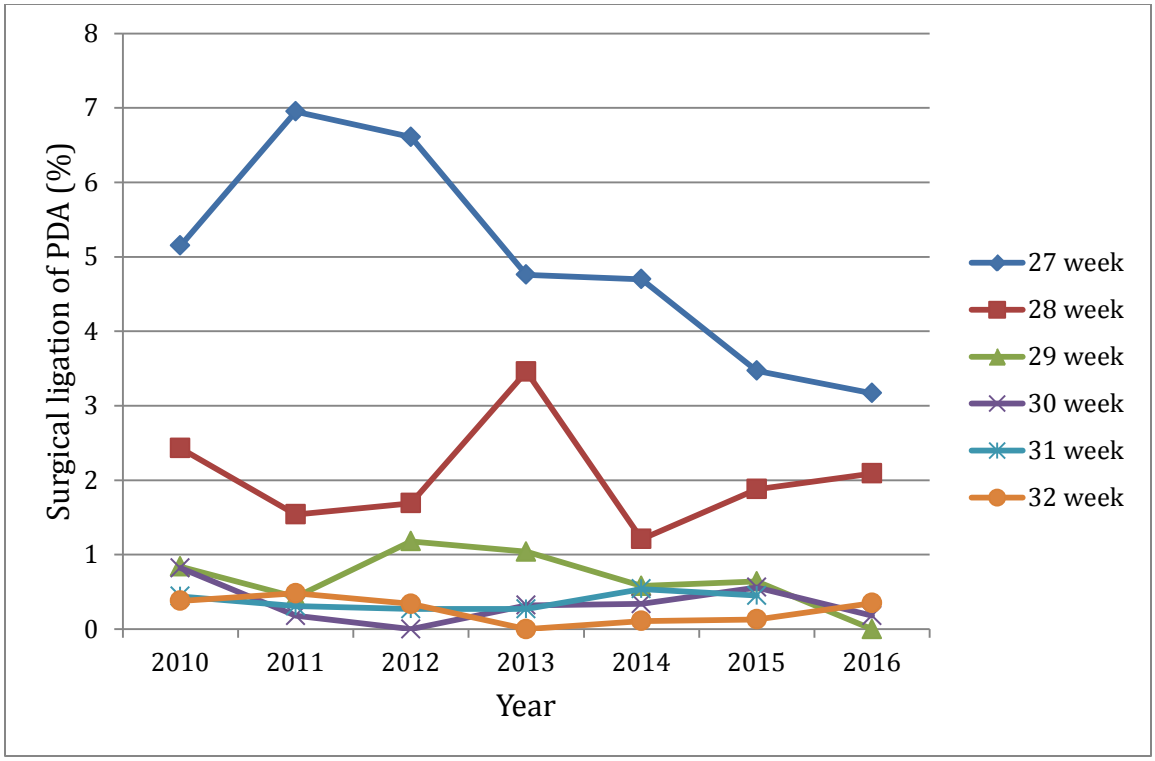


6. Surgical ligation of PDA

a. 23-26 weeks' GA:

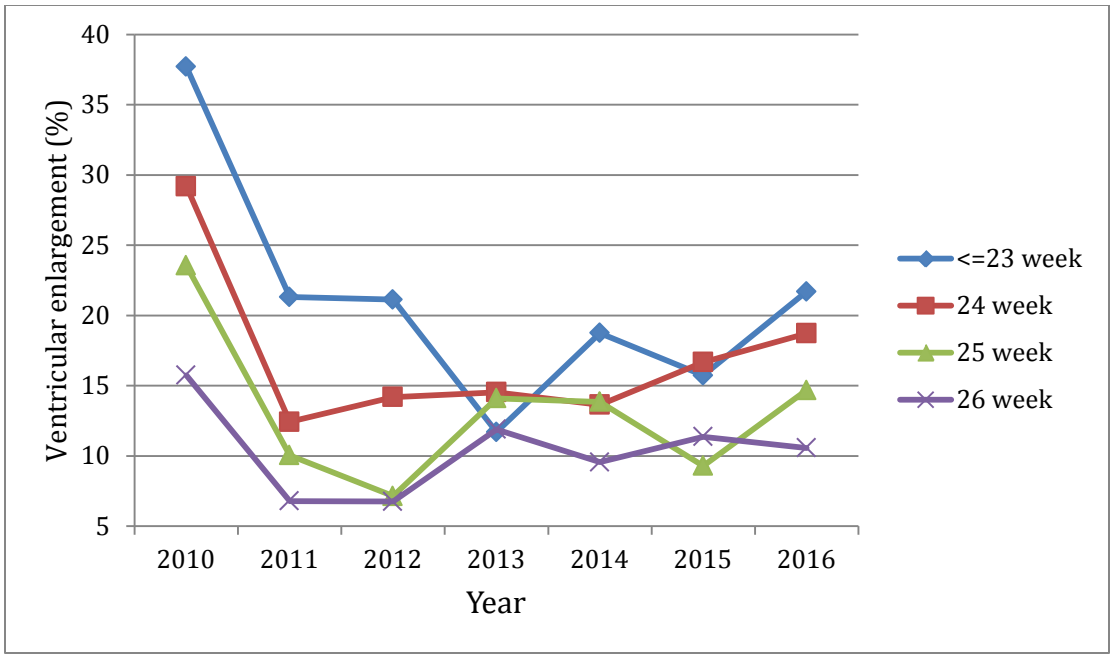


b. 27-32 weeks' GA:

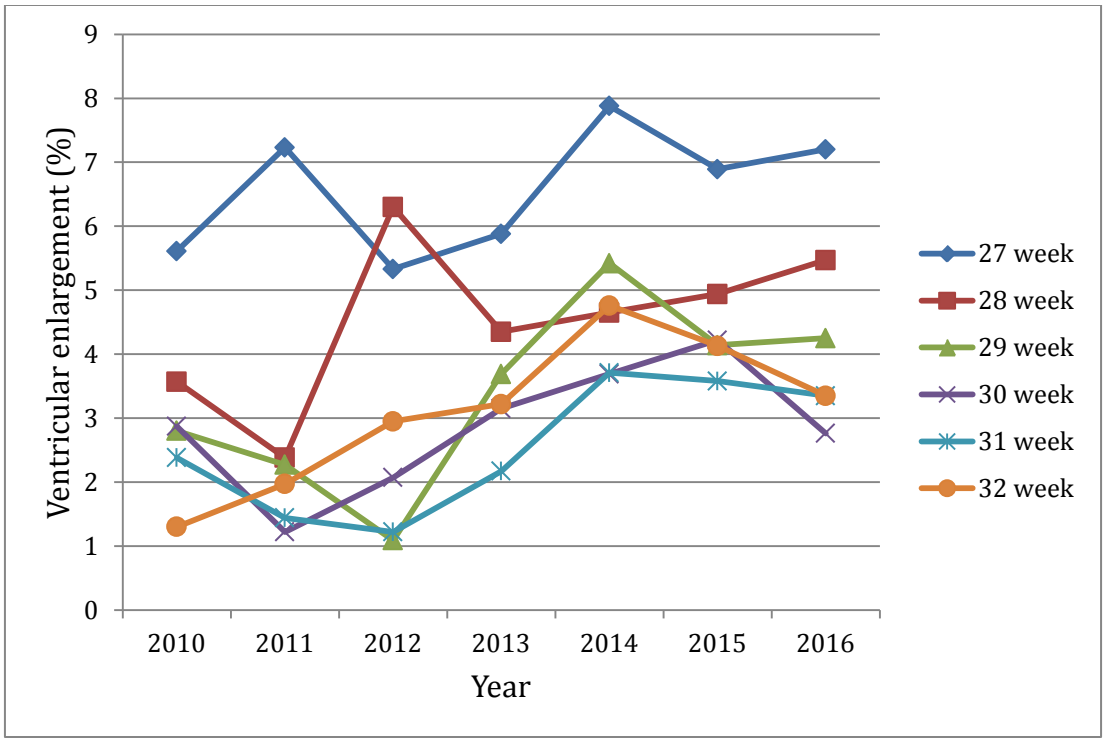


7. Ventricular enlargement (VE): (moderate and severe VE only; among neonates who received ultrasound exams)

a. 23-26 weeks' GA:

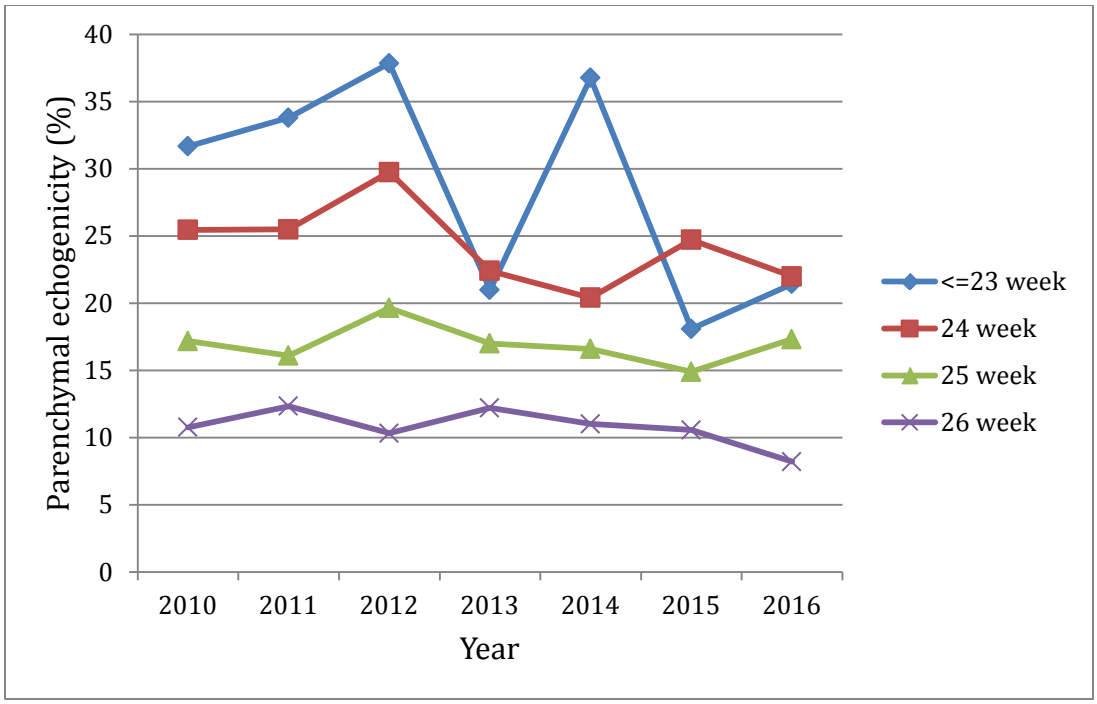


b. 27-32 weeks' GA:

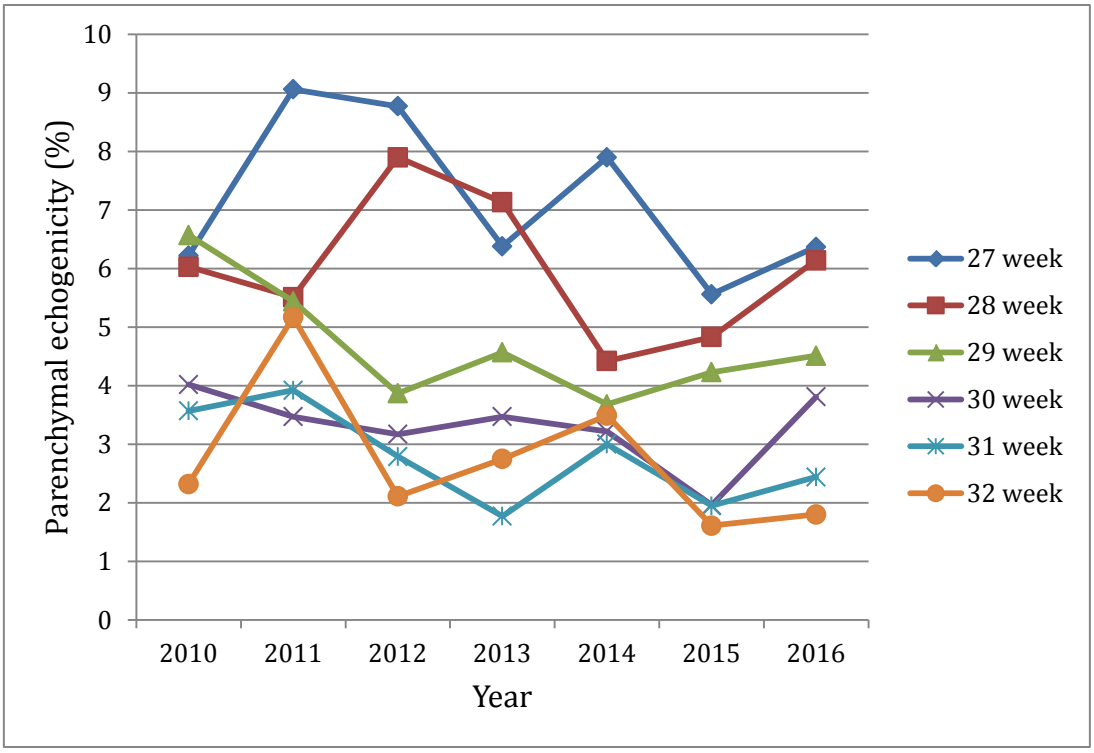


8. Parenchymal echogenicity (among neonates who received ultrasound exams)

a. 23-26 weeks' GA:

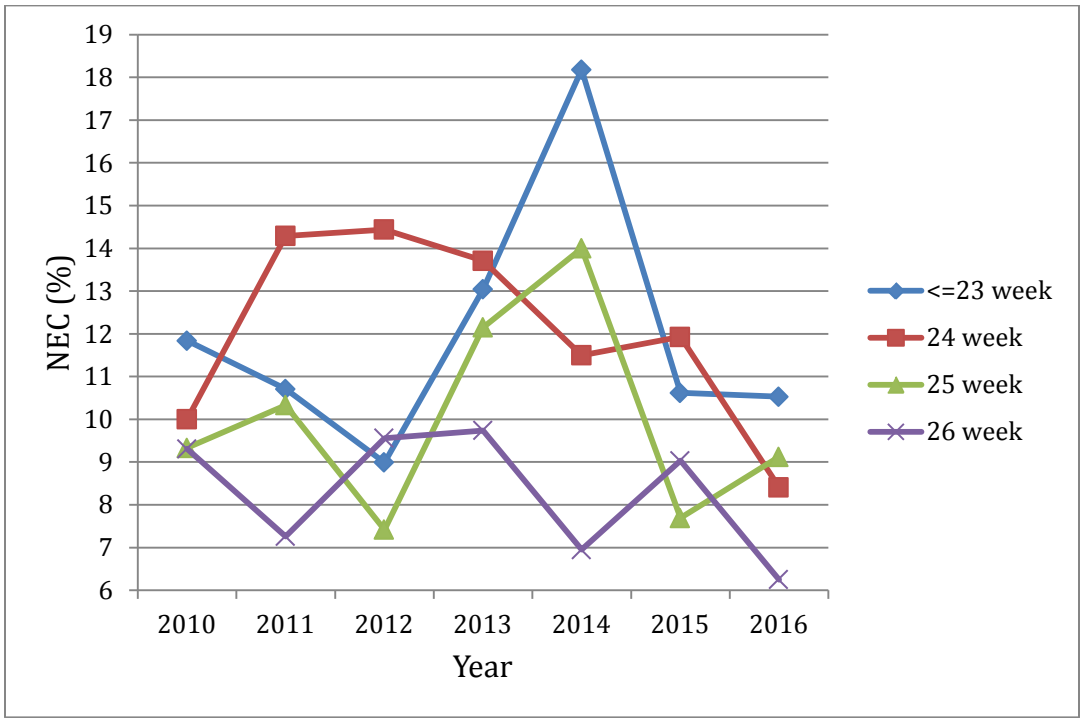


b. 27-32 weeks GA:

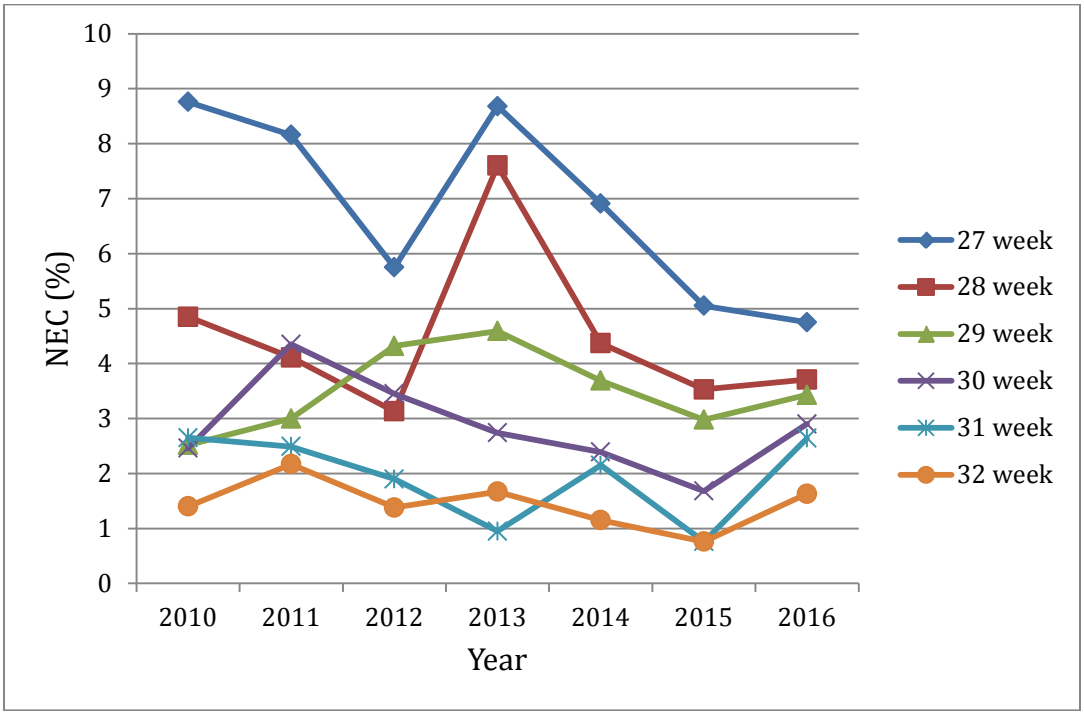


9. NEC:

a. 23-26 weeks' GA:

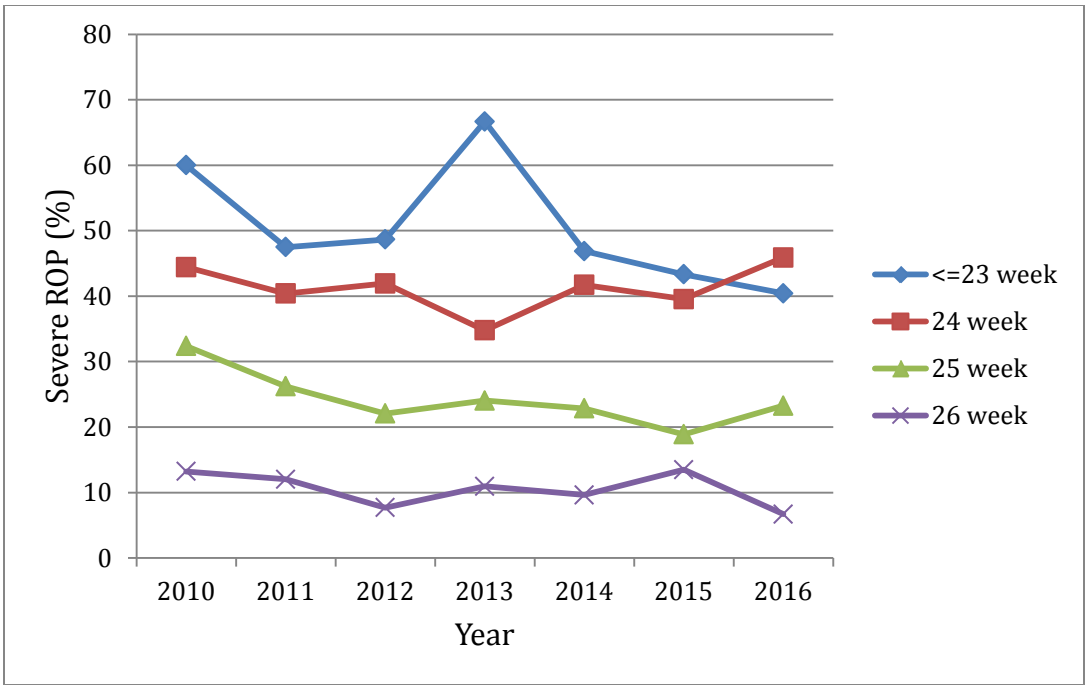


b. 27-32 weeks' GA:

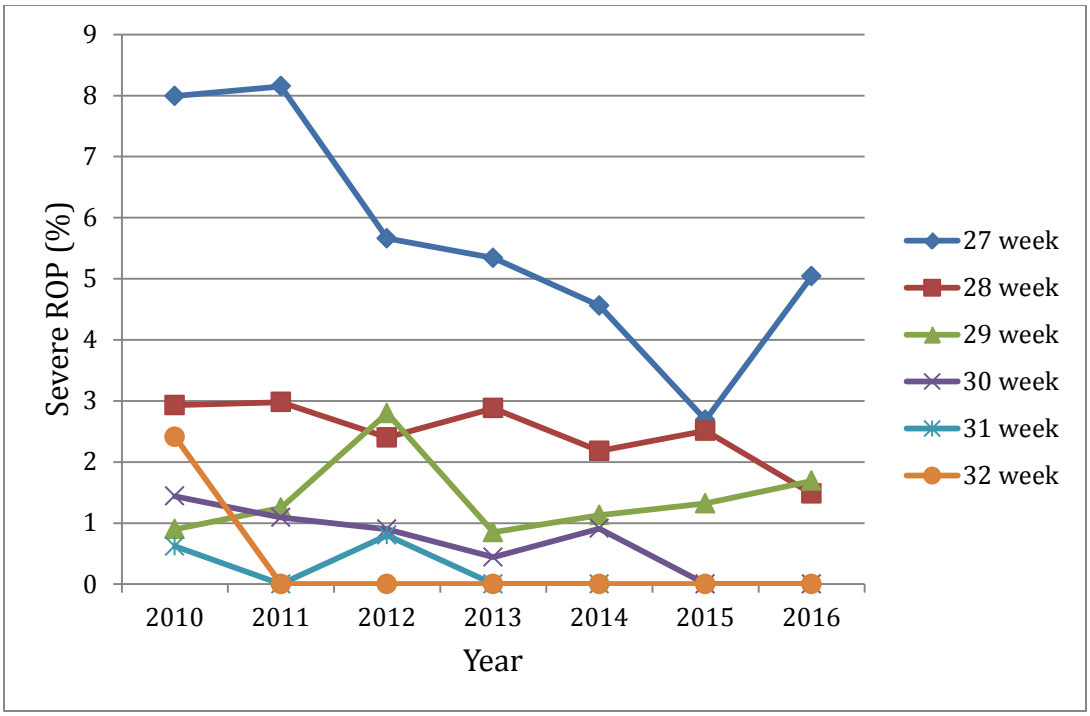


10. Severe ROP (≥ Stage 3 or ROP treatment) among neonates who received eye exams:

a. 23-26 weeks' GA:

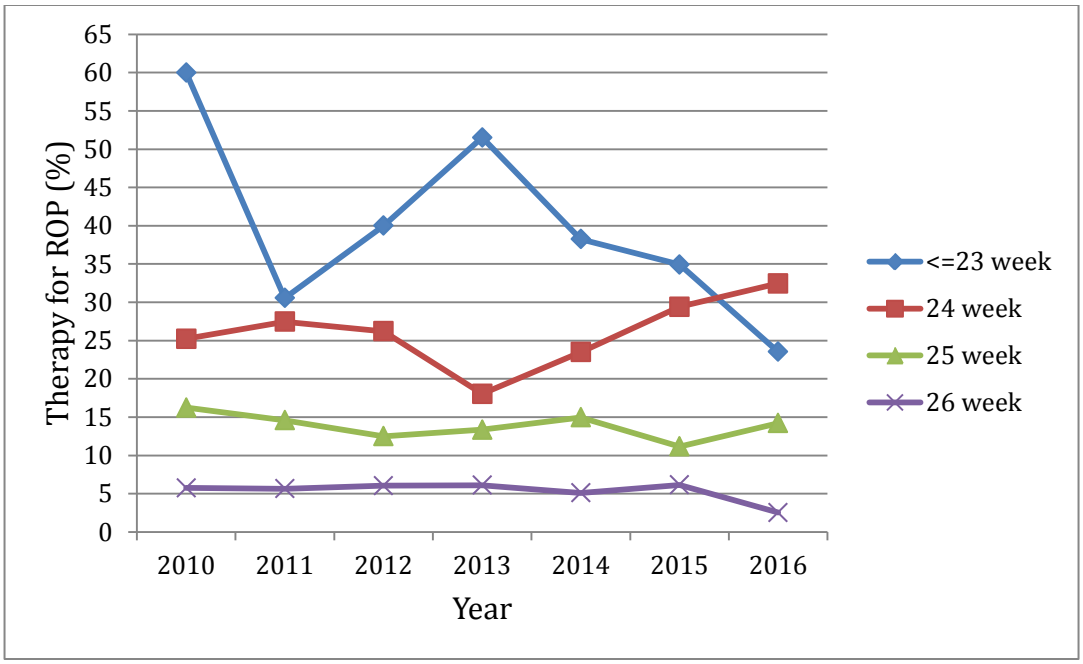


b. 27-32 weeks' GA:

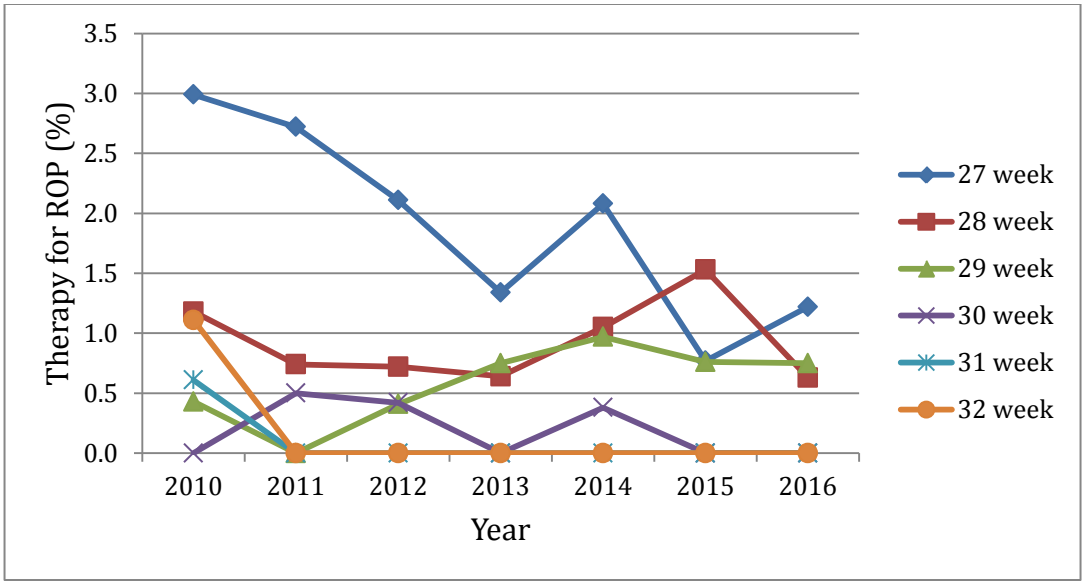


11. Therapy for ROP (among neonates who received eye exams)

a. 23-26 weeks' GA :

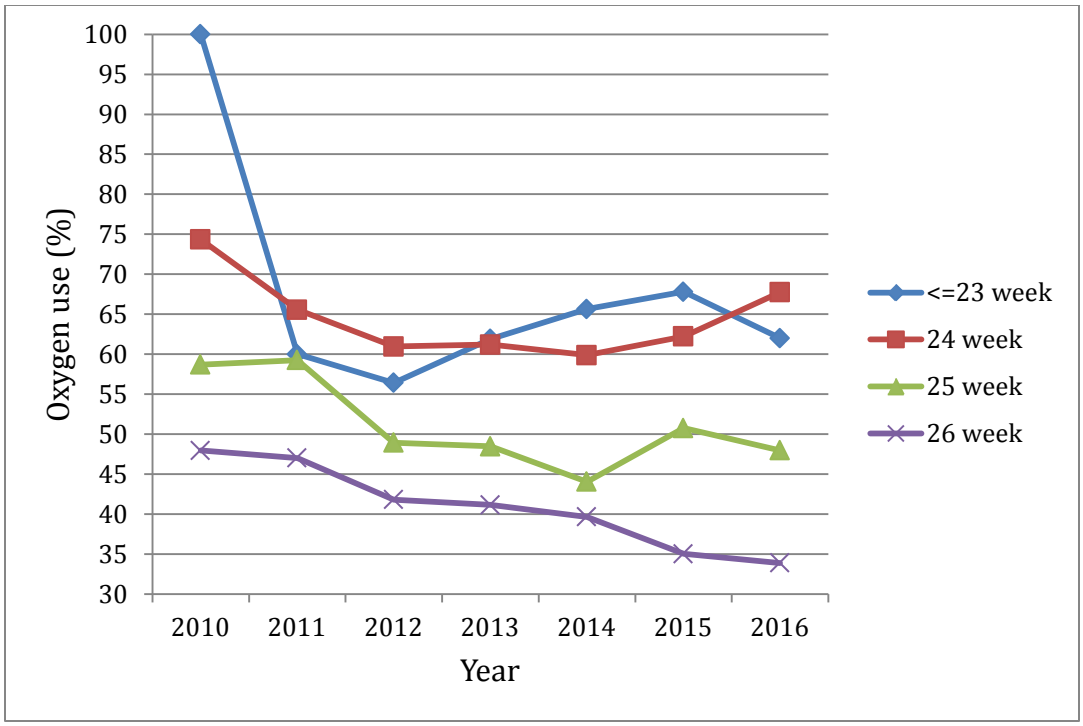


b. 27-32 weeks' GA:

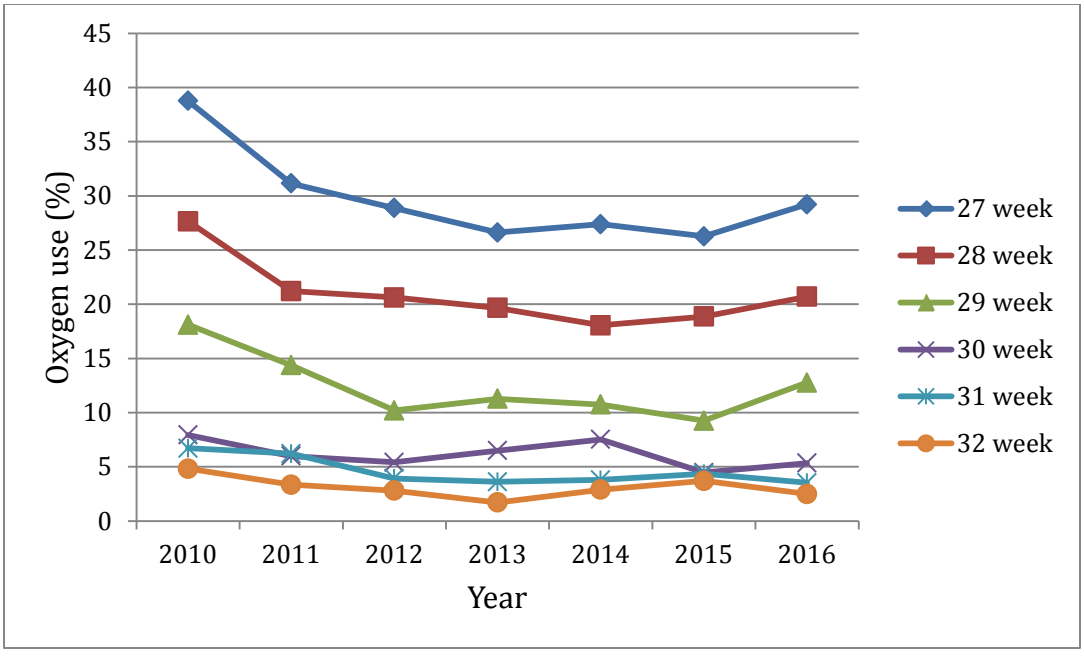


12a. Oxygen use at 36 weeks or at discharge:

a. 23-26 weeks' GA:

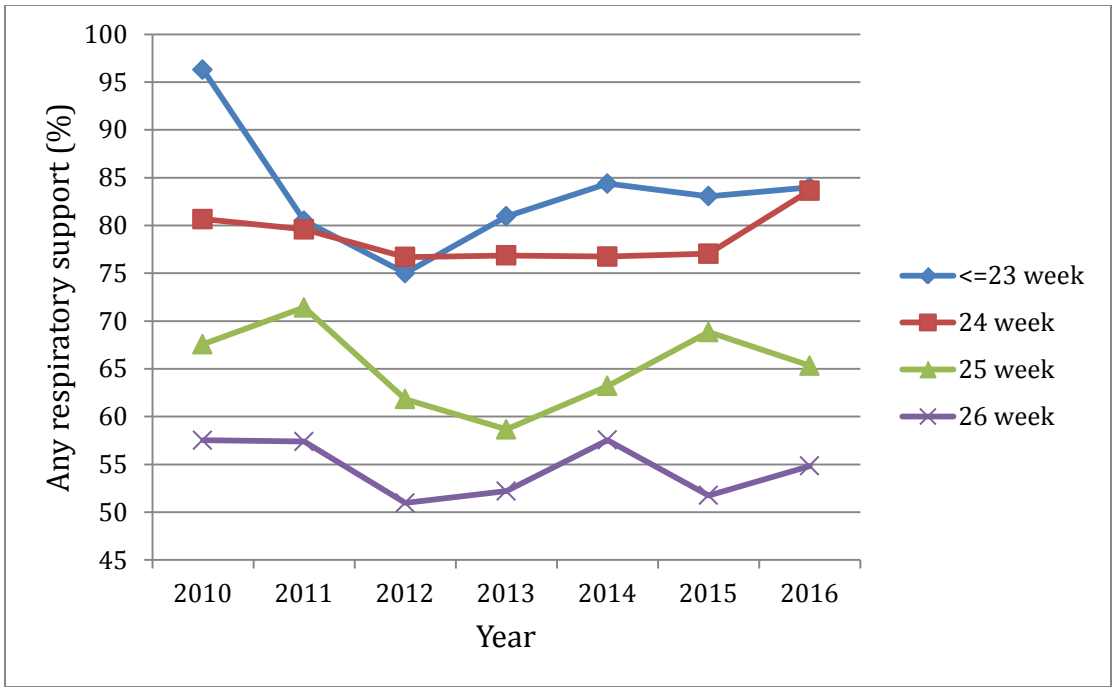


b. 27-32 weeks' GA:

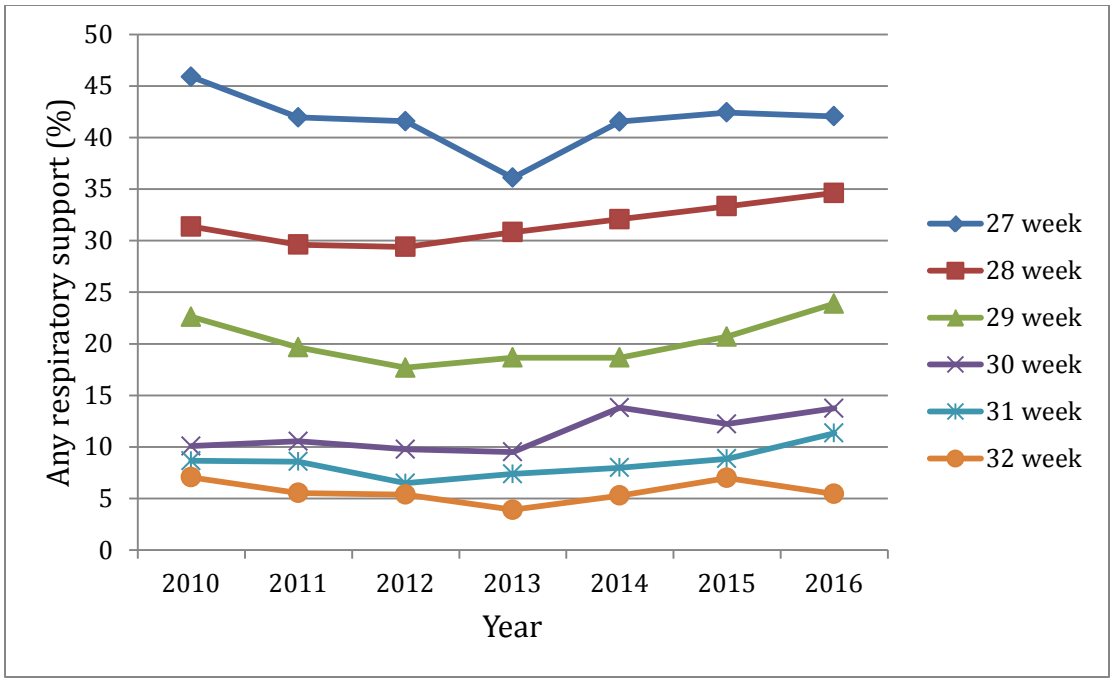


12b. Any respiratory support at 36 weeks or at discharge:

a. 23-26 weeks' GA:

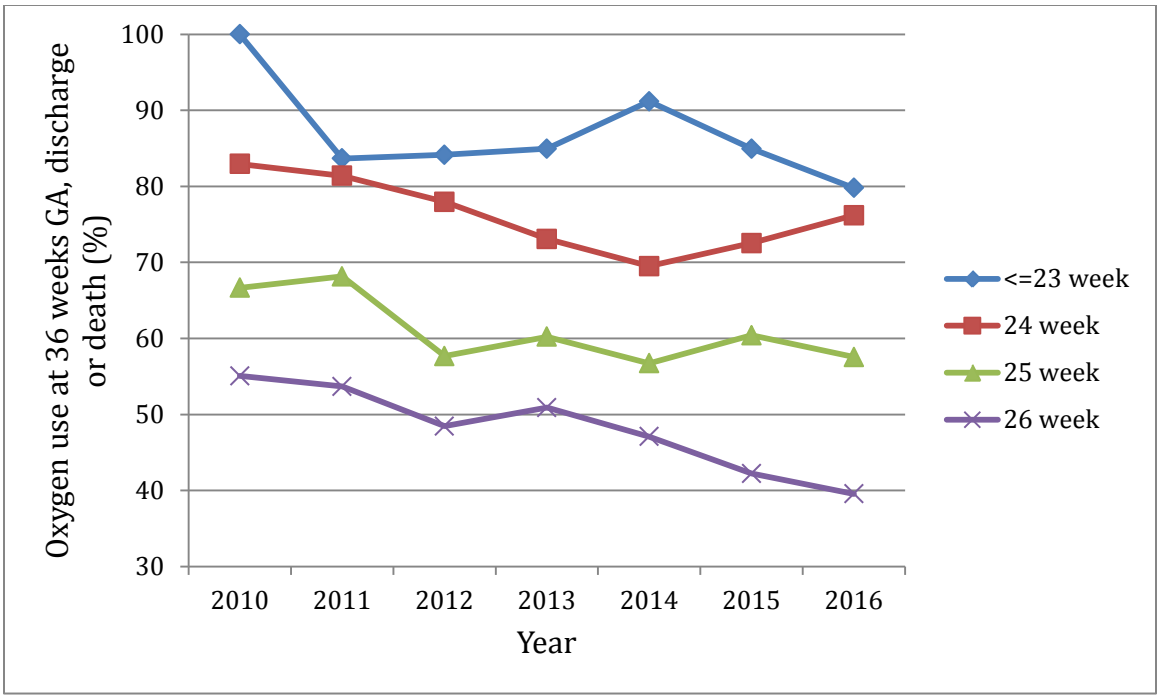


b. 27-32 weeks' GA:

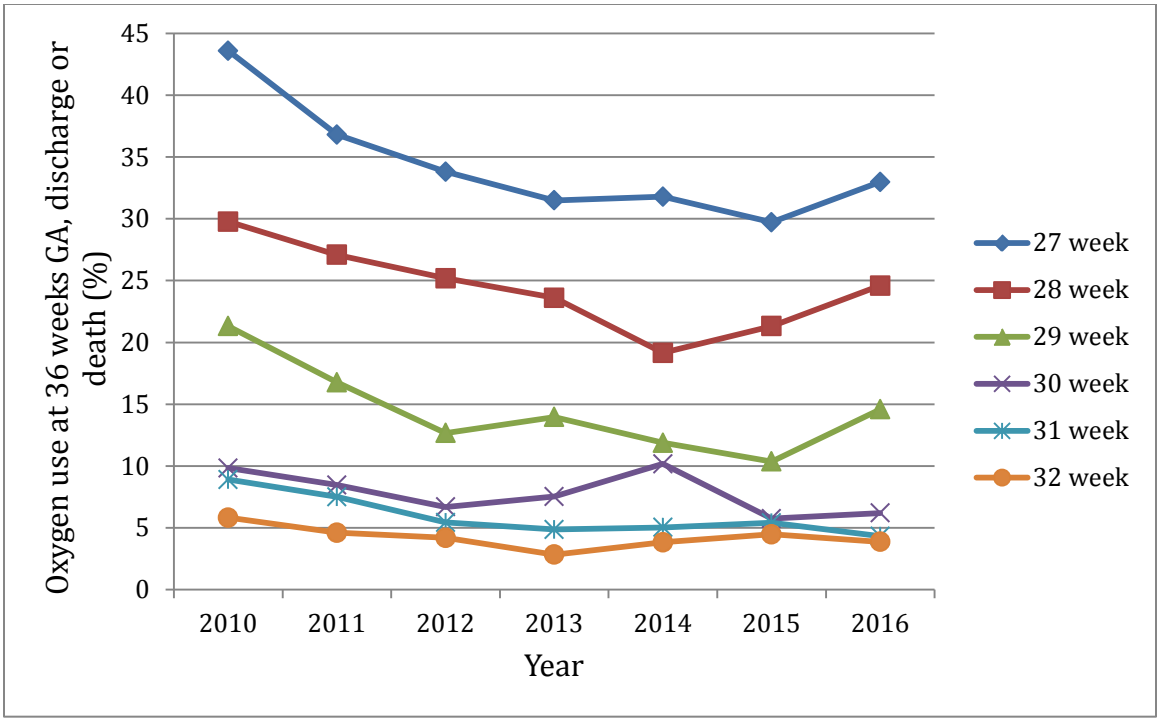


13a. Oxygen use at 36 weeks/discharge or death:

a. 23-26 weeks' GA:

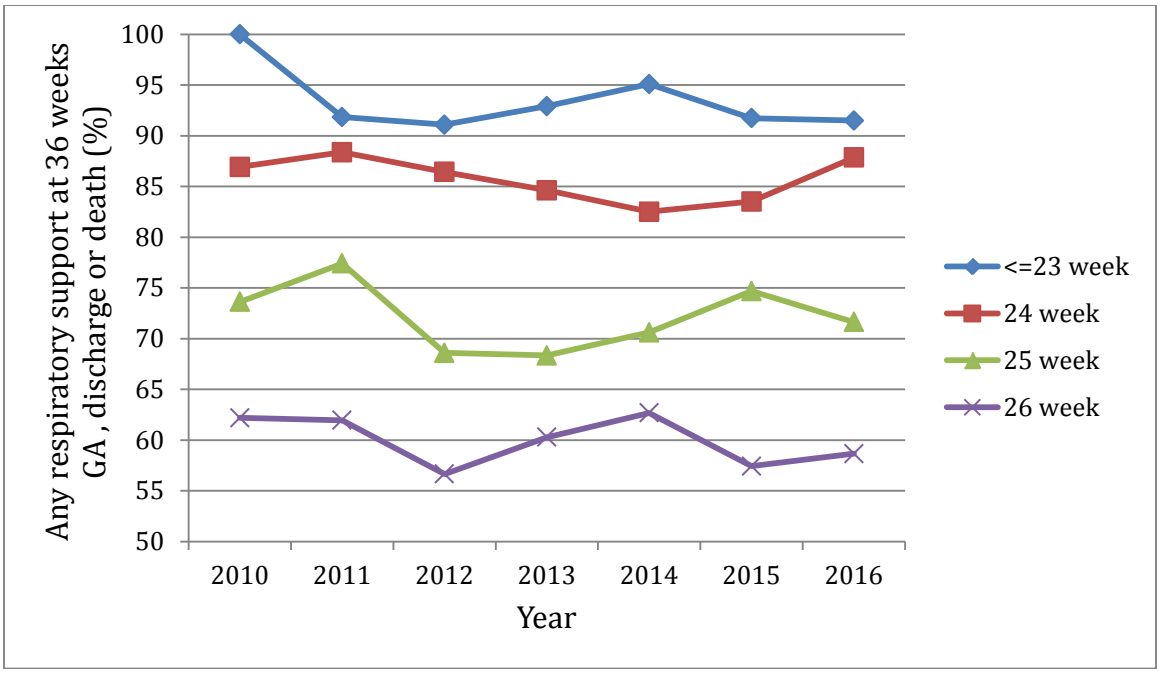


b. 27-32 weeks' GA:

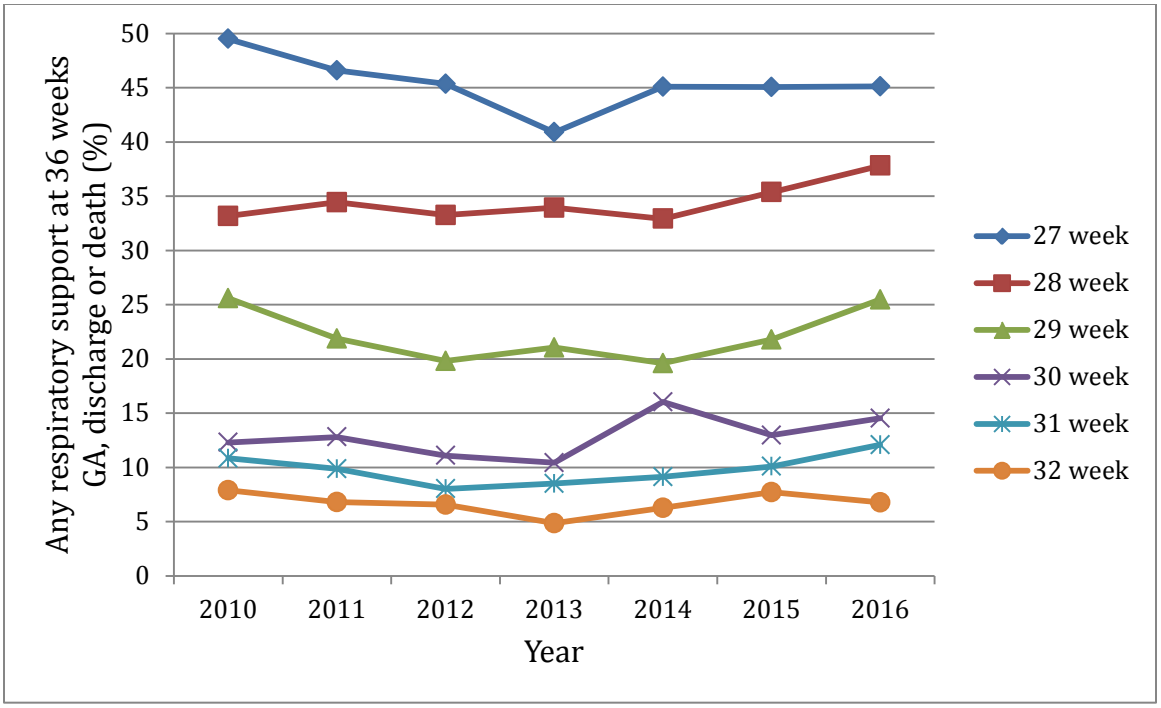


13b. Any respiratory support at 36 weeks/discharge or death:

a. 23-26 weeks' GA:

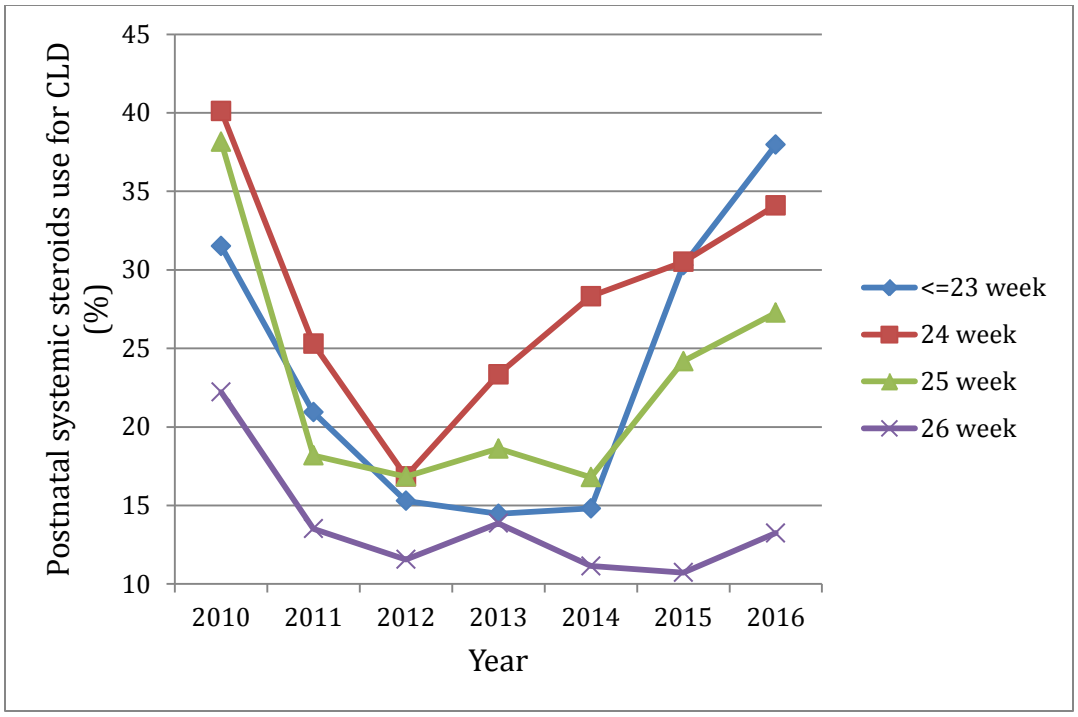


b. 27-32 weeks' GA:

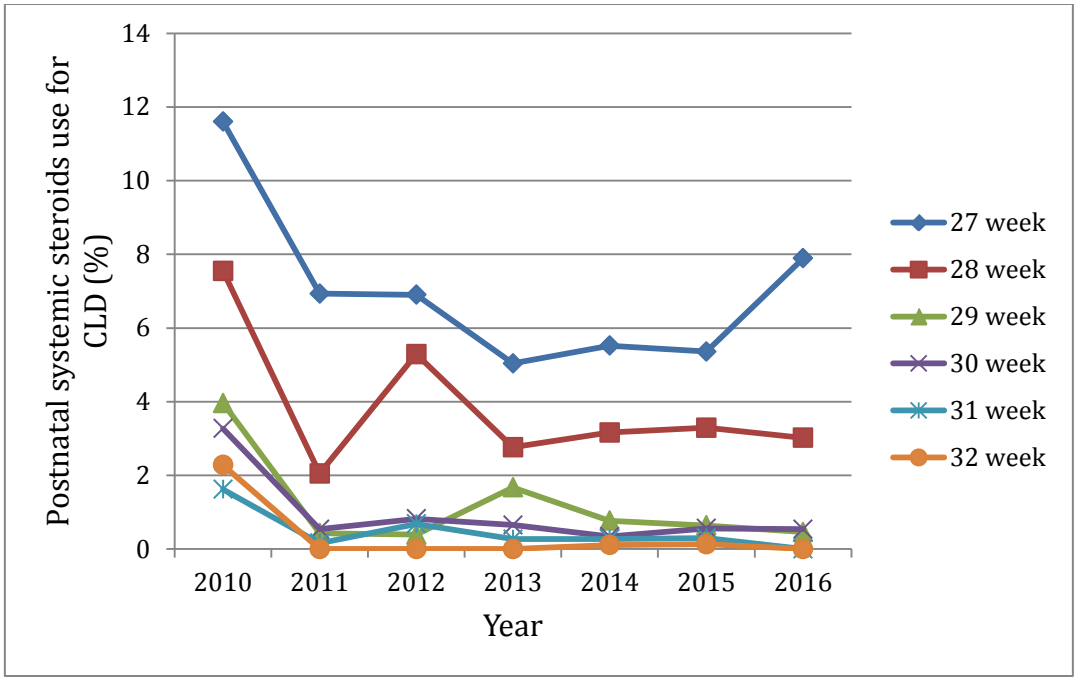


14. Postnatal systemic steroids use for chronic lung disease (CLD)

a. 23-26 weeks' GA:



b. 27-32 weeks' GA:

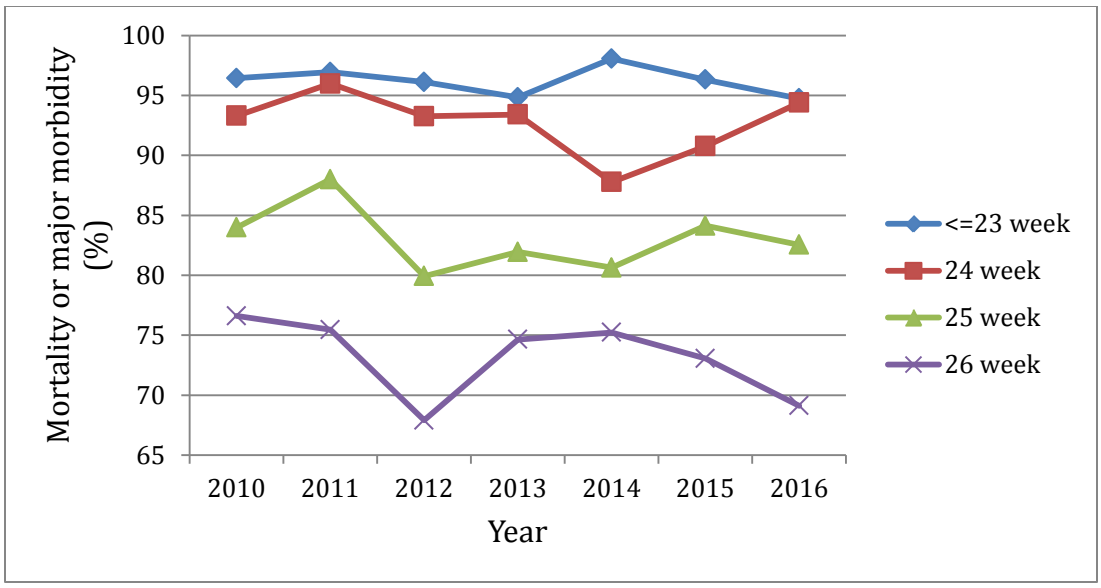


15. Mortality or major morbidity

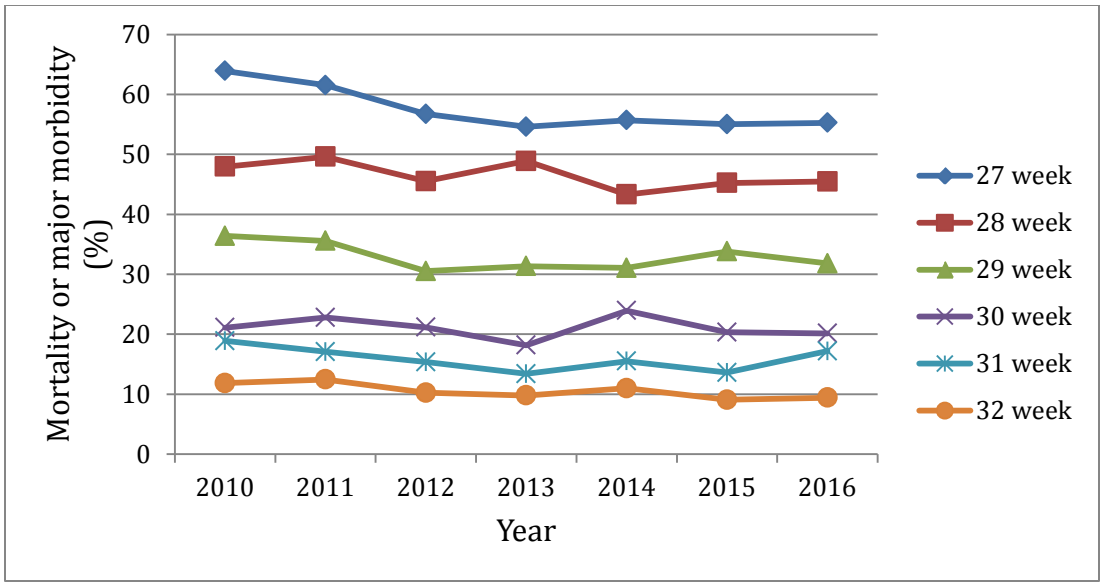
Major morbidity was counted as any one of the following:

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

a. 23-26 weeks' GA:



b. 27-32 weeks' GA:



I. 2016 CNN publications

Peer reviewed publications

1) Hossain S, Shah PS, Ye XY, Darlow BA, Lee SK, Lui K, Canadian Neonatal Network and Australian and New Zealand Neonatal Network. Outborns or inborns: Where are the differences? A Comparison Study of Very Preterm Neonatal Intensive Care Unit Infants Cared for in Australia and New Zealand and in Canada. Neonatology 2016;109(1):76-84.

2) Soraisham AS, Harabor A, Shivananda S, Alvaro R, Ye XY, Lee SK, Shah PS. Trends and variations in the use of inhaled nitric oxide in preterm infants in Canadian Neonatal Intensive Care Units. American Journal of Perinatology. 2016 Jun;33(7):715-22.

3) Jiang S, Lyu Y, Ye XY, Monterrosa L, Shah PS, Lee SK. Intensity of delivery room resuscitation and neonatal outcomes for infants of 33-36 weeks gestation. Journal of Perinatology. 2016 Feb;36(2):100-5.

4) Morin J, Luu TM, Superstein R, Ospina L, Lefebvre F, Simard M, Shah V, Shah PS, Kelly E. Neurodevelopmental Outcomes following Bevacizumab Injections for Retinopathy of Prematurity. Pediatrics. 2016 Apr;137(4).

5) Melamed N, Shah J, Yoon EW, Pelausa E, Lee S, Shah PS, Murphy KE, Canadian Neonatal Network Investigators. The Role of Antenatal Corticosteroids in Twin Pregnancies Complicated by Preterm Birth. American Journal of Obstetrics and Gynecology. 2016 Oct;215(4).

6) Shah PS, Lui K, Sjörs G, Mirea L, Reichman B, Adams M, Modi N, Darlow BA, Kusada S, San Feliciano L, Yang J, Håkansson S, Mori R, Bassler D, Figueras-Aloy J, Lee SK; International Network for Evaluating Outcomes (iNeo) of Neonates. Neonatal Outcomes of Very Low Birth Weight and Very Preterm Neonates: An International Comparison. The Journal of Pediatrics. 2016 Oct;177:144-152.

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J. Appendices

Outcomes Definitions

Mortality: Death prior to discharge from the NICU.

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

Ventricular enlargement

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

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

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

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

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

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

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

Chronic lung disease (CLD) continued:

Severity	Respiratory support at time of classification (at 36 weeks' PMA or at discharge if baby was discharged prior to 36 weeks' PMA)	Oxygen	Flow rate
No CLD	None	21%	None
Mild CLD	Headbox or incubator	>21%	Any amount
	Nasal cannula	100%	<100cc/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

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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