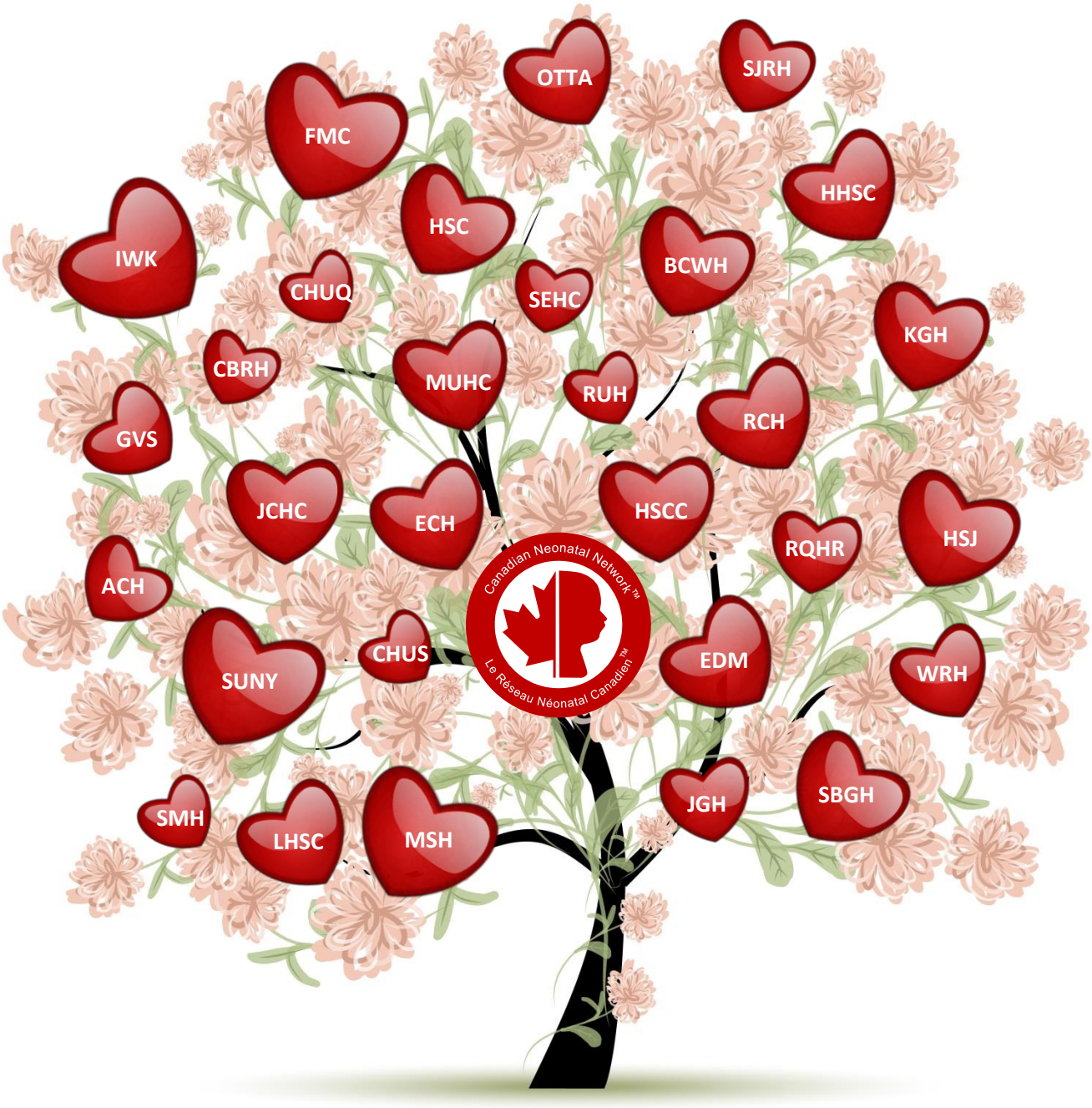

The Canadian Neonatal Network ™
Le Réseau Néonatal Canadien ™

Annual Report 2015 Rapport Annuel

Acknowledgements

This report is based upon data collected from 30 Health Care Organizations from across Canada that were members of the Canadian Neonatal Network™ during the year 2015. In addition to all investigators and the funding agency, we would like to recognize the invaluable support of the Neonatal Intensive Care Units (NICUs) that contributed to 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 Network was founded in 1995 by Dr. Shoo Lee. The Network maintains a standardized neonatal database and provides unique opportunities for researchers to participate in collaborative projects on a national and an 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 Center, is supported by Mount Sinai Hospital, Toronto, Ontario.

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Cover page adapted by Courtney Cheng and Priscilla Chan

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A. Executive Summary

This report from the Canadian Neonatal Network™ (CNN) is based on data from 30 tertiary sites, which contributed data in the year 2015.

Summary of Results/Methodology

Canadian Neonatal Network™ Database: Admissions between January 1, 2015 and December 31, 2015 who were discharged by March 31, 2016 were included.

Total number of eligible admissions to participating Canadian sites (See section D.1 for analyses)	16 076
Total number of eligible individual neonates (See section D.2. for analyses)	14 815
Total number of eligible very preterm (<33 weeks GA) neonates	4 030
Total number of eligible extremely preterm (<29 weeks GA) neonates (See section D.3. for analyses)	1 569
Total number of eligible very low birth weight (VLBW) neonates (See section D.3. for analyses)	2 782

Data on patient demographics, components of care and outcome until discharge from the participating site were entered into a computer and transferred electronically to the Coordinating Centre, at the Maternal-Infant Care Research Centre (MiCare), where the data were verified and analyzed.

Important notes regarding data interpretations

1. 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.
2. In 2015, five (5) sites had resource limitations and were only able to contribute data from a subset of eligible neonates admitted to their NICUs.
3. Characteristics of participating CNN sites are highlighted at the outset of the presentations.
4. 'Missing' data on outcome variables vary for each presentation. Caution should be used in interpreting the information.
5. The denominator for all percentages in this report includes neonates whose data for that particular item are available.
6. Data only include neonates admitted to the NICUs, except for Presentations #4, #6 and #6b.
7. Presentations #4, #6 and #6b include delivery room deaths.
8. Data should be used with caution and understanding that neonates who were not admitted to participating NICUs were not included in this report.

Outcomes Definitions

Mortality: Death prior to discharge from NICU.

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.

Retinopathy of prematurity (ROP): Stage 3, 4 or 5 ROP or those requiring surgery as defined by the International Classification of Retinopathy of Prematurity[1]. ROP was scored as the highest stage in either eye identified during the admission.

Necrotizing enterocolitis (NEC): Stage 2 or 3 NEC according to Bell's classification[2].

Nosocomial infection (NI): Isolation of bacterial, fungal or viral organism from blood or cerebrospinal fluid in a symptomatic infant after 2 days of age.

Bronchopulmonary dysplasia (BPD): Defined as the need for oxygen at 36 weeks post-menstrual age or at discharge to level 2 centers with the need for respiratory support or oxygen.

Survival without major morbidities: Defined as survival at discharge from NICU without having any of BPD, NEC stage 2 or 3, IVH grade 3 or 4 or PVL, NI or ROP stage 3, 4 or 5 during the stay in NICU.

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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

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 2015 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 & all 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	All eligible admissions	y	y	y	y	y
St. Boniface General Hospital	All eligible admissions	n	n/a	y	y	y
Hamilton Health Sciences	All eligible admissions	y	n	y	y	y
London Health Sciences Centre	All eligible admissions	y	y	y	y	y
Windsor Regional Hospital	< 33 weeks GA and/or < 1500g	n	n/a	n	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	< 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	< 29 weeks GA	y	n	y	y	y
McGill University Health Centre	All eligible admissions	n	n/a	y	y	n
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

C. Information Systems

Neonates included in this report are those who were admitted to a CNN participating site between January 1, 2015 and December 31, 2015, and were discharged by March 31, 2016. The neonates must have had a length of stay in the site of 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 14 815 patients accounted for 16 076 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 in the system and that identifier was followed throughout the stay at one or more hospitals. 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. Wherever a small cell size (≤5) 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 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 16 076 eligible admissions (including readmissions) to 30 sites. 25 of these sites submitted complete data (n=14 810) on all admissions and 5 sites submitted data on a selected admission cohort (n=1 266).

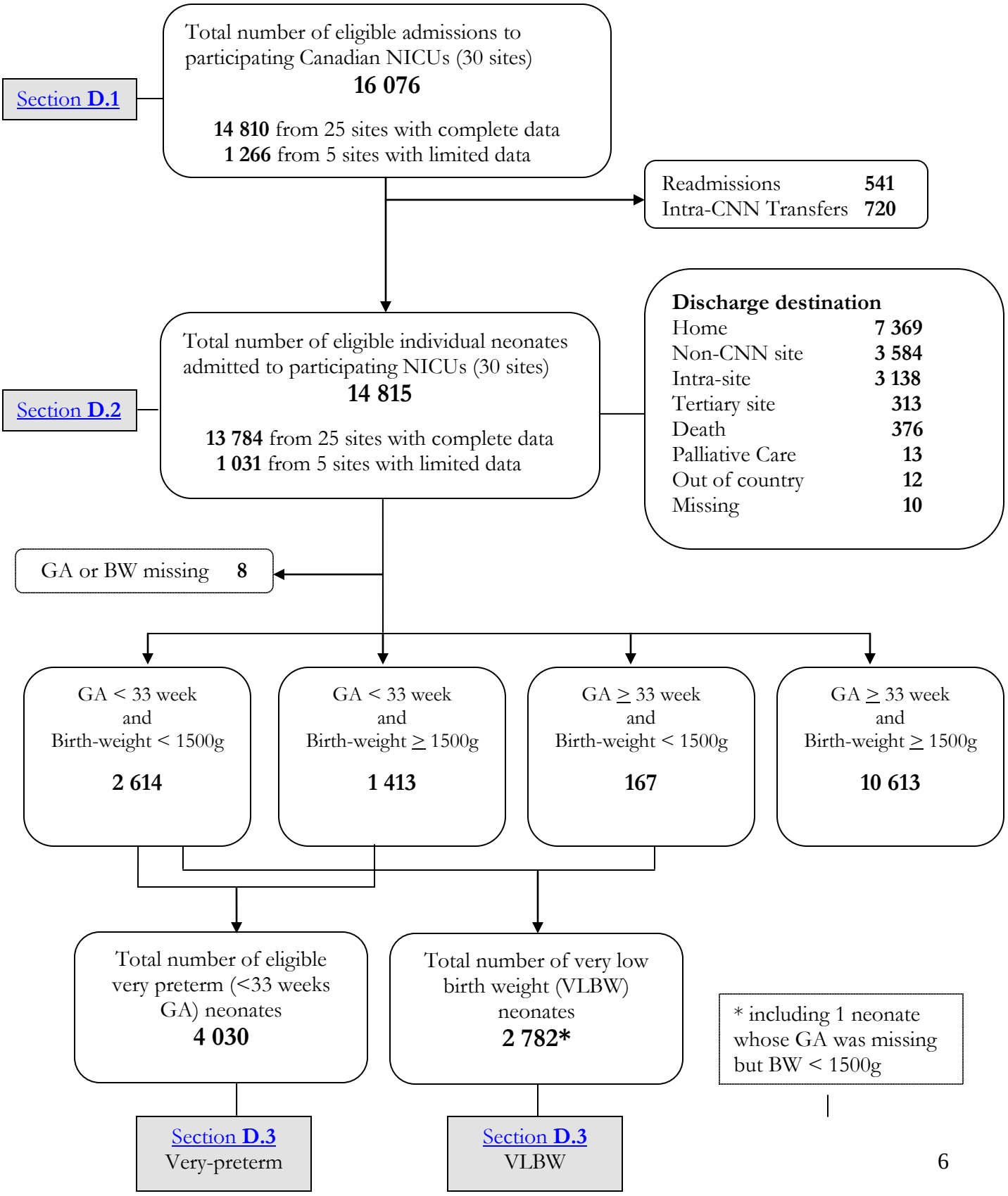
Section D.2. Analyses based on number of eligible neonates admitted to participating sites

These include data from 14 815 eligible neonates admitted to 30 sites. 25 of these sites submitted complete data (n=13 784) on all eligible admitted neonates and 5 sites submitted data on selected eligible admitted neonates (n=1 031).

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

These include data from 4 030 eligible very preterm neonates and 2 782 eligible VLBW neonates.

Canadian Neonatal Network™ Database: Admissions between January 1, 2015 and December 31, 2015 who were discharged by March 31, 2016. Readmissions from 2014, moribund, and delivery room deaths were excluded.

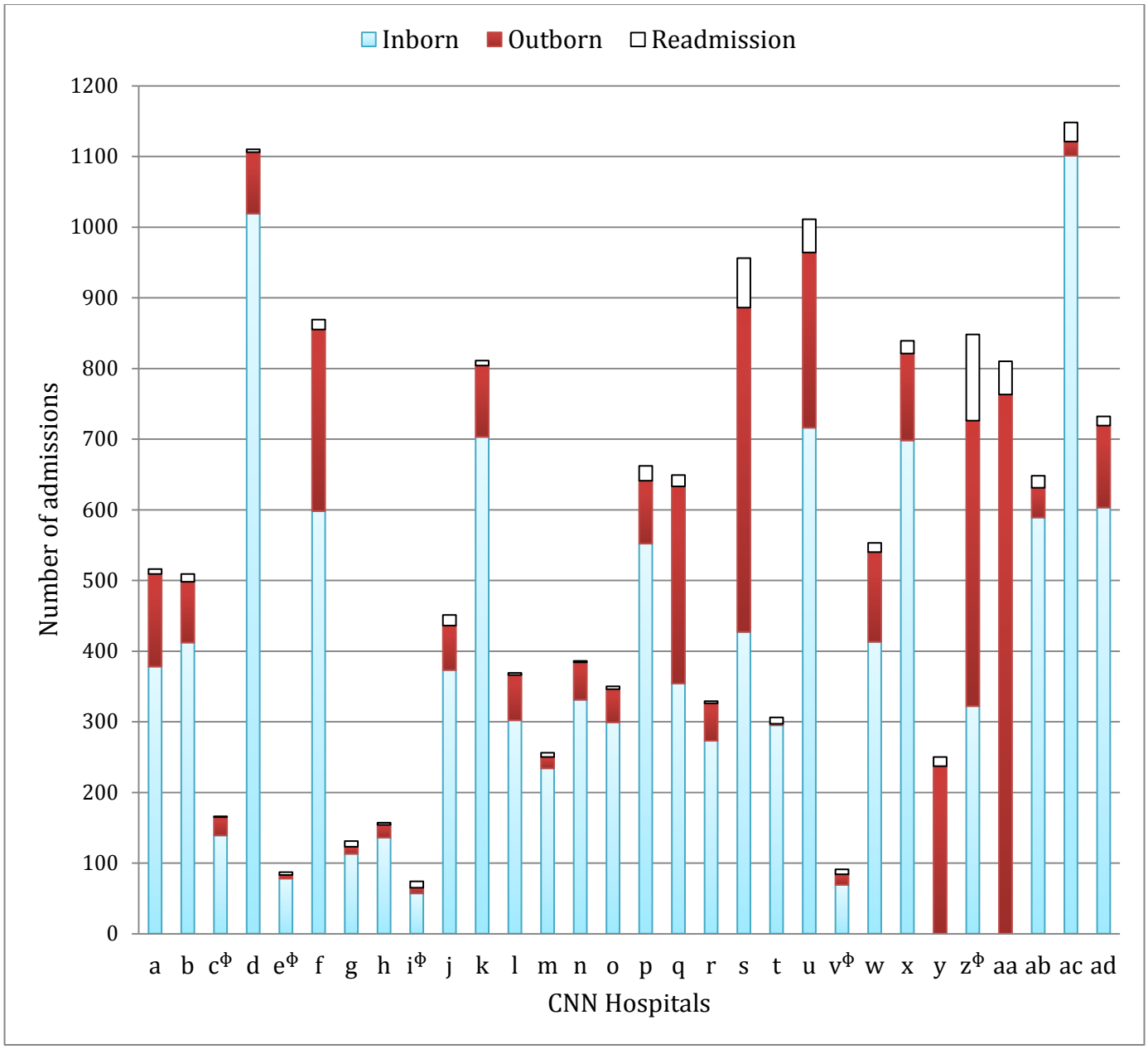


Section D.1

Analyses based on number of eligible admissions to participating sites

These include data from 16 076 eligible admissions (including readmissions) to 30 sites. 25 of these sites submitted complete data (n=14 810) on all admissions and 5 sites submitted data on a selected admission cohort (n=1 266).

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



Φ Data collected on selected cohort of eligible admissions only.

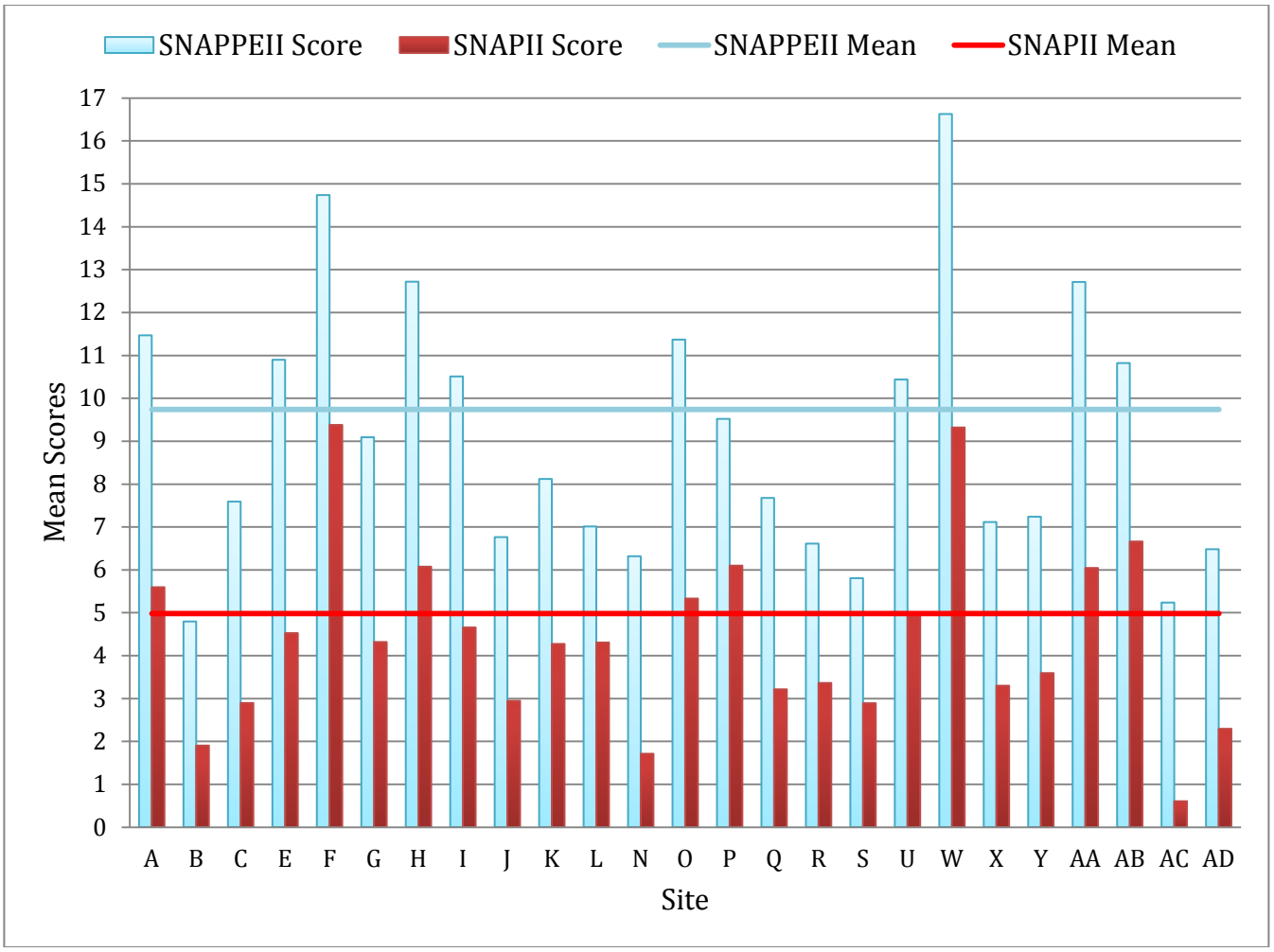
Presentation #1 (continued)
All admissions: Type of admissions: All Sites

Sites		Admission Status			Total	Sites		Admission status			Total
		Inborn	Outborn	Readmission				Inborn	Outborn	Readmission	
a	Count	378	131	7	516	p	Count	552	89	21	662
	%	73.3	25.4	1.4	(100.0)		%	83.4	13.4	3.2	(100.0)
b	Count	412	86	11	509	q	Count	354	279	16	649
	%	80.9	16.9	2.2	(100.0)		%	54.6	43.0	2.5	(100.0)
c$^{\phi}$	Count	139	26	1	166	r	Count	273	53	3	329
	%	83.7	15.7	0.6	(100.0)		%	83.0	16.1	0.9	(100.0)
d	Count	1019	87	4	1110	s	Count	427	459	70	956
	%	91.8	7.8	0.4	(100.0)		%	44.7	48.0	7.3	(100.0)
e$^{\phi}$	Count	78	5	4	87	t	Count	295	2	9	306
	%	89.7	5.8	4.6	(100.0)		%	96.4	0.7	2.9	(100.0)
f	Count	598	257	14	869	u	Count	716	248	47	1011
	%	68.8	29.6	1.6	(100.0)		%	70.8	24.5	4.7	(100.0)
g	Count	113	10	8	131	v$^{\phi}$	Count	69	15	7	91
	%	86.3	7.6	6.1	(100.0)		%	75.8	16.5	7.7	(100.0)
h	Count	136	18	3	157	w	Count	413	127	13	553
	%	86.6	11.5	1.9	(100.0)		%	74.7	23.0	2.4	(100.0)
i$^{\phi}$	Count	57	8	9	74	x	Count	698	123	18	839
	%	77.0	10.8	12.2	(100.0)		%	83.2	14.7	2.2	(100.0)
j	Count	373	63	15	451	y	Count	0	237	13	250
	%	82.7	14.0	3.3	(100.0)		%	0.0	94.8	5.2	(100.0)
k	Count	703	101	7	811	z$^{\phi}$	Count	322	404	122	848
	%	86.7	12.5	0.9	(100.0)		%	38.0	47.6	14.4	(100.0)
l	Count	302	64	3	369	aa	Count	0	763	47	810
	%	81.8	17.3	0.8	(100.0)		%	0.0	94.2	5.8	(100.0)
m	Count	234	16	6	256	ab	Count	589	42	17	648
	%	91.4	6.3	2.3	(100.0)		%	90.9	6.5	2.6	(100.0)
n	Count	331	53	2	386	ac	Count	1101	20	27	1148
	%	85.8	13.7	0.5	(100.0)		%	95.9	1.7	2.4	(100.0)
o	Count	299	47	4	350	ad	Count	603	116	13	732
	%	85.4	13.4	1.1	(100.0)		%	82.4	15.9	1.8	(100.0)

Total number of admissions:	16 076
Inborn:	11 584 (72.1%)
Outborn:	3 949 (24.6%)
Readmission:	541 (3.4%)
Missing data on admission status:	2 (0.01%)

COMMENTS: These analyses include 16 076 admissions to participating sites across Canada during the period of January 1, 2015 to December 31, 2015. Adjusting for readmission, these represent 14 815 Neonates. **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, 14 810 admissions, 486 missing data on SNAP scores)



Note: Median scores for SNAPII and SNAPIIPE for sites with complete data is 0 (zero).

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	11.5	5.6	**P**	Mean	9.5	6.1
	SEM	0.6	0.4		SEM	0.5	0.3
B	Mean	4.8	1.9	**Q**	Mean	7.7	3.2
	SEM	1.0	0.6		SEM	0.5	0.3
C	Mean	7.6	2.9	**R**	Mean	6.6	3.4
	SEM	0.7	0.4		SEM	0.5	0.4
Dϕ	Mean	11.4	5.7	**S**	Mean	5.8	2.9
	SEM	2.2	1.4		SEM	0.6	0.3
E	Mean	10.9	4.5	**T**ϕ	Mean	15.8	8.4
	SEM	1.0	0.6		SEM	1.8	1.0
F	Mean	14.7	9.4	**U**	Mean	10.4	4.9
	SEM	0.5	0.4		SEM	0.8	0.4
G	Mean	9.1	4.3	**V**ϕ	Mean	33.0	16.4
	SEM	0.7	0.4		SEM	2.4	1.6
H	Mean	12.7	6.1	**W**	Mean	16.6	9.3
	SEM	0.6	0.4		SEM	0.7	0.5
I	Mean	10.5	4.7	**X**	Mean	7.1	3.3
	SEM	1.2	0.6		SEM	0.6	0.3
J	Mean	6.8	2.9	**Y**	Mean	7.2	3.6
	SEM	0.6	0.4		SEM	0.5	0.3
K	Mean	8.1	4.3	**Z**ϕ	Mean	18.8	9.9
	SEM	0.6	0.4		SEM	1.6	0.8
L	Mean	7.0	4.3	**AA**	Mean	12.7	6.0
	SEM	0.6	0.4		SEM	0.6	0.4
Mϕ	Mean	15.5	7.2	**AB**	Mean	10.8	6.7
	SEM	0.6	0.4		SEM	0.5	0.3
N	Mean	6.3	1.7	**AC**	Mean	5.2	0.6
	SEM	0.4	0.2		SEM	3.2	0.4
O	Mean	11.4	5.3	**AD**	Mean	6.5	2.3
	SEM	0.5	0.4		SEM	0.7	0.4

All eligible admissions overall (25 sites) – Mean (SEM): SNAP-IIPE 9.7 (0.1), SNAP-II 5.0 (0.1)
Selected admissions overall (5 sites) – Mean (SEM): SNAP-IIPE 16.7 (0.5), SNAP-II 8.2 (0.3)

COMMENTS: These analyses include 16 076 admissions (515 missing data on SNAP scores) to participating sites across Canada during the year 2015. Adjusting for readmission, these analyses represent 14 815 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 have not been included in the previous bar graph but have been included in the above Table.

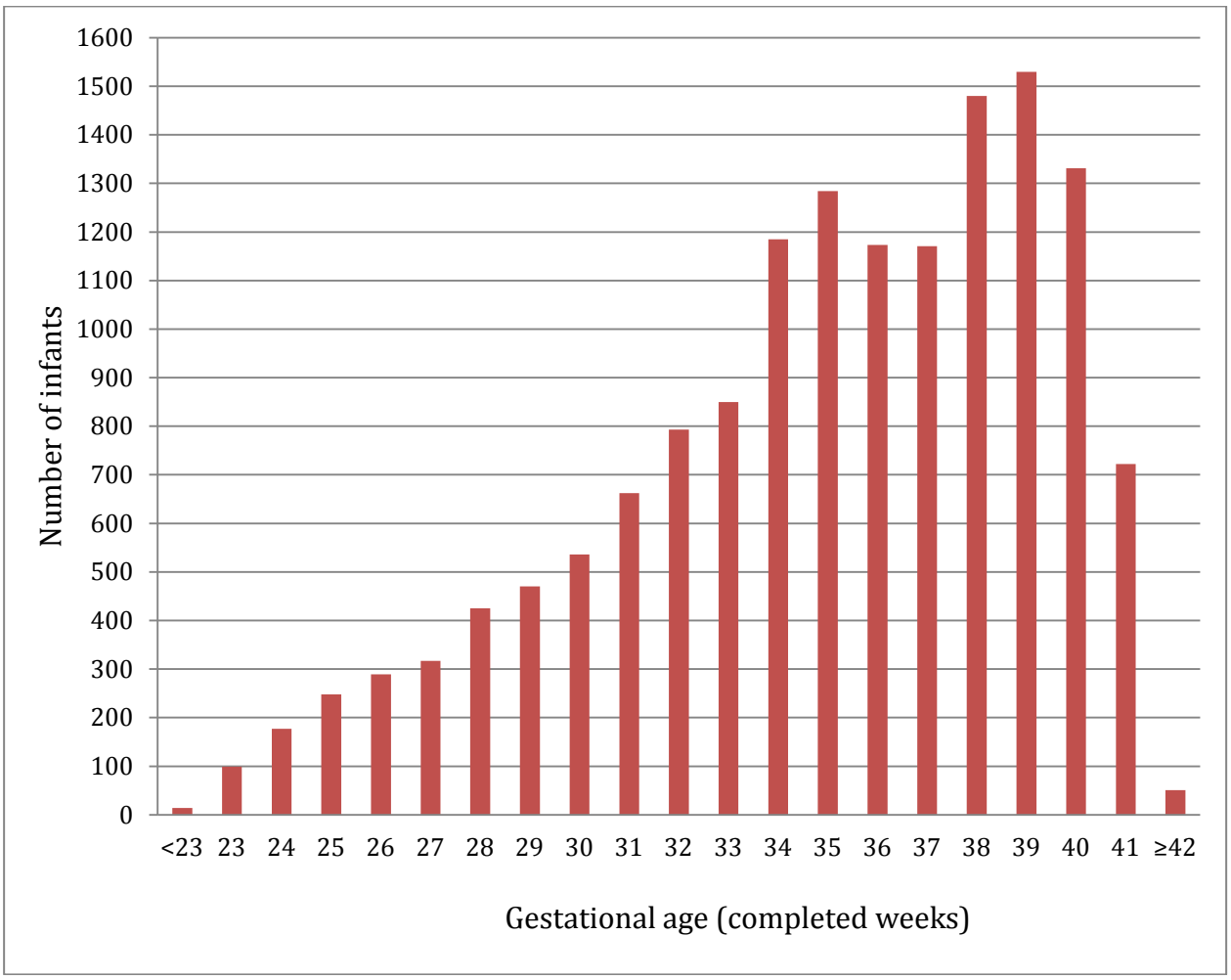
ϕ Please note that the criteria for entering neonates in the CNN dataset are not the same for these five sites and thus, the scores are not comparable with each other or with centers contributing complete data. These five sites may have included neonates at lower GAs and/or lower BWs; thus, their severity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

Section D.2

Analyses based on number of eligible neonates admitted to participating sites

These include data from 14 815 eligible neonates admitted to 30 sites. 25 of these sites submitted complete data (n=13 784) on all eligible admitted neonates and 5 sites submitted data on a selected cohort of eligible admitted neonates (n=1 031).

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

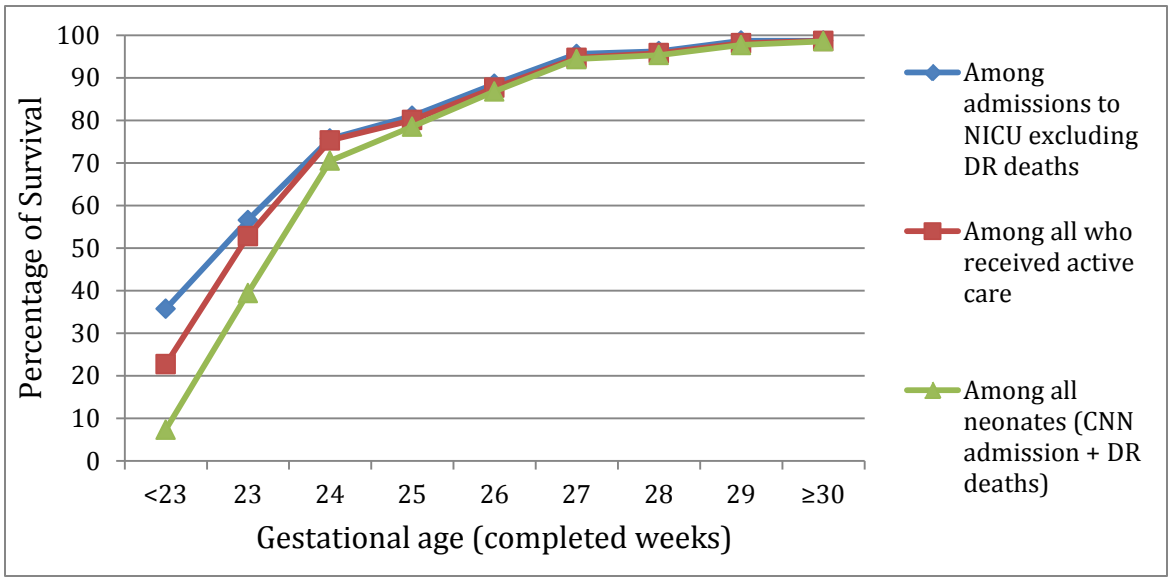


Presentation #3 (continued)
Gestational age distribution: All sites and all admitted neonates

GA in completed weeks at birth	Frequency	Percent	Cumulative percent
<23	14	0.1	0.1
23	99	0.7	0.8
24	177	1.2	2.0
25	248	1.7	3.6
26	289	2.0	5.6
27	317	2.1	7.7
28	425	2.9	10.6
29	470	3.2	13.8
30	536	3.6	17.4
31	662	4.5	21.9
32	793	5.4	27.2
33	850	5.7	33.0
34	1 185	8.0	41.0
35	1 284	8.7	49.6
36	1 173	7.9	57.6
37	1 171	7.9	65.5
38	1 480	10.0	75.5
39	1 530	10.3	85.8
40	1 331	9.0	94.8
41	722	4.9	99.7
≥42	51	0.3	100.0
Total included	14 807	100.0	
Total # of missing (GA)	8		
Total # of infants	14 815		

COMMENTS: The GA distribution of neonates is shown here. Term babies (≥37 weeks) represent approximately 42.4% 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 deaths

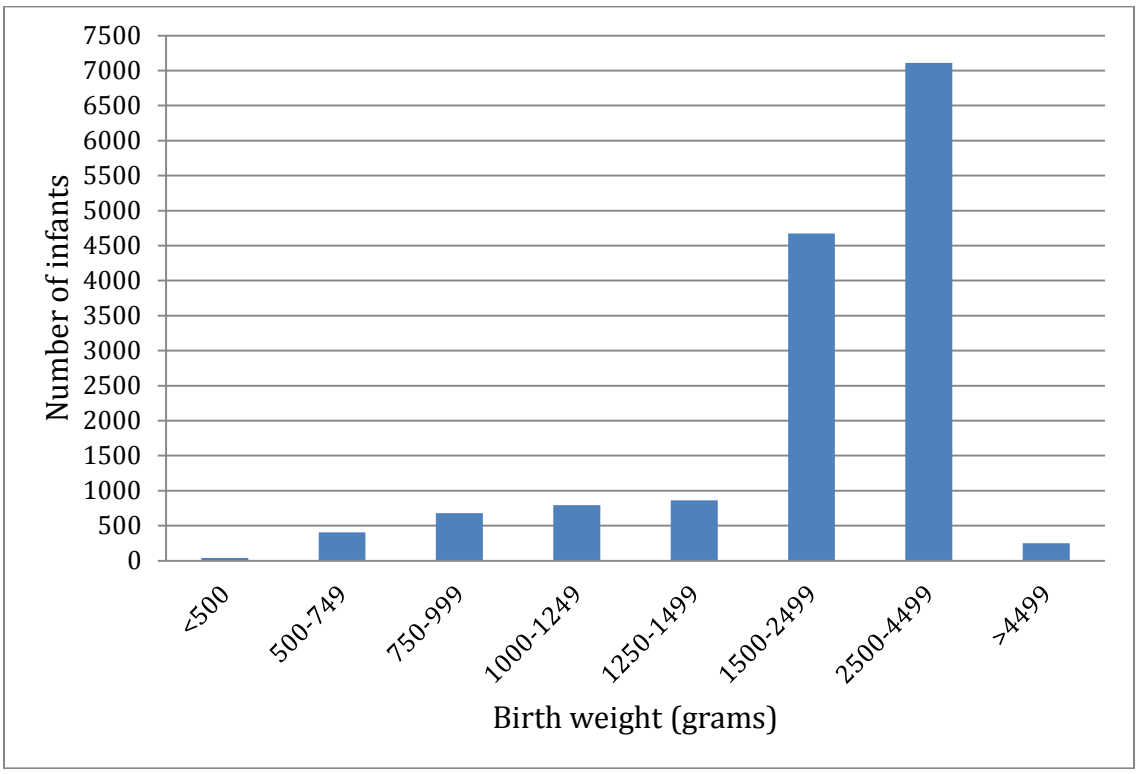


CNN admissions excluding delivery room deaths					Delivery room deaths*		Total CNN admissions including delivery room deaths*				
GA (completed weeks)	**Number of infants**	**Number of survivors**	**Percent survival among admission to NICU, excluding DR deaths**	**Number of infants who received palliative care**	**Palliative care**	**Active care**	**Total**	**Number of infants who received palliative care**	**Number of infants who received active care**	**Percent survival among those who received active care**	**Percent survival among all neonates (CNN admission + 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)*
<23	14	5	36	0	46	8	68	46	22	23	7
23	99	56	57	0	36	7	142	36	106	53	39
24	177	134	76	0	12	1	190	12	178	75	71
25	248	201	81	0	5	3	256	5	251	80	79
26	289	256	89	0	3	3	295	3	292	88	87
27	317	303	96	0	1	3	321	1	320	95	94
28	425	409	96	0	2	2	429	2	427	96	95
29	470	464	99	0	2	3	475	2	473	98	98
≥30	12 768	12 604	99	1	13	7	12 788	14	12 774	99	99
Total included	14 807	14 432	97	1	120	37	14 964	121	14 843	97	96
Total # of missing (GA)	8				2	0	10	2	8		
Total # of infants	**14 815**				**122**	**37**	**14 974**	**123**	**14 851**		

***Please note that delivery room deaths are included *only* in Presentations #4 and #6 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 #5
Birth weight distribution: All sites and all admitted neonates

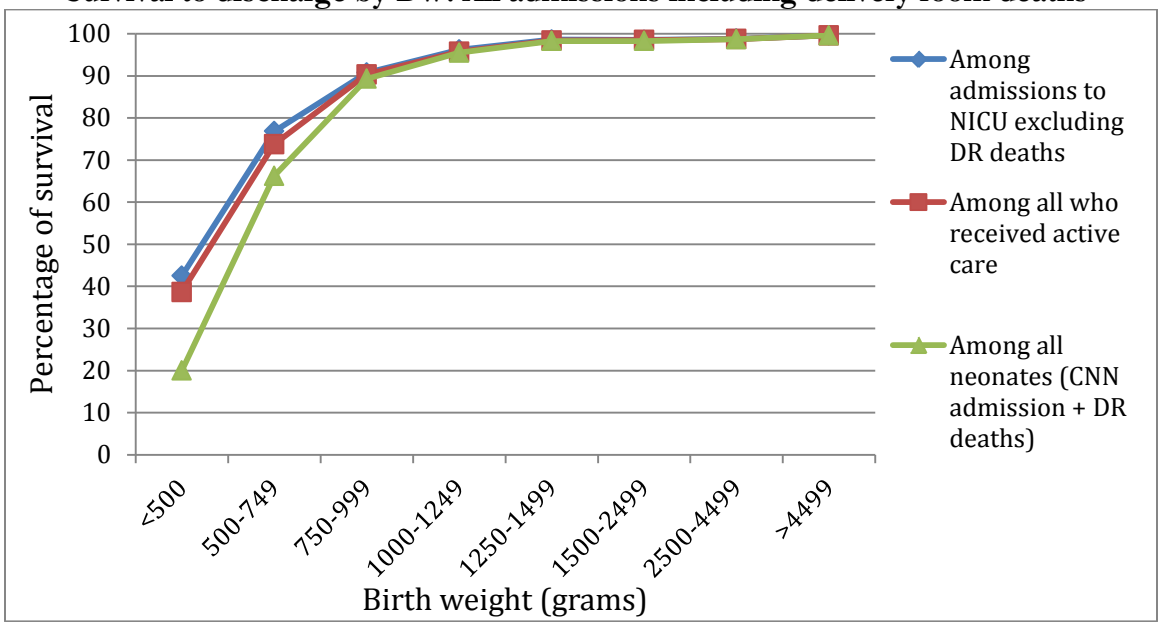


BW (grams)	Frequency	Percent from total number of neonates	Cumulative percent
<500	40	0.3	0.3
500-749	406	2.7	3.0
750-999	680	4.6	7.6
1000-1249	792	5.4	13.0
1250-1499	864	5.8	18.8
1500-2499	4 672	31.5	50.3
2500-4499	7 111	48.0	98.3
>4499	248	1.7	100.0
Total included	14 813	100.0	
Missing (BW)	2		
Total # of neonates	14 815		

COMMENTS: The BW distribution of neonates admitted to the sites. Eighty-one percent weighed more than 1 500g at birth and 50% 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 deaths



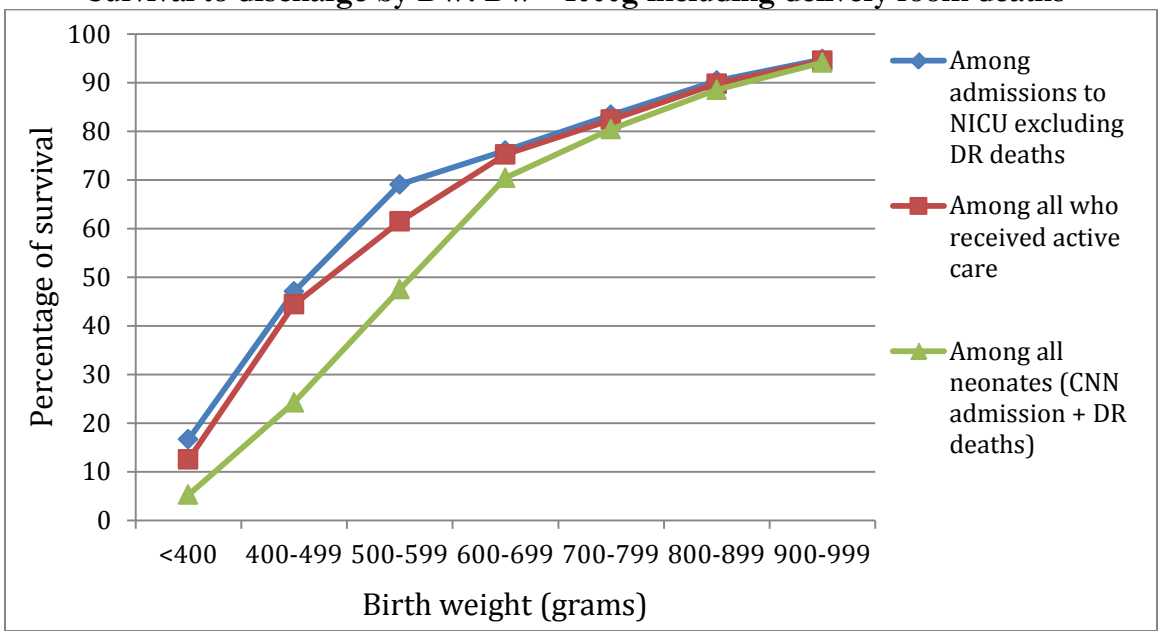
CNN Admissions not including DR deaths					Delivery room deaths*		Total CNN admissions + Delivery room deaths*				
BW (grams)	**Number of infants**	**Number of survivors**	**Percent survival among admission to NICU, excluding DR deaths**	**Number of infants who received palliative care**	**Palliative care**	**Active care**	**Total**	**Number of infants who received palliative care**	**Number of infants who received active care**	**Percent survival among those who received active care**	**Percent survival among all neonates (CNN admission + 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	17	43	0	41	4	85	41	44	39	20
500-749	406	312	77	0	48	17	471	48	423	74	66
750-999	680	617	91	0	8	3	691	8	683	90	89
1000-1249	792	762	96	0	2	4	798	2	796	96	95
1250-1499	864	852	99	0	1	2	867	1	866	98	98
1500-2499	4 672	4 604	99	0	11	1	4 684	11	4 673	99	98
2500-4499	7 111	7 026	99	1	3	5	7 119	4	7 115	99	99
>4499	248	247	100	0	0	0	248	0	248	100	100
Total included	14 813	14 437	97	1	114	36	14 963	115	14 848	97	96
Missing (BW)	2				8	1	11	8	3		
Total # of neonates	**14 815**				**122**	**37**	**14 974**	**123**	**14 851**		

***Please note that delivery room deaths are included *only* 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 #6b

Survival to discharge by BW: BW <1000g including delivery room deaths



CNN Admissions not including DR deaths					Delivery room deaths*		Total CNN admissions + Delivery room deaths*				
BW (grams)	**Number of infants**	**Number of survivors**	**Percent survival among admission to NICU, excluding DR deaths**	**Number of infants who received palliative care**	**Palliative care**	**Active care**	**Total**	**Number of infants who received palliative care**	**Number of infants who received active care**	**Percent survival among those who received active care**	**Percent survival among all neonates (CNN admission + DR deaths)**
	a	*b*	*b/a*	*c*	*d*	*e*	*a+d+e*	*c+d*	*(a-c) +e*	*b/ (a-c)+e*	*b/(a+d+e)*
<400	6	1	17	0	11	2	19	11	8	13	5
400-499	34	16	47	0	30	2	66	30	36	44	24
500-599	97	67	69	0	32	12	141	32	109	61	48
600-699	188	143	76	0	13	2	203	13	190	75	70
700-799	247	206	83	0	6	3	256	6	250	82	80
800-899	282	255	90	0	4	2	288	4	284	90	89
900-999	272	258	95	0	1	1	274	1	273	95	94
Total included	1126	946	84	0	97	24	1247	97	1150	82	76

***Please note that delivery room deaths are included *only* 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		8		**538**	**1031**	**2461**	**4492**	**6285**	**14807**
No prenatal care		512	N	24	24	34	65	58	205
			%	4.6	2.4	1.4	1.5	1.0	1.4
Illicit drug use		9	N	25	46	131	285	409	896
			%	4.7	4.5	5.3	6.3	6.5	6.1
Smoking		9	N	70	129	312	568	775	1854
			%	13.0	12.5	12.7	12.6	12.3	12.5
Maternal hypertension		494	N	38	191	515	829	562	2135
			%	7.3	19.0	21.5	19.0	9.3	14.9
Maternal diabetes		554	N	31	128	377	789	878	2203
			%	6.1	13.1	15.7	18.2	14.5	15.4
Assisted pregnancy		962	N	66	120	325	411	217	1139
			%	12.7	12.2	13.8	9.8	3.8	8.2
Multiples		8	N	121	245	756	1214	188	2524
			%	22.5	23.8	30.7	27.0	3.0	17.0
$MgSO_4$ for neuroprotection		550	N	312	654	1182	324	58	2530
			%	60.4	66.7	50.3	7.6	1.0	17.7
Prenatal steroids	None	504	N	64	93	315	2805	5923	9200
			%	12.1	9.2	13.1	65.0	98.1	64.3
	Partial		N	116	216	462	217	5	1016
			%	21.9	21.3	19.2	5.0	0.1	7.1
	Complete		N	351	704	1635	1292	113	4095
			%	66.1	69.5	67.8	30.0	1.9	28.6
Mode of birth	Vaginal	55	N	279	394	924	2157	3718	7472
			%	52.2	38.3	37.6	48.2	59.4	50.6
	C/S		N	256	636	1531	2320	2545	7288
			%	47.9	61.8	62.4	51.8	40.6	49.4
Presentation	Vertex	688	N	305	635	1648	3460	5518	11566
			%	59.7	64.0	69.6	80.9	92.3	81.9
	Breech		N	176	306	606	722	345	2155
			%	34.4	30.9	25.6	16.9	5.8	15.3
	Other		N	30	51	115	96	114	406
			%	5.9	5.1	4.9	2.2	1.9	2.9
Rupture of membranes	<24 h	752	N	364	708	1856	3724	5579	12231
			%	69.6	71.6	79.0	87.4	93.9	87.0
	24h to 1wk		N	112	125	299	385	349	1270
			%	21.4	12.64	12.72	9.0	5.9	9.0
	>1 wk		N	47	156	195	153	11	562
			%	9.0	15.77	8.3	3.6	0.2	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		8		**538**	**1031**	**2461**	**4492**	**6285**	**14807**
Chorioamnionitis*		5547	N	168	226	264	188	398	1244
			%	41.7	29.5	15.5	6.6	11.3	13.4
Delayed cord clamping	≤ 29 sec	7159	N	10	14	8	11	8	51
			%	3.2	2.8	0.7	0.5	0.2	0.7
	30-44 sec		N	9	17	21	19	2	68
			%	2.9	3.4	1.9	0.8	0.1	0.9
	≥45 sec		N	15	37	85	54	3	194
			%	4.8	7.3	7.7	2.4	0.1	2.5
	Yes, but timing unknown		N	0	2	3	7	2	14
			%	0.0	0.4	0.3	0.3	0.1	0.2
	No		N	280	437	994	2166	3452	7329
			%	89.2	86.2	89.5	96.0	99.6	95.7

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

Presentation #8a
Resuscitation details: GA < 31 weeks

Action taken			**GA at birth (completed weeks)**								
			≤23	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**Total**
Total			**113**	**177**	**248**	**289**	**317**	**425**	**470**	**536**	**2575**
No resuscitation needed/provided		N	1	0	2	0	2	2	16	40	63
		%	0.9	0.0	0.8	0.0	0.6	0.5	3.4	7.5	2.4
CPAP		N	23	62	95	151	190	285	330	365	1501
		%	20.4	35.0	38.6	52.3	59.9	67.1	70.2	68.1	58.3
PPV via mask		N	82	130	185	218	220	258	260	273	1626
		%	72.6	73.5	75.2	75.4	69.4	60.7	55.3	50.9	63.2
PPV via ETT		N	96	122	138	142	120	124	93	75	910
		%	85.0	68.9	56.1	49.1	37.9	29.2	19.8	14.0	35.4
Chest compression		N	9	16	25	18	19	17	10	11	125
		%	8.0	9.0	10.2	6.2	6.0	4.0	2.1	2.1	4.9
Epinephrine		N	5	7	12	8	6	6	4	6	54
		%	4.4	4.0	4.9	2.8	1.9	1.4	0.9	1.1	2.1
Unknown		N	0	1	1	2	2	3	4	2	15
		%	0.0	0.6	0.4	0.7	0.6	0.7	0.9	0.4	0.6
Any resuscitation provided*		N	112	176	240	286	308	403	434	455	2414
		%	99.1	99.4	97.6	99.0	97.2	94.8	92.3	84.9	93.8
Initial gas	Air	N	19	32	41	67	82	122	149	195	707
		%	16.8	18.1	16.5	23.2	25.9	28.7	31.7	36.4	27.5
	22-40% O_2	N	32	72	100	99	112	146	139	128	828
		%	28.3	40.7	40.3	34.3	35.3	34.4	29.6	23.9	32.2
	41-70% O_2	N	7	11	12	20	20	28	20	24	142
		%	6.2	6.2	4.8	6.9	6.3	6.6	4.3	4.5	1.0
	71-99% O_2	N	1	3	4	8	2	4	0	3	25
		%	0.9	1.7	1.6	2.8	0.6	0.9	0.0	0.6	1.0
	100% O_2	N	32	22	32	35	22	20	20	20	203
		%	28.3	12.4	12.9	12.1	6.9	4.7	4.3	3.7	7.9
	Unknown/ Missing	N	22	37	59	60	79	105	142	166	670
		%	19.5	20.9	23.8	20.8	24.9	24.7	30.2	31.0	26.0
Maximum O_2 conc. during resus.	21%	N	0	0	4	3	0	8	20	31	66
		%	0.0	0.0	1.6	1.0	0.0	1.9	4.3	5.8	2.6
	22-40%	N	6	21	31	41	63	101	146	145	554
		%	5.3	11.9	12.5	14.2	19.9	23.8	31.1	27.1	21.5
	41-70%	N	8	21	42	51	67	89	75	97	450
		%	7.1	11.9	16.9	17.7	21.1	20.9	16.0	18.1	17.5
	>70%	N	85	110	133	151	134	148	114	102	977
		%	75.2	62.2	53.6	52.3	42.3	34.8	24.3	19.0	37.9
	Missing	N	14	25	38	43	53	79	115	161	528
		%	12.4	14.1	15.3	14.9	16.7	18.6	24.5	30.0	20.5

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

NOTE: Please note that some of the definitions for items on this table were evolving during this first year of this data collection. Please use caution while interpreting these data. Resuscitation time was defined as first 30 minutes after birth.

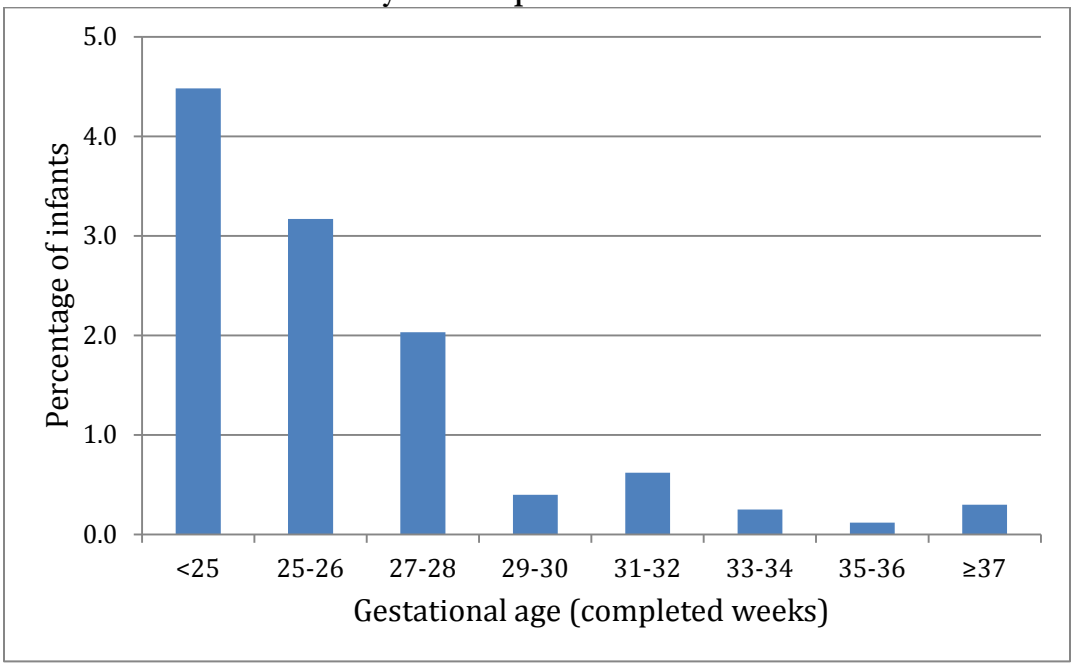
Presentation #8b
Resuscitation details: GA ≥ 31 weeks

Action taken			**GA at birth (completed weeks)**							
			31	**32**	**33**	**34**	**35**	**36**	**≥37**	**Total**
Total			**662**	**793**	**850**	**1185**	**1284**	**1173**	**6285**	**12232**
No resuscitation needed / provided		N	85	138	238	424	441	408	2139	3873
		%	12.8	17.4	28.0	35.8	34.4	34.8	34.0	31.7
CPAP		N	397	430	350	317	331	261	1297	3383
		%	60.0	54.3	41.2	26.8	25.8	22.3	20.6	27.7
PPV via mask		N	316	305	247	249	288	283	1724	3412
		%	47.7	38.5	29.1	21.0	22.4	24.1	27.4	27.9
PPV via ETT		N	69	56	47	33	45	46	472	768
		%	10.4	7.1	5.5	2.8	3.5	3.9	7.5	6.3
Chest compression		N	11	13	14	10	19	15	182	264
		%	1.7	1.6	1.7	0.8	1.5	1.3	2.9	2.2
Epinephrine		N	5	8	4	4	5	6	67	99
		%	0.8	1.0	0.5	0.3	0.4	0.5	1.1	0.8
Unknown		N	4	10	9	18	13	27	165	246
		%	0.6	1.3	1.1	1.5	1.0	2.3	2.6	2.0
Any resuscitation provided*		N	514	542	446	438	485	426	2479	5330
		%	77.6	68.4	52.5	37.0	37.8	36.3	39.5	43.6
Initial gas	Air	N	229	300	219	251	298	270	1462	3029
		%	34.6	37.8	25.8	21.2	23.2	23.0	23.3	24.8
	22-40% O_2	N	132	101	103	106	98	75	378	993
		%	19.9	12.7	12.1	9.0	7.6	6.4	6.0	8.1
	41-70% O_2	N	23	25	12	9	26	12	110	217
		%	3.5	3.2	1.4	0.8	2.0	1.0	1.8	1.8
	71-99% O_2	N	2	2	10	1	4	4	22	45
		%	0.3	0.3	1.2	0.1	0.3	0.3	0.4	0.4
	100% O_2	N	22	29	28	32	27	39	281	458
		%	3.3	3.7	3.3	2.7	2.1	3.3	4.5	3.7
	Unknown/ Missing	N	254	336	478	786	831	773	4032	7490
		%	38.4	42.4	56.2	66.3	64.7	65.9	64.2	61.2
Maximum O_2 conc. during resus	21%	N	36	53	65	93	125	103	604	1079
		%	5.4	6.7	7.7	7.9	9.7	8.8	9.6	8.8
	22-40%	N	145	199	129	154	150	108	533	1418
		%	21.9	25.1	15.2	13.0	11.7	9.2	8.5	11.6
	41-70%	N	94	91	71	56	65	54	256	687
		%	14.2	11.5	8.4	4.7	5.1	4.6	4.1	5.6
	>70%	N	134	114	107	90	105	118	779	1447
		%	20.2	14.4	12.6	7.6	8.2	10.1	12.4	11.8
	Missing	N	253	336	478	792	839	790	4113	7601
		%	38.2	42.4	56.2	66.8	65.3	67.4	65.4	62.1

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

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

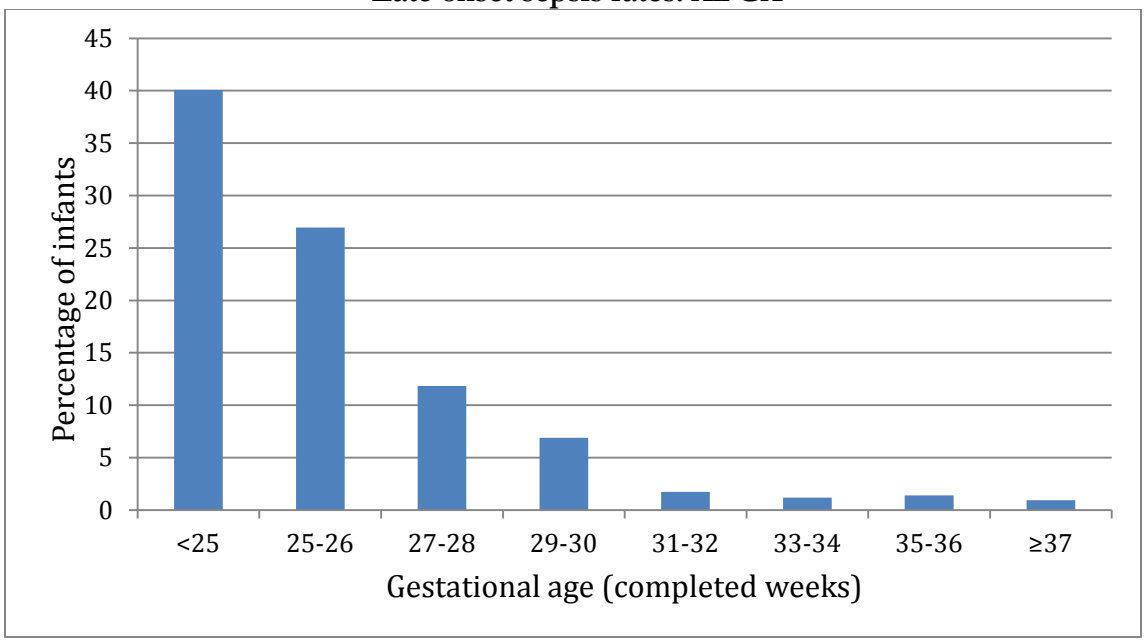
Presentation #9
Early onset sepsis rates: All GA



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	290	13	4.5	14	5	2	7
25-26	537	17	3.2	17	11	1	5
27-28	740	15	2.0	15	10	4	1
29-30	1006	4	0.4	4	0	1	3
31-32	1455	9	0.6	9	1	2	6
33-34	2035	5	0.3	5	1	1	3
35-36	2457	3	0.1	3	1	0	2
≥37	6285	19	0.3	19	5	6	8
Total included	**14 805**	**85**	**0.6**	86	34	17	35
Missing	10						
Total # of neonates	**14 815**						

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 (n=8), Haemophilus influenza (n=6), Staphylococci (n=6), Cytomegalovirus (n=3), Enterococci (n=2). In contrast to previous CNN reports, CONS were *not* included as an organism causing early onset sepsis in this report based on consultation with microbiologists.

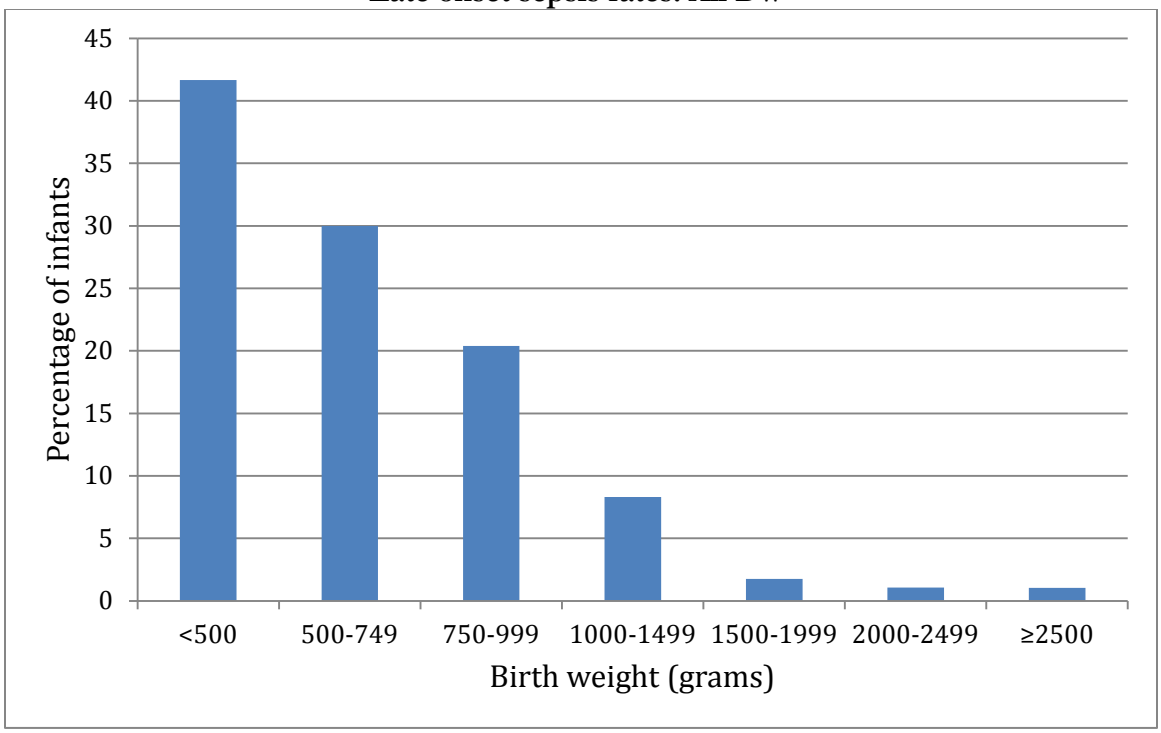
Presentation #10
Late onset sepsis rates: All GA



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 infants with more than one infection	Among infants who survived day 2, percentage with at least one infection	Total number of organisms	Organisms				
								CONS	E. Coli	Coag + Staph	Fungal	Other
<25	290	23	267	107	29	40	153	68	16	8	11	50
25-26	537	14	523	141	25	27	177	72	27	15	4	59
27-28	742	6	736	87	13	12	103	57	7	13	0	26
29-30	1 006	4	1 002	69	2	7	74	45	7	7	0	15
31-32	1 455	4	1 451	25	2	2	28	11	5	6	1	5
33-34	2 035	5	2 030	24	2	1	28	8	5	2	0	13
35-36	2 457	7	2 450	34	1	1	37	11	4	3	0	19
≥37	6 285	17	6 268	58	5	1	68	24	12	6	1	25
Total included	**14 807**	**80**	**14 727**	**545**	**79**	**4**	**668**	**296**	**83**	**60**	**17**	**212**
Missing	8											
Total # of neonates	**14 815**											

COMMENTS: Late onset sepsis is defined as any positive blood and/or cerebrospinal fluid culture for bacteria, viral or fungi after 2 days of age (analysis is neonate-based). The numbers are adjusted for readmission. Among other category, top 5 organisms were: GBS (n=43), Staphylococci (n=38), Enterococci (n=36), Klebsiella (n=34), Enterobacter (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 infants with more than one infection	Among infants who survived day 2, percentage with at least one infection	Total number of organisms	Organisms				
								CONS	E. Coli	Coag + Staph	Fungal	Other
<500	40	7	33	15	1	42	18	9	1	3	1	4
500-749	406	16	390	117	27	30	159	67	17	11	7	57
750-999	680	13	667	136	27	20	178	87	23	17	6	45
1000-1499	1 656	8	1 648	137	15	8	154	78	15	15	1	45
1500-1999	2 123	8	2 115	37	2	2	40	15	6	5	1	13
2000-2499	2 549	6	2 543	27	2	1	34	11	6	2	0	15
≥2500	7 359	22	7 337	76	5	1	86	30	15	7	1	33
Total included	**14 813**	**80**	**14 733**	**545**	**79**	**4**	**669**	**297**	**83**	**60**	**17**	**212**
Missing (BW)	2											
Total # of neonates	**14 815**											

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: GBS (n=43), Staphylococci (n=38), Enterococci (n=36), Klebsiella (n=34), Enterobacter (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				538	1031	1006	1455	4492	6285	14807
Prophylactic	Indomethacin	2	N	182	99	16	6	2	1	306
			%	33.9	9.6	1.6	0.4	0.0	0.0	2.1
	Probiotics	2	N	164	328	275	305	134	21	1227
			%	30.5	31.8	27.3	21.0	3.0	0.3	8.3
RDS	Unknown	4	N	1	0	0	1	1	3	6
			%	0.2	0.0	0.0	0.1	0.0	0.1	0.0
	Uncertain		N	8	5	19	30	33	21	116
			%	1.5	0.5	1.9	2.1	0.7	0.3	0.8
	None		N	46	184	354	859	3902	6063	11408
			%	8.6	17.9	35.2	59.1	86.9	96.5	77.1
	Definite		N	481	841	633	564	556	198	3273
			%	89.7	81.7	62.9	38.8	12.4	3.2	22.1
Surfactant in first 30 min			N	106	94	34	15	7	0	256
			%	19.7	9.1	3.4	1.0	0.2	0.0	1.7
Surfactant in first 60 min			N	204	202	64	36	20	3	529
			%	37.9	19.6	6.4	2.5	0.5	0.1	3.6
Surfactant in first 120 min			N	303	330	123	90	37	13	896
			%	56.3	32.0	12.2	6.2	0.8	0.2	6.1
Surfactant at any time			N	458	639	355	293	297	145	2187
			%	85.1	62.0	35.3	20.1	6.6	2.3	14.8
Pneumothorax diagnosis		2	N	48	43	28	40	144	439	742
			%	8.9	4.2	2.8	2.8	3.2	7.0	5.0
Pneumothorax treatment**	Observation	2	N	15	13	8	10	62	312	420
			%	2.8	1.3	0.8	0.7	1.4	5.0	2.8
	Needle drainage	2	N	13	13	6	14	39	58	143
			%	2.4	1.3	0.6	1.0	0.9	0.9	1.0
	Chest tube	2	N	31	30	21	23	64	91	260
			%	5.8	2.9	2.1	1.6	1.4	1.5	1.8
Seizures	Definite /suspected	5	N	39	33	10	20	70	394	566
			%	7.3	3.2	1.0	1.4	1.6	6.3	3.8

** One infant can have multiple treatments

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				538	1031	1006	1455	4492	6285	14807
Operations	Laparotomy	2	N	57	43	19	18	149	189	475
			%	10.6	4.2	1.9	1.2	3.3	3.0	3.2
	Thoracotomy	2	N	6	7	5	2	29	95	144
			%	1.1	0.7	0.5	0.1	0.7	1.5	1.0
	VP shunt	2	N	9	14	4	3	6	18	54
			%	1.7	1.4	0.4	0.2	0.1	0.3	0.4
Gastro-intestinal perforation	Spontaneous	114	N	22	10	4	2	15	16	69
			%	4.1	1.0	0.4	0.1	0.3	0.3	0.5
	NEC related		N	29	17	2	4	14	4	70
			%	5.4	1.7	0.2	0.3	0.3	0.1	0.5
Acquired stricture		2	N	5	6	1	3	6	3	24
			%	0.9	0.6	0.1	0.2	0.1	0.1	0.2
Acute bilirubin encephalopathy		2	N	0	1	0	1	1	3	6
			%	0.0	0.1	0.0	0.1	0.0	0.1	0.0
Exchange transfusion		2	N	2	0	1	1	15	21	40
			%	0.4	0.0	0.1	0.1	0.3	0.3	0.3
Congenital anomaly*	None		N	393	773	833	1257	3689	4696	11641
			%	73.1	75.0	82.8	86.4	82.1	74.7	78.6
	Minor		N	127	213	140	167	494	887	2028
			%	23.6	20.7	13.9	11.5	11.0	14.1	13.7
	Major		N	18	45	33	31	309	702	1138
			%	3.4	4.4	3.3	2.1	6.9	11.2	7.7

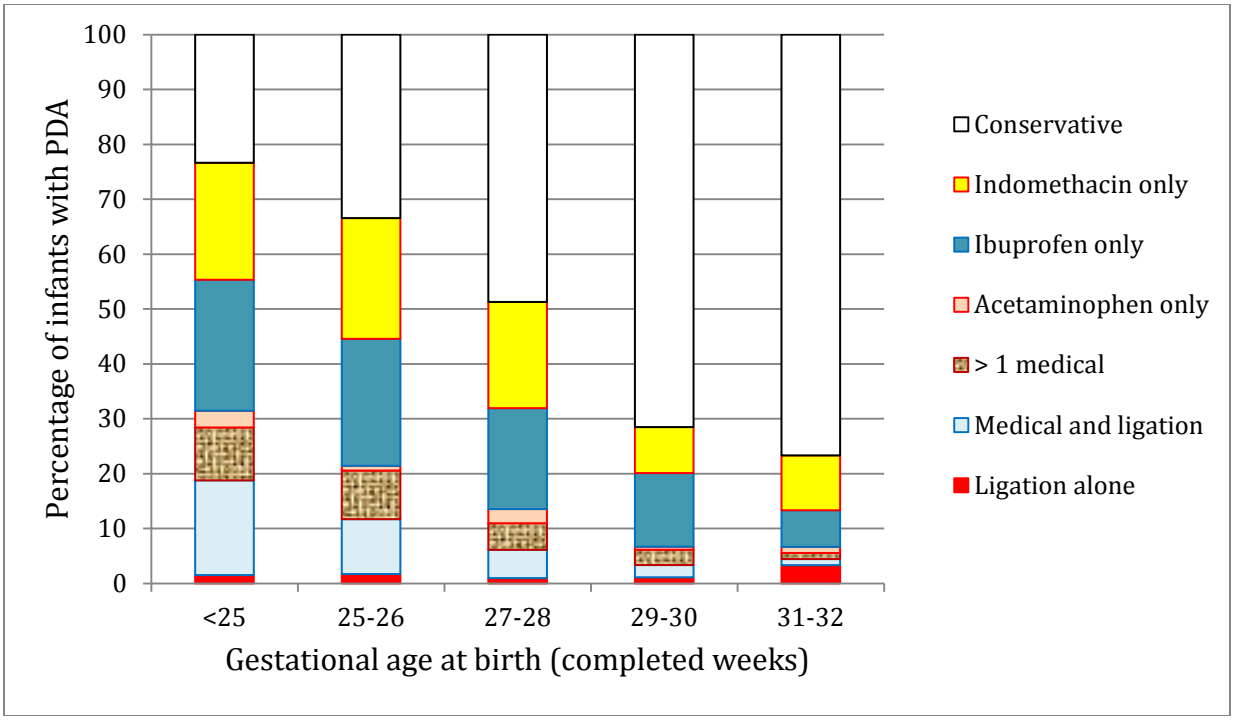
*A list of major anomalies can be found in the 2013 annual report, pages 124-127. It is available via the following link: http://www.canadianneonatalnetwork.org/Portal/LinkClick.aspx?fileticket=lreR0871sjA%3d&tabid=39

Section D.3

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

These include data from 4 030 eligible very preterm neonates and 2 782 eligible VLBW neonates.

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

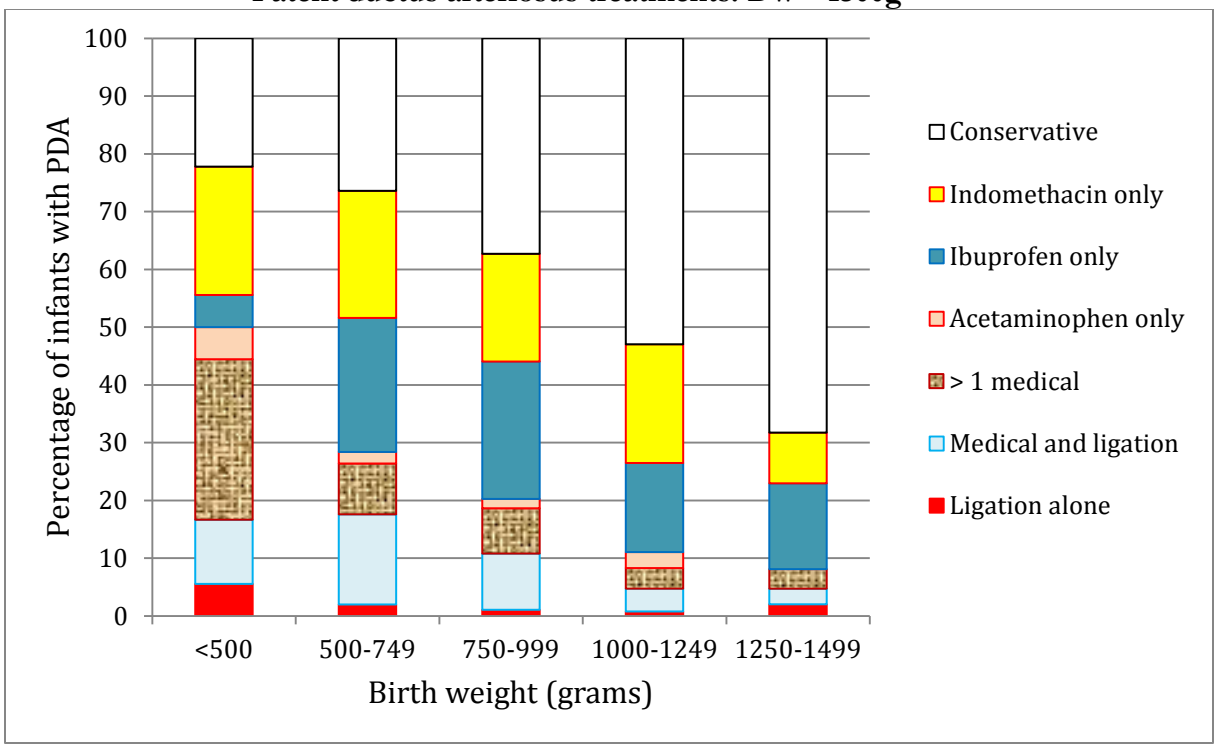


Birth GA (completed weeks)		Total	Missing data on PDA	PDA unknown	No PDA	Neonates with PDA	Treatment†						
							Conservative	Indo	Ibu	Acetaminophen	> 1 medical*	Medical and ligation#	Ligation alone
<25	**N**	290	1	11	81	197	46	42	47	6	19	34	3
	%						23%	21%	24%	3%	10%	17%	2%
25-26	**N**	537	2	7	178	350	117	77	81	3	31	35	6
	%						33%	22%	23%	1%	9%	10%	2%
27-28	**N**	742	0	0	432	310	151	60	57	8	15	16	3
	%						49%	19%	18%	3%	5%	5%	1%
29-30	**N**	1006	0	1	826	179	128	15	24	1	5	4	2
	%						72%	8%	13%	1%	3%	2%	1%
31-32	**N**	1455	1	1	1363	90	69	9	6	1	1	1	3
	%						77%	10%	7%	1%	1%	1%	3%
Total included	**N**	4030	4	20	2880	1126	511	203	215	19	71	90	17
	%						45%	18%	19%	2%	6%	8%	2%

†The percentages of treatment of patent ductus arteriosus are calculated out of number of neonates diagnosed with PDA.
*>1 medical = 2 or 3 of (Indomethacin or Ibuprofen or Acetaminophen)
#Medical and ligation = Ligation + at least one of (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 treatments: BW <1500g

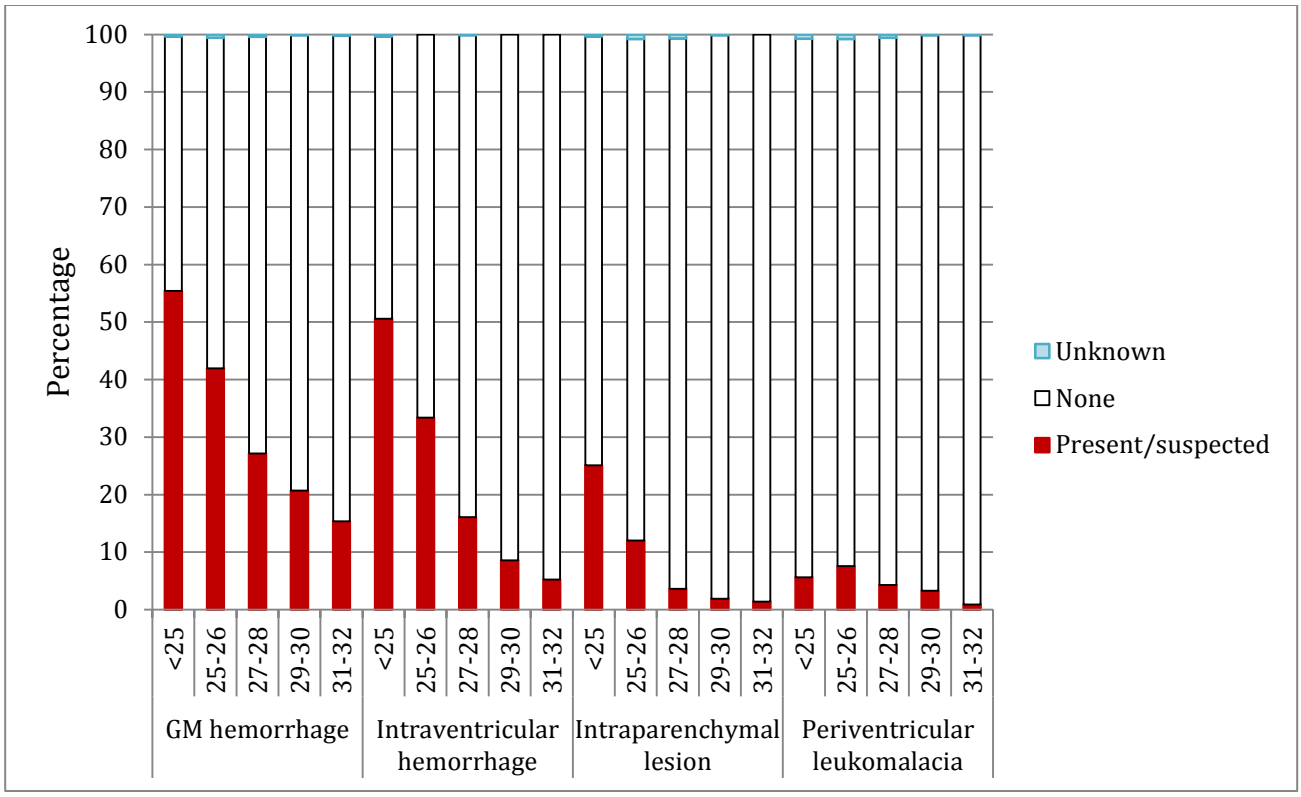


BW (grams)		Total	Missing data on PDA	PDA information unknown	No PDA	Neonates with PDA	Treatment†						
							Conservative	Indo	Ibu	Acetaminophen	> 1 medical*	Medical and ligation#	Ligation alone
<500	**N**	40	0	2	20	18	4	4	1	1	5	2	1
	%						22%	22%	6%	6%	28%	11%	6%
500-749	**N**	406	0	13	143	250	66	55	58	5	22	39	5
	%						26%	22%	23%	2%	9%	16%	2%
750-999	**N**	680	2	3	305	370	138	69	88	6	29	36	4
	%						37%	19%	24%	2%	8%	10%	1%
1000-1249	**N**	792	1	1	537	253	134	52	39	7	9	10	2
	%						53%	21%	15%	3%	4%	4%	1%
1250-1499	**N**	864	1	1	714	148	101	13	22	0	5	4	3
	%						68%	9%	15%	0%	3%	3%	2%
Total included	**N**	2782	4	20	1719	1039	443	193	208	19	70	91	15
	%						43%	19%	20%	2%	7%	9%	1%

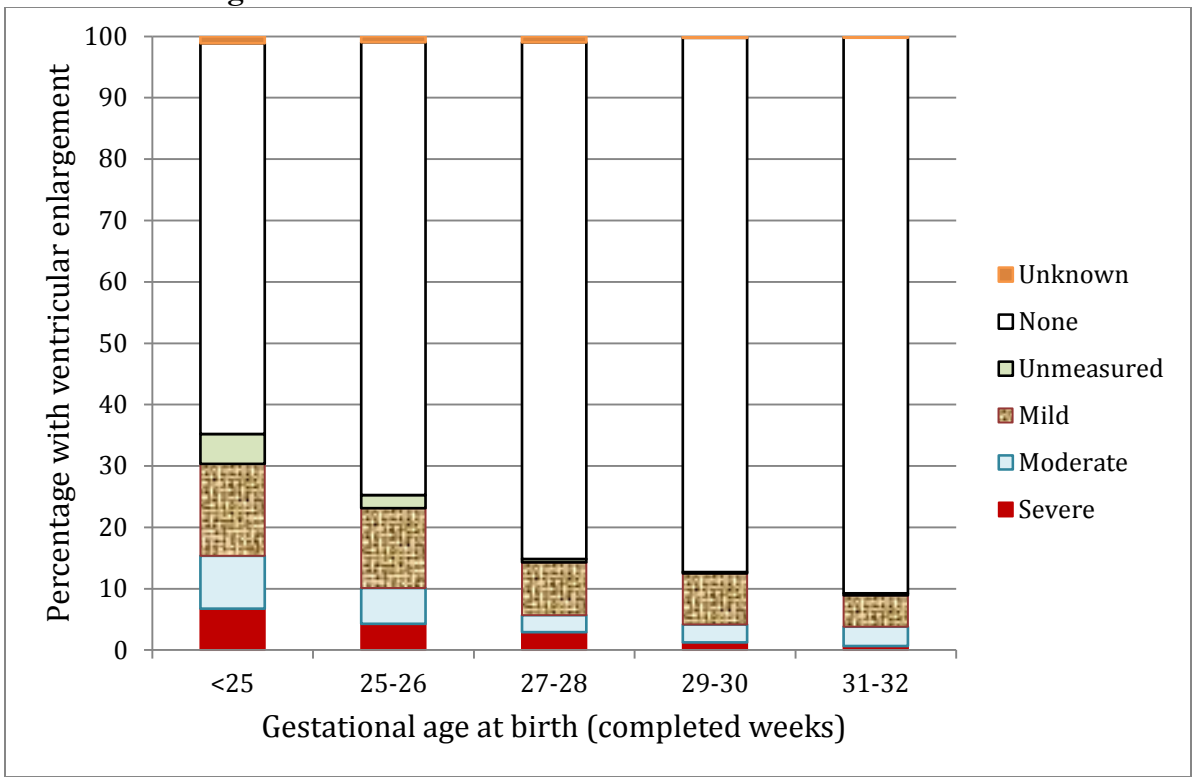
†The percentages of treatment of patent ductus arteriosus are calculated out of number of neonates diagnosed with PDA.
*>1 medical = 2 or 3 of (Indomethacin or Ibuprofen or Acetaminophen)
#Medical and ligation = Ligation + at least one of (Indomethacin or Ibuprofen or Acetaminophen)

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

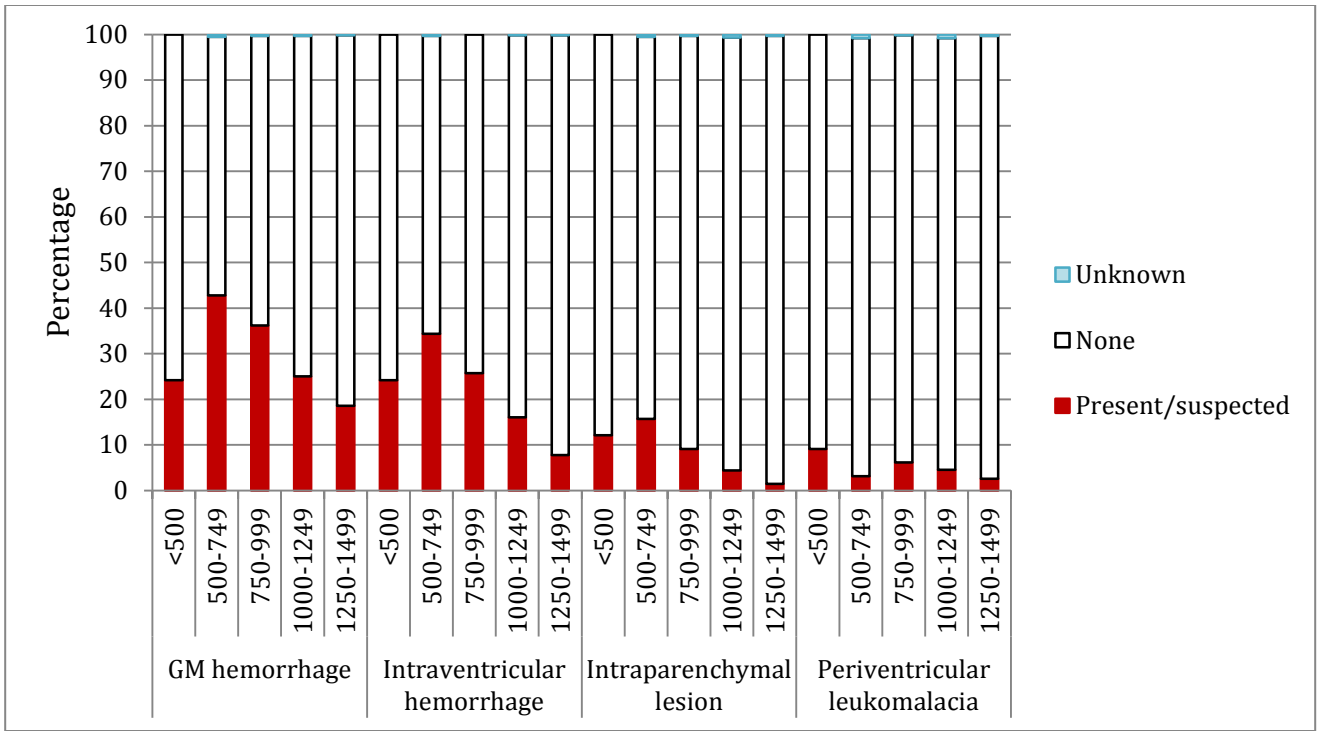


Presentation #15 (continued)
Neuroimaging findings: GA <33 weeks

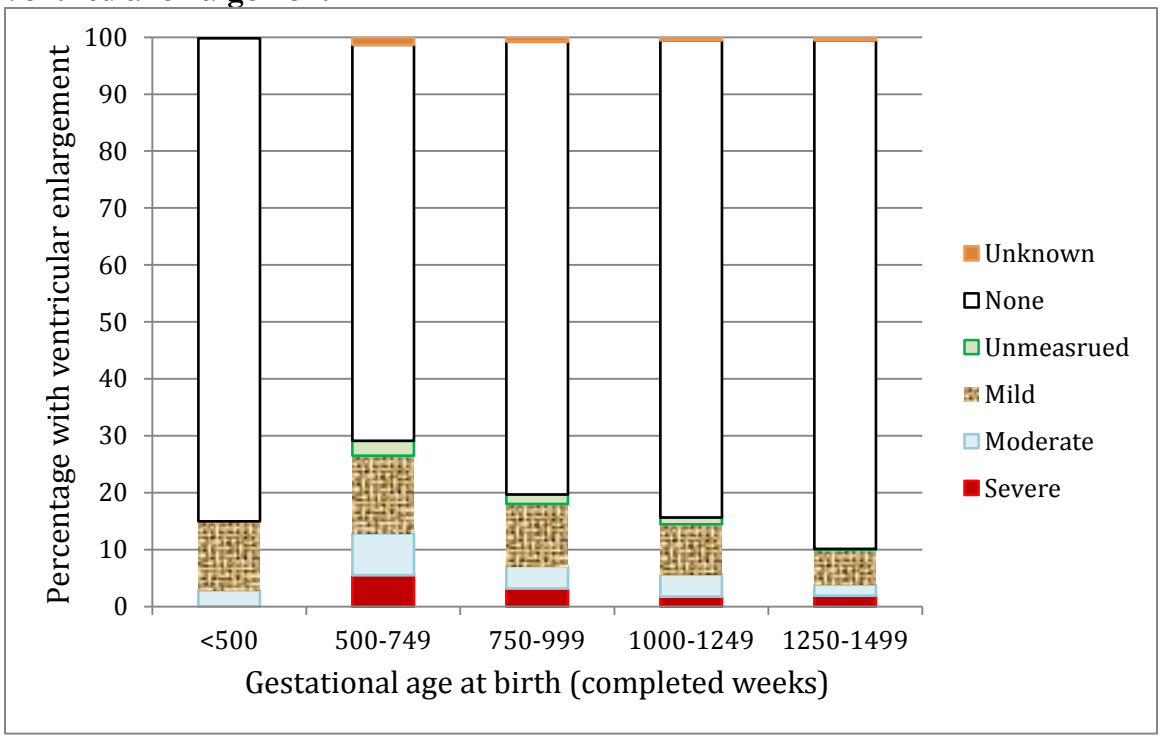
GA at birth (completed weeks)		Total	Neuro-imaging available	Neuroimaging findings																	
				GM hemorrhage			Intraventricular hemorrhage			Ventricular enlargement						Intraparenchymal lesion			Periventricular leukomalacia		
				Present/suspected	None	Unknown	Present/suspected	None	Unknown	Mild	Moderate	Severe	Unmeasured	None	Unknown	Present/suspected	None	Unknown	Present/suspected	None	Unknown
<25	N	290	267	148	118	1	135	131	1	40	23	18	13	170	3	67	199	1	15	249	2
	%			55	44	0	51	49	0	15	9	7	5	64	1	25	75	0	6	94	1
25-26	N	537	515	216	296	3	172	343	0	67	30	22	11	380	5	62	449	4	39	472	4
	%			42	57	1	33	67	0	13	6	4	2	74	1	12	87	1	8	92	1
27-28	N	742	721	196	522	3	116	604	1	62	20	21	4	607	7	26	690	5	31	686	4
	%			27	72	0	16	84	0	9	3	3	1	84	1	4	96	1	4	95	1
29-30	N	1006	889	184	704	1	76	813	0	74	26	11	2	774	2	17	871	1	29	859	1
	%			21	79	0	9	91	0	8	3	1	0	87	0	2	98	0	3	97	0
31-32	N	1455	920	141	777	2	48	872	0	47	29	6	3	833	2	13	907	0	8	911	1
	%			15	84	0	5	95	0	5	3	1	0	91	0	1	99	0	1	99	0
Total	N	4030	3312	885	2417	10	547	2763	2	290	128	78	33	2764	19	185	3116	11	122	3177	12
	%			27	73	0	17	83	0	9	4	2	1	83	1	6	94	0	4	96	0

Note: The neuroimaging findings are not mutually exclusive, i.e. one infant may have more than one finding.

Presentation #16
Neuroimaging findings: BW <1500g



Ventricular enlargement



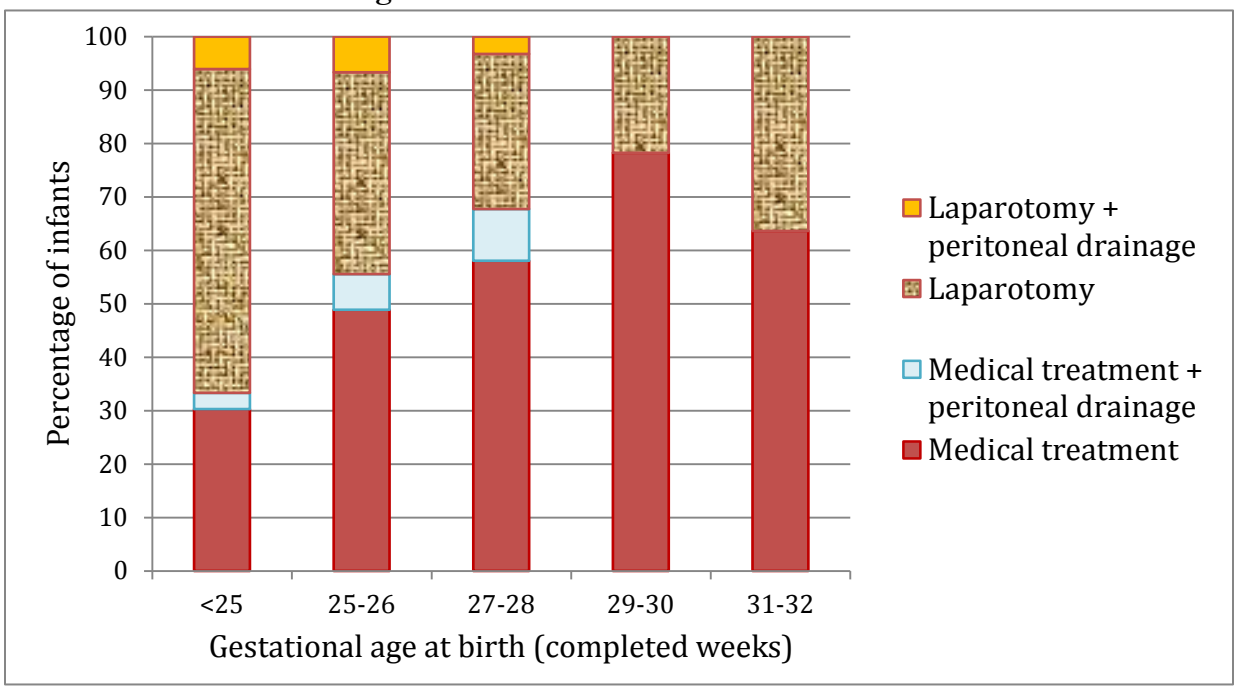
Presentation #16 (continued)
Neuroimaging findings: BW <1500g

BW (grams)		Total	Neuro-imaging available	Neuroimaging findings																	
				GM hemorrhage			Intraventricular hemorrhage			Ventricular enlargement						Intraparenchymal lesion			Periventricular leukomalacia		
				Present/suspected	None	Unknown	Present/suspected	None	Unknown	Mild	Moderate	Severe	Unmeasured	None	Unknown	Present/suspected	None	Unknown	Present/suspected	None	Unknown
<500	N	40	33	8	25	0	8	25	0	4	1	0	0	28	0	4	29	0	3	30	0
	%			24	76	0	24	76	0	12	3	0	0	85	0	12	88	0	9	91	0
500-749	N	406	381	163	216	2	131	249	1	52	28	21	10	265	5	60	319	2	12	365	3
	%			43	57	1	34	65	0	14	7	6	3	70	1	16	84	1	3	96	1
750-999	N	680	660	239	419	2	170	490	0	72	26	21	11	525	5	60	598	2	41	618	1
	%			36	63	0	26	74	0	11	4	3	2	80	1	9	91	0	6	94	0
1000-1249	N	792	747	187	558	2	120	626	1	66	29	13	9	626	4	33	709	5	34	707	6
	%			25	75	0	16	84	0	9	4	2	1	84	1	4	95	1	5	95	1
1250-1499	N	864	731	136	594	1	57	673	1	45	14	14	1	653	4	11	718	2	19	710	2
	%			19	81	0	8	92	0	6	2	2	0	89	1	2	98	0	3	97	0
Total	N	2782	2552	733	1812	7	486	2063	3	239	98	69	31	2097	18	168	2373	11	109	2430	12
	%			29	71	0	19	81	0	9	4	3	1	82	1	7	93	0	4	95	0

Note: The neuroimaging findings are not mutually exclusive, i.e. one infant may have more than one findings.

Presentation #17

Necrotizing enterocolitis treatments: GA <33weeks



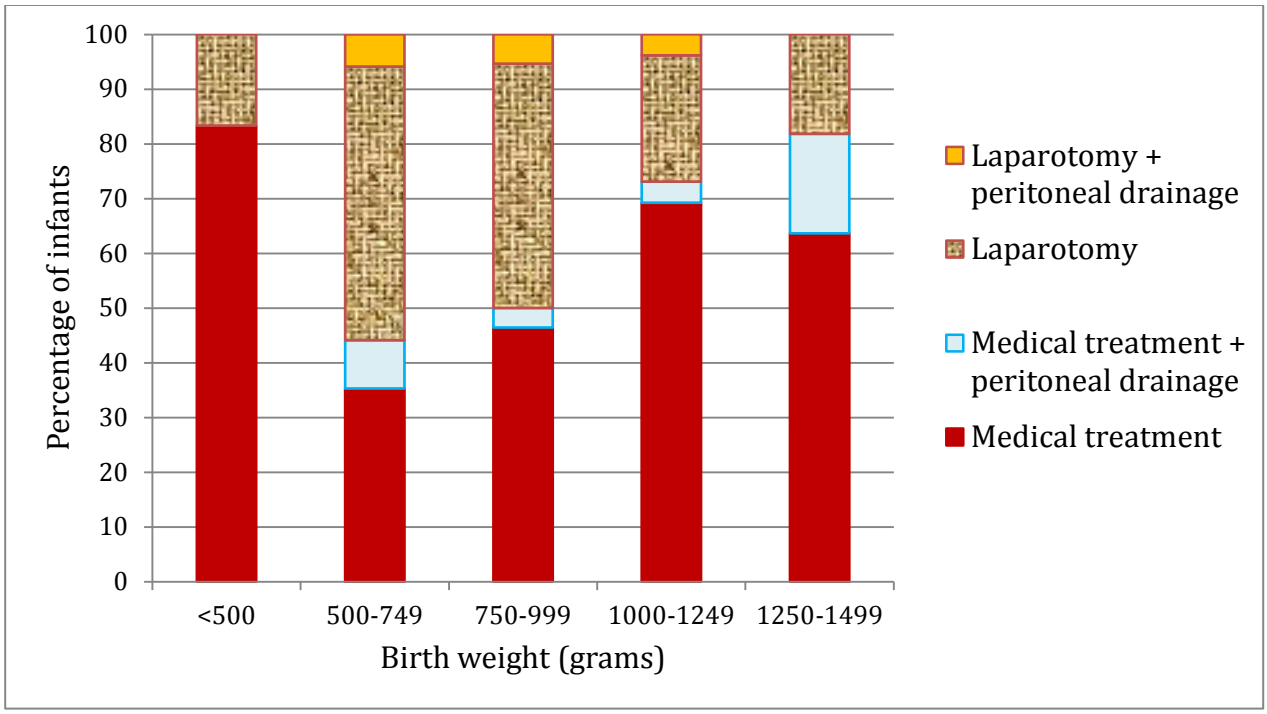
GA at birth (completed weeks)		Total number of neonates	Missing data on NEC	No NEC	NEC*	Neonates with necrotizing enterocolitis**			
						Medical treatment only	Medical + peritoneal drainage	Laparotomy	Laparotomy + peritoneal drainage
<25	N	290	1	256	33	10	1	20	2
	%			89%	11%	30%	3%	61%	6%
25-26	N	537	2	490	45	22	3	17	3
	%			92%	8%	49%	7%	38%	7%
27-28	N	742	0	711	31	18	3	9	1
	%			96%	4%	58%	10%	29%	3%
29-30	N	1006	0	983	23	18	0	5	0
	%			98%	2%	78%	0%	22%	0%
31-32	N	1455	1	1443	11	7	0	4	0
	%			99%	1%	64%	0%	36%	0%
Total	N	4030	4	3883	143	75	7	55	6
	%			96%	4%	52%	5%	38%	4%

*The percentages of necrotizing enterocolitis are calculated out of number of neonates with data available on NEC.
**Percentages for various forms of treatment are calculated out of those with NEC

COMMENTS: Necrotizing enterocolitis is scored according to the following criteria: a) definite pneumatosis (air within the bowel wall) or portal/hepatic gas as diagnosed by x-ray or USG, 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 infants with NEC for GA ≥ 33:
GA 33-36: 47 (1.1%), GA ≥ 37: 10 (0.2%)

Presentation #18
Necrotizing enterocolitis treatments: BW <1500g



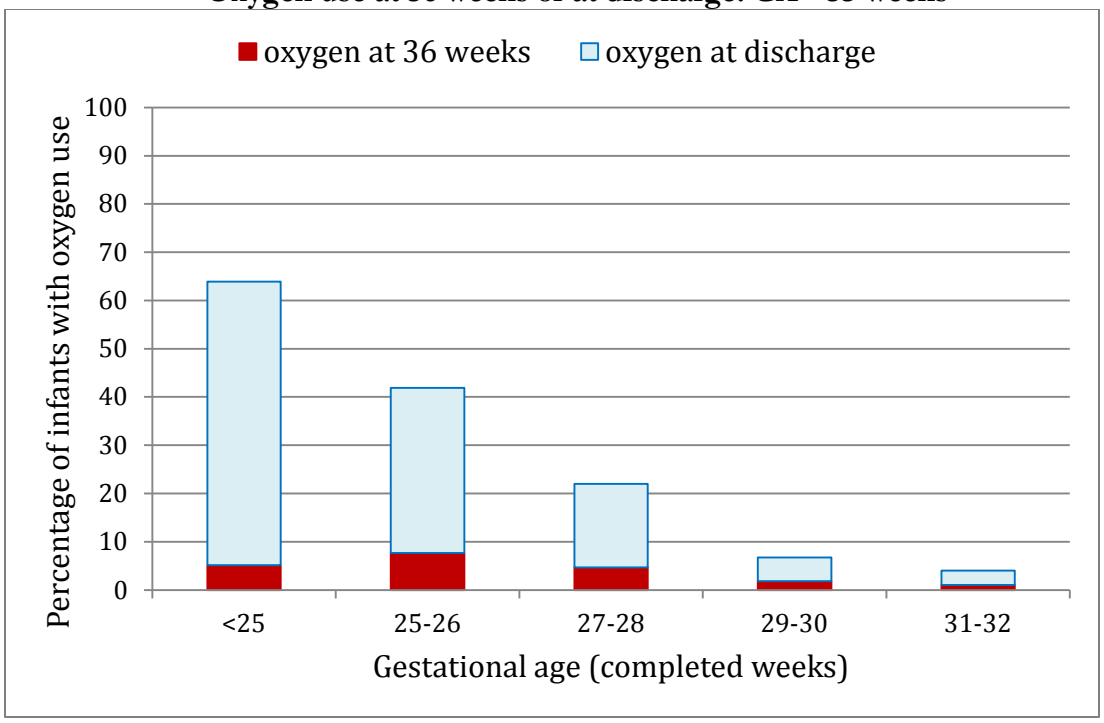
Birth weight (grams)		Total number of neonates	Missing data on NEC	No NEC	NEC*	Neonates with necrotizing enterocolitis**			
						Medical treatment only	Medical + peritoneal drainage	Laparotomy	laparotomy + peritoneal drainage
<500	N	40	0	34	6	5	0	1	0
	%			85	15%	83%	0%	17%	0%
500-749	N	406	0	372	34	12	3	17	2
	%			92	8%	35%	9%	50%	6%
750-999	N	680	2	622	56	26	2	25	3
	%			92	8%	46%	4%	45%	5%
1000-1249	N	792	1	765	26	18	1	6	1
	%			97	3%	69%	4%	23%	4%
1250-1499	N	864	1	852	11	7	2	2	0
	%			99	1%	64%	18%	18%	0%
Total	N	2782	4	2645	133	68	8	51	6
	%			95	5%	51%	6%	38%	5%

***The percentages of necrotizing enterocolitis are calculated out of number of neonates with data available on NEC.**
****Percentages for various forms of treatment are calculated out of those with NEC**

COMMENTS: Necrotizing enterocolitis 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 USG, 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 infants with NEC and with BW ≥ 1500 is as follows:
BW 1500-2499g - 47 neonates (1.0%)
BW ≥ 2500g - 20 neonates (0.3%)

Presentation #19a
Oxygen use at 36 weeks or at discharge: GA <33 weeks



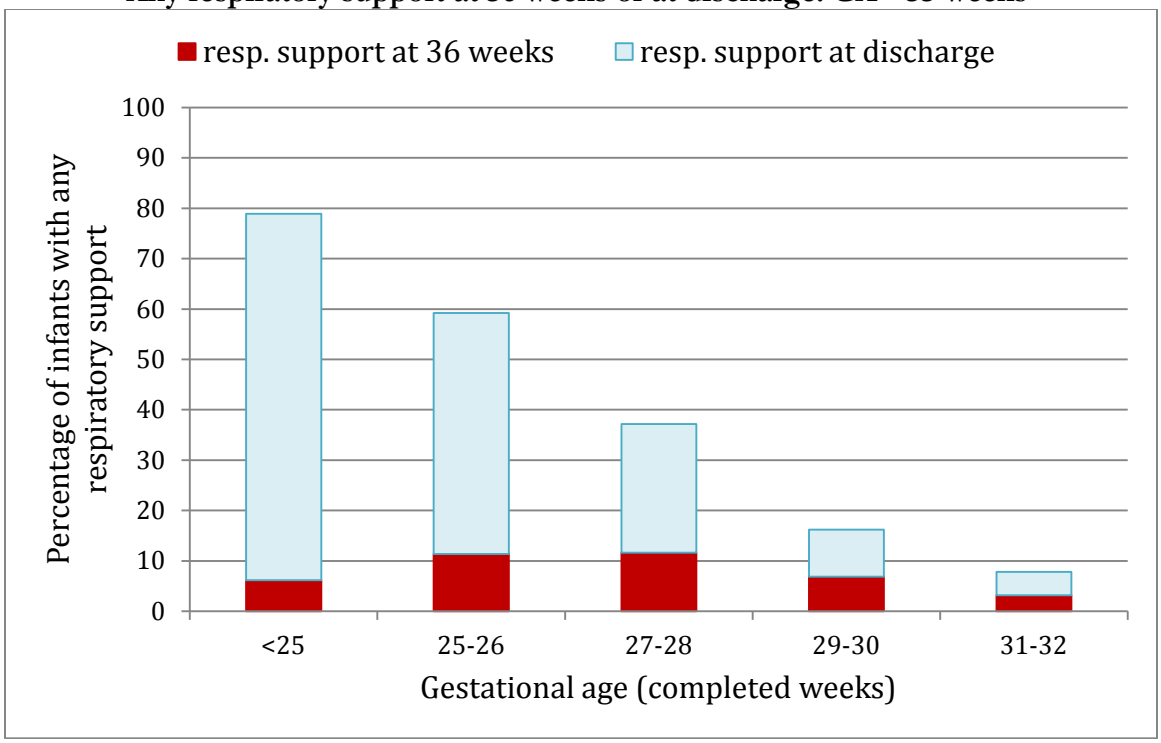
GA	Total number of neonates	Number of neonates whose oxygen use is unknown*	Number of neonates with known results	Number (%) of neonates with oxygen use at 36 weeks	Number (%) of neonates with oxygen use at discharge	Number (%) of neonates with oxygen use at 36 weeks or discharge
<25	290	96	194	10 (5)	114 (59)	124 (64)
25-26	537	81	456	35 (8)	156 (34)	191 (42)
27-28	742	37	705	33 (5)	122 (17)	155 (22)
29-30	1 006	37	969	18 (2)	47 (5)	65 (7)
31-32	1 455	55	1 400	15 (1)	41 (3)	56 (4)
Total	**4 030**	**306**	**3 724**	111 (3)	480 (13)	**591 (16)**

COMMENTS: This presentation includes neonates who received supplemental oxygen at week 36 postmenstrual age (PMA), and neonates who were discharged prior to week 36 PMA and receiving **supplemental oxygen at discharge from a CNN hospital**. There were no requirements for chest radiographs at the time of diagnosis.

*unknown = death before week 36 or first admission after week 36

Note: all percentages of oxygen use were calculated out of the neonates with known results.

Presentation #19b
Any respiratory support at 36 weeks or at discharge: GA <33 weeks



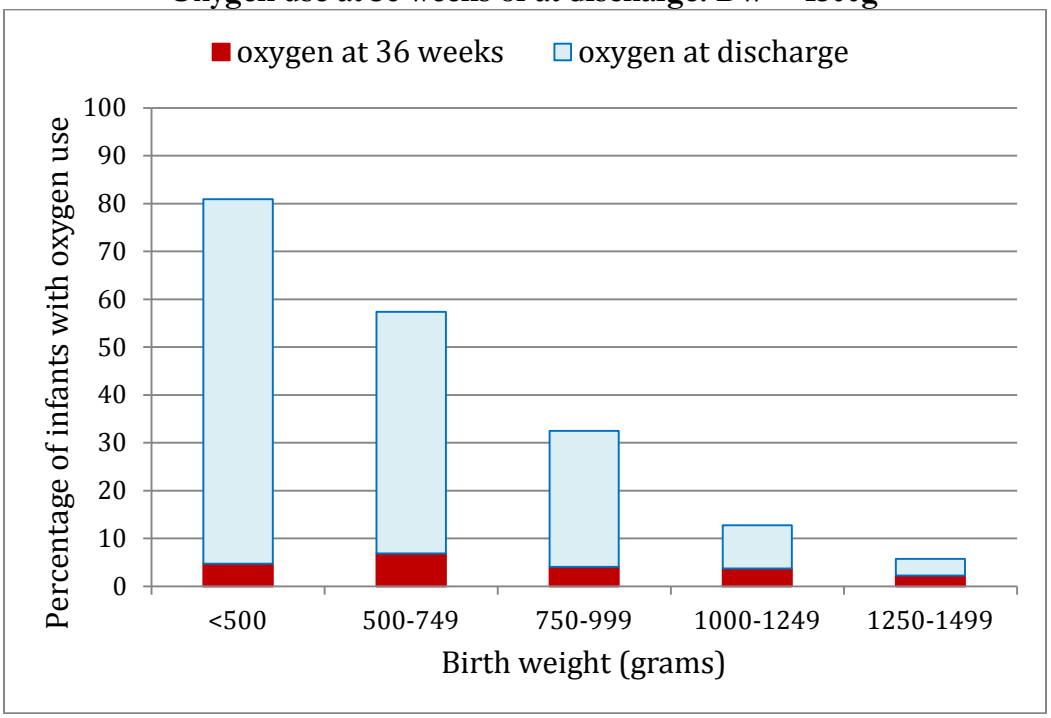
GA	Total number of neonates	Number of neonates whose oxygen use or respiratory support is unknown*	Number of neonates with known results	Number (%) of neonates with respiratory support at 36 weeks	Number (%) of neonates with respiratory support at discharge	Number (%) of neonates with respiratory support at 36 weeks or discharge
<25	290	96	194	12 (6)	141 (73)	153 (79)
25-26	537	81	456	52 (11)	218 (48)	270 (59)
27-28	742	37	705	82 (12)	180 (26)	262 (37)
29-30	1 006	37	969	67 (7)	90 (9)	157 (16)
31-32	1 455	55	1 400	45 (3)	65 (5)	110 (8)
Total	**4 030**	**306**	**3 724**	258 (7)	694 (19)	**952** (26)

COMMENTS: This presentation includes neonates who received supplemental oxygen or any respiratory support at week 36 postmenstrual age (PMA), and neonates who were discharged prior to week 36 PMA and receiving supplemental oxygen or any respiratory support at discharge from CNN centre. There were no requirements for chest radiographs at the time of diagnosis.

*unknown = death before week 36 or first admission after week 36

Note: all percentages of oxygen use were calculated out of the neonates with known results.

Presentation #20a
Oxygen use at 36 weeks or at discharge: BW < 1500g



BW (grams)	Total number of neonates	Number of neonates whose oxygen use is unknown*	Number of neonates with known results	Number (%) of neonates with oxygen use at 36 weeks	Number (%) of neonates with oxygen use at discharge	Number (%) of neonates with oxygen use at 36 weeks or discharge
<500	40	19	21	1 (5)	16 (76)	17 (81)
500-749	406	101	305	21 (7)	154 (50)	175 (57)
750-999	680	67	613	25 (4)	174 (28)	199 (32)
1000-1249	792	41	751	28 (4)	68 (9)	96 (13)
1250-1499	864	25	839	19 (2)	29 (3)	48 (6)
Total	**2 782**	**253**	**2 529**	**94 (4)**	**441 (17)**	**535 (21)**

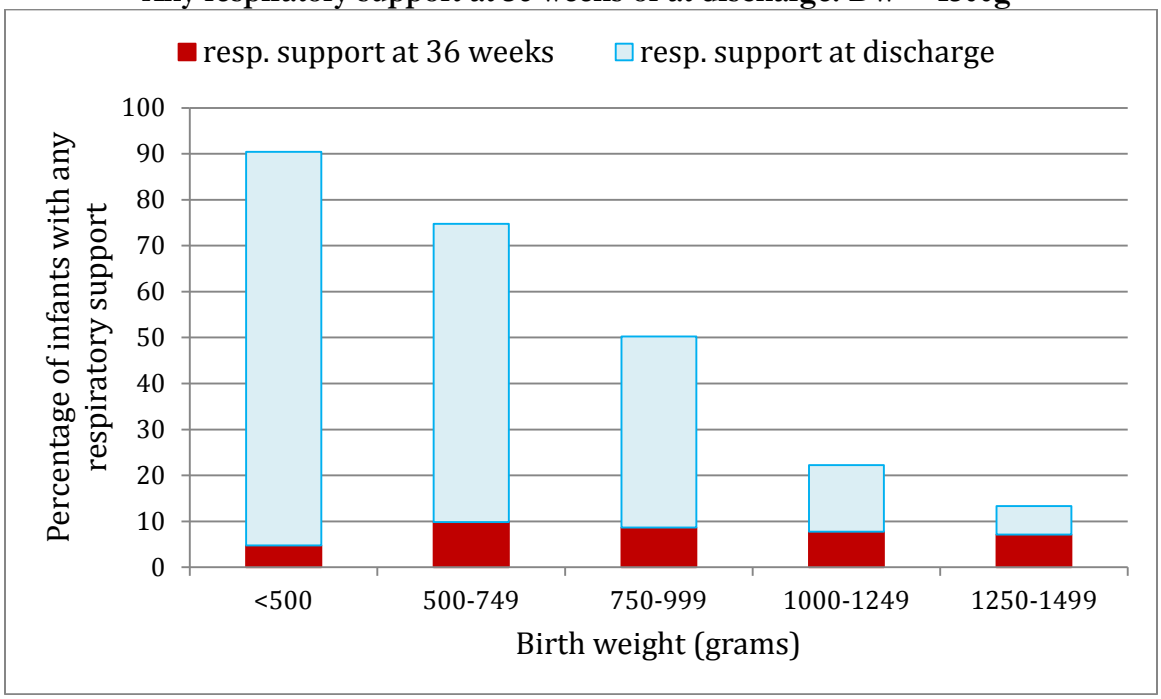
COMMENTS: This presentation includes neonates who received supplemental oxygen at week 36 postmenstrual age (PMA), and neonates who were discharged prior to week 36 PMA and receiving **supplemental oxygen at discharge from CNN centre**. There were no requirements for chest radiographs at the time of diagnosis.

*unknown = death before week 36 or first admission after week 36

Note: all percentages of oxygen use were calculated out of the neonates with known results.

Presentation #20b

Any respiratory support at 36 weeks or at discharge: BW < 1500g



BW (grams)	Total number of neonates	Number of neonates whose oxygen use or respiratory support is unknown*	Number of neonates with known results	Number (%) of neonates with respiratory support at 36 weeks	Number (%) of neonates with respiratory support at discharge	Number (%) of neonates with respiratory support at 36 weeks or discharge
<500	40	19	21	1 (5)	18 (86)	19 (90)
500-749	406	101	305	30 (10)	198 (65)	228 (75)
750-999	680	67	613	53 (9)	255 (42)	308 (50)
1000-1249	792	41	751	58 (8)	109 (15)	167 (22)
1250-1499	864	25	839	60 (7)	52 (6)	112 (13)
Total	**2 782**	**253**	**2 529**	**202 (8)**	**632 (25)**	**834 (33)**

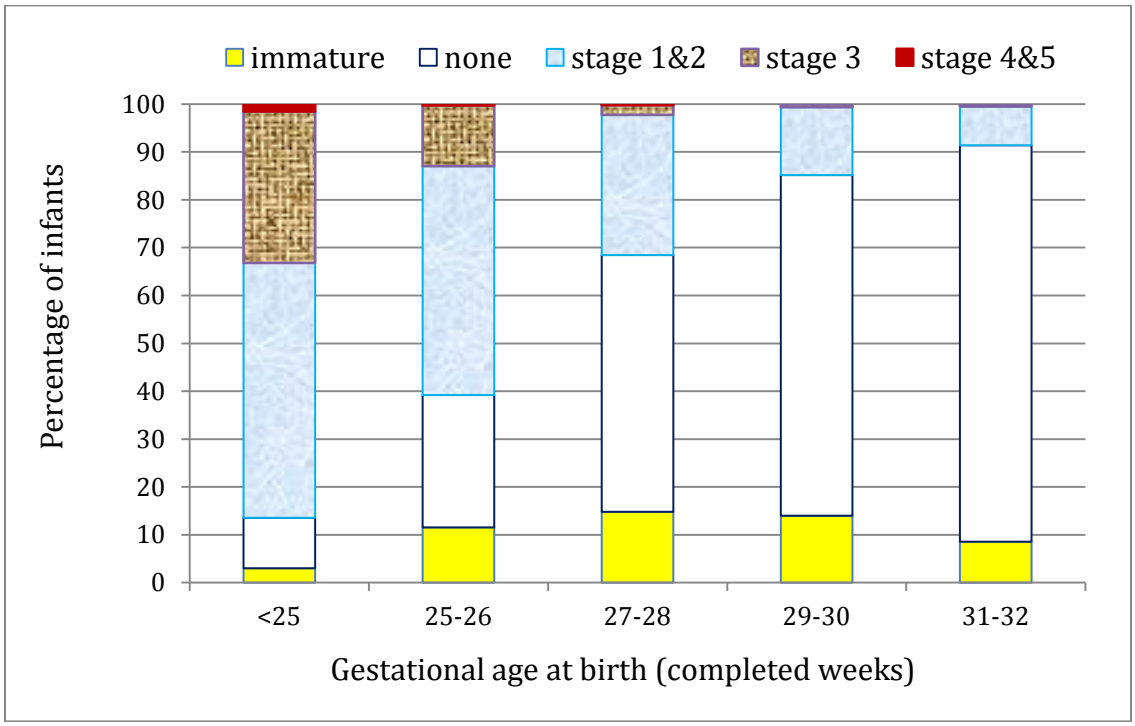
COMMENTS: This presentation includes neonates who received supplemental oxygen or any respiratory support at week 36 postmenstrual age (PMA), and neonates who were discharged prior to week 36 PMA and receiving supplemental oxygen or any respiratory support at discharge from CNN centre. There were no requirements for chest radiographs at the time of diagnosis.

*unknown = death before week 36 or first admission after week 36

Note: all percentages of oxygen use were calculated out of the neonates with known results.

Presentation #21

Retinopathy of prematurity staging: GA <33 weeks

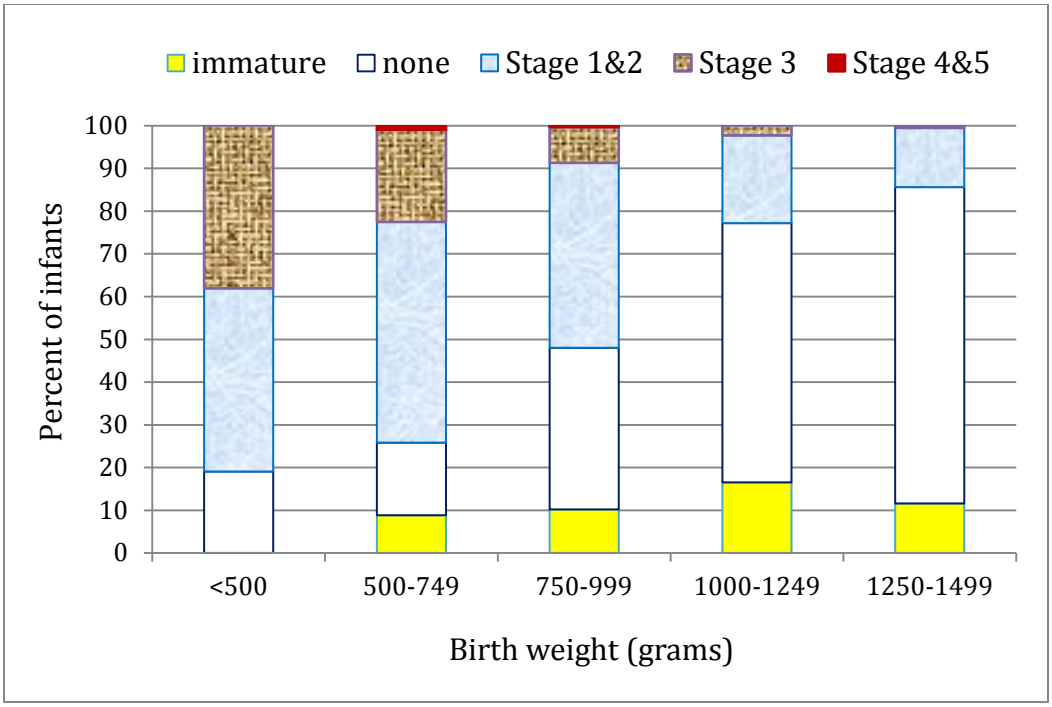


GA (completed weeks)		Total number of neonates	Number of neonates alive at 6 weeks	Number of neonates with known eye examination results	Retinopathy of prematurity*				
					Immature	None	Stages 1 & 2	Stage 3	Stage 4 & 5
<25	N	290	207	199	6	21	106	63	3
	%				3%	11%	53%	32%	1.5%
25-26	N	537	470	441	51	122	211	56	1
	%				12%	28%	48%	13%	0.2%
27-28	N	742	722	587	87	315	172	12	1
	%				15%	54%	29%	2%	0.2%
29-30	N	1 006	995	500	70	356	71	3	0
	%				14%	71%	14%	1%	0.0%
31-32	N	1 455	1 437	210	18	174	17	1	0
	%				9%	83%	8%	0%	0.0%
Total included	N	4 030	3 831	1 937	232	988	577	135	5
	%				12%	51%	30%	7%	0.3%

***The percentages of various stages of retinopathy of prematurity are calculated out of number of neonates with known eye examination results.**

COMMENTS: Retinopathy of prematurity 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 in interpreting these data.**

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



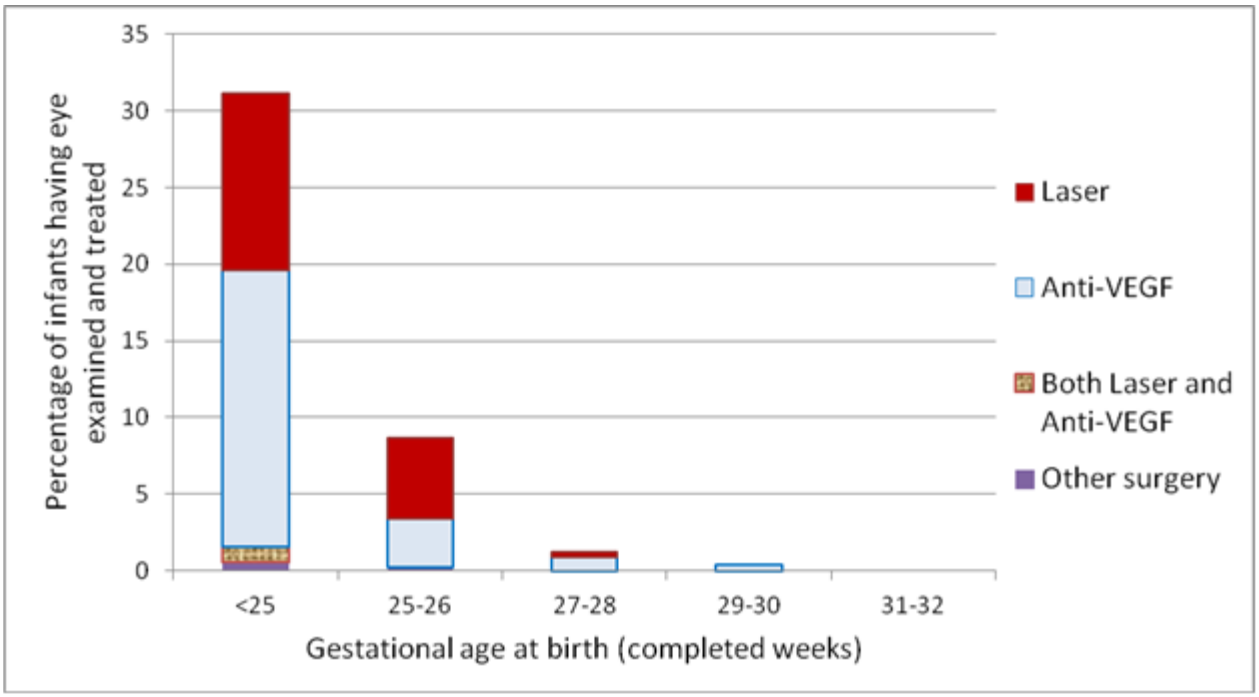
BW (grams)		Total number of neonates	Number of neonates alive at 6 weeks	Number of neonates with known eye examination results	Retinopathy of prematurity*				
					Immature	None	Stages 1 & 2	Stage 3	Stage 4 & 5
<500	N	40	22	21	0	4	9	8	0
	%				0%	19%	43%	38%	0. 0%
500-749	N	406	329	306	27	52	158	66	3
	%				9%	17%	52%	22%	1.0%
750-999	N	680	626	550	56	208	238	46	2
	%				10%	38%	43%	8%	0.4%
1000-1249	N	792	768	521	86	316	107	12	0
	%				17%	61%	21%	2%	0.0%
1250-1499	N	864	855	354	41	262	49	2	0
	%				12%	74%	14%	1%	0.0%
Total included	N	2 782	2 600	1 752	210	842	561	134	5
	%				12%	48%	32%	8%	0.3%

***The percentages of various stages of retinopathy of prematurity are calculated out of number of neonates with known eye examination results.**

COMMENTS: Retinopathy of prematurity 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 in interpreting these data.**

Presentation #23

Retinopathy of prematurity treatments: GA <33 weeks

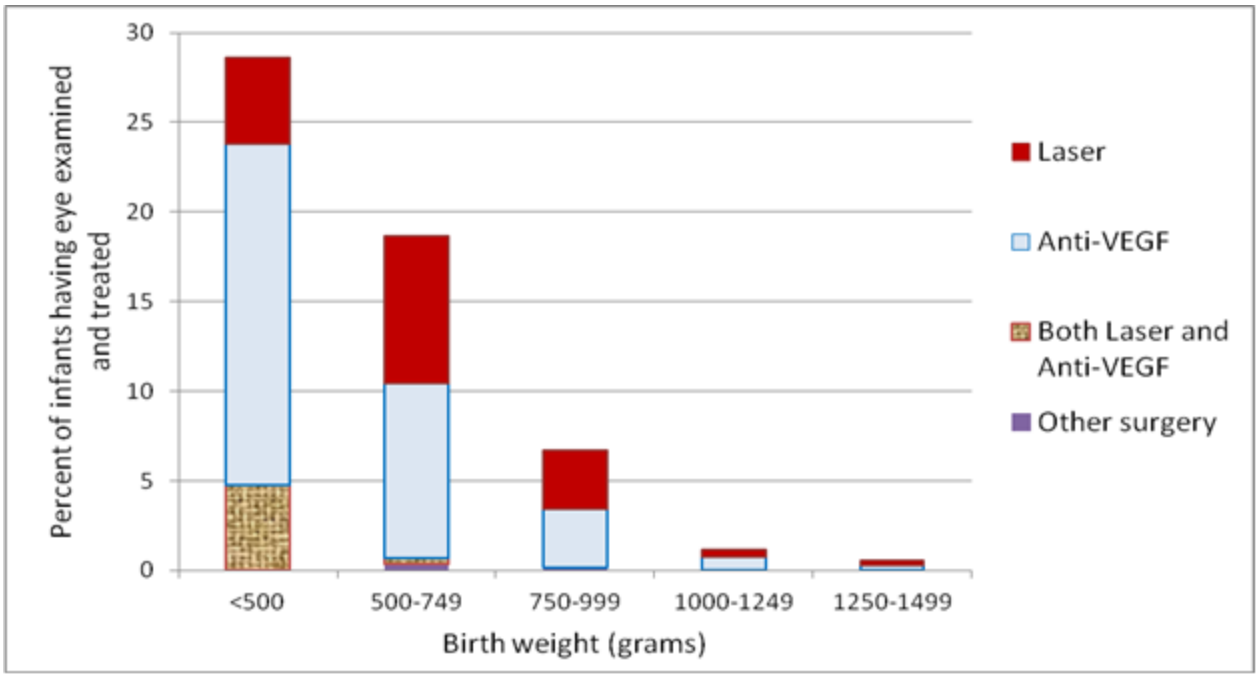


Birth GA (completed weeks)		Total number of neonates	Number of neonates with known eye examination results	Therapy for retinopathy of prematurity *	Therapy for retinopathy of prematurity			
					Laser	Anti-VEGF	Both Laser and Anti-VEGF	Other surgery
<25	N %	290	199	62 31%	23	36	2	1
25-26	N %	537	441	37 8%	23	14	0	1
27-28	N %	742	587	7 1%	2	5	0	0
29-30	N %	1 006	500	2 0%	0	2	0	0
31-32	N %	1 455	210	0 0%	0	0	0	0
Total included	N %	4 030	1 937	108 6%	48	57	0	2

***The percentages of patient who received therapy are calculated out of number of neonates with known eye examination results.**

COMMENTS: Retinopathy of prematurity 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 in interpreting these data as some neonates did not have eye examination data.**

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



BW (grams)		Total number of neonates	Number of neonates with known eye examination results	Therapy for retinopathy of prematurity *	Therapy for retinopathy of prematurity			
					Laser	Anti-VEGF	Both Laser and Anti-VEGF	Other surgery
<500	N	40	21	6	1	4	1	0
	%			29%				
500-749	N	406	306	57	25	30	1	1
	%			19%				
750-999	N	680	550	36	18	18	0	1
	%			7%				
1000-1249	N	792	521	6	2	4	0	0
	%			1%				
1250-1499	N	864	354	2	1	1	0	0
	%			1%				
Total included	N	2 782	1 752	107	47	57	2	2
	%			6%				

***The percentages of patient who received therapy are calculated out of number of neonates with known eye examination results.**

COMMENTS: Retinopathy of prematurity 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 in interpreting these data as some neonates did not have eye examination data.**

Presentation #25a
Mortality or significant morbidities: GA <33 weeks

GA	Number of neonates	Number survived till discharge (%)	Number of neonates discharged home directly from network sites	Number (%) without any of the six morbidities	Number (%) with any one morbidity prior to discharge	Number (%) with any two morbidities prior to discharge	Number (%) with any three morbidities prior to discharge	Number (%) with any four morbidities prior to discharge	Number (%) with any five morbidities prior to discharge	Number (%) with all six morbidities prior to discharge
<24	113	61 (54)	36	2 (6)	14 (39)	8 (22)	9 (25)	3 (8)	0	0
24	177	134 (76)	73	13 (18)	21 (29)	19 (26)	15 (21)	5 (7)	0	0
25	248	201 (81)	99	19 (19)	38 (38)	24 (24)	16 (16)	2 (2)	0	0
26	289	256 (89)	123	42 (34)	46 (37)	24 (20)	9 (7)	0	2 (2)	0
27	317	303 (96)	133	67 (50)	45 (34)	14 (11)	7 (5)	0	0	0
28	425	409 (96)	167	106 (63)	44 (26)	14 (8)	2 (1)	1 (1)	0	0
29	470	464 (99)	173	115 (66)	48 (28)	10 (6)	0	0	0	0
30	536	526 (98)	200	165 (83)	30 (15)	5 (3)	0	0	0	0
31	662	651 (98)	265	241 (91)	20 (8)	4 (2)	0	0	0	0
32	793	782 (99)	339	312 (92)	23 (7)	4 (1)	0	0	0	0
Total	**4030**	**3787 (94)**	**1608**	**1082 (67)**	**329 (20)**	**126 (8)**	**58 (4)**	**11 (1)**	**2 (0)**	**0**

Inclusion criteria for these analyses:

1. Neonate born at <33 weeks GA
2. Neonate discharged home from participating network sites

COMMENTS:

Morbidities were counted as score of one for each of the following

i. Ventricular enlargement or PEC
ii. Stage 3 or higher ROP
iii. Oxygen use at 36 weeks or at discharge if earlier
iv. Culture proven early onset or late onset sepsis
v. Stage 2 or 3 NEC
vi. PDA requiring surgical ligation

Presentation #25b
Mortality or significant morbidities: GA <33 weeks

GA	Number of neonates	Number survived till discharge (%)	Number of neonates discharged home directly from network sites	Number (%) without any of the three morbidities	Number (%) with any one morbidity prior to discharge	Number (%) with any two morbidities prior to discharge	Number (%) with all three morbidities prior to discharge
<24	113	61 (54)	36	5 (14)	19 (53)	7 (19)	5 (14)
24	177	134 (76)	73	17 (23)	33 (45)	19 (26)	4 (5)
25	248	201 (81)	99	33 (33)	49 (49)	16 (16)	1 (1)
26	289	256 (89)	123	57 (46)	45 (37)	19 (15)	2 (2)
27	317	303 (96)	133	79 (59)	46 (35)	7 (5)	1 (1)
28	425	409 (96)	167	121 (72)	40 (24)	5 (3)	1 (1)
29	470	464 (99)	173	133 (77)	39 (23)	1 (1)	0
30	536	526 (98)	200	186 (93)	13 (7)	1 (1)	0
31	662	651 (98)	265	253 (95)	10 (4)	2 (1)	0
32	793	782 (99)	339	320 (94)	19 (6)	0	0
Total	**4030**	**3787 (94)**	**1608**	**1204 (75)**	**313 (19)**	**77 (5)**	**14 (1)**

Inclusion criteria for these analyses:

1. Neonate born at <33 weeks GA
2. Neonate discharged home from participating network sites

COMMENTS:

Morbidities were counted as score of one for each of the following

i. Ventricular enlargement or PEC
ii. Stage 3 or higher ROP
iii. Oxygen use at 36 weeks or at discharge if earlier

E. Site Comparisons

E.1. Site Comparisons – Survival / Mortality

Presentation #26
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	66.7	90.5	100.0	98.9	100.0	99.2	100.0	99.0	97.1
B	0.0	100.0	100.0	100.0	100.0	100.0	100.0	98.5	98.3
C	66.7	100.0	100.0	100.0	96.6	100.0	100.0	96.5	97.8
Dϕ	50.0	50.0	100.0	100.0	96.2	100.0	NA	NA	95.0
E	100.0	100.0	100.0	100.0	100.0	100.0	94.1	98.6	98.4
F	65.7	84.1	98.7	95.8	99.1	97.6	97.8	98.0	96.3
G	52.9	91.3	86.7	100.0	98.1	98.8	100.0	99.2	96.1
H	100.0	100.0	88.9	100.0	86.7	95.7	94.2	98.0	96.6
I	100.0	75.0	66.7	100.0	100.0	97.4	100.0	100.0	97.4
J	66.7	80.0	100.0	100.0	100.0	97.9	98.7	99.0	97.8
K	85.7	69.2	100.0	100.0	97.6	100.0	100.0	100.0	98.8
L	33.3	88.9	100.0	100.0	100.0	98.2	98.2	100.0	98.5
Mϕ	87.1	84.0	96.9	96.6	95.9	94.1	95.9	98.2	95.5
N	100.0	76.9	100.0	95.8	100.0	100.0	99.4	99.5	99.1
O	53.3	85.0	95.0	100.0	100.0	97.4	98.5	97.9	96.9
P	83.3	76.2	93.9	100.0	99.0	98.4	98.7	98.9	97.9
Q	60.0	88.2	96.3	96.0	96.9	100.0	98.6	99.2	98.2
R	100.0	85.7	93.8	100.0	100.0	100.0	99.2	98.2	98.7
S	0.0	100.0	75.0	100.0	100.0	100.0	100.0	99.0	98.6
Tϕ	100.0	78.6	90.0	100.0	100.0	NA	NA	NA	95.2
U	100.0	84.6	90.0	100.0	100.0	100.0	100.0	99.3	98.9
Vϕ	50.0	68.6	94.1	NA	NA	NA	NA	NA	77.2
W	61.5	100.0	97.1	100.0	98.8	100.0	98.7	95.5	96.8
X	100.0	100.0	100.0	100.0	100.0	98.9	98.6	100.0	99.6
Y	75.0	100.0	100.0	97.1	100.0	100.0	100.0	99.7	99.4
Zϕ	53.3	88.0	95.7	95.0	98.4	NA	NA	NA	91.5
AA	35.0	67.7	94.4	98.4	97.3	95.7	96.8	98.9	95.1
AB	86.4	95.2	96.9	97.9	98.9	100.0	99.0	99.3	98.6
AC	NA	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AD	40.0	77.8	71.4	100.0	100.0	98.9	100.0	98.2	96.9
Overall survival rate for GA**	67.2	85.1	96.0	98.4	98.5	98.8	98.8	98.8	97.5

These analyses include 14 807 neonates from 30 sites (8 neonates had missing GA data).

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

ϕ Please note that the criteria for entering neonates in the CNN dataset are not the same for these five sites and thus, the rates may not be comparable with other sites.

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

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

NA = no data available, 0 = no neonates survived

Delivery room deaths are not included

Presentation #27
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	100.0	74.4	93.3	100.0	100.0	99.1	100.0	97.1
B	NA	0.0	100.0	100.0	100.0	100.0	98.8	98.3
C	NA	60.0	100.0	100.0	100.0	99.2	97.6	97.8
Dϕ	NA	75.0	80.0	100.0	100.0	96.4	NA	95.0
E	NA	100.0	100.0	100.0	100.0	91.3	100.0	98.4
F	0.0	73.9	93.7	97.5	98.8	97.1	98.1	96.3
G	20.0	80.0	91.7	85.3	100.0	99.4	98.6	96.1
H	0.0	100.0	100.0	94.1	92.6	93.8	98.1	96.6
I	0.0	NA	83.3	90.9	100.0	98.6	100.0	97.4
J	100.0	60.0	94.7	95.2	100.0	98.7	98.9	97.8
K	50.0	80.0	93.3	95.7	100.0	99.4	100.0	98.8
L	0.0	80.0	100.0	100.0	100.0	98.3	100.0	98.5
Mϕ	100.0	87.2	88.7	90.5	98.5	97.7	97.5	95.5
N	NA	100.0	83.3	100.0	96.0	99.6	99.6	99.1
O	NA	72.2	80.0	95.2	95.8	98.1	98.1	96.9
P	0.0	76.9	88.1	97.6	100.0	98.6	98.8	97.9
Q	100.0	81.8	79.2	100.0	100.0	98.6	99.1	98.2
R	100.0	100.0	90.0	100.0	96.4	99.5	98.6	98.7
S	0.0	NA	83.3	100.0	100.0	100.0	99.0	98.6
Tϕ	NA	88.9	87.5	90.0	100.0	100.0	NA	95.2
U	NA	66.7	91.7	100.0	100.0	100.0	99.5	98.9
Vϕ	0.0	69.2	77.1	84.2	100.0	100.0	50.0	77.4
W	100.0	79.2	100.0	98.0	100.0	99.5	95.6	96.8
X	NA	100.0	100.0	100.0	100.0	99.4	99.6	99.6
Y	100.0	75.0	100.0	100.0	100.0	99.5	99.7	99.4
Zϕ	50.0	61.1	96.0	92.1	95.5	98.2	100.0	91.5
AA	20.0	44.0	87.8	95.8	96.4	96.2	98.8	95.1
AB	66.7	92.5	98.2	98.5	98.8	98.8	99.4	98.6
AC	NA	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AD	NA	40.0	66.7	100.0	94.4	99.3	99.3	96.9
Overall survival rate for BW**	42.5	76.8	90.7	96.2	98.6	98.5	98.8	97.5

These analyses include 14 813 neonates from 30 sites (2 neonates had missing BW data).

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

ϕ Please note that the criteria for entering neonates in the CNN dataset are not the same for these five sites and thus, the rates may not be comparable with other sites.

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

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

NA = no data available, 0 = no neonates survived

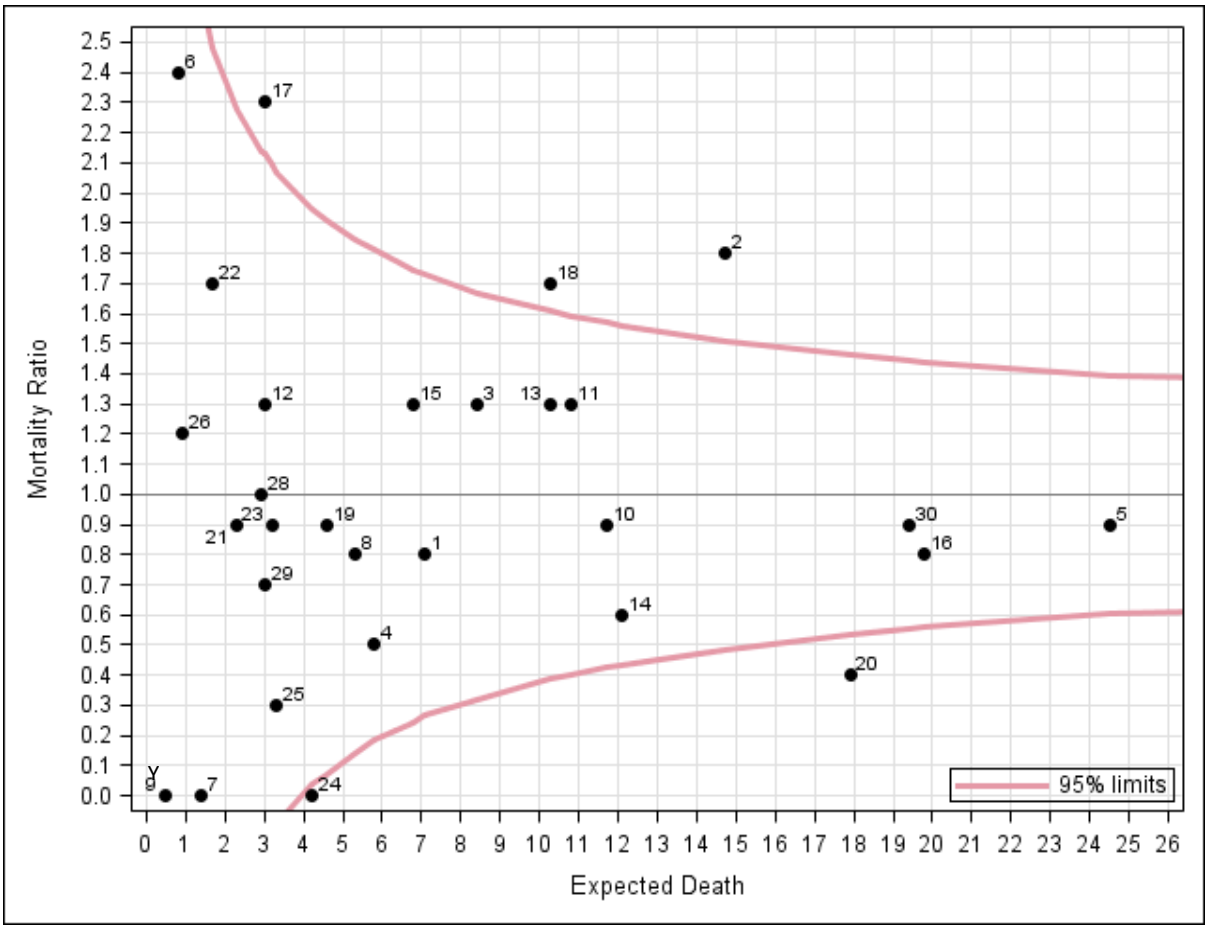
Delivery room deaths are not included

Presentation # 28a
Mortality: GA<33 weeks: Adjusted standardized ratios by site

Site	Number of infants	Number of deaths	Adjusted# Expected number of deaths	Adjusted# Standardized ratio	95% confidence interval for adjusted standardized ratio	
1	113	6	7.1	0.8	0.3	1.8
2	215	27	14.7	1.8	1.2	2.7
3	127	11	8.4	1.3	0.7	2.3
4	124	3	5.8	0.5	0.1	1.5
5	356	23	24.5	0.9	0.6	1.4
6	20	2	0.8	2.4	0.3	8.7
7	19	0	1.4	0.0	.	2.6
8	114	4	5.3	0.8	0.2	1.9
9	15	0	0.5	0.0	.	8.1
10	230	11	11.7	0.9	0.5	1.7
11	164	14	10.8	1.3	0.7	2.2
12	85	4	3.0	1.3	0.4	3.4
13	152	13	10.3	1.3	0.7	2.1
14	213	7	12.1	0.6	0.2	1.2
15	140	9	6.8	1.3	0.6	2.5
16	334	15	19.8	0.8	0.4	1.2
17	57	7	3.0	2.3	0.9	4.7
18*	78	17	10.3	1.7	1.0	2.7
19	81	4	4.6	0.9	0.2	2.2
20	299	8	17.9	0.4	0.2	0.9
21	54	2	2.3	0.9	0.1	3.1
22	56	3	1.7	1.7	0.3	5.0
23	64	3	3.2	0.9	0.2	2.7
24	102	0	4.2	0.0	.	0.9
25	109	1	3.3	0.3	0.0	1.7
26	16	1	0.9	1.2	0.0	6.4
27	52	3	1.2	2.6	0.5	7.6
28	99	3	2.9	1.0	0.2	3.0
29	79	2	3.0	0.7	0.1	2.4
30	336	18	19.4	0.9	0.6	1.5

Please note that site codes for Presentations 28a and 28b are different from other presentations in this report.
Neonates with major congenital anomalies are excluded.
The prediction model was adjusted for GA, SGA, Sex, SNAPII > 20.
* Site 18 has different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites. (See next page for full explanation)

Presentations # 28b
Mortality: GA<33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 28a
Column 1: Different site code than other presentations in the report
Column 2: Number of eligible neonates at each site (<33 weeks 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, 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 28b
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 # 28c

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

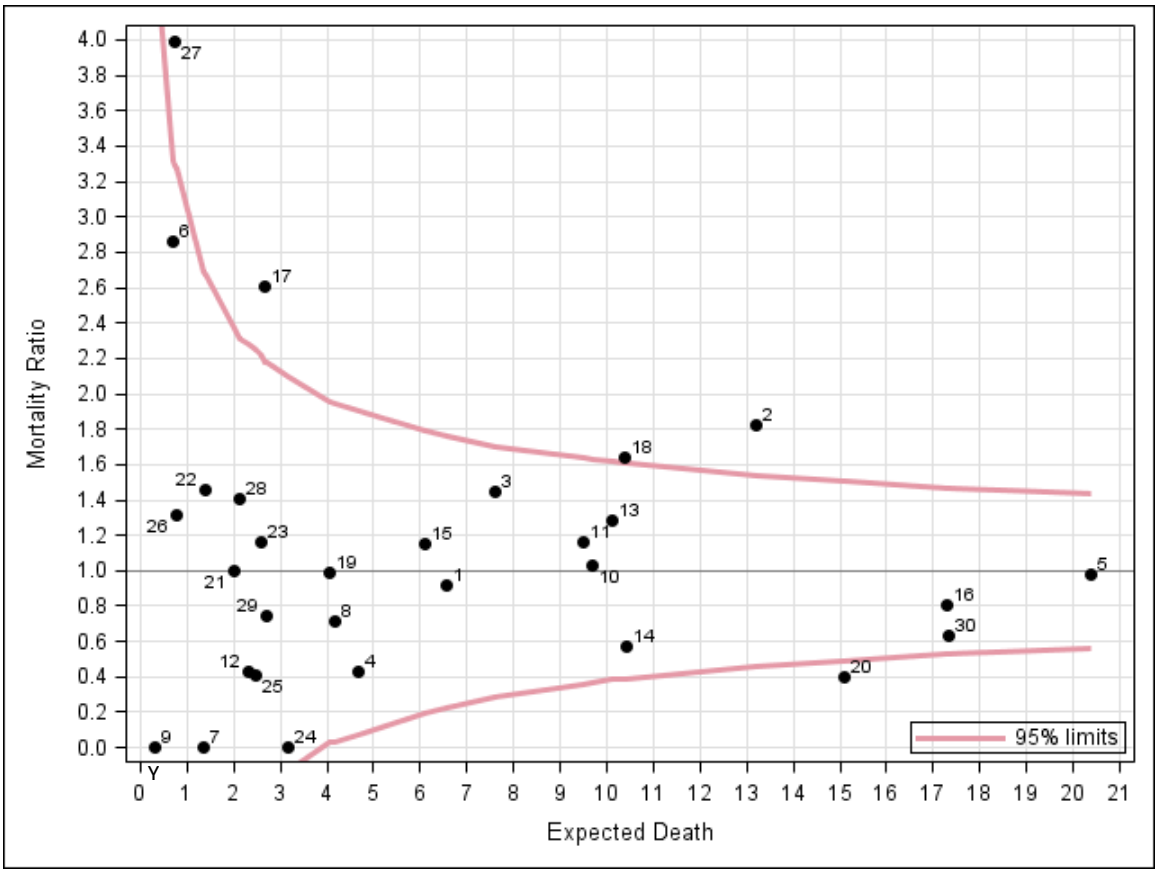
Site	Number of infants	Number of deaths	Adjusted# Expected number of deaths	Adjusted# Standardized ratio	95% confidence interval for adjusted standardized ratio	
1	41	6	6.6	0.9	0.3	2.0
2	85	24	13.2	1.8	1.2	2.7
3	54	11	7.6	1.4	0.7	2.6
4	41	2	4.7	0.4	0.0	1.5
5	153	20	20.4	1.0	0.6	1.5
6	10	2	0.7	2.9	0.3	10.3
7	9	0	1.4	0.0	.	2.7
8	38	3	4.2	0.7	0.1	2.1
9	6	0	0.3	0.0	.	12.1
10	82	10	9.7	1.0	0.5	1.9
11	63	11	9.5	1.2	0.6	2.1
12	27	1	2.3	0.4	0.0	2.4
13	69	13	10.1	1.3	0.7	2.2
14	76	6	10.4	0.6	0.2	1.3
15	51	7	6.1	1.1	0.5	2.4
16	159	14	17.3	0.8	0.4	1.4
17	21	7	2.7	2.6	1.0	5.4
18	78	17	10.4	1.6	1.0	2.6
19	28	4	4.1	1.0	0.3	2.5
20	120	6	15.1	0.4	0.1	0.9
21	13	2	2.0	1.0	0.1	3.6
22	10	2	1.4	1.5	0.2	5.2
23	25	3	2.6	1.2	0.2	3.4
24	26	0	3.2	0.0	.	1.2
25	25	1	2.5	0.4	0.0	2.2
26	4	1	0.8	1.3	0.0	7.3
27	11	3	0.8	4.0	0.8	11.7
28	30	3	2.1	1.4	0.3	4.1
29	21	2	2.7	0.7	0.1	2.7
30	130	11	17.3	0.6	0.3	1.1

Please note that site codes for Presentations 28a, 28b, 28c and 28d are different from other presentations in this report.

Neonates with major congenital anomalies are excluded.

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

Presentations # 28d
Mortality: GA<29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 28c
Column 1: Different site code than other presentations in the report
Column 2: Number of eligible neonates at each site (<29 weeks 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, 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 28d
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.

E2. Site Comparisons –

Mortality / Morbidities

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

Site	Number range	Mortality	Severe neurological injury	Severe ROP	Oxygen use at 36 weeks or discharge	NEC stage 2 or 3	Late onset sepsis	Mortality or severe morbidity
	N	%	%	%	%	%	%	%
AC	< 60	0.0	6.7	9.1	6.7	0.0	6.7	20.0
AD		12.3	9.8	13.8	4.0	0.0	8.8	33.3
B		6.3	33.3	0.0	13.3	0.0	18.8	37.5
E		0.0	6.7	20.0	25.0	4.6	0.0	27.3
I		5.8	4.7	25.0	4.0	3.9	5.8	13.5
D		5.3	14.0	1.9	1.9	3.5	23.2	29.8
S		9.5	20.0	22.2	25.0	4.8	9.5	47.6
C		5.2	8.9	3.0	9.3	1.7	7.0	20.7
U	61 – 110	4.6	4.7	2.4	24.2	4.6	9.2	32.3
L		3.6	7.8	0.0	13.4	2.4	8.4	22.9
T		4.8	7.8	0.0	14.9	2.4	15.7	31.3
V*		22.8	25.7	20.0	38.1	2.5	12.7	67.1
H		6.8	3.8	4.6	16.9	8.0	10.2	30.7
N		4.0	12.3	2.3	3.2	2.0	6.9	16.8
X		0.0	4.8	10.6	6.8	1.9	7.8	16.5
J	111 – 200	5.2	13.3	11.1	8.3	2.6	12.2	29.6
Q		6.9	12.5	10.6	24.4	2.8	7.6	38.2
K		5.0	8.3	6.7	10.5	0.8	8.3	23.1
Y		2.4	14.6	13.3	28.8	0.8	7.1	37.3
O		8.3	13.9	2.8	17.5	2.3	20.3	39.1
R		1.8	8.8	7.1	7.5	4.5	7.1	16.8
G		9.5	9.0	2.0	12.3	4.5	17.7	35.4
Z		8.5	12.2	6.9	28.5	3.7	14.6	40.9
W	> 200	3.2	9.2	9.1	10.7	1.8	12.8	24.8
AA		12.6	11.4	7.0	24.0	5.9	17.1	41.9
AB		3.2	7.6	4.7	18.2	3.2	7.3	28.4
A		4.7	12.2	6.0	12.5	3.8	8.5	26.0
P		4.7	8.1	8.9	11.3	4.3	7.7	25.8
M		6.2	22.6	30.3	17.9	5.9	9.3	35.5
F		6.8	9.9	10.5	17.9	4.1	10.3	31.8
Total CNN		6.0	11.4	8.2	15.9	3.6	10.7	30.9

Mortality or severe morbidity = Mortality prior to discharge or any of the five morbidities

*Site V does not have complete data for infants with GA < 33 and may not be comparable with other sites.

These are unadjusted rates.

Presentation #30
Mortality/morbidities: GA<29 weeks: Site specific crude rates

Site	Number range	Mortality	Severe neurological injury	Severe ROP	Oxygen use at 36 weeks or discharge	NEC stage 2 or 3	Late onset sepsis	Mortality or severe morbidity
	N	%	%	%	%	%	%	%
AC	< 20	0.0	16.7	0.0	16.7	0.0	0.0	33.3
B		25.0	50.0	0.0	33.3	0.0	50.0	100.0
E		0.0	12.5	33.3	50.0	10.0	0.0	50.0
S		20.0	30.0	44.4	55.6	10.0	10.0	80.0
D		20.0	50.0	12.5	0.0	20.0	44.4	60.0
I		27.3	18.2	50.0	11.1	18.2	18.2	45.5
C		13.3	14.3	7.7	33.3	6.7	28.6	60.0
AD	20-40	33.3	21.1	23.1	14.3	0.0	19.1	76.2
U		12.0	12.5	4.6	54.6	8.0	24.0	72.0
X		0.0	16.0	29.4	26.9	3.9	15.4	46.2
N		10.0	25.9	3.9	11.1	3.3	16.7	46.7
R		7.4	22.2	19.2	23.1	7.4	22.2	48.2
L		12.5	17.4	0.0	47.8	8.3	20.8	62.5
H		7.1	3.6	6.3	38.5	7.1	17.9	50.0
T		14.3	18.5	0.0	37.5	7.1	35.7	71.4
K	41-80	11.9	20.0	9.4	29.7	2.4	16.7	52.4
Y		4.7	11.6	21.1	62.8	2.3	16.3	65.1
W		7.6	12.2	12.5	26.8	3.9	30.4	54.4
Q		13.0	14.8	14.9	54.4	7.4	13.0	70.4
J		14.0	21.4	16.7	21.6	4.7	25.6	58.1
O		20.0	20.4	4.6	34.1	5.5	38.2	69.1
Z		17.5	25.4	10.9	60.4	8.1	31.8	77.8
G		20.0	11.9	3.5	27.6	7.3	24.3	57.1
V		22.8	25.7	20.0	38.1	2.5	12.7	67.1
A	> 80	9.1	18.1	6.9	21.6	6.7	15.8	45.5
P		12.2	14.8	10.3	26.0	11.0	18.3	53.7
AB		5.4	11.1	6.3	33.6	6.2	14.7	50.4
AA		28.7	18.8	14.5	54.8	12.6	36.8	78.2
M		9.7	40.6	32.8	38.5	9.0	18.6	66.2
F		12.7	14.9	14.2	33.3	7.6	21.5	57.0
Total CNN		13.1	19.2	12.6	34.7	7.0	21.4	59.6

Mortality or severe morbidity = Mortality prior to discharge or any of the five morbidities

These are unadjusted rates.

E.2.1. Site Comparisons – Late Onset Sepsis

Presentations #31 to #34

In presentations #31 and #32, 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.

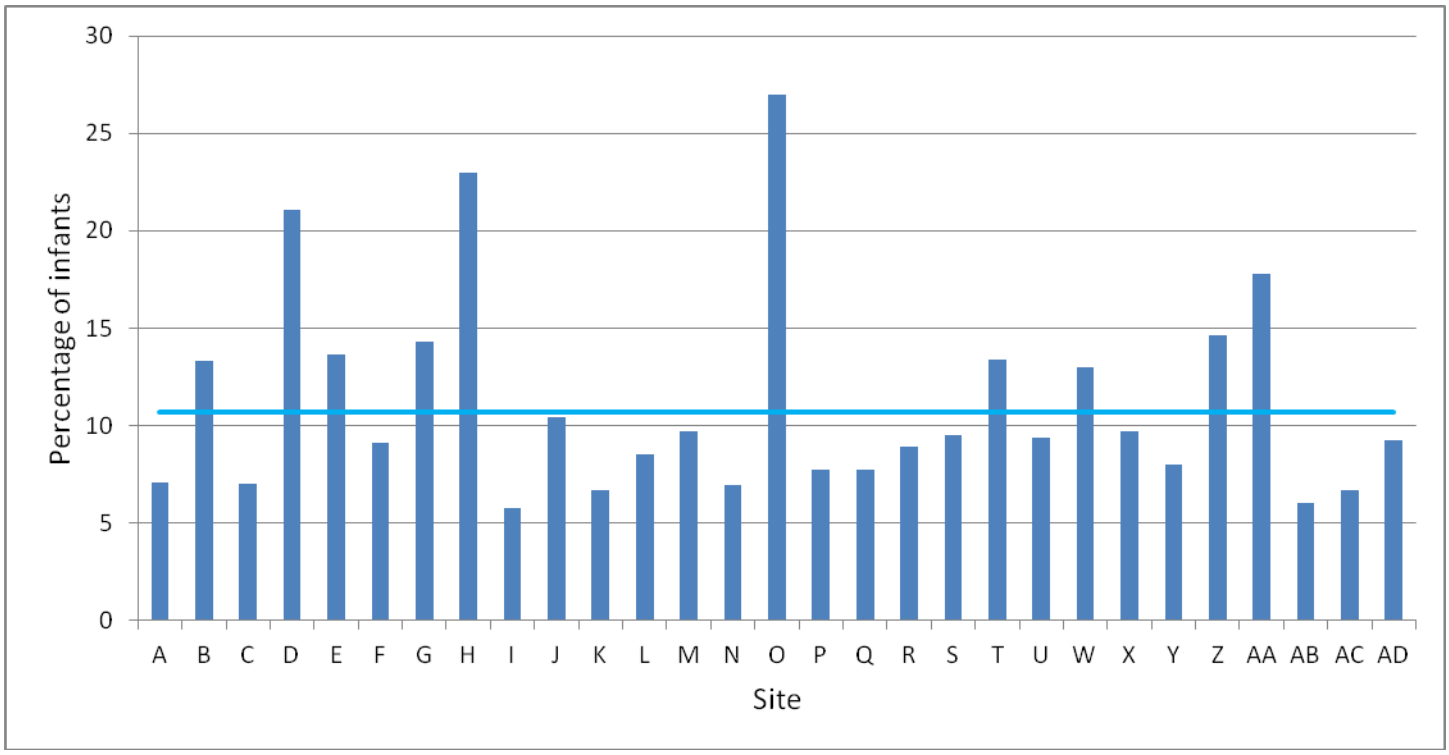
In presentations #33 and #34, assignment of infection was based on location where the infection happened, and not assigned to the hospital where the first episode of sepsis was acquired. Each episode of infection was counted (the total number of episodes exceeds the total number of neonates).

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

Presentation #31

Late onset sepsis: GA<33 weeks: Site specific crude rates

Sites that contributed data on all eligible admissions for neonates with GA < 33
(n=29 sites, 3 905 neonates, 46 excluded due to death before 3 days of age)



Site	A	B	C	D	E	F	G	H	I	J	K
%	7.1	13.3	7.0	21.1	13.6	9.1	14.3	23.0	5.8	10.4	6.7
Site	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**W**
%	8.5	9.7	6.9	27.0	7.8	7.7	8.9	9.5	13.4	9.4	13.0
Site	**X**	**Y**	**Z**	**AA**	**AB**	**AC**	**AD**	**Whole network**			
%	9.7	8.0	14.6	17.8	6.0	6.7	9.3	10.7			

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 #31 and #32, 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 #32a
Late onset sepsis: GA<33 weeks: Adjusted standardized ratios by site

Site	Number of infants	Number of NI	Adjusted# Expected number of NI	Adjusted# Standardized ratio	95% confidence interval for adjusted standardized ratio	
1	113	12	12.6	1.0	0.5	1.7
2	220	39	26.6	1.5	1.0	2.0
3	133	34	14.9	2.3	1.6	3.2
4	126	10	11.7	0.9	0.4	1.6
5	358	33	42.5	0.8	0.5	1.1
6	21	2	2.1	0.9	0.1	3.4
7	25	3	4.0	0.8	0.2	2.2
8	118	8	11.1	0.7	0.3	1.4
9	15	1	1.2	0.8	0.0	4.5
10	232	18	21.9	0.8	0.5	1.3
11	164	24	19.3	1.2	0.8	1.8
12	98	20	10.3	1.9	1.2	3.0
13	148	22	17.5	1.3	0.8	1.9
14	215	28	23.4	1.2	0.8	1.7
15	142	11	14.8	0.7	0.4	1.3
16	334	24	39.5	0.6	0.4	0.9
17	54	5	5.4	0.9	0.3	2.2
18*	74	10	15.9	0.6	0.3	1.2
19	80	11	8.5	1.3	0.6	2.3
20	312	19	35.5	0.5	0.3	0.8
21	56	4	4.7	0.8	0.2	2.2
22	55	12	3.7	3.3	1.7	5.7
23	64	6	6.3	0.9	0.3	2.1
24	105	10	8.7	1.2	0.6	2.1
25	114	10	7.8	1.3	0.6	2.4
26	14	2	0.7	3.0	0.3	11.0
27	52	3	3.2	0.9	0.2	2.7
28	101	7	8.1	0.9	0.3	1.8
29	82	7	6.7	1.0	0.4	2.1
30	352	34	40.7	0.8	0.6	1.2

Please note that site codes for Presentations 32a, 32b, 32c and 32d are different from other presentations in this report.

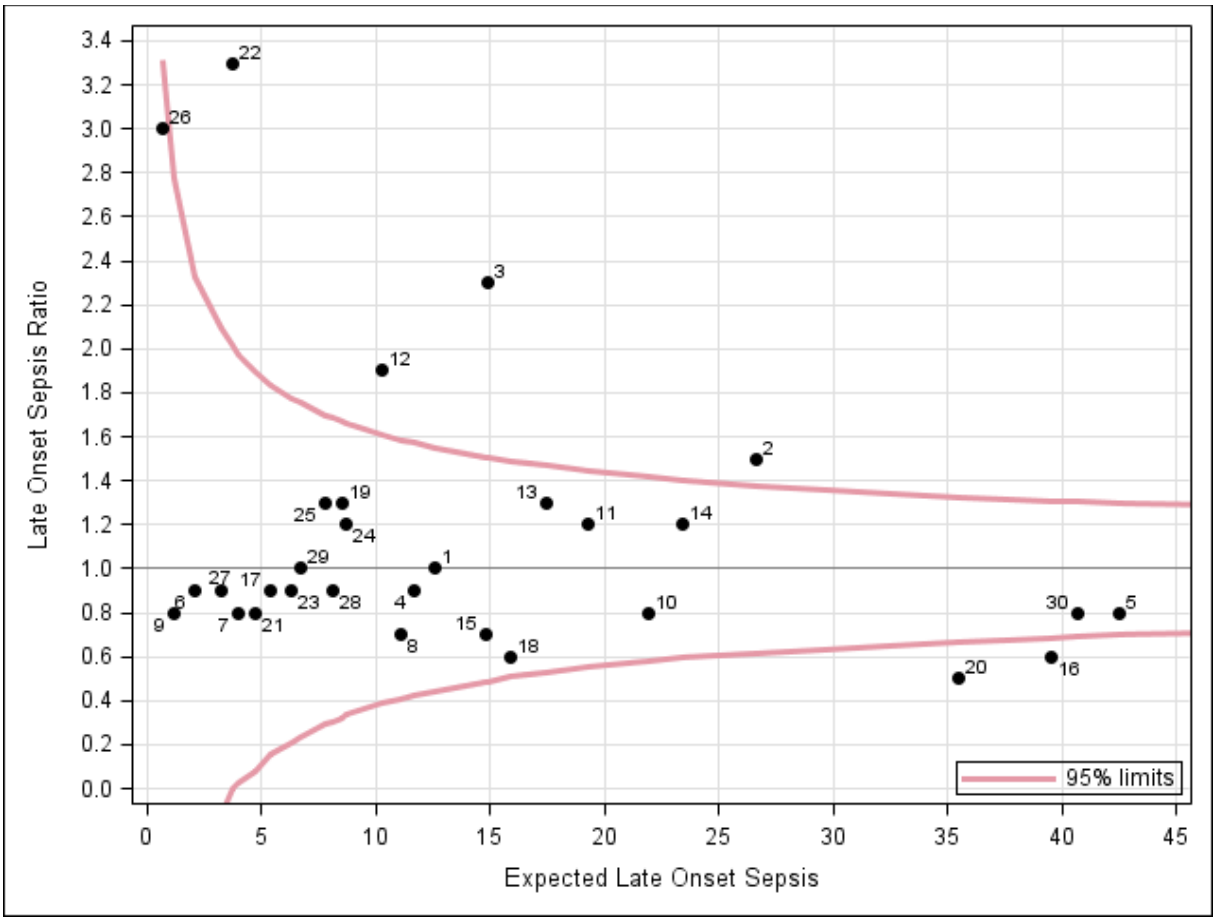
*Late onset sepsis was attributed to the hospital where the first episode of sepsis was acquired.

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

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

* Site 18 has different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites. (See next page for full explanation)

Presentation # 32b
Late onset sepsis: GA<33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 32a
Column 1: Different site code than other presentations in the report
Column 2: Number of eligible neonates at your sites (<33 weeks)
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, SNAPII > 20
Column 5: Adjusted standardized ratio calculated based on observed LOS/expected LOS
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 32b
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.

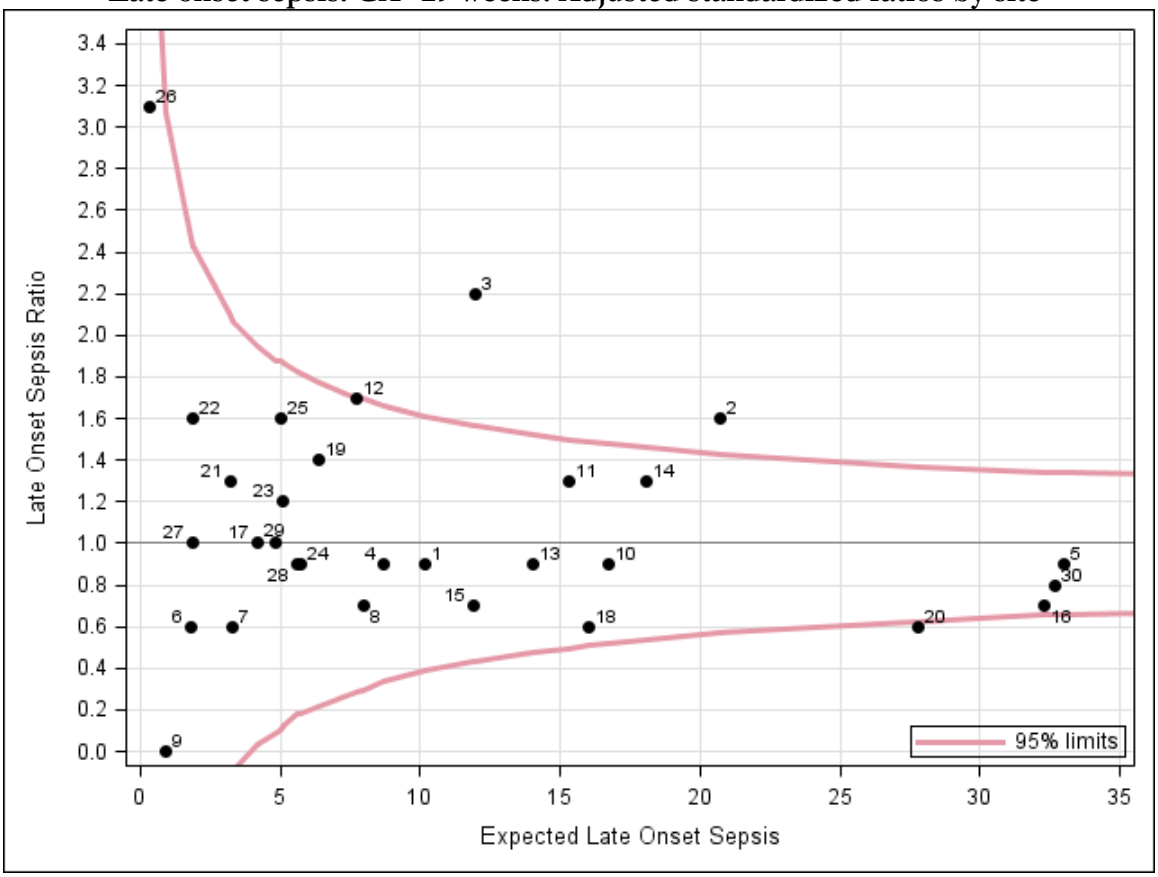
Presentation #32c
Late onset sepsis: GA<29 weeks: Adjusted standardized ratios by site

Site	Number of infants	Number of NI	Adjusted# Expected number of NI	Adjusted# Standardized ratio	95% confidence interval for adjusted standardized ratio	
1	41	9	10.2	0.9	0.4	1.7
2	85	33	20.7	1.6	1.1	2.2
3	53	26	12.0	2.2	1.4	3.2
4	44	8	8.7	0.9	0.4	1.8
5	151	30	33.0	0.9	0.6	1.3
6	10	1	1.8	0.6	0.0	3.1
7	12	2	3.3	0.6	0.1	2.2
8	40	6	8.0	0.7	0.3	1.6
9	6	0	0.9	0.0	.	3.9
10	81	15	16.7	0.9	0.5	1.5
11	63	20	15.3	1.3	0.8	2.0
12	36	13	7.7	1.7	0.9	2.9
13	61	12	14.0	0.9	0.4	1.5
14	77	24	18.1	1.3	0.8	2.0
15	54	8	11.9	0.7	0.3	1.3
16	157	22	32.3	0.7	0.4	1.0
17	18	4	4.2	1.0	0.3	2.4
18	74	10	16.0	0.6	0.3	1.2
19	26	9	6.4	1.4	0.6	2.7
20	127	17	27.8	0.6	0.4	1.0
21	13	4	3.2	1.3	0.3	3.2
22	8	3	1.9	1.6	0.3	4.6
23	24	6	5.1	1.2	0.4	2.6
24	27	5	5.7	0.9	0.3	2.0
25	28	8	5.0	1.6	0.7	3.1
26	2	1	0.3	3.1	0.0	17.4
27	11	2	1.9	1.0	0.1	3.8
28	30	5	5.6	0.9	0.3	2.1
29	23	5	4.8	1.0	0.3	2.4
30	142	27	32.7	0.8	0.5	1.2

Please note that site codes for Presentations 32a, 32b, 32c and 32d are different from 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, SNAPII > 20.

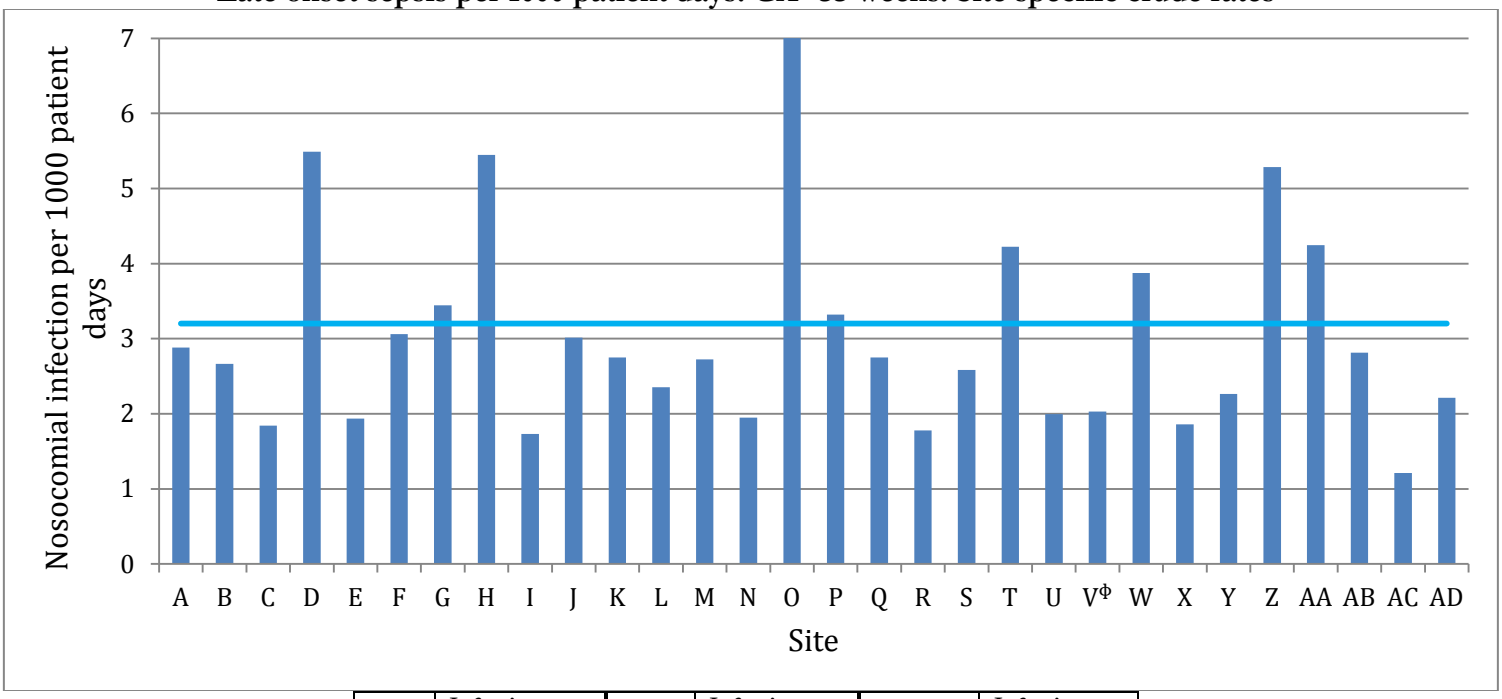
Presentation # 32d
Late onset sepsis: GA<29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 32c
Column 1: Different site code than other presentations in the report
Column 2: Number of eligible neonates at your sites (<29 weeks)
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, SNAPII > 20
Column 5: Adjusted standardized ratio calculated based on observed LOS/expected LOS
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 32d
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 #33
Late onset sepsis per 1000 patient days: GA<33 weeks: Site specific crude rates



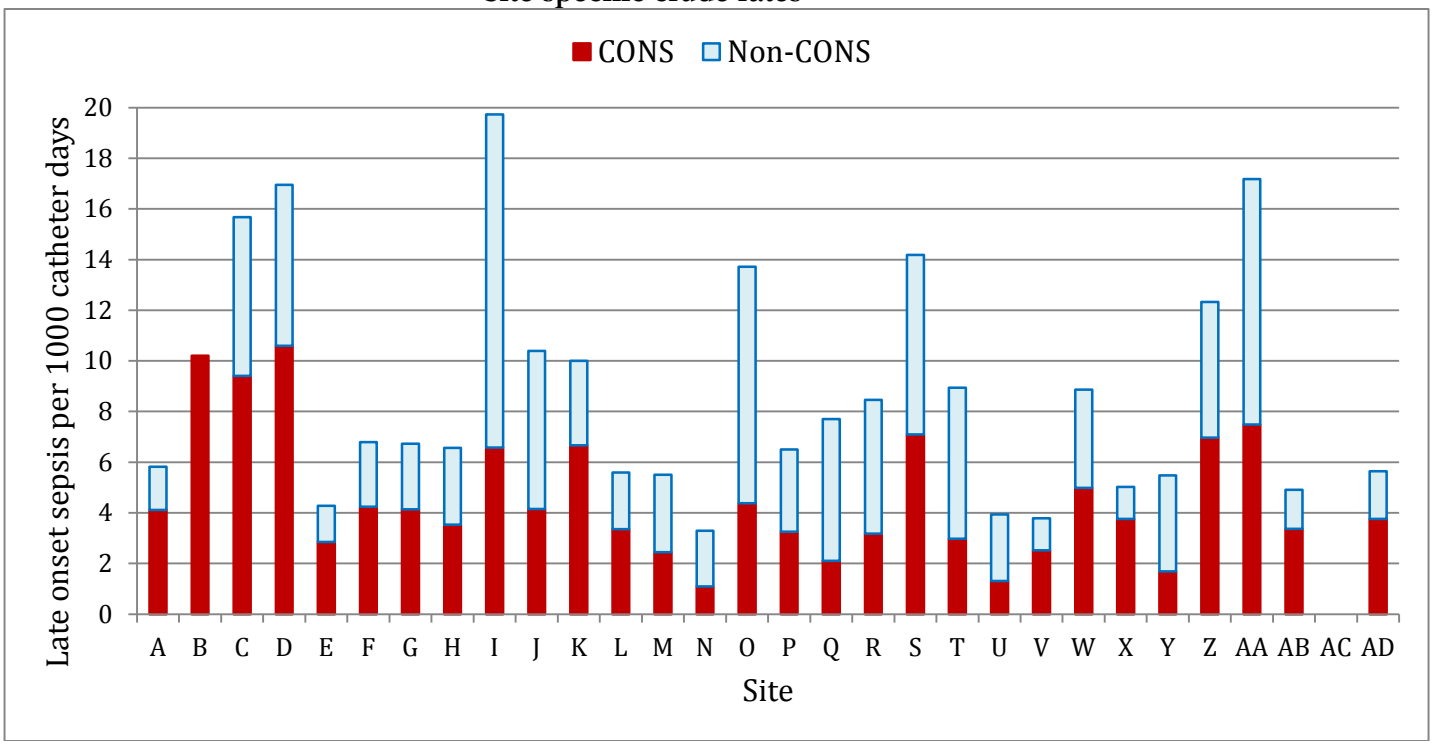
Site	Infections per 1000 patient days	Site	Infections per 1000 patient days	Site	Infections per 1000 patient days
A	2.9	**L**	2.4	**W**	3.9
B	2.7	**M**	2.7	**X**	1.9
C	1.8	**N**	1.9	**Y**	2.3
D	5.5	**O**	7.0	**Z**	5.3
E	1.9	**P**	3.3	**AA**	4.2
F	3.1	**Q**	2.8	**AB**	2.8
G	3.4	**R**	1.8	**AC**	1.2
H	5.4	**S**	2.6	**AD**	2.2
I	1.7	**T**	4.2		
J	3.0	**U**	2.0	**Whole network**	3.2
K	2.7	**VΦ**	2.0		

Total number of neonates = 4 030

***Note that the criteria for entering neonates with GA <33 in the CNN dataset are not the same for site V, thus, the rates may not be comparable with other sites.**

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 infections, they will be counted as separate episodes of infections in the numerator.
In presentations #33 and #34, 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.

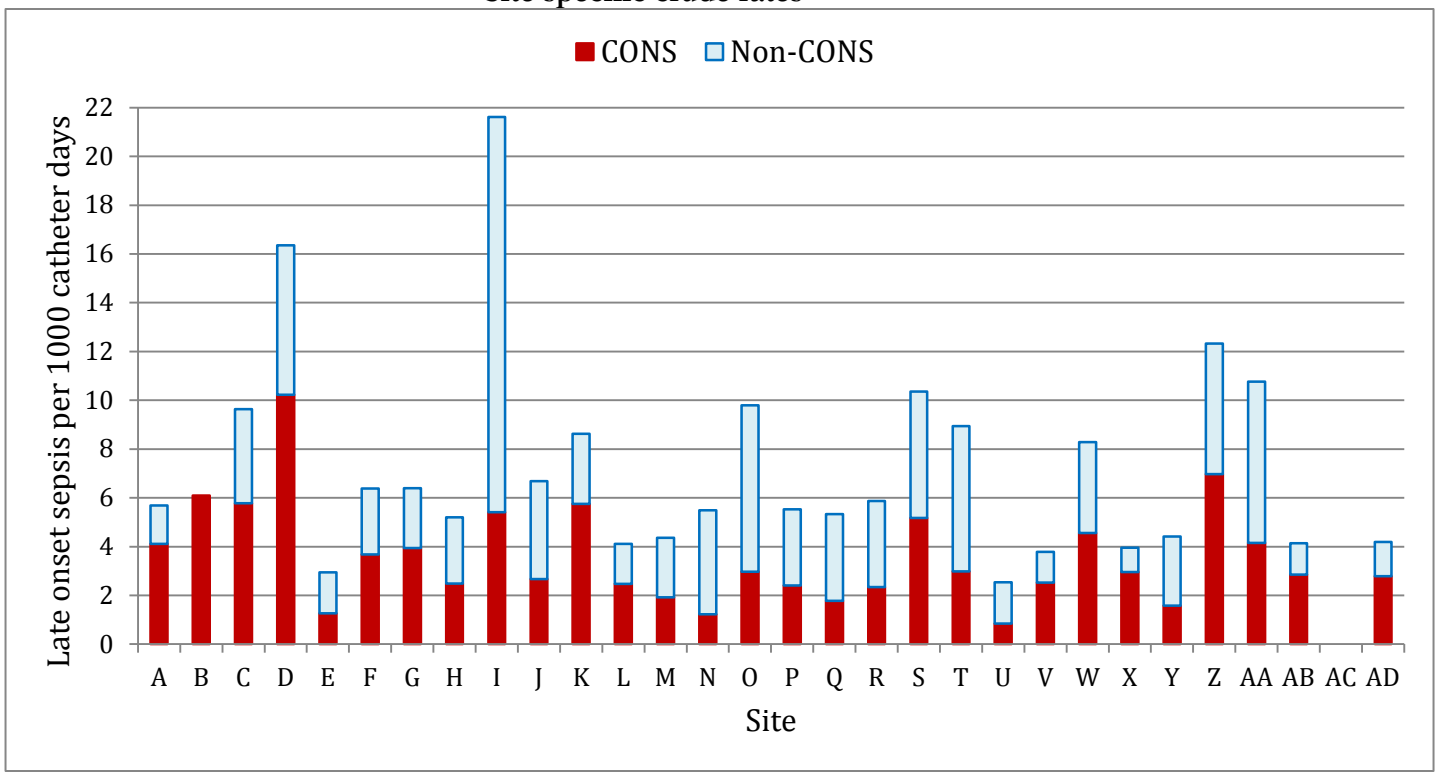
Presentation #34a
Central Line-Associated Bloodstream Infections per 1000 central line* days: GA < 33 weeks: Site specific crude rates



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	5	12	2919	4.1	1.7	**P**	7	7	2151	3.3	3.3
B	0	1	98	10.2	0.0	**Q**	8	3	1427	2.1	5.6
C	2	3	319	9.4	6.3	**R**	5	3	945	3.2	5.3
D	3	5	472	10.6	6.4	**S**	1	1	141	7.1	7.1
E	1	2	702	2.8	1.4	**T**	6	3	1006	3.0	6.0
F	9	15	3533	4.2	2.5	**U**	2	1	761	1.3	2.6
G	5	8	1933	4.1	2.6	**V**	2	4	1586	2.5	1.3
H	12	14	3960	3.5	3.0	**W**	14	18	3612	5.0	3.9
I	2	1	152	6.6	13.2	**X**	1	3	797	3.8	1.3
J	3	2	481	4.2	6.2	**Y**	9	4	2374	1.7	3.8
K	1	2	300	6.7	3.3	**Z**	10	13	1865	7.0	5.4
L	2	3	893	3.4	2.2	**AA**	22	17	2271	7.5	9.7
M	15	12	4910	2.4	3.1	**AB**	5	11	3260	3.4	1.5
N	2	1	911	1.1	2.2	**AC**	0	0	26	0.0	0.0
O	32	15	3425	4.4	9.3	**AD**	1	2	532	3.8	1.9
						Total	**187**	**186**	**46521**	**3.9**	**3.9**

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

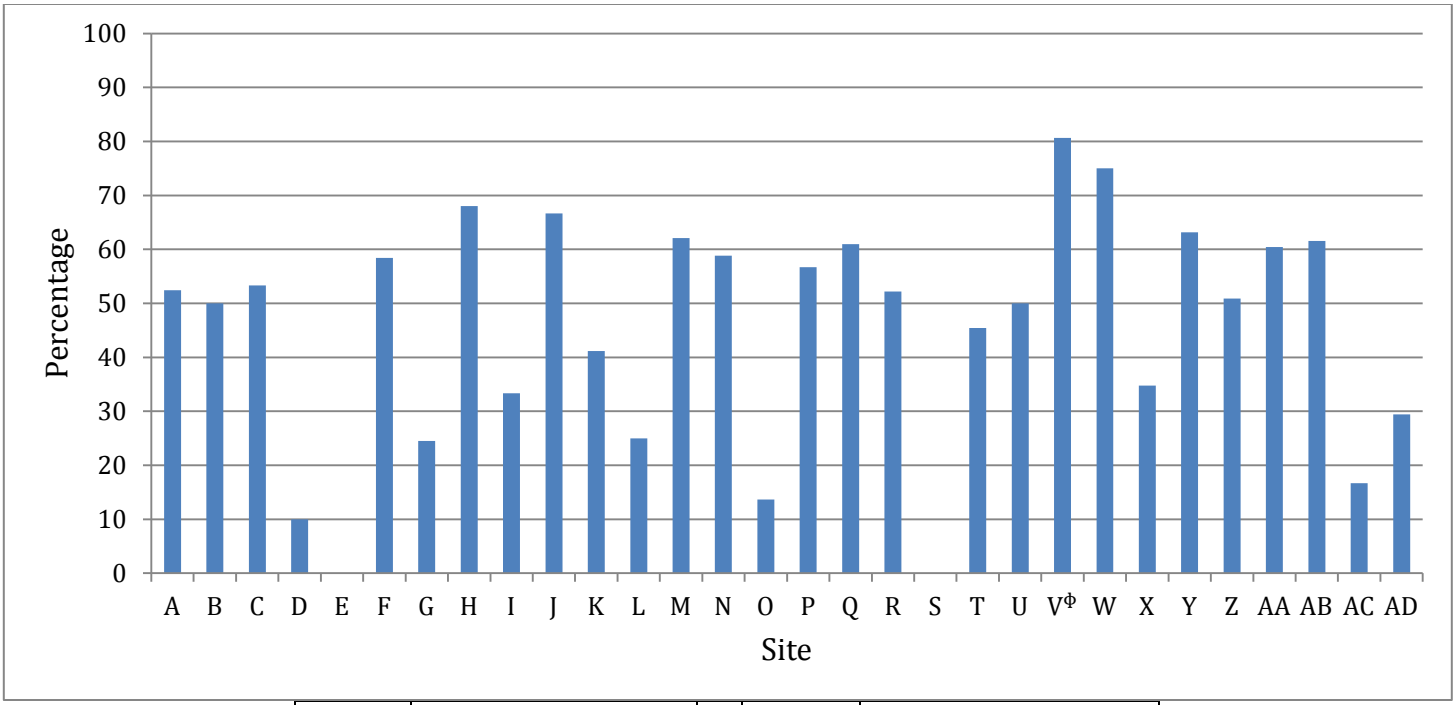
Presentation #34b
Central Line-Associated Bloodstream Infections per 1000 central line* days: All neonates: Site specific crude rates



Site	CLABSI**		Central line days	CLABSI per 1000 central line days	
	CONS	Non-CONS		CONS	Non-CONS
A	5	13	3165	4.1	1.6
B	0	1	164	6.1	0.0
C	2	3	519	5.8	3.9
D	3	5	489	10.2	6.1
E	4	3	2381	1.3	1.7
F	11	15	4073	3.7	2.7
G	5	8	2032	3.9	2.5
H	23	21	8463	2.5	2.7
I	3	1	185	5.4	16.2
J	3	2	748	2.7	4.0
K	1	2	348	5.7	2.9
L	2	3	1214	2.5	1.6
M	19	15	7805	1.9	2.4
N	7	2	1640	1.2	4.3
O	39	17	5719	3.0	6.8
P	13	10	4155	2.4	3.1
Q	8	4	2249	1.8	3.6
R	6	4	1704	2.3	3.5
S	1	1	193	5.2	5.2
T	6	3	1006	3.0	6.0
U	2	1	1184	0.8	1.7
V	2	4	1586	2.5	1.3
W	22	27	5915	4.6	3.7
X	1	3	1013	3.0	1.0
Y	9	5	3174	1.6	2.8
Z	10	13	1865	7.0	5.4
AA	27	17	4089	4.2	6.6
AB	5	11	3861	2.8	1.3
AC	0	0	49	0.0	0.0
AD	1	2	716	2.8	1.4
			Total	**240**	**216**	**71704**	**3.0**	**3.3**

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

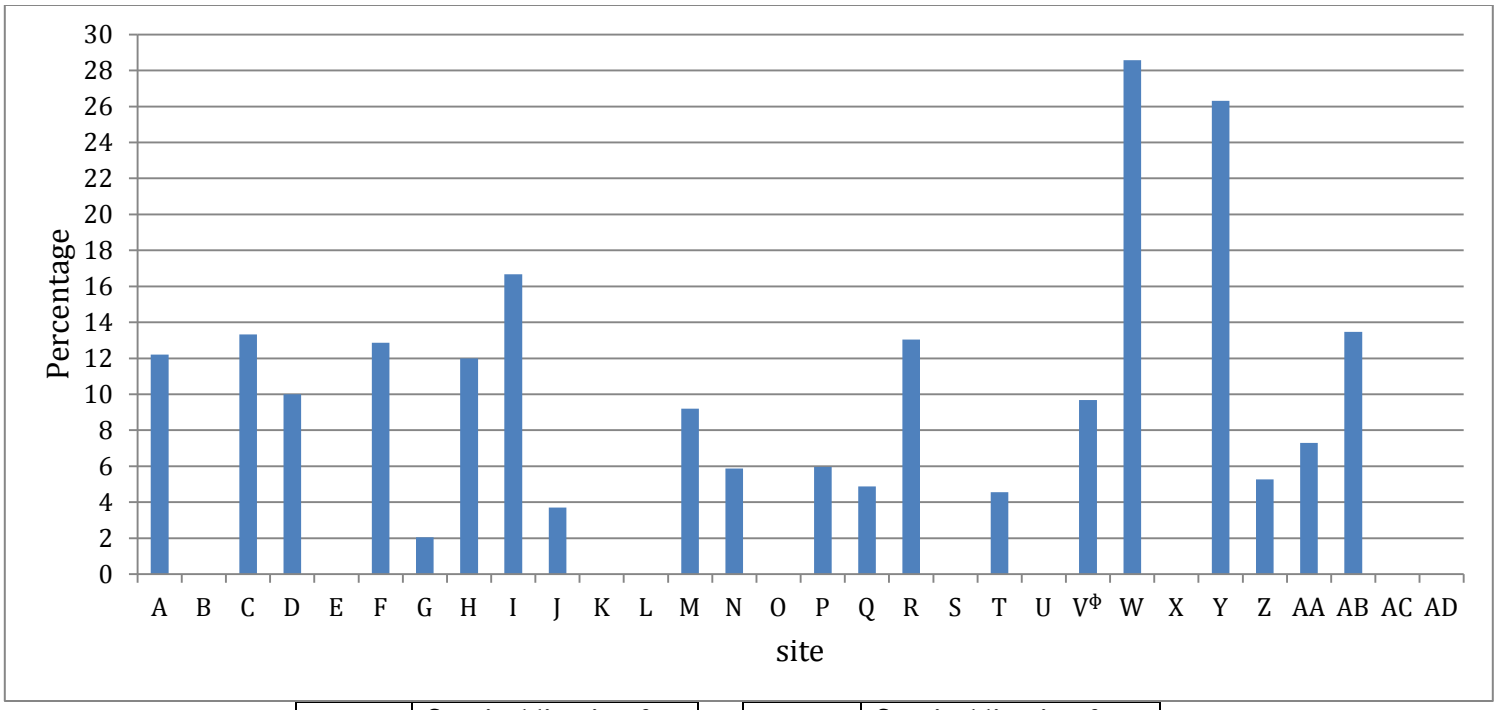
Presentation #35
Rate of treatment[#] for PDA: GA<33 weeks who had PDA: Site specific crude rates



Site	Treatment[#] for PDA among neonates who had PDA (%)		Site	Treatment[#] for PDA among neonates who had PDA (%)
A	52.4		**P**	56.7
B	50.0		**Q**	61.0
C	53.3		**R**	52.2
D	10.0		**S**	0.0
E	NA		**T**	45.5
F	58.4		**U**	50.0
G	24.5		**Vϕ**	80.7
H	68.0		**W**	75.0
I	33.3		**X**	34.8
J	66.7		**Y**	63.2
K	41.2		**Z**	50.9
L	25.0		**AA**	60.4
M	62.1		**AB**	61.5
N	58.8		**AC**	16.7
O	13.6		**AD**	29.4
			Total	54.6

Total number of neonates who had PDA = 1126
[#]Treatment of PDA includes any of indomethacin, ibuprofen, acetaminophen, or ligation
† Percentage of neonates to each network site and results are attributed to the site of first admission.
ϕNote that the criteria for entering neonates with GA <33 in the CNN dataset are not the same for site V and thus, the rates may not be comparable with other sites.
*No PDA among neonates with GA<33 in site E.

Presentation #36
Surgical PDA ligation rate: GA<33 weeks and who had PDA: Site specific crude rates

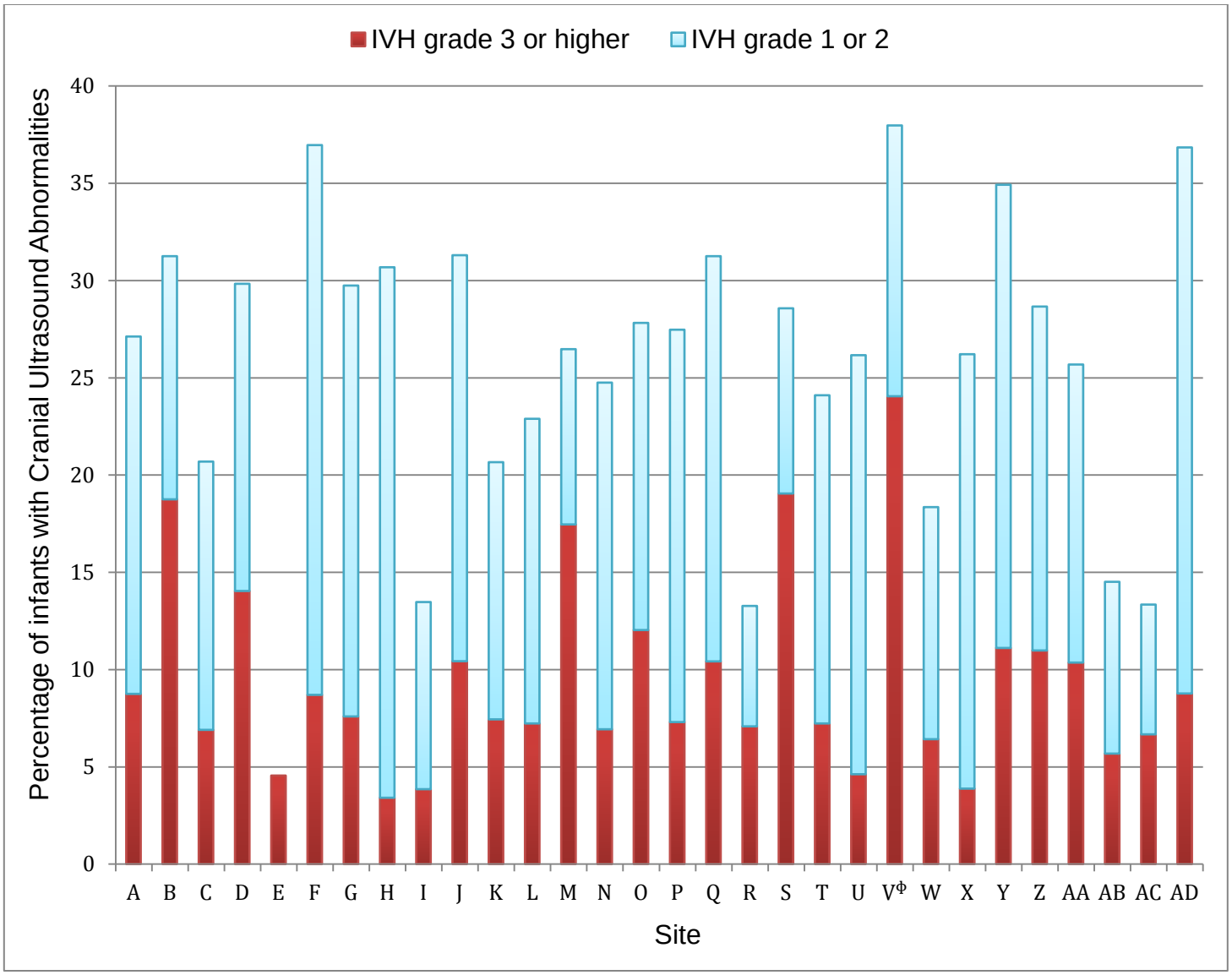


Site	Surgical ligation for PDA among neonates who had PDA (%)
A	12.2
B	0.0
C	13.3
D	10.0
E	NA
F	12.9
G	2.0
H	12.0
I	16.7
J	3.7
K	0.0
L	0.0
M	9.2
N	5.9
O	0.0

Site	Surgical ligation for PDA among neonates who had PDA (%)
P	6.0
Q	4.9
R	13.0
S	0.0
T	4.6
U	0.0
Vϕ	9.7
W	28.6
X	0.0
Y	26.3
Z	5.3
AA	7.3
AB	13.5
AC	0.0
AD	0.0
Total	9.5

Total number of neonates who had PDA = 1126
† Percentage of neonates to each network site and results are attributed to the site of first admission.
ϕNote that the criteria for entering neonates with GA <33 in the CNN dataset are not the same for site V and thus, the rates may not be comparable with other sites.
*No PDA among neonates with GA<33 in site E.

Presentation #37
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 #37 (continued)
Neuroimaging abnormalities rate: GA<33 weeks: Site specific crude rates

Site	<25	25-26	27-28	29-30	31-32	Overall rate* per sites %
A	51.9	19.1	2.7	2.1	0.0	8.8
B	0.0	100.0	50.0	0.0	9.1	18.8
C	33.3	0.0	0.0	7.1	3.5	6.9
D	100.0	50.0	33.3	9.5	3.9	14.0
E	0.0	0.0	25.0	0.0	0.0	4.6
F	17.1	27.3	6.3	6.3	2.6	8.7
G	11.8	8.7	13.3	11.1	0.0	7.6
H	0.0	0.0	5.6	6.7	0.0	3.4
I	100.0	25.0	0.0	0.0	0.0	3.9
J	22.2	33.3	10.5	5.0	3.9	10.4
K	42.9	23.1	9.1	2.7	0.0	7.4
L	33.3	22.2	8.3	15.4	0.0	7.2
M	58.1	44.0	21.9	8.1	0.8	17.5
N	0.0	30.8	20.0	0.0	0.0	6.9
O	20.0	20.0	15.0	15.2	2.2	12.0
P	8.3	23.8	12.2	7.7	1.0	7.3
Q	50.0	0.0	11.1	16.0	4.6	10.4
R	25.0	42.9	12.5	3.3	1.8	7.1
S	100.0	20.0	25.0	0.0	14.3	19.1
T	0.0	7.1	40.0	4.4	0.0	7.2
U	0.0	15.4	10.0	0.0	0.0	4.6
V$^{\phi}$	40.0	31.4	11.8	NA	NA	24.1
W	15.4	16.1	5.7	8.9	0.0	6.4
X	33.3	12.5	13.3	0.0	0.0	3.9
Y	25.0	16.7	6.9	14.3	8.3	11.1
Z	60.0	12.0	17.4	0.0	3.3	11.0
AA	35.0	16.1	11.1	4.9	5.4	10.4
AB	13.6	19.1	4.6	3.1	1.1	5.7
AC	NA	50.0	0.0	0.0	0.0	6.7
AD	0.0	33.3	14.3	6.7	0.0	8.8
Overall rate per GA group %**	31.0	22.2	10.8	6.0	1.9	9.3

Total number of neonates = 4 030
VE=ventricular enlargement, PEC=parenchymal echogenicity
$^{\phi}$ Note that the criteria for entering neonates with GA **<**33 in the CNN dataset are not same for site V and thus, the rates may not be comparable with other sites.
Note that 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 gestational category)*100
NA = no data available

Presentation# 38a

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

Site	Number of infants	Number with IVH G3/4 or PVL	Adjusted## Expected number with IVH G3/4 or PVL	Adjusted## Standardized ratio	95% confidence interval for adjusted standardized ratio	
1	88	12	11.0	1.1	0.6	1.9
2	195	22	21.6	1.0	0.6	1.5
3	109	15	14.4	1.0	0.6	1.7
4	94	14	10.9	1.3	0.7	2.2
5	313	29	39.7	0.7	0.5	1.0
6	19	4	1.6	2.5	0.7	6.3
7	12	0	2.1	0.0	.	1.8
8	103	5	9.9	0.5	0.2	1.2
9	15	1	1.2	0.8	0.0	4.7
10	207	17	21.9	0.8	0.5	1.2
11	147	18	17.3	1.0	0.6	1.6
12	77	3	6.4	0.5	0.1	1.4
13	127	10	16.0	0.6	0.3	1.1
14	148	14	20.8	0.7	0.4	1.1
15	116	15	12.3	1.2	0.7	2.0
16	236	28	35.1	0.8	0.5	1.2
17	51	5	5.5	0.9	0.3	2.1
18*	73	18	14.5	1.2	0.7	2.0
19	75	5	7.6	0.7	0.2	1.5
20	219	12	30.5	0.4	0.2	0.7
21	41	4	4.3	0.9	0.2	2.4
22	56	8	3.6	2.2	1.0	4.4
23	63	3	6.4	0.5	0.1	1.4
24	83	4	7.9	0.5	0.1	1.3
25	87	7	6.9	1.0	0.4	2.1
26	9	3	1.4	2.1	0.4	6.2
27	43	2	3.0	0.7	0.1	2.4
28	55	7	6.7	1.0	0.4	2.1
29	73	4	5.2	0.8	0.2	2.0
30	256	53	32.7	1.6	1.2	2.1

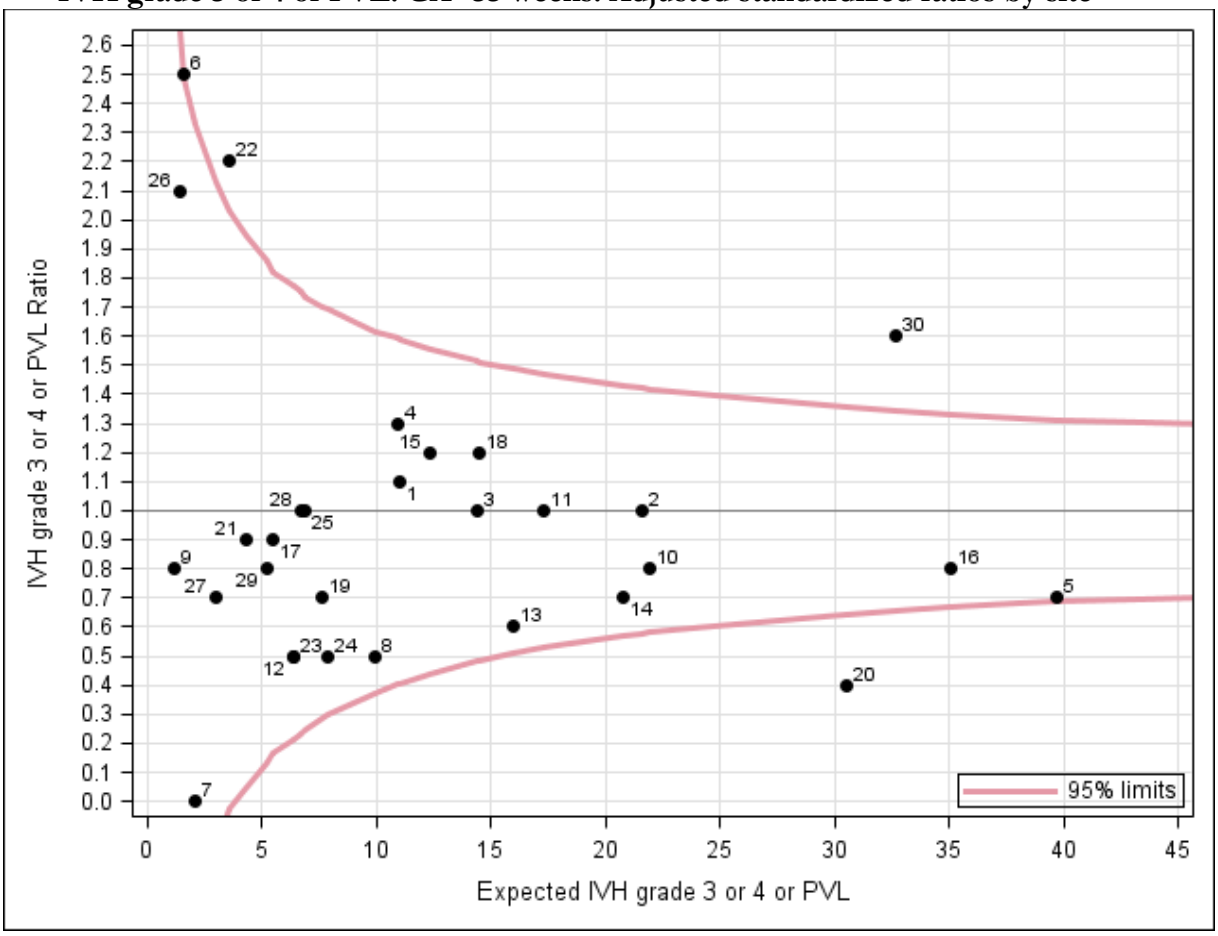
Please note that site codes for Presentations 38a and 38b are different from other presentations in this report.

Neonates with major congenital anomalies are excluded.

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

* Site 18 has different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites. (See next page for full explanation)

Presentation #38b
IVH grade 3 or 4 or PVL: GA<33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 38a
Column 1: Different site code than other presentations in the report
Column 2: Number of eligible neonates at your sites (<33 weeks 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, SNAPII > 20
Column 5: Adjusted standardized ratio calculated based on observed IVH or PVL/expected IVH or PVL
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 38b
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# 38c

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

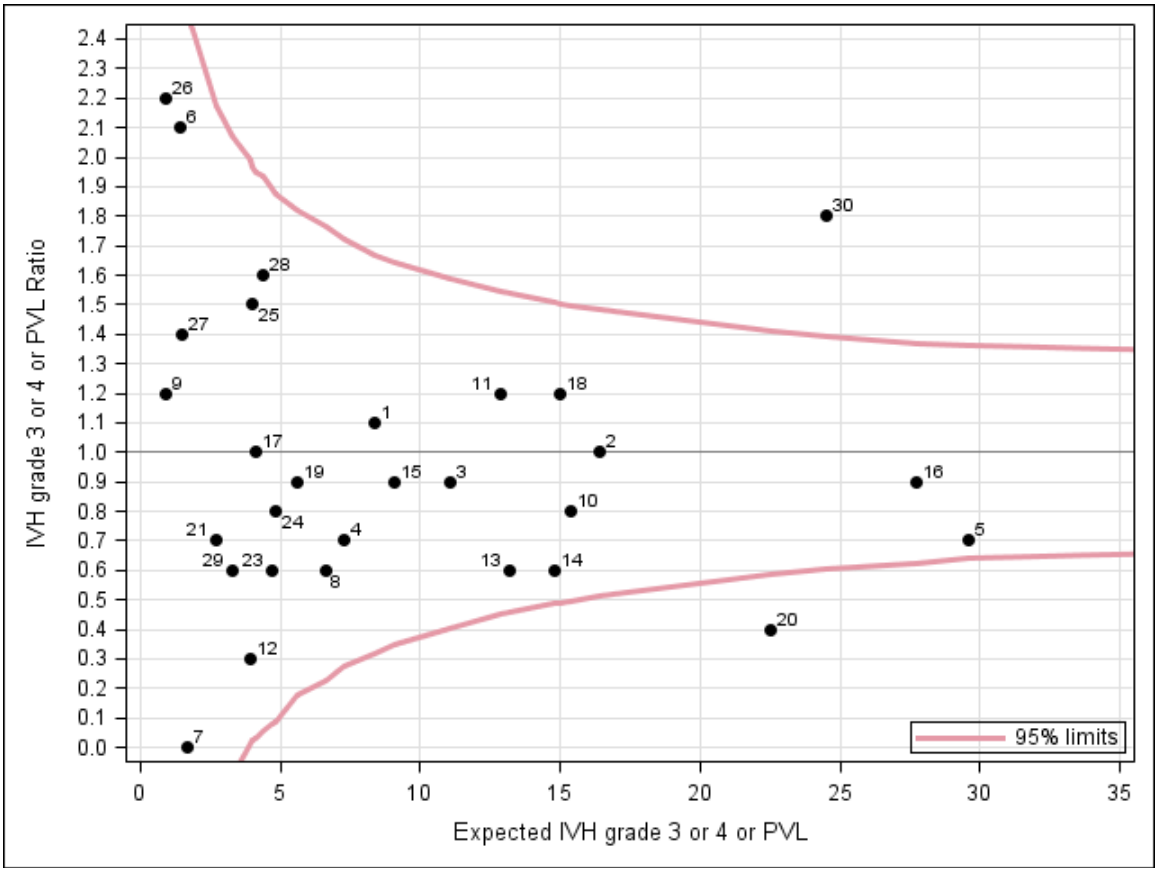
Site	Number of infants	Number with IVH G3/4 or PVL	Adjusted[#] Expected number with IVH G3/4 or PVL	Adjusted[#] Standardized ratio	95% confidence interval for adjusted standardized ratio	
1	40	9	8.4	1.1	0.5	2.0
2	84	16	16.4	1.0	0.6	1.6
3	48	10	11.1	0.9	0.4	1.7
4	41	5	7.3	0.7	0.2	1.6
5	149	22	29.6	0.7	0.5	1.1
6	10	3	1.4	2.1	0.4	6.3
7	7	0	1.7	0.0	.	2.1
8	36	4	6.6	0.6	0.2	1.6
9	6	1	0.9	1.2	0.0	6.5
10	81	12	15.4	0.8	0.4	1.4
11	63	16	12.9	1.2	0.7	2.0
12	27	1	3.9	0.3	0.0	1.4
13	66	8	13.2	0.6	0.3	1.2
14	71	9	14.8	0.6	0.3	1.2
15	51	8	9.1	0.9	0.4	1.7
16	149	26	27.7	0.9	0.6	1.4
17	19	4	4.1	1.0	0.3	2.5
18	73	18	15.0	1.2	0.7	1.9
19	27	5	5.6	0.9	0.3	2.1
20	117	10	22.5	0.4	0.2	0.8
21	12	2	2.7	0.7	0.1	2.6
22	10	5	1.9	2.7	0.9	6.2
23	24	3	4.7	0.6	0.1	1.9
24	25	4	4.8	0.8	0.2	2.2
25	25	6	4.0	1.5	0.6	3.3
26	4	2	0.9	2.2	0.2	7.9
27	11	2	1.5	1.4	0.2	5.0
28	27	7	4.4	1.6	0.6	3.2
29	20	2	3.3	0.6	0.1	2.2
30	118	45	24.5	1.8	1.3	2.5

Please note that site codes for Presentations 38a, 38b, 38c and 38d are different from other presentations in this report.

Neonates with major congenital anomalies are excluded.

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

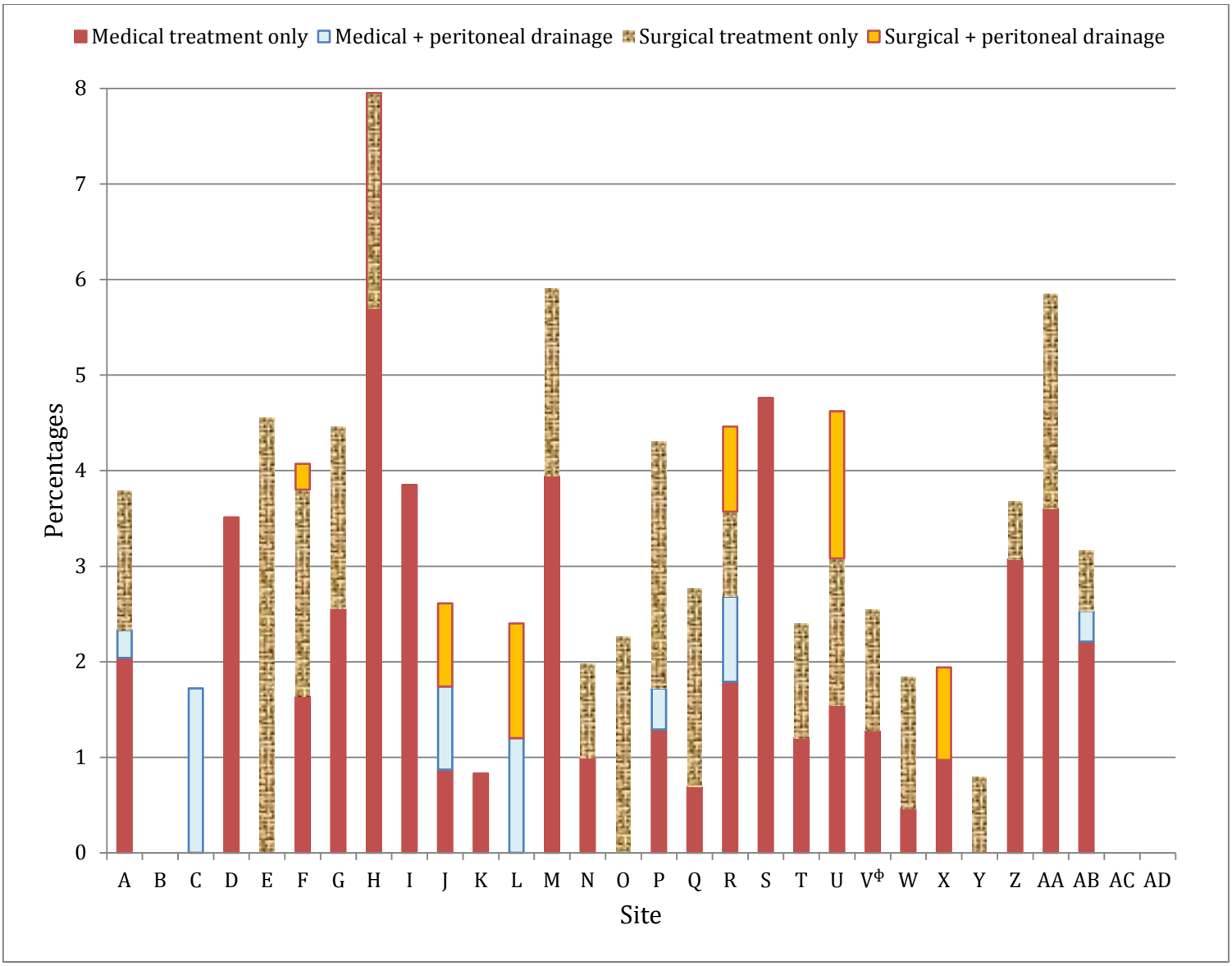
Presentation #38d
IVH grade 3 or 4 or PVL: GA<29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 38c
Column 1: Different site code than other presentations in the report
Column 2: Number of eligible neonates at your sites (<33 weeks 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, SNAPII > 20
Column 5: Adjusted standardized ratio calculated based on observed IVH or PVL/expected IVH or PVL
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 38d
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 #39
NEC treatment rates: GA<33 weeks: Site specific crude rates



Presentation #39 (continued)

NEC treatment rates: GA<33 weeks: Site specific crude rates

Site	Treatment (%)				
	Medical treatment only	Medical + peritoneal drainage	Surgical treatment only	Surgical + peritoneal drainage	Any
A	2.0	0.3	1.5	0.0	3.8
B	0.0	0.0	0.0	0.0	0.0
C	0.0	1.7	0.0	0.0	1.7
D	3.5	0.0	0.0	0.0	3.5
E	0.0	0.0	4.6	0.0	4.6
F	1.6	0.0	2.2	0.3	4.1
G	2.6	0.0	1.9	0.0	4.5
H	5.7	0.0	2.3	0.0	8.0
I	3.9	0.0	0.0	0.0	3.9
J	0.9	0.9	0.0	0.9	2.6
K	0.8	0.0	0.0	0.0	0.8
L	0.0	1.2	0.0	1.2	2.4
M	3.9	0.0	2.0	0.0	5.9
N	1.0	0.0	1.0	0.0	2.0
O	0.0	0.0	2.3	0.0	2.3
P	1.3	0.4	2.6	0.0	4.3
Q	0.7	0.0	2.1	0.0	2.8
R	1.8	0.9	0.9	0.9	4.5
S	4.8	0.0	0.0	0.0	4.8
T	1.2	0.0	1.2	0.0	2.4
U	1.5	0.0	1.5	1.5	4.6
V$^{\phi}$	1.3	0.0	1.3	0.0	2.5
W	0.5	0.0	1.4	0.0	1.8
X	1.0	0.0	0.0	1.0	1.9
Y	0.0	0.0	0.8	0.0	0.8
Z	3.1	0.0	0.6	0.0	3.7
AA	3.6	0.0	2.3	0.0	5.9
AB	2.2	0.3	0.6	0.0	3.2
AC	0.0	0.0	0.0	0.0	0.0
AD	0.0	0.0	0.0	0.0	0.0
Total	1.9	0.2	1.4	0.1	3.6

COMMENTS: These analyses include 4 026 neonates from 30 sites. **Twenty-nine sites collected data on all eligible admissions for neonates with GA < 33 weeks whereas one site (marked by $^{\phi}$) collected data on selected eligible admissions only.**

$^{\phi}$Note that the criteria for entering neonates with GA **<33 weeks** in the CNN dataset are not same for site V and thus, the rates may not be comparable with other sites.

Presentation #40a

NEC: GA<33 weeks: Adjusted standardized ratios by site

Site	Number of infants	Number of NEC	Adjusted# Expected number of NEC	Adjusted# Standardized ratio	95% confidence interval for adjusted standardized ratio	
1	113	3	3.9	0.8	0.2	2.2
2	215	13	8.1	1.6	0.9	2.7
3	127	3	4.8	0.6	0.1	1.8
4	124	1	3.6	0.3	0.0	1.6
5	356	15	13.1	1.1	0.6	1.9
6	20	1	0.7	1.4	0.0	8.1
7	19	1	0.9	1.1	0.0	6.1
8	114	1	3.2	0.3	0.0	1.7
9	15	0	0.4	0.0	.	9.3
10	230	10	6.8	1.5	0.7	2.7
11	163	6	5.9	1.0	0.4	2.2
12	85	7	2.4	2.9	1.2	6.0
13	151	6	6.4	0.9	0.3	2.0
14	212	4	7.0	0.6	0.2	1.5
15	140	3	4.5	0.7	0.1	1.9
16	334	12	12.7	0.9	0.5	1.7
17	57	0	2.0	0.0	.	1.9
18*	78	2	5.1	0.4	0.0	1.4
19	81	2	2.7	0.7	0.1	2.6
20	299	8	10.1	0.8	0.3	1.6
21	54	0	1.6	0.0	.	2.3
22	56	2	1.3	1.6	0.2	5.7
23	64	2	2.0	1.0	0.1	3.7
24	102	2	2.6	0.8	0.1	2.8
25	108	4	2.5	1.6	0.4	4.1
26	16	0	0.4	0.0	.	8.4
27	52	2	1.1	1.8	0.2	6.6
28	99	1	2.6	0.4	0.0	2.1
29	79	2	2.1	0.9	0.1	3.4
30	336	19	11.8	1.6	1.0	2.5

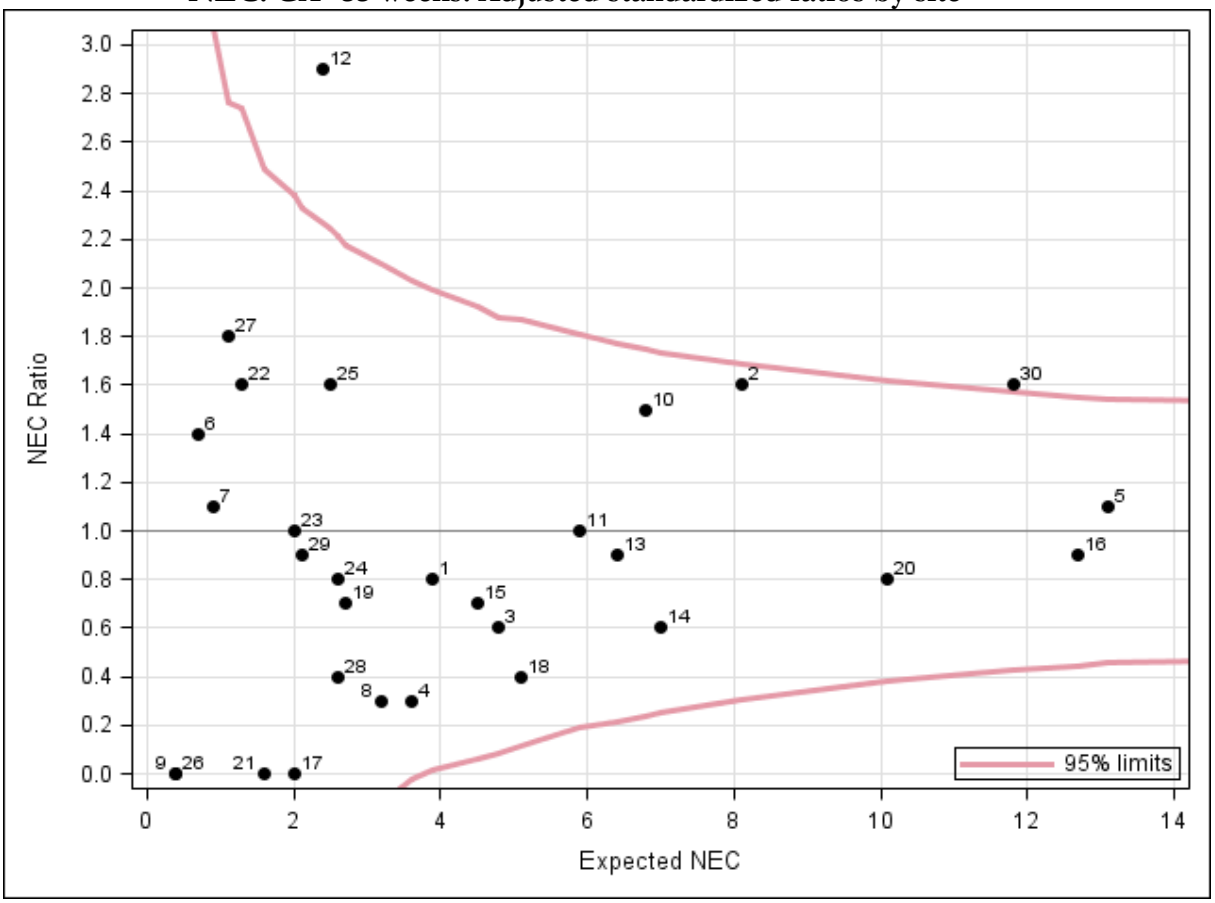
Please note that site codes for Presentations 40a and 40b are different from other presentations in this report.

Neonates with major congenital anomalies are excluded.

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

* Site 18 has different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites. (See next page for full explanation)

Presentation #40b
NEC: GA<33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 40a
Column 1: Different site code than other presentations in the report
Column 2: Number of eligible neonates at your sites (<33 weeks 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, 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 40b
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 #40c

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

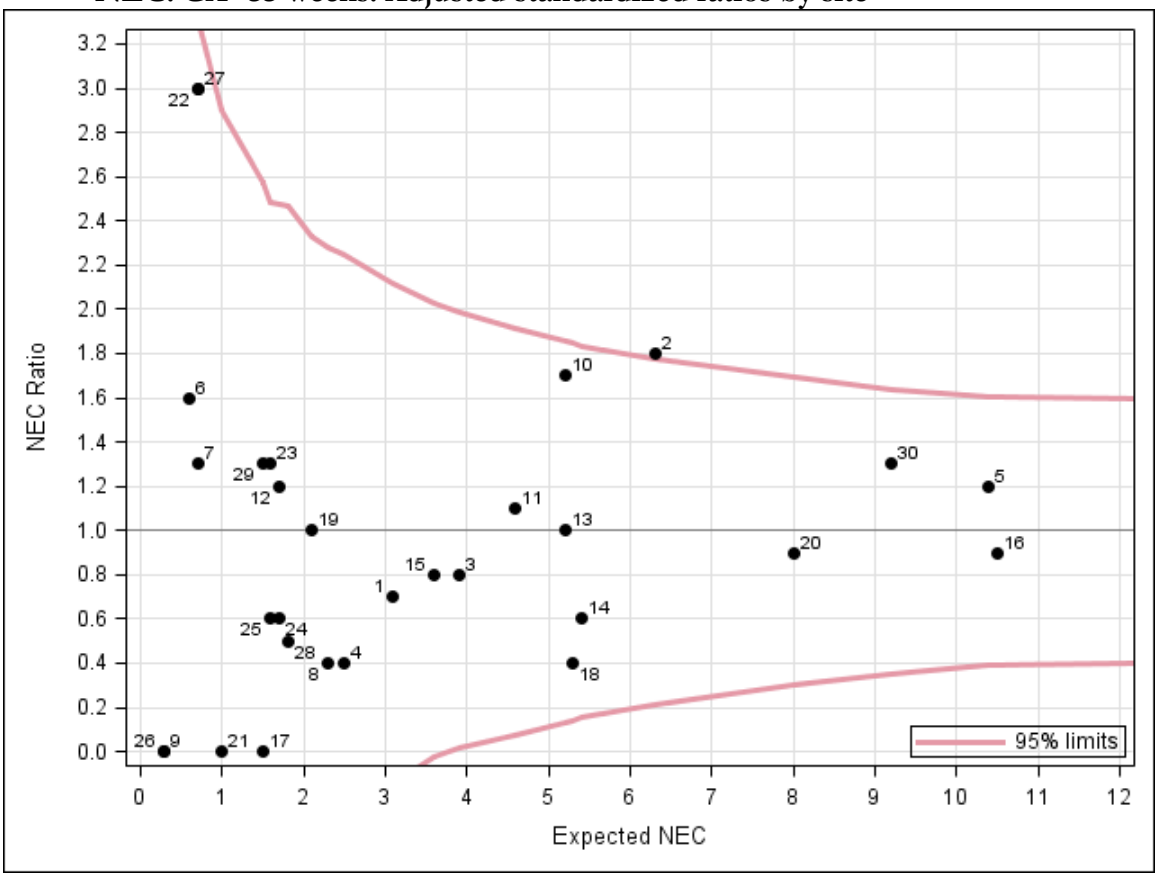
Site	Number of infants	Number of NEC	Adjusted[#] Expected number of NEC	Adjusted[#] Standardized ratio	95% confidence interval for adjusted standardized ratio	
1	41	2	3.1	0.7	0.1	2.3
2	85	11	6.3	1.8	0.9	3.1
3	54	3	3.9	0.8	0.2	2.2
4	41	1	2.5	0.4	0.0	2.2
5	153	12	10.4	1.2	0.6	2.0
6	10	1	0.6	1.6	0.0	9.1
7	9	1	0.7	1.3	0.0	7.5
8	38	1	2.3	0.4	0.0	2.4
9	6	0	0.3	0.0	.	11.8
10	82	9	5.2	1.7	0.8	3.3
11	62	5	4.6	1.1	0.4	2.6
12	27	2	1.7	1.2	0.1	4.3
13	68	5	5.2	1.0	0.3	2.3
14	75	3	5.4	0.6	0.1	1.6
15	51	3	3.6	0.8	0.2	2.5
16	159	10	10.5	0.9	0.5	1.7
17	21	0	1.5	0.0	.	2.4
18	78	2	5.3	0.4	0.0	1.4
19	28	2	2.1	1.0	0.1	3.5
20	120	7	8.0	0.9	0.4	1.8
21	13	0	1.0	0.0	.	3.6
22	10	2	0.7	3.0	0.3	10.9
23	25	2	1.6	1.3	0.1	4.5
24	26	1	1.7	0.6	0.0	3.4
25	25	1	1.6	0.6	0.0	3.6
26	4	0	0.3	0.0	.	12.9
27	11	2	0.7	3.0	0.3	10.9
28	30	1	1.8	0.5	0.0	3.1
29	21	2	1.5	1.3	0.2	4.8
30	130	12	9.2	1.3	0.7	2.3

Please note that site codes for Presentations 40a, 40b, 40c and 40b are different from other presentations in this report.

Neonates with major congenital anomalies are excluded.

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

Presentation #40d
NEC: GA<33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 40c
Column 1: Different site code than other presentations in the report
Column 2: Number of eligible neonates at your sites (<29 weeks 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, 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 40d
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 #41

Oxygen use at 36 weeks/at discharge/death: GA <33 weeks: site specific crude rates

	GA at birth					
Site	**<25**	**25-26**	**27-28**	**29-30**	**31-32**	**Overall rate for sites**
A	73.1	32.3	9.5	7.5	2.5	16.4
B	100.0	0.0	50.0	0.0	9.1	18.8
C	83.3	33.3	0.0	0.0	3.5	12.5
D	100.0	50.0	0.0	4.8	3.9	7.3
E	100.0	NA	0.0	0.0	33.3	25.0
F	71.4	52.3	19.2	11.6	6.1	22.1
G	88.2	26.1	23.3	2.8	1.9	19.0
H	100.0	71.4	22.2	3.5	23.1	22.9
I	0.0	25.0	33.3	0.0	3.3	7.7
J	55.6	46.7	10.5	5.0	0.0	13.0
K	57.1	38.5	31.8	0.0	4.9	15.0
L	66.7	66.7	33.3	0.0	0.0	14.5
M	70.4	58.3	21.7	8.6	6.7	22.3
N	0.0	46.2	0.0	4.2	0.0	7.2
O	86.7	50.0	15.0	9.4	6.8	24.4
P	66.7	47.6	20.4	5.8	4.1	15.1
Q	80.0	70.6	46.2	12.0	9.2	28.7
R	25.0	28.6	25.0	0.0	2.2	8.4
S	100.0	80.0	25.0	0.0	0.0	28.6
T	100.0	50.0	20.0	9.1	0.0	19.2
U	50.0	69.2	50.0	10.0	6.7	27.7
V$^{\phi}$	80.0	67.7	23.5	NA	NA	50.0
W	61.5	35.5	18.2	3.8	2.4	13.7
X	33.3	25.0	26.7	0.0	0.0	6.8
Y	87.5	100.0	48.3	17.1	8.3	29.4
Z	93.3	56.0	60.9	17.5	11.5	34.2
AA	90.0	80.7	44.4	13.1	8.5	33.3
AB	77.3	40.5	21.5	11.3	7.7	20.8
AC	NA	0.0	25.0	0.0	0.0	6.7
AD	80.0	33.3	28.6	0.0	0.0	15.8
Overall rate for GA group	75.3	49.9	24.5	7.8	5.2	20.4

Total number of neonates = 3 937.

93 neonates were excluded due to first admission after week 36. NA = no data available.

$^{\phi}$Note that the criteria for entering neonates with GA <33 weeks in the CNN dataset are not the same for site V and thus, the rates may not be comparable with other sites. Outcomes are attributed to the site of first admission.

Comments: Neonates were classified as having oxygen use at 36 weeks as follows: a) receiving supplemental oxygen at week 36 postmenstrual age (PMA) or b) discharged prior to week 36 PMA and receiving supplemental oxygen at discharge. Neonates were excluded from analysis if the first admission was after week 36. There were no requirements for chest radiographs at the time of diagnosis. Deaths prior to week 36 PMA are included.

Presentation #42
Oxygen use at 36 weeks/at discharge: GA<33 weeks: Site specific crude rates

	GA at birth					
Site	**<25**	**25-26**	**27-28**	**29-30**	**31-32**	**Overall rate for sites**
A	58.8	26.3	9.5	6.5	2.5	12.5
B	NA	0.0	50.0	0.0	9.1	13.3
C	75.0	33.3	0.0	0.0	3.5	9.3
D	NA	0.0	0.0	4.8	0.0	1.9
E	100.0	NA	0.0	0.0	33.3	25.0
F	60.0	46.2	18.2	9.7	5.3	17.9
G	77.8	19.1	17.9	2.8	1.9	12.3
H	100.0	71.4	12.5	3.5	9.1	16.9
I	0.0	0.0	20.0	0.0	3.3	4.0
J	33.3	33.3	10.5	5.0	0.0	8.3
K	50.0	11.1	31.8	0.0	2.5	10.5
L	50.0	66.7	33.3	0.0	0.0	13.4
M	65.2	50.0	20.3	7.5	3.5	17.9
N	0.0	30.0	0.0	0.0	0.0	3.2
O	75.0	41.2	10.5	9.4	6.8	17.5
P	60.0	35.3	15.2	5.8	3.1	11.3
Q	66.7	66.7	44.0	12.0	7.8	24.4
R	25.0	16.7	25.0	0.0	2.2	7.5
S	NA	80.0	25.0	0.0	0.0	25.0
T	100.0	36.4	11.1	9.1	0.0	14.9
U	50.0	63.6	44.4	10.0	6.7	24.2
V$^{\phi}$	66.7	54.2	21.2	NA	NA	38.1
W	37.5	35.5	15.6	3.8	1.2	10.7
X	33.3	25.0	26.7	0.0	0.0	6.8
Y	87.5	100.0	48.3	14.7	8.3	28.8
Z	87.5	52.2	59.1	13.2	10.0	28.5
AA	71.4	71.4	41.2	11.7	7.1	24.0
AB	73.7	37.5	19.1	9.5	6.7	18.2
AC	NA	0.0	25.0	0.0	0.0	6.7
AD	50.0	14.3	0.0	0.0	0.0	4.0
Overall rate for GA group	63.9	41.9	22.0	6.7	4.0	15.9

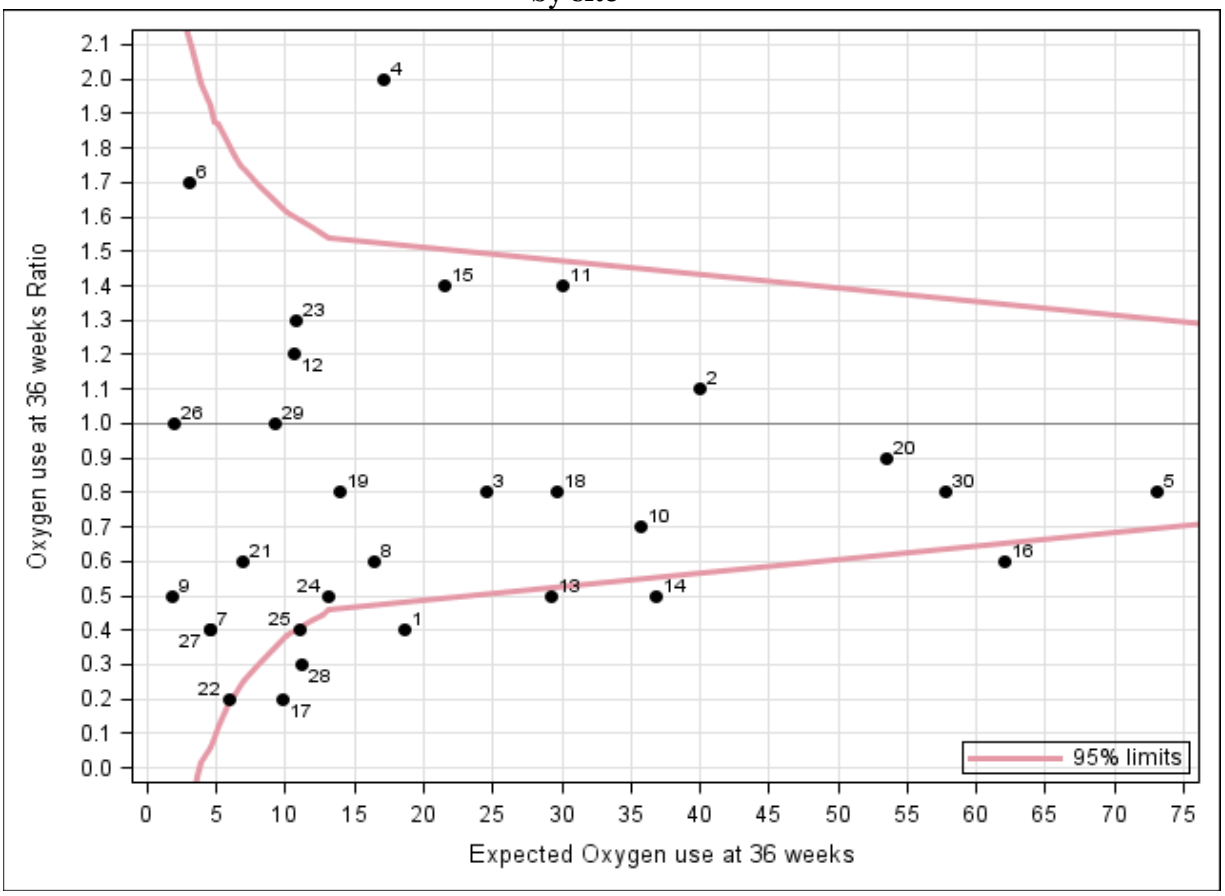
Total number of neonates = 3 724.
306 neonates were excluded due to death prior to week 36 or first admission after week 36. NA = no data available.
$^{\phi}$Note that the criteria for entering neonates with GA <33 weeks in the CNN dataset are not the same for site V and thus, the rates may not be comparable with other sites. Outcomes are attributed to the site of first admission.
Comments: Neonates were classified as having oxygen use at 36 weeks as follows: a) receiving supplemental oxygen at week 36 postmenstrual age (PMA) or b) discharged prior to week 36 PMA and receiving supplemental oxygen at discharge. Neonates were excluded from analysis if they died prior to week 36 or the first admission was after week 36. There were no requirements for chest radiographs at the time of diagnosis.

Presentation #43a
Oxygen use at 36 weeks/at discharge: GA <33 weeks: Adjusted standardized ratios by site

Site	Number of infants	Number with oxygen use at 36w or discharge	Adjusted# Expected number of oxygen use at 36w or discharge	Adjusted# Standardized ratio	95% confidence interval for adjusted standardized ratio	
1	107	8	18.6	0.4	0.2	0.8
2	186	44	40.0	1.1	0.8	1.5
3	114	20	24.6	0.8	0.5	1.3
4	123	34	17.1	2.0	1.4	2.8
5	337	58	73.0	0.8	0.6	1.0
6	19	5	3.0	1.7	0.5	3.9
7	6	2	4.6	0.4	0.0	1.6
8	109	10	16.4	0.6	0.3	1.1
9	15	1	1.8	0.5	0.0	3.0
10	219	24	35.7	0.7	0.4	1.0
11	151	43	30.0	1.4	1.0	1.9
12	77	13	10.6	1.2	0.7	2.1
13	141	16	29.3	0.5	0.3	0.9
14	200	20	36.8	0.5	0.3	0.8
15	132	31	21.5	1.4	1.0	2.0
16	313	39	62.0	0.6	0.4	0.9
17	50	2	9.8	0.2	0.0	0.7
18*	62	23	29.6	0.8	0.5	1.2
19	72	11	14.0	0.8	0.4	1.4
20	291	50	53.5	0.9	0.7	1.2
21	51	4	6.9	0.6	0.2	1.5
22	51	1	6.0	0.2	0.0	0.9
23	61	14	10.8	1.3	0.7	2.2
24	102	7	13.1	0.5	0.2	1.1
25	91	4	11.0	0.4	0.1	0.9
26	15	2	1.9	1.0	0.1	3.7
27	50	2	4.5	0.4	0.1	1.6
28	92	3	11.2	0.3	0.1	0.8
29	78	9	9.3	1.0	0.4	1.8
30	301	47	57.8	0.8	0.6	1.1

Please note that site codes for Presentations 43a and 43b are different from 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, SNAPII > 20.
* Site 18 has different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites. (See next page for full explanation)

Presentation #43b
Oxygen use at 36 weeks/at discharge: GA <33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 43a
Column 1: Different site code than other presentations in the report
Column 2: Number of eligible neonates at your sites (<33 weeks 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, SNAPII > 20
Column 5: Adjusted standardized ratio calculated based on observed oxygen use/expected oxygen use
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 43b
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

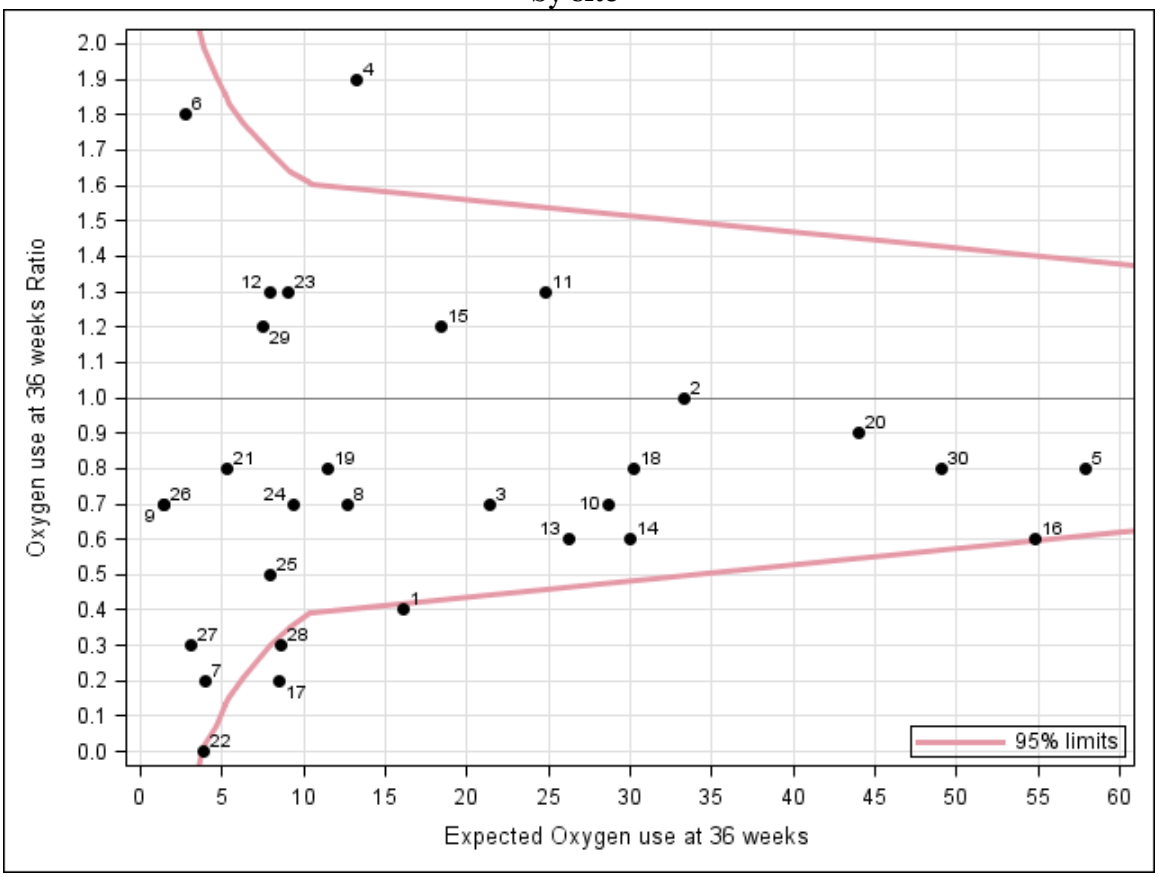
Note: Deaths before 36 weeks were not included in the denominator.

Presentation #43c
Oxygen use at 36 weeks / at discharge: GA <29 weeks: Adjusted standardized ratios by site

Site	Number of infants	Number with oxygen use at 36w or discharge	Adjusted## Expected number of oxygen use at 36w or discharge	Adjusted## Standardized ratio	95% confidence interval for adjusted standardized ratio	
1	35	7	16.1	0.4	0.2	0.9
2	61	33	33.3	1.0	0.7	1.4
3	43	15	21.4	0.7	0.4	1.2
4	41	25	13.2	1.9	1.2	2.8
5	136	47	57.9	0.8	0.6	1.1
6	9	5	2.8	1.8	0.6	4.2
7	1	1	4.0	0.2	0.0	1.4
8	35	9	12.7	0.7	0.3	1.3
9	6	1	1.5	0.7	0.0	3.7
10	73	19	28.7	0.7	0.4	1.0
11	53	32	24.8	1.3	0.9	1.8
12	26	10	8.0	1.3	0.6	2.3
13	58	16	26.3	0.6	0.3	1.0
14	68	17	30.0	0.6	0.3	0.9
15	43	23	18.4	1.2	0.8	1.9
16	143	31	54.8	0.6	0.4	0.8
17	14	2	8.5	0.2	0.0	0.9
18	62	23	30.2	0.8	0.5	1.1
19	24	9	11.5	0.8	0.4	1.5
20	114	38	44.0	0.9	0.6	1.2
21	11	4	5.3	0.8	0.2	1.9
22	6	0	3.9	0.0	.	0.9
23	22	12	9.1	1.3	0.7	2.3
24	26	7	9.4	0.7	0.3	1.5
25	24	4	7.9	0.5	0.1	1.3
26	3	1	1.5	0.7	0.0	3.6
27	9	1	3.1	0.3	0.0	1.8
28	27	3	8.6	0.3	0.1	1.0
29	20	9	7.5	1.2	0.5	2.3
30	109	38	49.1	0.8	0.5	1.1

Please note that site codes for Presentations 43a, 43b, 43c and 43b are different from 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, SNAPII > 20.

Presentation #43d
Oxygen use at 36 weeks / at discharge: GA <29 weeks: Adjusted standardized ratios by site

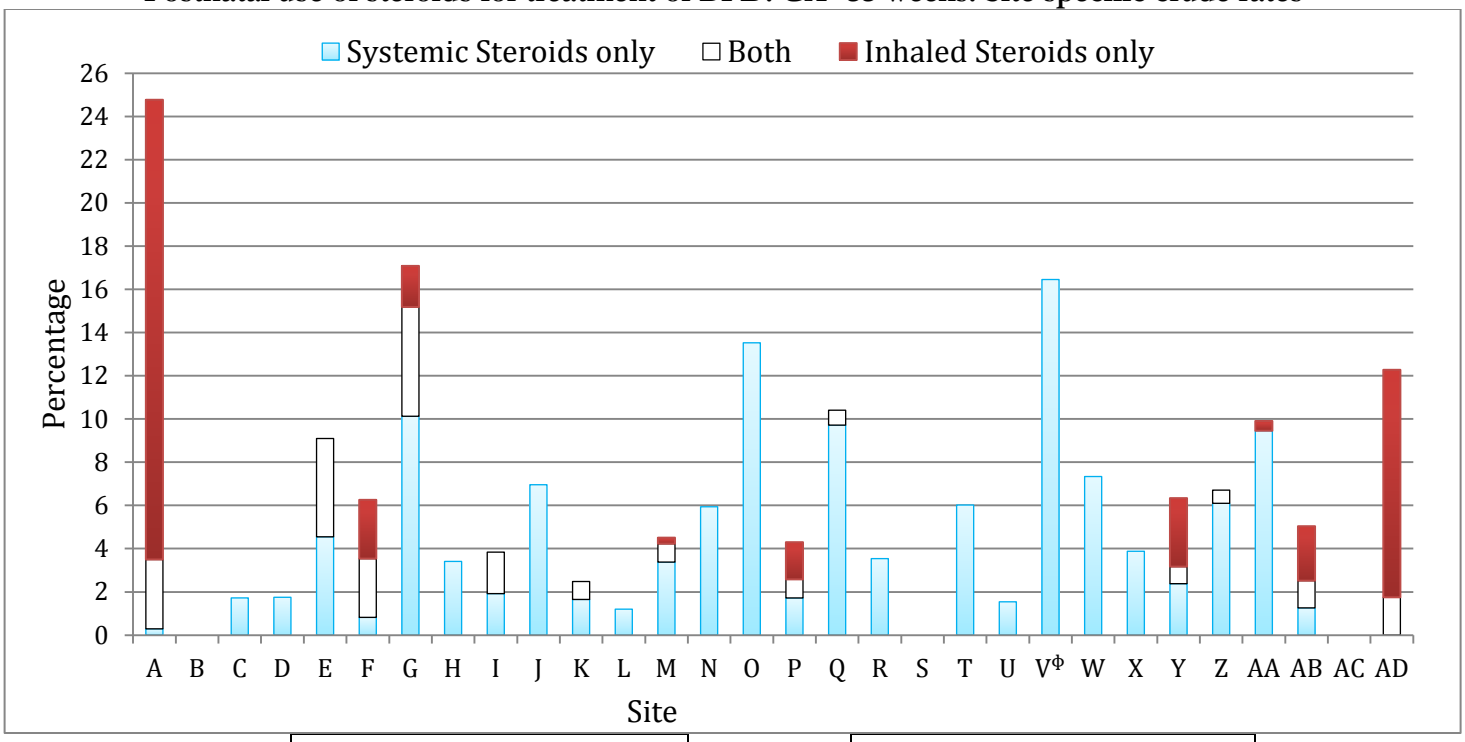


Explanation for Presentation 43c
Column 1: Different site code than other presentations in the report
Column 2: Number of eligible neonates at your sites (<29 weeks and no major anomaly)
Column 3: Number of neonates with outcome of interest among those eligible neonates
Column 4: Expected number of neonates with outcome of interest after adjustment for GA, SGA, Sex, SNAPII > 20
Column 5: Adjusted standardized ratio calculated based on observed oxygen use/expected oxygen use
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 43d
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

Note: Deaths before 36 weeks were not included in the denominator.

Presentation #44a
Postnatal use of steroids for treatment of BPD: GA<33 weeks: Site specific crude rates†



Site	Postnatal steroid use (%)		
	Systemic Steroids only	Both	Inhaled Steroids only
A	0.3	3.2	21.3
B	0.0	0.0	0.0
C	1.7	0.0	0.0
D	1.8	0.0	0.0
E	4.6	4.6	0.0
F	0.8	2.7	2.7
G	10.1	5.1	1.9
H	3.4	0.0	0.0
I	1.9	1.9	0.0
J	7.0	0.0	0.0
K	1.7	0.8	0.0
L	1.2	0.0	0.0
M	3.4	0.9	0.3
N	5.9	0.0	0.0
O	13.5	0.0	0.0

Site	Postnatal steroid use (%)		
	Systemic Steroids only	Both	Inhaled Steroids only
P	1.7	0.9	1.7
Q	9.7	0.7	0.0
R	3.5	0.0	0.0
S	0.0	0.0	0.0
T	6.0	0.0	0.0
U	1.5	0.0	0.0
VΦ	16.5	0.0	0.0
W	7.3	0.0	0.0
X	3.9	0.0	0.0
Y	2.4	0.8	3.2
Z	6.1	0.6	0.0
AA	9.5	0.0	0.5
AB	1.3	1.3	2.5
AC	0.0	0.0	0.0
AD	0.0	1.8	10.5
Total	4.3	1.1	2.7

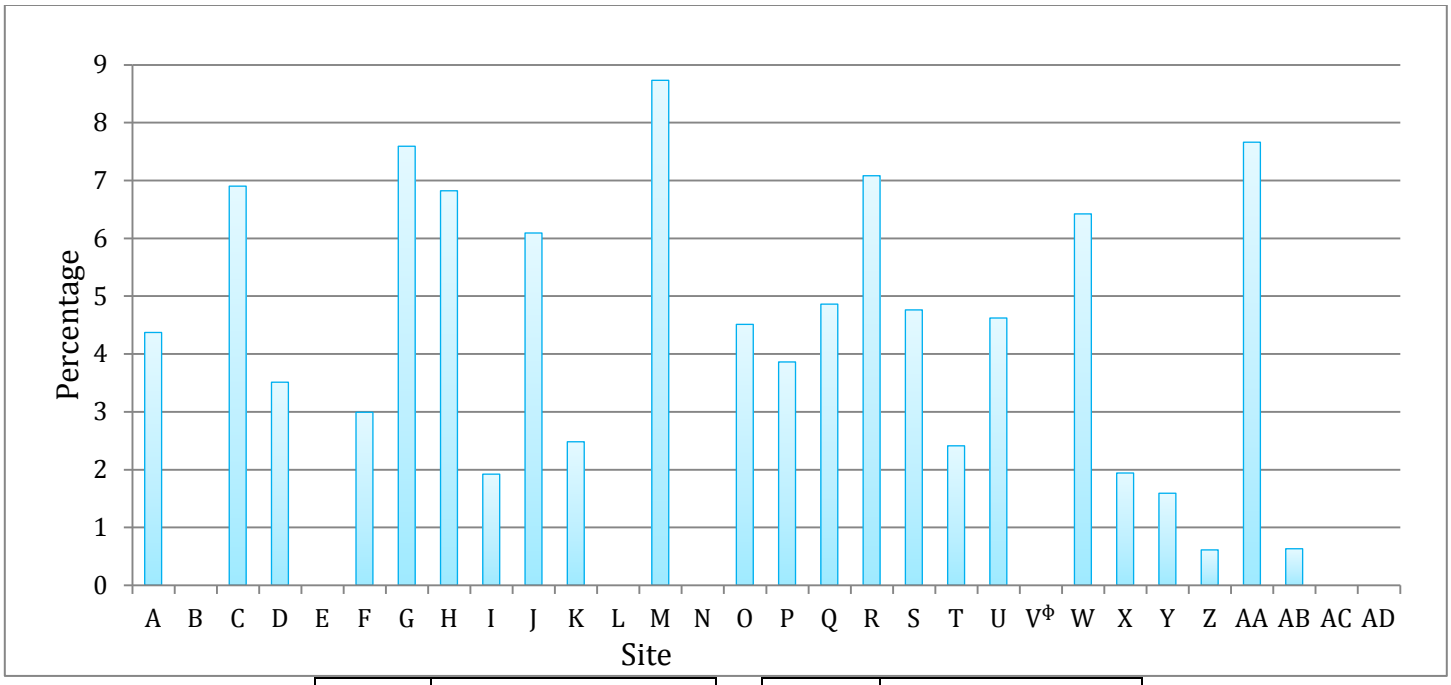
Total number of neonates = 4 030

† Percentage of neonates to each network site and results are attributed to the site of first admission.

ΦNote that the criteria for entering neonates with GA <33 in the CNN dataset are not the same for site V and thus, the rates may not be comparable with other sites.

COMMENTS: Specific criteria for these treatments in each site are not documented here.

Presentation #44b
Systemic steroids for hypotension: GA<33 weeks: Site specific crude rates†



Site	Postnatal systemic steroids use for hypotension (%)
A	4.4
B	0.0
C	6.9
D	3.5
E	0.0
F	3.0
G	7.6
H	6.8
I	1.9
J	6.1
K	2.5
L	0.0
M	8.7
N	0.0
O	4.5

Site	Postnatal systemic steroids use for hypotension (%)
P	3.9
Q	4.9
R	7.1
S	4.8
T	2.4
U	4.6
VΦ	0.0
W	6.4
X	1.9
Y	1.6
Z	0.6
AA	7.7
AB	0.6
AC	0.0
AD	0.0
Total	4.1

Total number of neonates = 4 030
† Percentage of neonates to each network site and results are attributed to the site of first admission.
ΦNote that the criteria for entering neonates with GA <33 in the CNN dataset are not the same for site V and thus, the rates may not be comparable with other sites.
COMMENTS: Specific criteria for these treatments in each site are not documented here.

Presentation #45a

ROP ≥stage 3: GA<33weeks: Adjusted standardized ratios by site

Site	Number of infants	Number with ROP ≥Stage 3	Adjusted[#] Expected number with ROP ≥ Stage 3	Adjusted[#] Standardized ratio	95% confidence interval for adjusted standardized ratio	
1	61	7	6.6	1.1	0.4	2.2
2	124	8	14.1	0.6	0.2	1.1
3	69	2	8.1	0.2	0.0	0.9
4	58	8	4.8	1.7	0.7	3.3
5	164	18	21.5	0.8	0.5	1.3
6	17	4	0.9	4.4	1.2	11.2
7	7	2	1.6	1.2	0.1	4.5
8	43	2	4.4	0.5	0.1	1.7
9	11	1	0.3	3.0	0.0	16.8
10	88	8	9.7	0.8	0.4	1.6
11	72	5	10.0	0.5	0.2	1.2
12	22	1	2.9	0.3	0.0	1.9
13	94	2	11.5	0.2	0.0	0.6
14	31	2	10.6	0.2	0.0	0.7
15	63	7	6.8	1.0	0.4	2.1
16	126	7	19.2	0.4	0.1	0.8
17	29	4	2.9	1.4	0.4	3.5
18*	34	7	9.8	0.7	0.3	1.5
19	34	0	4.3	0.0	.	0.9
20	93	4	15.8	0.3	0.1	0.6
21	31	1	2.6	0.4	0.0	2.2
22	53	1	1.5	0.7	0.0	3.8
23	40	1	2.6	0.4	0.0	2.1
24	47	5	3.2	1.6	0.5	3.6
25	66	5	3.1	1.6	0.5	3.8
26	5	0	0.8	0.0	.	4.6
27	8	2	1.1	1.9	0.2	6.8
28	43	1	3.0	0.3	0.0	1.9
29	34	0	3.0	0.0	.	1.2
30	58	18	18.9	1.0	0.6	1.5

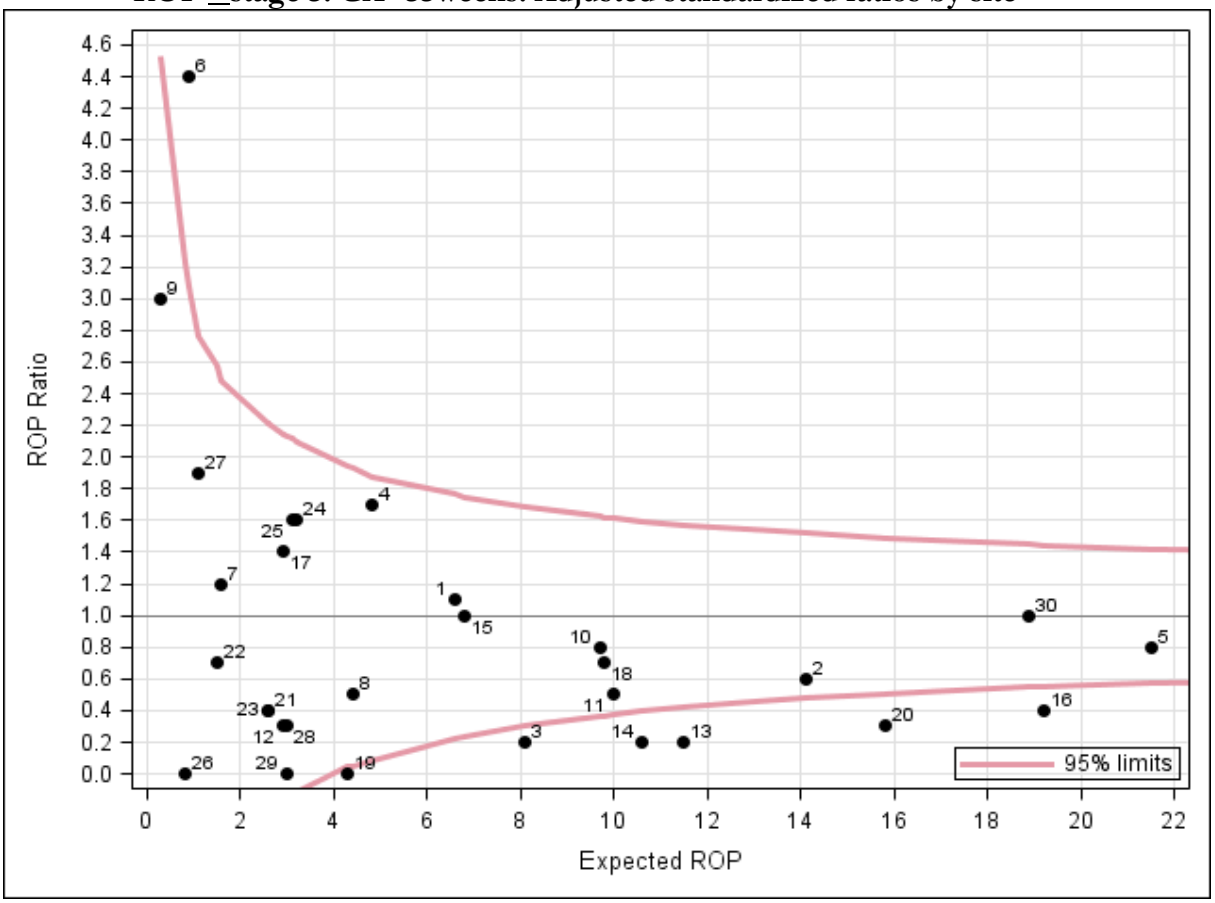
Please note that site codes for Presentations 45a, 45b, 45c and 45d are different from other presentations in this report.

Neonates with major congenital anomalies are excluded.

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

* Site 18 has different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites. (See next page for full explanation)

Presentation #45b
ROP ≥stage 3: GA<33weeks: Adjusted standardized ratios by site



Explanation for Presentation 45a
Column 1: Different site code than other presentations in the report
Column 2: Number of eligible neonates at your sites (<33 weeks 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, SNAPII > 20
Column 5: Adjusted standardized ratio calculated based on observed ROP/expected ROP
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 45b
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

Presentation #45c

ROP ≥ stage 3: GA < 29 weeks: Adjusted standardized ratios by site

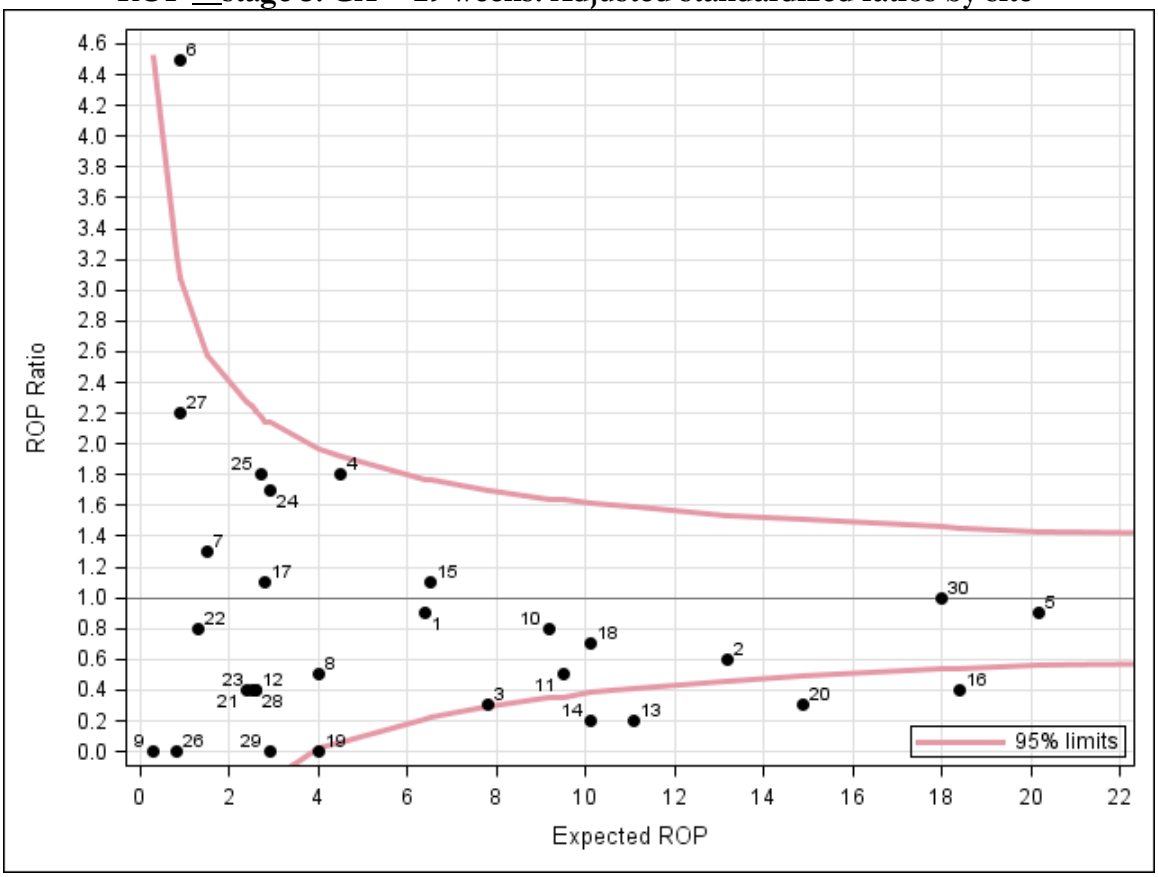
Site	Number of infants	Number with ROP ≥Stage 3	Adjusted[#] Expected number with ROP ≥ Stage 3	Adjusted[#] Standardized ratio	95% confidence interval for adjusted standardized ratio	
1	34	6	6.4	0.9	0.3	2.0
2	61	8	13.2	0.6	0.3	1.2
3	43	2	7.8	0.3	0.0	0.9
4	36	8	4.5	1.8	0.8	3.5
5	122	18	20.2	0.9	0.5	1.4
6	9	4	0.9	4.5	1.2	11.6
7	5	2	1.5	1.3	0.1	4.7
8	30	2	4.0	0.5	0.1	1.8
9	6	0	0.3	0.0	.	12.2
10	68	7	9.2	0.8	0.3	1.6
11	46	5	9.5	0.5	0.2	1.2
12	16	1	2.6	0.4	0.0	2.2
13	57	2	11.1	0.2	0.0	0.7
14	22	2	10.1	0.2	0.0	0.7
15	44	7	6.5	1.1	0.4	2.2
16	110	7	18.4	0.4	0.2	0.8
17	13	3	2.8	1.1	0.2	3.1
18	34	7	10.1	0.7	0.3	1.4
19	18	0	4.0	0.0	.	0.9
20	72	4	14.9	0.3	0.1	0.7
21	11	1	2.4	0.4	0.0	2.3
22	8	1	1.3	0.8	0.0	4.4
23	22	1	2.5	0.4	0.0	2.2
24	17	5	2.9	1.7	0.6	4.0
25	24	5	2.7	1.8	0.6	4.3
26	3	0	0.8	0.0	.	4.9
27	4	2	0.9	2.2	0.2	7.8
28	26	1	2.6	0.4	0.0	2.1
29	20	0	2.9	0.0	.	1.3
30	53	18	18.0	1.0	0.6	1.6

Please note that site codes for Presentations 45a, 45b, 45c and 45d are different from other presentations in this report.

Neonates with major congenital anomalies are excluded.

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

Presentation #45d
ROP ≥ stage 3: GA < 29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 45c
Column 1: Different site code than other presentations in the report
Column 2: Number of eligible neonates at your sites (<29 weeks 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, SNAPII > 20
Column 5: Adjusted standardized ratio calculated based on observed ROP/expected ROP
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 45d
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

Presentation #46a

Mortality or major morbidity: GA < 33 weeks: Adjusted standardized ratios by site

Site	Number of infants	Number with mortality or major morbidities	Adjusted# Expected number of mortality or major morbidities	Adjusted# Standardized ratio	95% confidence interval for adjusted standardized ratio	
1	113	33	30.9	1.1	0.7	1.5
2	215	89	67.4	1.3	1.1	1.6
3	127	50	42.0	1.2	0.9	1.6
4	124	45	30.8	1.5	1.1	2.0
5	356	108	125.5	0.9	0.7	1.0
6	20	9	6.0	1.5	0.7	2.9
7	19	5	7.4	0.7	0.2	1.6
8	114	24	30.0	0.8	0.5	1.2
9	15	3	3.8	0.8	0.2	2.3
10	230	58	62.9	0.9	0.7	1.2
11	164	67	50.6	1.3	1.0	1.7
12	85	25	20.8	1.2	0.8	1.8
13	152	51	49.7	1.0	0.8	1.3
14	213	52	62.6	0.8	0.6	1.1
15	140	52	37.7	1.4	1.0	1.8
16	334	85	111.0	0.8	0.6	0.9
17	57	19	17.1	1.1	0.7	1.7
18*	78	52	48.2	1.1	0.8	1.4
19	81	24	23.8	1.0	0.6	1.5
20	299	75	93.6	0.8	0.6	1.0
21	54	10	12.0	0.8	0.4	1.5
22	56	16	11.0	1.5	0.8	2.4
23	64	20	19.6	1.0	0.6	1.6
24	102	17	23.5	0.7	0.4	1.2
25	109	16	20.9	0.8	0.4	1.2
26	16	6	3.2	1.9	0.7	4.1
27	52	7	9.2	0.8	0.3	1.6
28	99	16	22.0	0.7	0.4	1.2
29	79	16	16.3	1.0	0.6	1.6
30	336	109	99.3	1.1	0.9	1.3

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

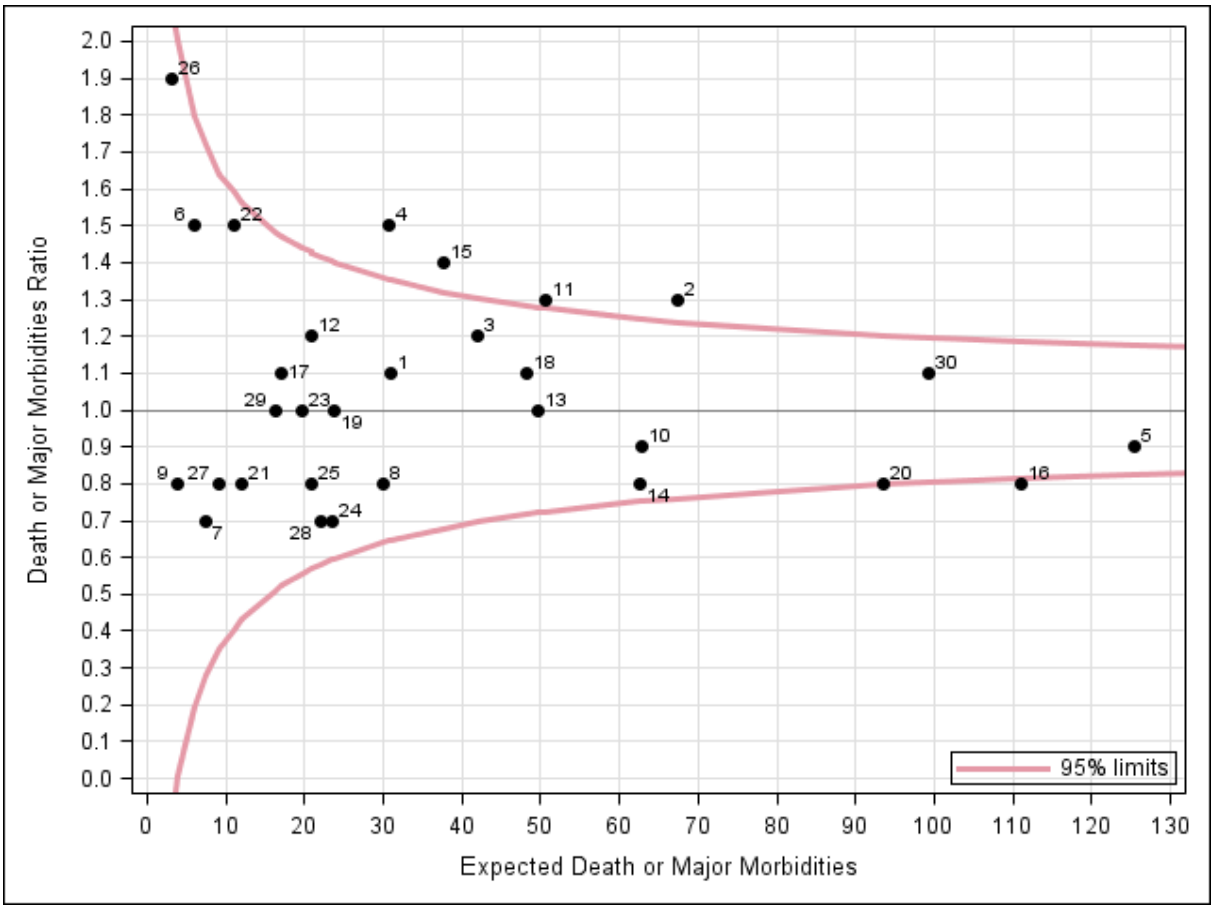
Please note that site codes for Presentations 46a, 46b, 46c and 46d are different from other presentations in this report.

Neonates with major congenital anomalies are excluded.

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

* Site 18 has different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites. (See next page for full explanation)

Presentation #46b
Mortality or major morbidity: GA < 33 weeks: Adjusted standardized ratios by site



Explanation for Presentation 46a
Column 1: Different site code than other presentations in the report
Column 2: Number of eligible neonates at your sites (<33 weeks 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, 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

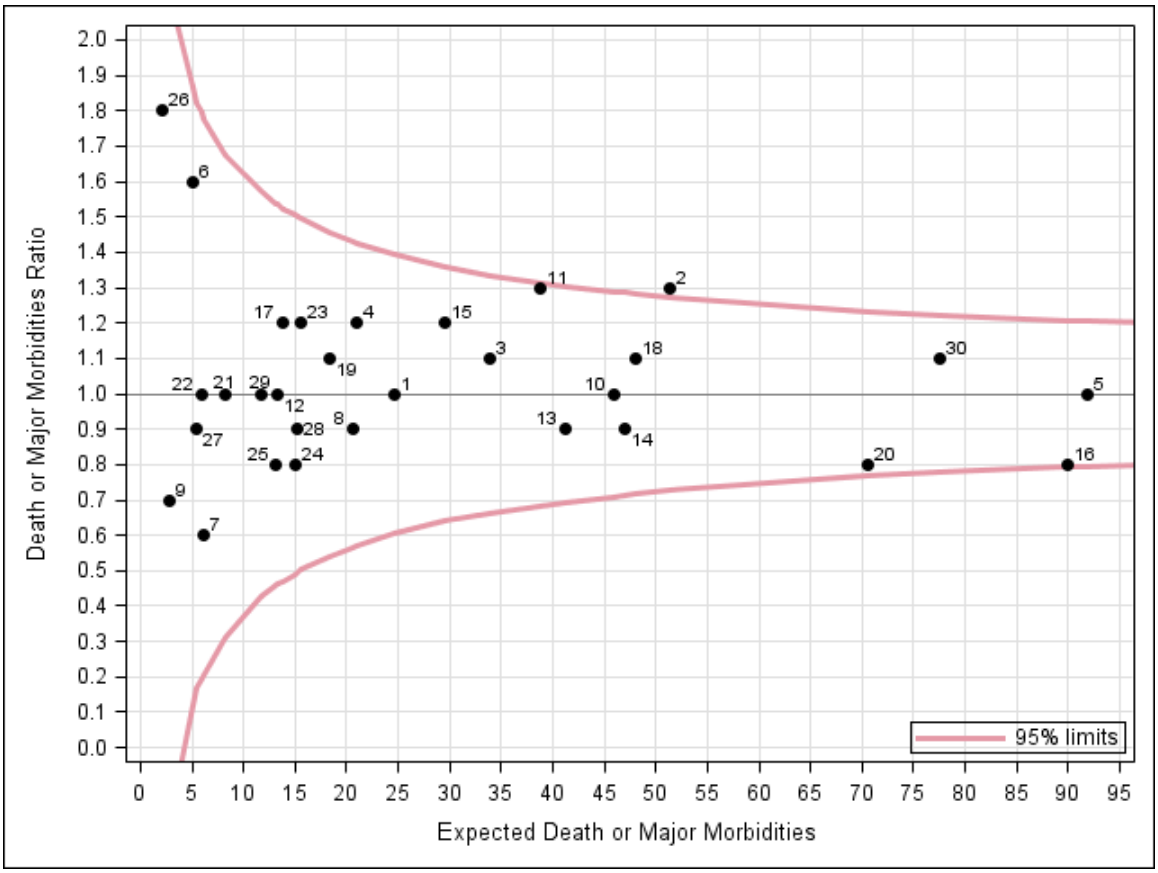
Explanation for Presentation 46b
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red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

Presentation #46c
Mortality or major morbidity: GA < 29 weeks: Adjusted standardized ratios by site

Site	Number of infants	Number with mortality or major morbidities	Adjusted## Expected number of mortality or major morbidities	Adjusted## Standardized ratio	95% confidence interval for adjusted standardized ratio	
1	41	24	24.6	1.0	0.6	1.4
2	85	66	51.3	1.3	1.0	1.6
3	54	38	33.9	1.1	0.8	1.5
4	41	26	21.0	1.2	0.8	1.8
5	153	88	91.8	1.0	0.8	1.2
6	10	8	5.1	1.6	0.7	3.1
7	9	4	6.2	0.6	0.2	1.7
8	38	18	20.7	0.9	0.5	1.4
9	6	2	2.8	0.7	0.1	2.6
10	82	44	45.9	1.0	0.7	1.3
11	63	49	38.8	1.3	0.9	1.7
12	27	13	13.3	1.0	0.5	1.7
13	69	39	41.3	0.9	0.7	1.3
14	76	41	47.0	0.9	0.6	1.2
15	51	36	29.6	1.2	0.9	1.7
16	159	71	90.0	0.8	0.6	1.0
17	21	16	13.8	1.2	0.7	1.9
18	78	52	48.1	1.1	0.8	1.4
19	28	20	18.3	1.1	0.7	1.7
20	120	57	70.5	0.8	0.6	1.0
21	13	8	8.3	1.0	0.4	1.9
22	10	6	6.0	1.0	0.4	2.2
23	25	18	15.6	1.2	0.7	1.8
24	26	12	15.0	0.8	0.4	1.4
25	25	11	13.2	0.8	0.4	1.5
26	4	4	2.2	1.8	0.5	4.6
27	11	5	5.5	0.9	0.3	2.1
28	30	14	15.2	0.9	0.5	1.5
29	21	12	11.7	1.0	0.5	1.8
30	130	82	77.5	1.1	0.8	1.3

Major morbidity = IVH 3 or 4 or PVL or BPD or ROP >stage 2 or NEC or Nosocomial sepsis
Please note that site codes for Presentations 46a, 46b, 46c & 46b are different from other presentations in this report.
Neonates with major congenital anomalies are excluded.
The prediction model was adjusted for GA, SGA, Sex, SNAPII > 20.

Presentation #46d
Mortality or major morbidity: GA < 29 weeks: Adjusted standardized ratios by site



Explanation for Presentation 46c
Column 1: Different site code than other presentations in the report
Column 2: Number of eligible neonates at your sites (<29 weeks 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, 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 46d
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with numerical notation: Site and its location matching x and y axis values
Red funnel shaped lines: 95% confidence limits based on entire network information.
Sites outside of red lines represent higher or lower (depending upon position in graph) adjusted standardized ratio. However, for determining whether site is statistically different from others, one should also assess 95% CI and check whether both upper and lower boundaries are also outside of the funnel area or not.

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Presentation #47a
Benchmarking

Benchmarking among all neonates
for sites which contributed all eligible admissions with GA<33 weeks

Among all neonates															
Grouping according to number of neonates	< 200 neonates						200 – 500 neonates								
Parameter ↓ / Site rank →	**Top**					**Bottom**	**Top**								**Bottom**
Mortality (adjusted standardized ratio)*	19	7	22	11	26	27	9	8	23	29	1	13	21	17	6
Early onset sepsis rate (%)	26	22	27	7	11	19	6	9	21	17	13	23	8	29	1
Late onset sepsis rate (SNAP-II-PE adjusted) (%)	27	7	26	11	19	22	9	6	21	8	23	17	29	1	13
Late onset sepsis /1000 patient days	27	26	7	19	11	22	9	6	17	21	23	29	1	8	13
Death or at least one of major morbidities (adjusted standardized ratio)*	27	19	7	22	11	26	8	9	21	23	29	17	13	1	6

Benchmarking among neonates with BW < 1500 g
for sites which contributed all eligible admissions with GA<33 weeks

Among neonates < 1500g															
Grouping according to number of neonates	< 40 neonates							40 – 70 neonates							
Parameter ↓ / Site rank →	**Top**						**Bottom**	**Top**							**Bottom**
Non-receipt of antenatal steroid (%)	26	22	6	9	21	27	7	12	24	17	25	28	29	23	19
Surgical ligation of PDA (%)	26	6	9	7	22	21	27	24	17	29	23	19	28	25	12
Stage 2 or 3 NEC (adjusted standardized ratio)*	26	9	21	7	6	22	27	17	28	24	19	25	23	29	12
Stage 3-5 ROP (adjusted standardized ratio)*	26	21	22	7	27	9	6	19	29	28	12	23	17	24	25
Oxygen use at 36 wks (adjusted standardized ratio)*	22	7	27	9	26	21	6	17	28	25	24	19	29	12	23
Grade 3 or 4 IVH (adjusted standardized ratio)*	7	21	27	9	26	6	22	23	24	12	19	17	29	25	28
Use of systemic steroids (%)	9	26	6	22	7	27	21	17	24	23	19	29	12	28	25
Mortality (adjusted standardized ratio)*	9	7	21	26	22	6	27	24	25	29	12	19	23	28	17
Death or at least one of major morbidities (adjusted standardized ratio)	7	21	27	9	22	6	26	25	24	28	19	23	17	12	29

*Standardized ratio calculated based on observed events/expected events adjusted for GA, SGA, Sex, SNAPII > 20

Presentation #47a (continued)
Benchmarking

Benchmarking among all neonates for sites which contributed all eligible admissions with GA<33 weeks

Among all neonates														
501 – 700 neonates							**> 700 neonates**							Grouping according to number of neonates
Top → **Bottom**							**Top** → **Bottom**							**← Site rank / ↓ Parameter**
24	4	25	16	14	30	12	20	28	5	10	15	3	2	Mortality (adjusted standardized ratio)*
4	12	24	25	16	14	30	2	28	3	20	15	10	5	Early onset sepsis rate (%)
4	24	25	12	16	30	14	28	20	15	10	5	3	2	Late onset sepsis rate (SNAP-II-PE adjusted) (%)
24	25	4	16	30	14	12	28	15	20	5	10	2	3	Late onset sepsis /1000 patient days
25	24	16	14	4	30	12	28	20	5	10	15	2	3	Death or at least one of major morbidities (adjusted standardized ratio)*

Benchmarking among neonates with BW < 1500g for sites which contributed all eligible admissions with GA<33 weeks

Among neonates < 1500g														
71 – 120 neonates							**> 120 neonates**							Grouping according to number of neonates
Top → **Bottom**							**Top** → **Bottom**							**← Site rank / ↓ Parameter**
1	3	15	8	4	11	13	2	16	5	14	20	10	30	Non-receipt of antenatal steroid (%)
3	8	13	15	1	11	4	2	10	30	16	5	20	14	Surgical ligation of PDA (%)
4	8	1	3	15	11	13	14	20	16	5	10	30	2	Stage 2 or 3 NEC (adjusted standardized ratio)*
13	3	8	11	15	1	4	14	20	16	2	10	5	30	Stage 3-5 ROP (adjusted standardized ratio)*
1	13	8	3	11	15	4	16	14	10	5	30	20	2	Oxygen use at 36 wks (adjusted standardized ratio)*
8	13	15	1	11	4	3	20	5	14	16	10	2	30	VE or PEC (adjusted standardized ratio)*
8	11	4	1	15	13	3	5	10	20	16	2	30	14	Use of systemic steroids (%)
4	8	1	15	13	11	3	20	14	30	16	10	5	2	Mortality (adjusted standardized ratio)*
8	13	1	3	15	11	4	16	20	14	5	10	30	2	Death or at least one of major morbidities (adjusted standardized ratio)

*Standardized ratio calculated based on observed events/expected events adjusted for GA, SGA, Sex, SNAPII > 20

Presentation #47b
Benchmarking

Benchmarking for sites which contributed all eligible admissions with GA<33 weeks

Among neonates <33 weeks															
Grouping according to number of neonates	< 60 neonates								60 – 110 neonates						
Parameter ↓ / Site rank →	**Top**							**Bottom**	**Top**						**Bottom**
Non-receipt of antenatal steroid (%)	26	22	6	17	9	21	7	27	12	24	23	28	29	19	
Surgical ligation of PDA (%)	26	6	17	9	22	21	27	7	24	23	29	19	28	12	
Late onset sepsis (adjusted standardized ratio)*	7	9	21	17	27	6	26	22	28	23	29	24	19	12	
Stage 2 or 3 NEC (adjusted standardized ratio)*	9	21	17	26	7	6	22	27	28	19	24	29	23	12	
Stage 3-5 ROP (adjusted standardized ratio)*	26	21	22	7	17	27	9	6	19	29	28	12	23	24	
Oxygen use at 36 wks (adjusted standardized ratio)*	22	17	7	27	9	21	26	6	28	24	19	29	12	23	
VE or PEC (adjusted standardized ratio)*	7	27	9	17	21	26	22	6	12	23	24	19	29	28	
Use of systemic steroids (%)	26	9	17	22	6	27	21	7	24	29	23	19	28	12	
Mortality (adjusted standardized ratio)*	7	9	21	26	22	17	6	27	24	29	19	23	28	12	
Death or at least one of major morbidities (adjusted standardized ratio)	7	27	9	21	17	22	6	26	24	28	29	19	23	12	

Benchmarking for sites which contributed all eligible admissions with GA<29 weeks

Among neonates <29 weeks																
Grouping according to number of neonates	< 20 neonates								20 – 40 neonates							
Parameter ↓ / Site rank →	**Top**							**Bottom**	**Top**							**Bottom**
Non-receipt of antenatal steroid (%)	26	22	9	21	6	7	27		12	17	24	25	29	19	28	23
Surgical ligation of PDA (%)	26	9	6	21	22	27	7		17	24	29	23	19	28	12	25
Stage 2 or 3 NEC (adjusted standardized ratio)*	26	9	21	7	6	22	27		17	28	24	25	19	12	23	29
Stage 3-5 ROP (adjusted standardized ratio)*	26	9	21	22	7	27	6		19	29	28	12	23	17	24	25
Oxygen use at 36 wks (adjusted standardized ratio)*	22	7	27	26	9	21	6		17	28	25	24	19	29	12	23
VE or PEC (adjusted standardized ratio)*	7	21	9	27	6	26	22		12	29	23	24	19	17	25	28
Use of systemic steroids (%)	9	26	7	6	22	21	27		17	23	24	29	19	12	28	25
Mortality (adjusted standardized ratio)*	9	7	21	26	22	6	27		24	25	12	29	19	23	28	17
Death or at least one of major morbidities (adjusted standardized ratio)	7	9	27	21	22	6	26		24	25	28	12	29	19	23	17

*Standardized ratio calculated based on observed events/expected events adjusted for GA, SGA, Sex, SNAPII > 20

Presentation #47b (continued)
Benchmarking

Benchmarking for sites which contributed all eligible admissions with GA<33 weeks

Among neonates <33 weeks															
111 – 200 neonates								**> 200 neonates**							Grouping according to number of neonates
Top → **Bottom**								**Top** → **Bottom**							**← Site rank / ↓ Parameter**
1	25	3	11	8	15	13	4	16	2	5	14	10	20	30	Non-receipt of antenatal steroid (%)
3	8	13	1	15	11	25	4	10	2	30	16	5	20	14	Surgical ligation of PDA (%)
8	15	4	1	11	13	25	3	20	16	5	10	30	14	2	Late onset sepsis (adjusted standardized ratio)*
4	8	3	15	1	13	11	25	14	20	16	5	10	2	30	Stage 2 or 3 NEC (adjusted standardized ratio)*
13	3	8	11	15	1	25	4	14	20	16	2	10	5	30	Stage 3-5 ROP (adjusted standardized ratio)*
25	1	13	8	3	11	15	4	14	16	10	5	30	20	2	Oxygen use at 36 wks (adjusted standardized ratio)*
8	13	25	11	3	1	15	4	20	14	5	10	16	2	30	VE or PEC (adjusted standardized ratio)*
8	4	25	11	1	15	13	3	10	5	16	20	30	14	2	Use of systemic steroids (%)
25	4	8	1	13	11	3	15	20	14	16	30	10	5	2	Mortality (adjusted standardized ratio)*
25	8	13	1	3	11	15	4	16	20	14	5	10	30	2	Death or at least one of major morbidities (adjusted standardized ratio)

Benchmarking for sites which contributed all eligible admissions with GA<29 weeks

Among neonates <29 weeks															
41 – 70 neonates							**> 70 neonates**								Grouping according to number of neonates
Top → **Bottom**							**Top** → **Bottom**								**← Site rank / ↓ Parameter**
1	3	11	15	8	13	4	2	16	14	20	18	5	10	30	Non-receipt of antenatal steroid (%)
3	8	13	15	1	11	4	10	2	18	5	30	16	20	14	Surgical ligation of PDA (%)
4	8	1	3	15	13	11	18	14	20	16	5	30	10	2	Stage 2 or 3 NEC (adjusted standardized ratio)*
13	3	8	11	1	15	4	14	20	16	2	18	10	5	30	Stage 3-5 ROP (adjusted standardized ratio)*
1	13	3	8	15	11	4	16	14	10	18	30	5	20	2	Oxygen use at 36 wks (adjusted standardized ratio)*
13	8	4	15	3	1	11	20	14	5	10	16	2	18	30	VE or PEC (adjusted standardized ratio)*
8	11	4	15	1	13	3	5	10	16	18	20	30	14	2	Use of systemic steroids (%)
4	8	1	15	11	13	3	20	14	30	16	5	10	18	2	Mortality (adjusted standardized ratio)*
8	13	1	3	15	4	11	16	20	14	5	10	30	18	2	Death or at least one of major morbidities (adjusted standardized ratio)

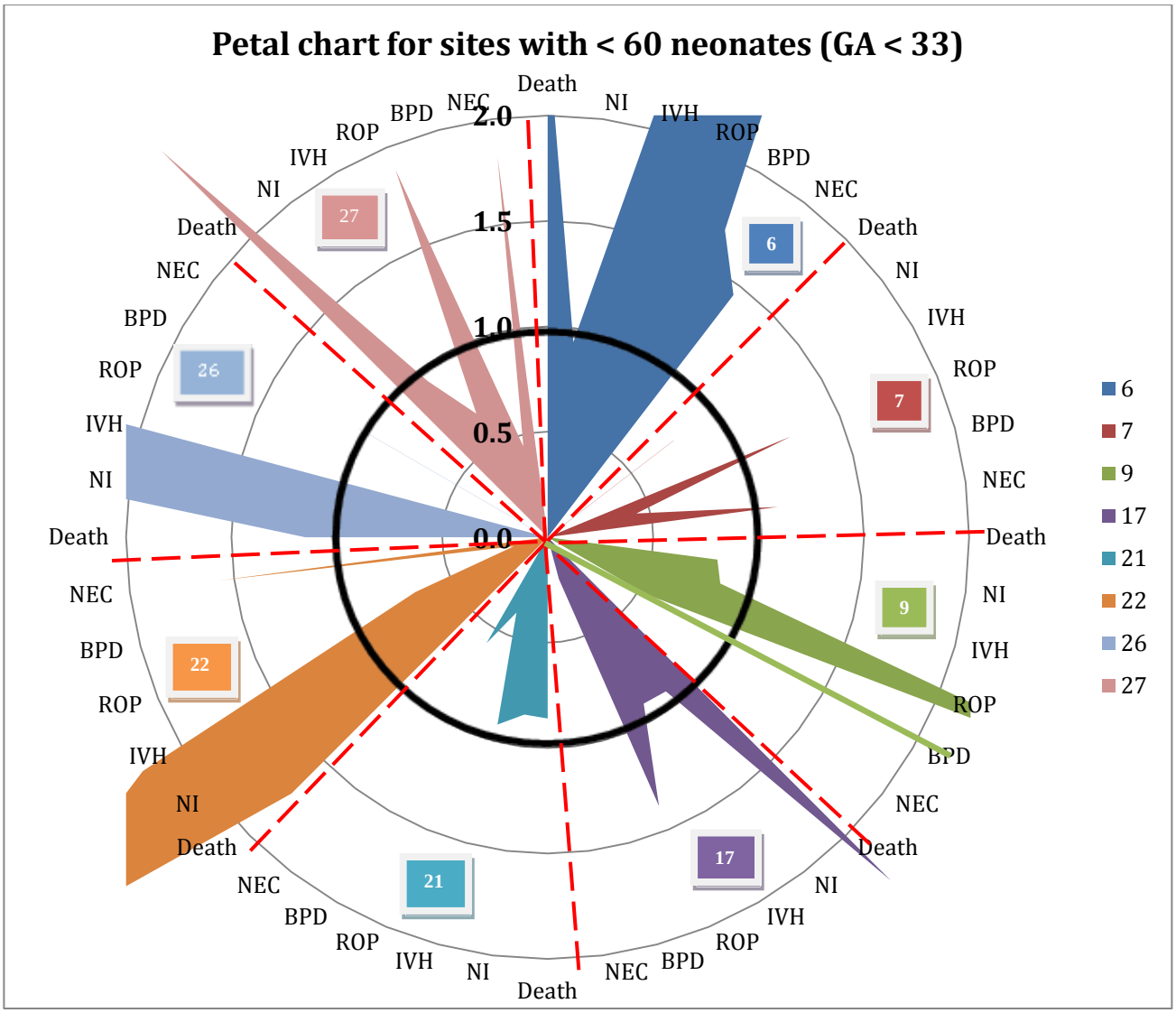
*Standardized ratio calculated based on observed events/expected events adjusted for GA, SGA, Sex, SNAPII > 20

Presentation 48 (a to d)
Benchmarking sites by adjusted standardized ratios (SR)
for mortality and different morbidities

Explanations for the charts in presentation 48 (a to d)

1. These charts are called Petal charts which portray the picture of all units in the group in one presentation.
2. There are four charts based on the size of the unit and they are divided according to the number of neonates <33 weeks gestation during the year.
3. The scale is in standardized ratios starting from 0 at center.
4. Units are separated by broken lines.
5. Numeric site code is shown in each segment – please refer to the appropriate code sent to your CNN site investigator.
6. Mortality and five morbidities are reported for each unit.
7. SR of 1 is highlighted with darker circle which should be used as a reference point for each morbidity. Anything less than 1 indicates that the adjusted SR is lower than average (observed lower than expected) and more than 1 means the adjusted SR is higher than average (observed higher than expected) for that particular morbidity.
8. SRs for each outcome are reported below the charts in a table.
9. The unit which has higher area of petal colored indicates that the SR in that particular unit is higher.

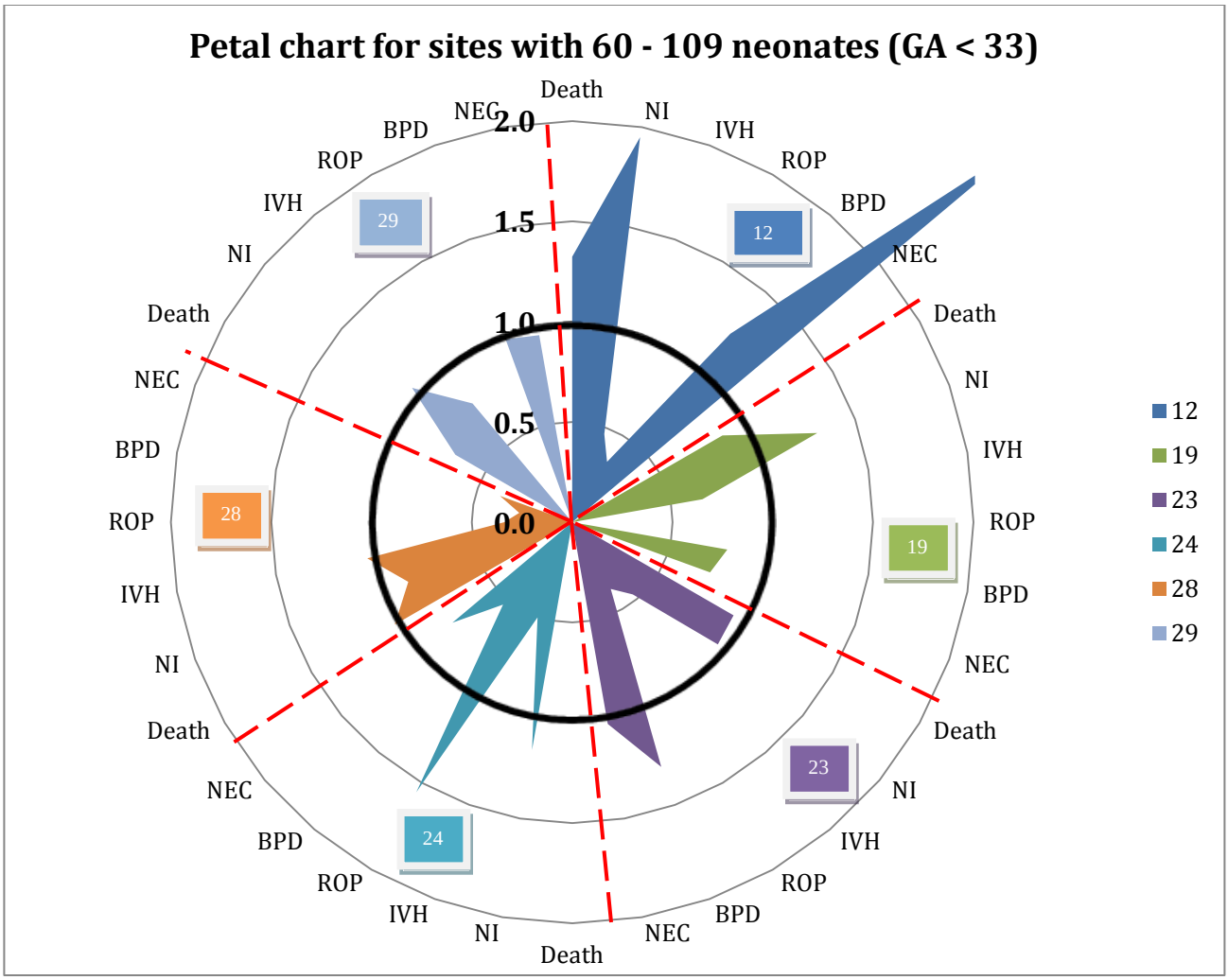
Presentation #48a
Mortality and morbidities: Sites with < 60 neonates: Petal chart from adjusted SR



Adjusted standardized ratios for mortality and morbidities

Site	Adjusted standardized ratio					
	Death	NI	IVH	ROP	BPD	NEC
6	2.4	0.9	2.5	4.4	1.7	1.4
7	0.0	0.8	0.0	1.2	0.4	1.1
9	0.0	0.8	0.8	3.0	0.5	0.0
17	2.3	0.9	0.9	1.4	0.2	0.0
21	0.9	0.8	0.9	0.4	0.6	0.0
22	1.7	3.3	2.2	0.7	0.2	1.6
26	1.2	3.0	2.1	0.0	1.0	0.0
27	2.6	0.9	0.7	1.9	0.4	1.8

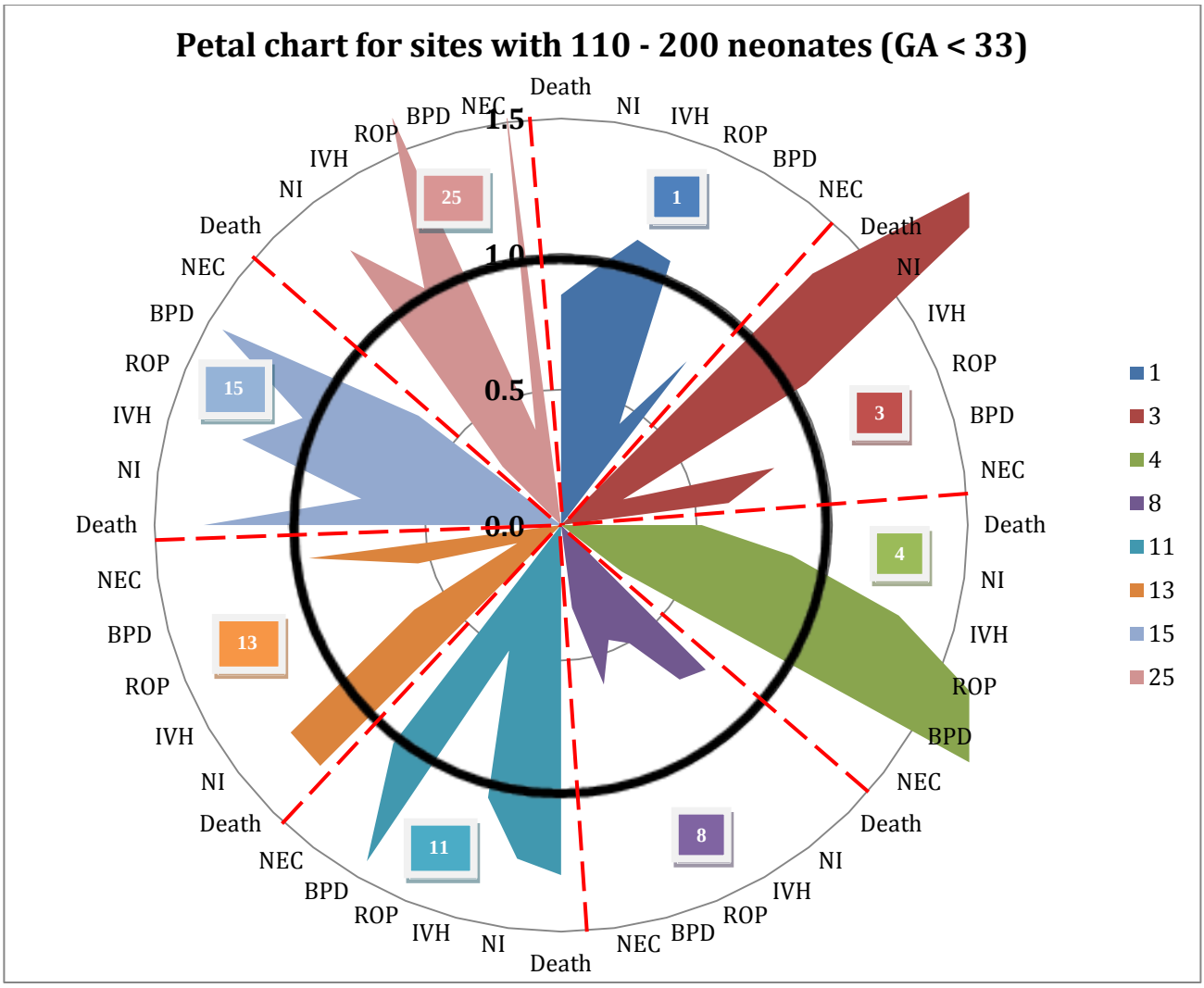
Presentation #48b
Mortality and morbidities: Sites with 60-109 neonates: Petal chart from adjusted SR



Adjusted standardized ratios for mortality and morbidities

Site	Adjusted standardized ratio					
	Death	NI	IVH	ROP	BPD	NEC
12	1.3	1.9	0.5	0.3	1.2	2.9
19	0.9	1.3	0.7	0.0	0.8	0.7
23	0.9	0.9	0.5	0.4	1.3	1.0
24	0.0	1.2	0.5	1.6	0.5	0.8
28	1.0	0.9	1.0	0.3	0.3	0.4
29	0.7	1.0	0.8	0.0	1.0	0.9

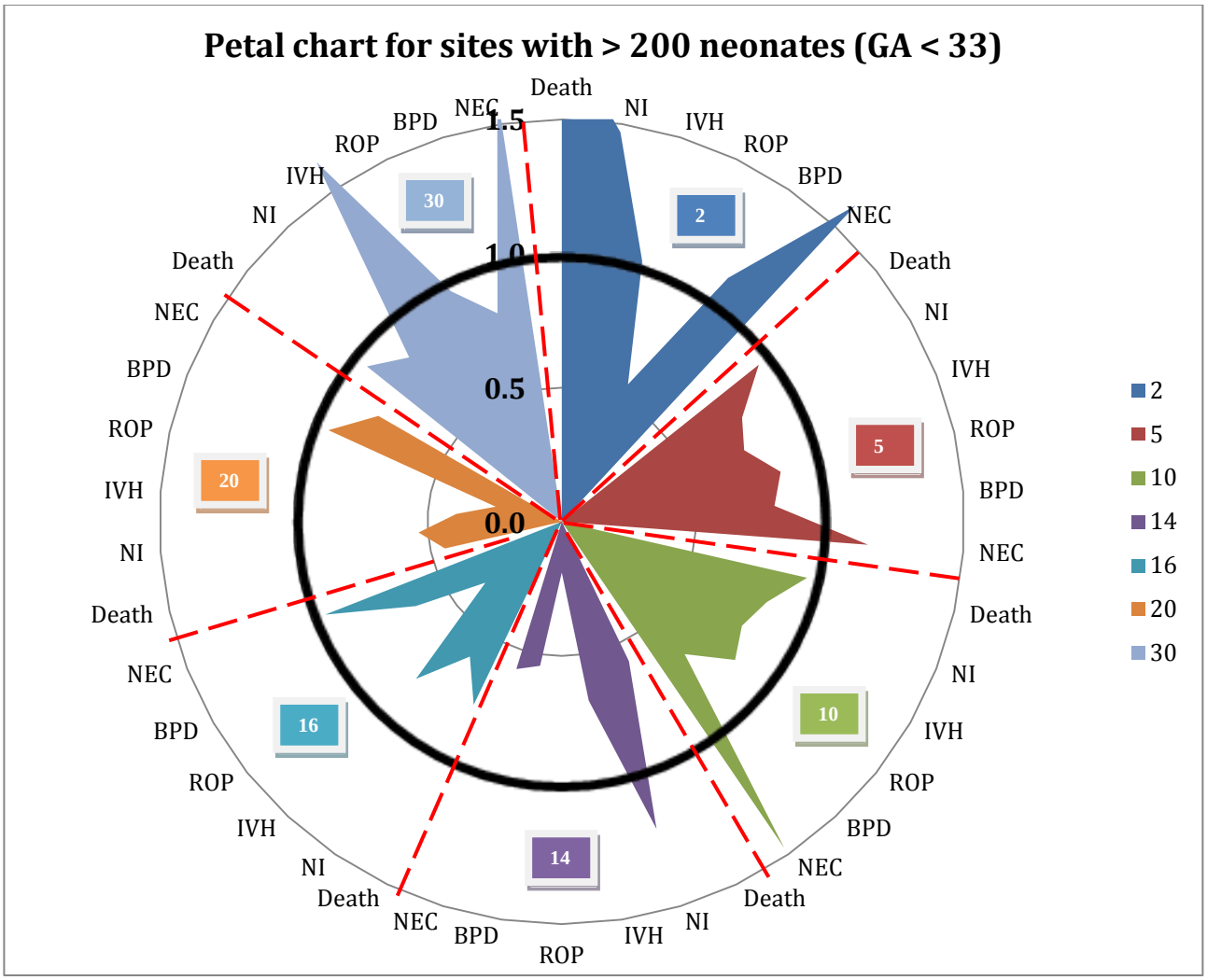
Presentation #48c
Mortality and morbidities: Sites with 110-200 neonates: Petal chart from adjusted SR



Adjusted standardized ratios for mortality and morbidities

Site	Adjusted standardized ratio					
	Death	NI	IVH	ROP	BPD	NEC
1	0.8	1.0	1.1	1.1	0.4	0.8
3	1.3	2.3	1.0	0.2	0.8	0.6
4	0.5	0.9	1.3	1.7	2.0	0.3
8	0.8	0.7	0.5	0.5	0.6	0.3
11	1.3	1.2	1.0	0.5	1.4	1.0
13	1.3	1.3	0.6	0.2	0.5	0.9
15	1.3	0.7	1.2	1.0	1.4	0.7
25	0.3	1.3	1.0	1.6	0.4	1.6

Presentation #48d
Mortality and morbidities: Sites with >200 neonates: Petal chart from adjusted SR



Adjusted standardized ratios for mortality and morbidities

Site	Adjusted standardized ratio					
	Death	NI	IVH	ROP	BPD	NEC
2	1.8	1.5	1.0	0.6	1.1	1.6
5	0.9	0.8	0.7	0.8	0.8	1.1
10	0.9	0.8	0.8	0.8	0.7	1.5
14	0.6	1.2	0.7	0.2	0.5	0.6
16	0.8	0.6	0.8	0.4	0.6	0.9
20	0.4	0.5	0.4	0.3	0.9	0.8
30	0.9	0.8	1.6	1.0	0.8	1.6

F. Discharge Disposition and Status

Presentation #49

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	109	222	300	373	604	1045	1332	3383	7368
	%	37.7	41.4	40.4	37.2	41.5	51.4	54.2	53.8	49.8
Community hospital	N	43	166	339	560	755	743	449	529	3584
	%	14.9	31.0	45.7	55.8	51.9	36.5	18.3	8.4	24.2
Tertiary hospital	N	12	19	15	5	7	25	35	193	311
	%	4.2	3.5	2.0	0.5	0.5	1.2	1.4	3.1	2.1
Died	N	95	80	30	16	22	24	30	78	375
	%	32.9	14.9	4.0	1.6	1.5	1.2	1.2	1.2	2.5
Palliative care (home/other institute)	N	0	0	0	0	1	1	1	10	13
	%	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.1
Another inpatient area in site	N	28	46	56	49	66	195	608	2090	3138
	%	9.7	8.6	7.6	4.9	4.5	9.6	24.8	33.3	21.2
Out of country discharge	N	2	3	2	1	0	2	1	1	12
	%	0.7	0.6	0.3	0.1	0.0	0.1	0.0	0.0	0.1
Total included	N	289	536	742	1004	1455	2035	2456	6284	14801
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Discharge destination missing	N									6
GA missing	N									0
Total	N									14807

Presentation #50

Support at discharge: Infants 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	290	537	742	1006	1455	2035	2457	6285	14807
Number of infants who survived and were discharged home	**N**	**109**	**222**	**300**	**373**	**604**	**1045**	**1332**	**3383**	**7368**
Oxygen	N	33	39	16	5	4	4	1	14	116
	%	30.3	17.6	5.3	1.3	0.7	0.4	0.1	0.4	1.6
Monitor	N	9	16	12	1	1	5	12	33	89
	%	8.3	7.2	4.0	0.3	0.2	0.5	0.9	1.0	1.2
Enterostomy	N	2	2	0	1	2	2	7	12	28
	%	1.8	0.9	0.0	0.3	0.3	0.2	0.5	0.4	0.4
Gavage	N	6	7	14	8	9	7	8	52	111
	%	5.5	3.2	4.7	2.1	1.5	0.7	0.6	1.5	1.5
Tracheostomy	N	0	1	1	0	0	1	2	2	7
	%	0.0	0.5	0.3	0.0	0.0	0.1	0.2	0.1	0.1
Gastrostomy	N	2	0	3	1	2	2	5	17	32
	%	1.8	0.0	1.0	0.3	0.3	0.2	0.4	0.5	0.4
Ventilation	N	1	1	0	0	0	0	0	0	2
	%	0.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CPAP	N	0	0	3	0	0	0	1	2	6
	%	0.0	0.0	1.0	0.0	0.0	0.0	0.1	0.1	0.1
Feeding status at discharge										
Breast milk only	N	33	62	106	117	210	405	437	1207	2577
	%	30.3	27.9	35.3	31.4	34.8	38.8	32.8	35.7	35.0
Formula only	N	35	82	87	110	169	246	339	698	1766
	%	32.1	36.9	29.0	29.5	28.0	23.5	25.5	20.6	24.0
Both breast milk and formula	N	39	74	104	143	220	391	548	1459	2978
	%	35.8	33.3	34.7	38.3	36.4	37.4	41.1	43.1	40.4

Note: All the percentages in this presentation are calculated out of the number of infants who survived and were discharged home. They may represent the more complex cases.

G. Hypoxic Ischemic Encephalopathy

Presentation #51

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**	60	190	58	20	328
	No	100	37	18	37	192
	Unknown	0	0	0	2	2
	Total	**160**	**227**	**76**	**59**	**522**

B. Reason for not receiving hypothermia treatment*

Reason	**Number**
Chromosomal anomalies	1
Major congenital anomalies	5
Weight < 2000g or GA < 35 weeks	28
Extreme condition	16
Head trauma or intracranial hemorrhage	6
Mild HIE	117
Unit policy	18
Health care team preference	5
Delayed transfer	30
Parental request	1
Unknown	7

*One neonate can have more than one reason.

C. Time of admission

Time	**Number**
<6 hours from birth	312
6 – 12 hours from birth	139
>12 hours from birth	65
Total**	516

**6 infants are missing either time of birth or time of admission.

Presentation #51 (continued)

Hypoxic Ischemic Encephalopathy

D. Characteristics of neonates who received hypothermia (N=328)

Characteristics	N		Results
Method	328	Selective head	4 (1%)
		Whole body cooling	324 (99%)
Target temperature	328	< 33^{0}C	12 (4%)
		33-34^{0}C	257 (78%)
		33.5-34.5^{0}C	45 (14%)
		34-35^{0}C	10 (3%)
		34.5-35.5^{0}C	1 (0%)
		Unknown	3 (1%)
Seizures at initiation	328		103 (31%)
Seizures at completion	328		46 (14%)
GA < 33 weeks	328		5 (2%)
Birthweight < 2000g	328		4 (1%)
During hypothermia	305	Hypotension	134 (44%)
	300	Thrombocytopenia	57 (19%)
	307	Coagulopathy	89 (29%)
	293	Persistent metabolic acidosis	49 (17%)
Death	328		31 (9%)

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**	26	5	0	4	23	58
	Stage 2	47	68	10	23	59	207
	Stage 3	2	12	28	4	3	50
	Unknown	0	0	1	7	5	13
	Total	75	85	39	39	90	328

*The numbers may be different from table A because this table represents staging at the start and end of hypothermia whereas table A presents staging at the time of first assessment

Presentation #51 (continued)
Hypoxic Ischemic Encephalopathy
For neonates* who received hypothermia (N=328)

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**	323	4.0	4.5	0.0	1.3	3.0	5.3	42.4	After 6 hours 56 (17%)	
	Target temp achieved	317	6.9	11.2	0.8	3.3	5.2	7.1	175.0	After 10 hours 38 (12%)	After 4 hours of initiation 43 (14%)
	Age at re-warming	325	70.2	19.3	2.7	73.5	76.0	77.7	116.9	After 78 hours 67 (21%)	Re-warming started >72 hours after initiation 67 (21%)
	Age at return of temp to normal	303	85.0	21.2	12.2	81.8	85.3	91.9	169.5	After 86 hours 138 (46%)	Took >8 hours to return temperature to normal after starting re-warming 167 (55%)
Temperature during hypothermia	**Lowest temp during hypothermia**	328	32.7	0.8	27.4	32.5	32.9	33.1	36.3	Lowest temp < 32.5C 69 (21%)	
	Highest temp during hypothermia	328	34.2	0.7	31.6	33.8	33.9	34.4	36.8	Highest temp > 35.5C 21 (6%)	

*Infants with time at initiation > 72 hours were excluded.
**All timing calculated from time of birth in hours of age.

H. Trend Analyses over last 6 years

This section includes trend analyses in the last 6 years (2010-15) for specific outcomes for neonates <33 weeks GA in network sites. The number of neonates included in these analyses is described in the following table for reference. This excludes delivery room deaths.

Number of neonates by admission year and GA

	GA											Total
Year	**<23**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**<33 w**
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

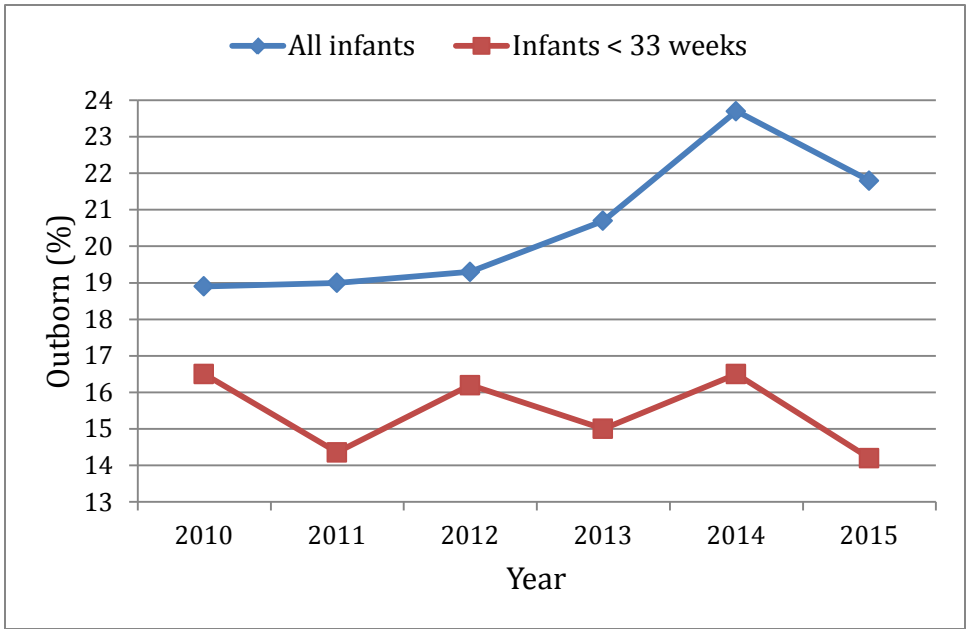
Number of neonates by admission year and birth weight

	Birth weight					Total
Year	**< 500**	**500 - 749**	**750 - 999**	**1000 - 1249**	**1250 – 1499**	**<1500g**
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

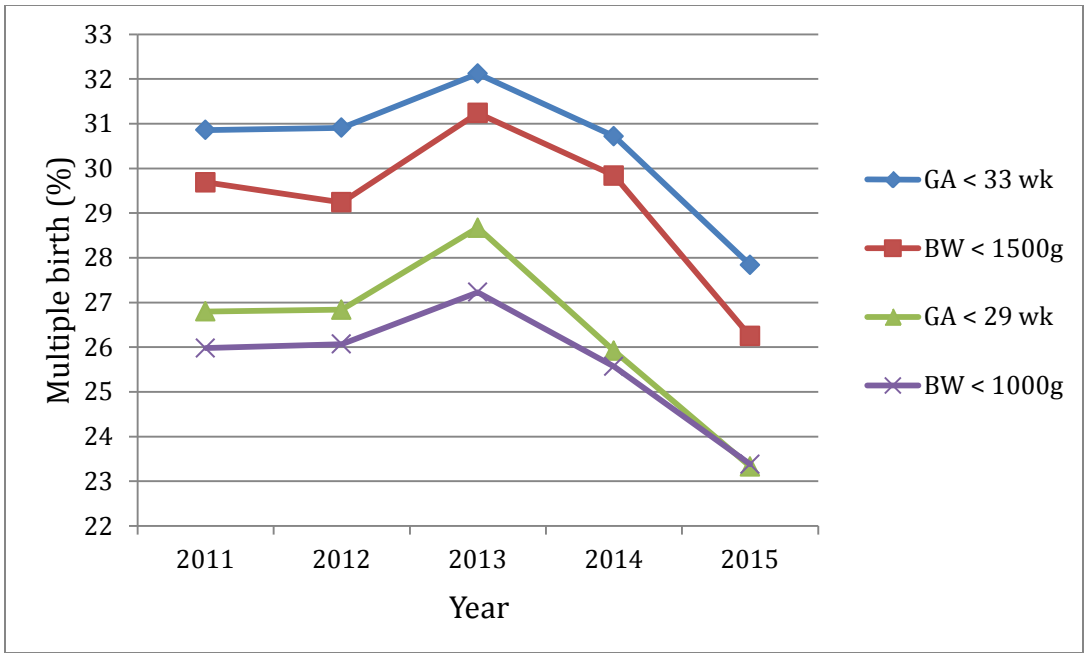
1. Neonates in the participating sites: Admission status:

		All infants			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%)

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

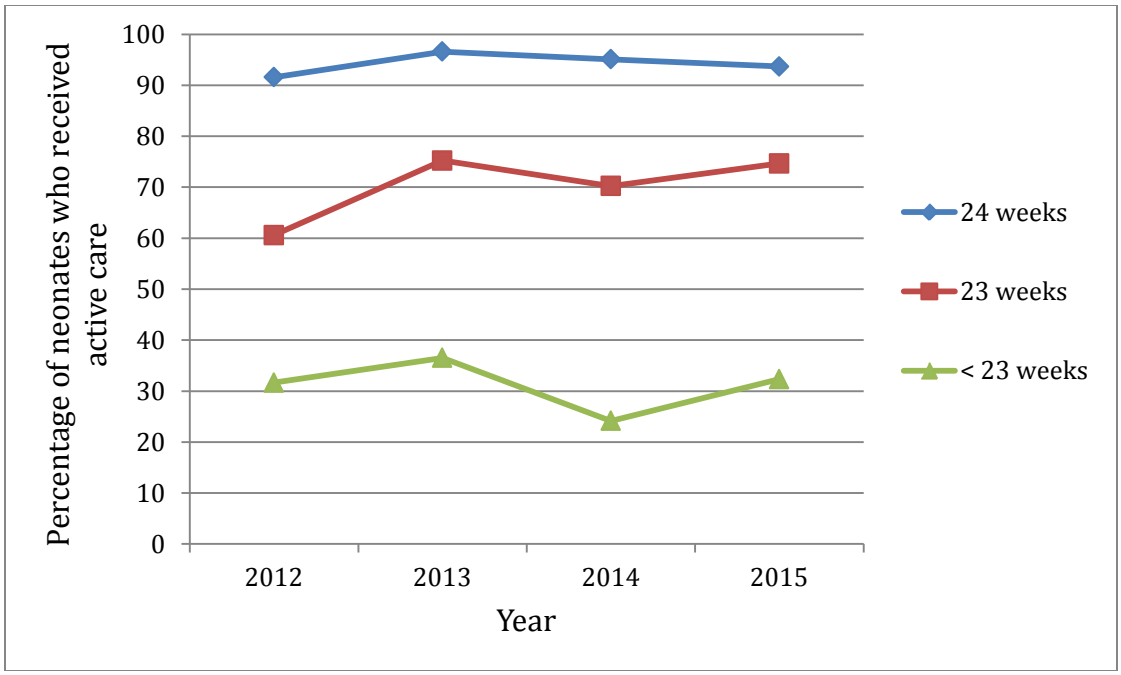


2. Multiple births



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

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

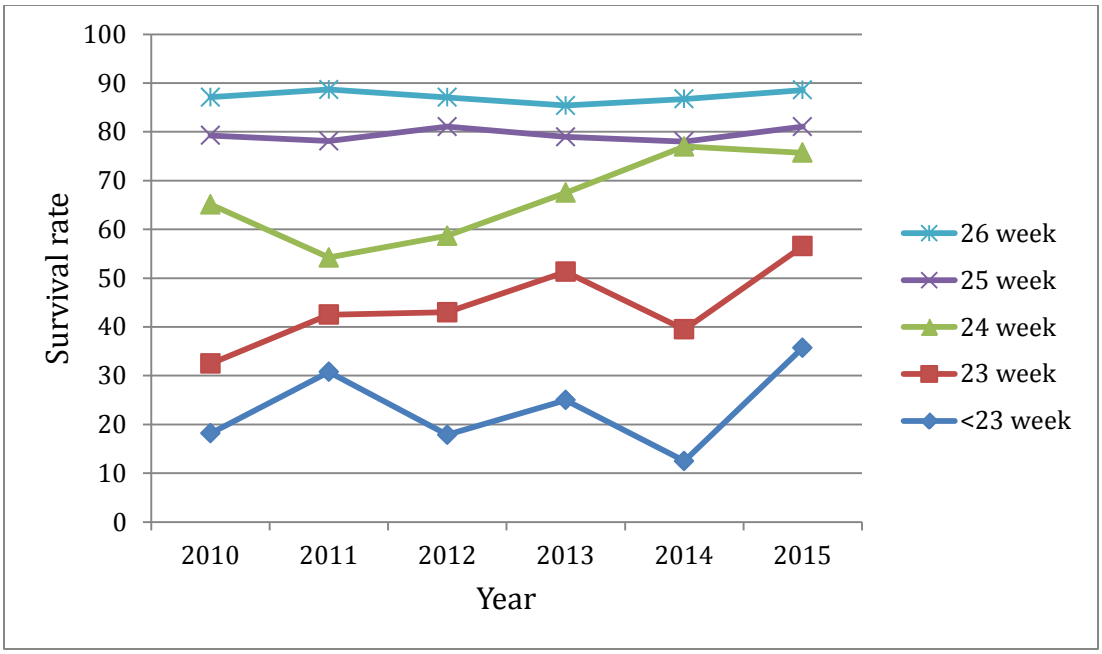


		2012	2013	2014	2015
<23 weeks	Number who received active care *(a-c) +e*	25	23	14	22
	Total including DR deaths *a+d+e*	79	63	58	68
	Percentage	32%	37%	24%	32%
23 weeks	Number who received active care (a-c) +e	83	85	92	106
	Total including DR deaths *a+d+e*	137	113	131	142
	Percentage	61%	75%	70%	75%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

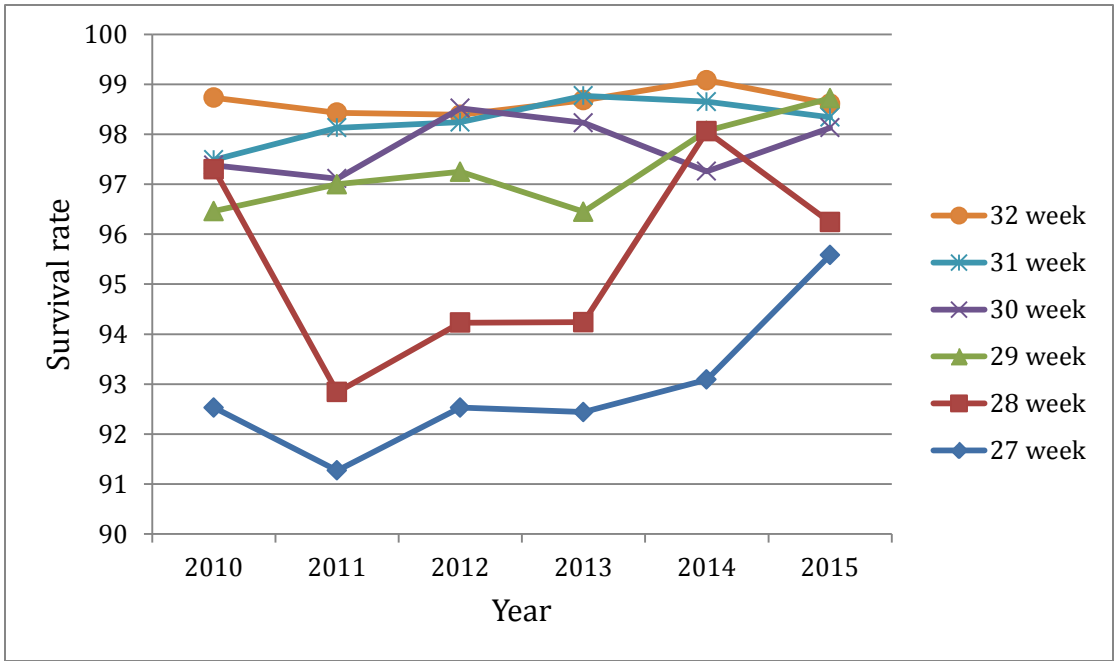
Note: Refer to presentation #4 for detailed breakdown by GA in 2015. The alphabet notations used in the table above are carried from presentation #4.

4. Survival rate:

a. 22-26 weeks:

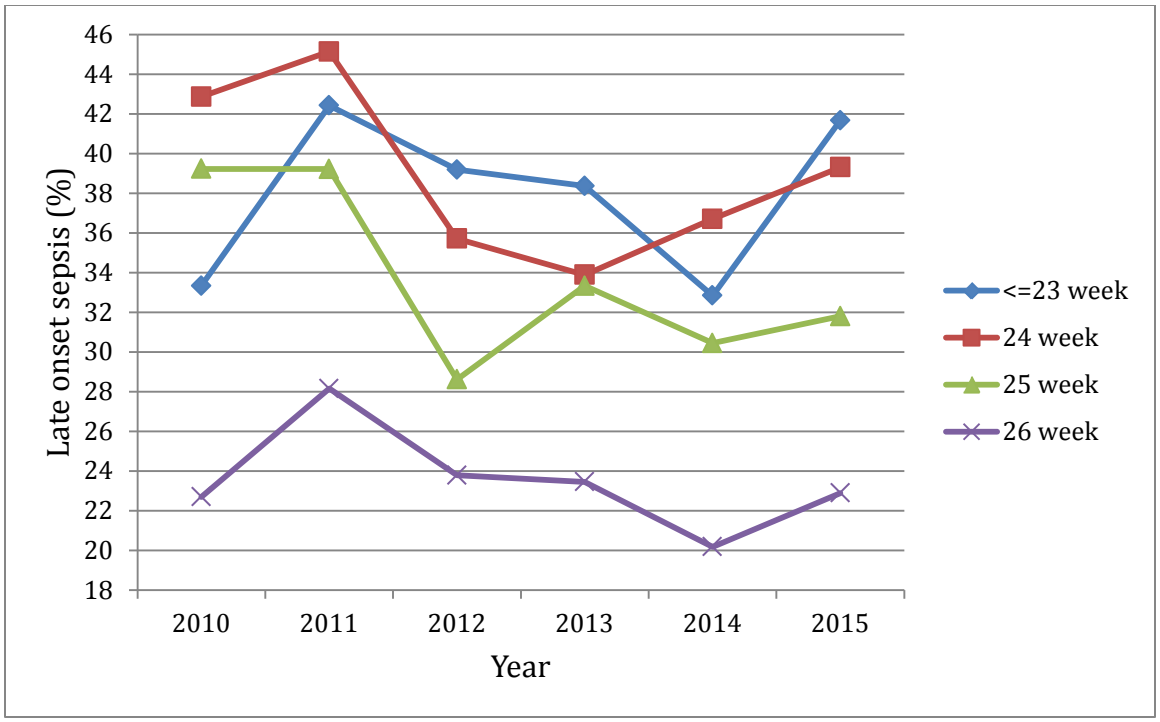


b. 27-32 weeks:

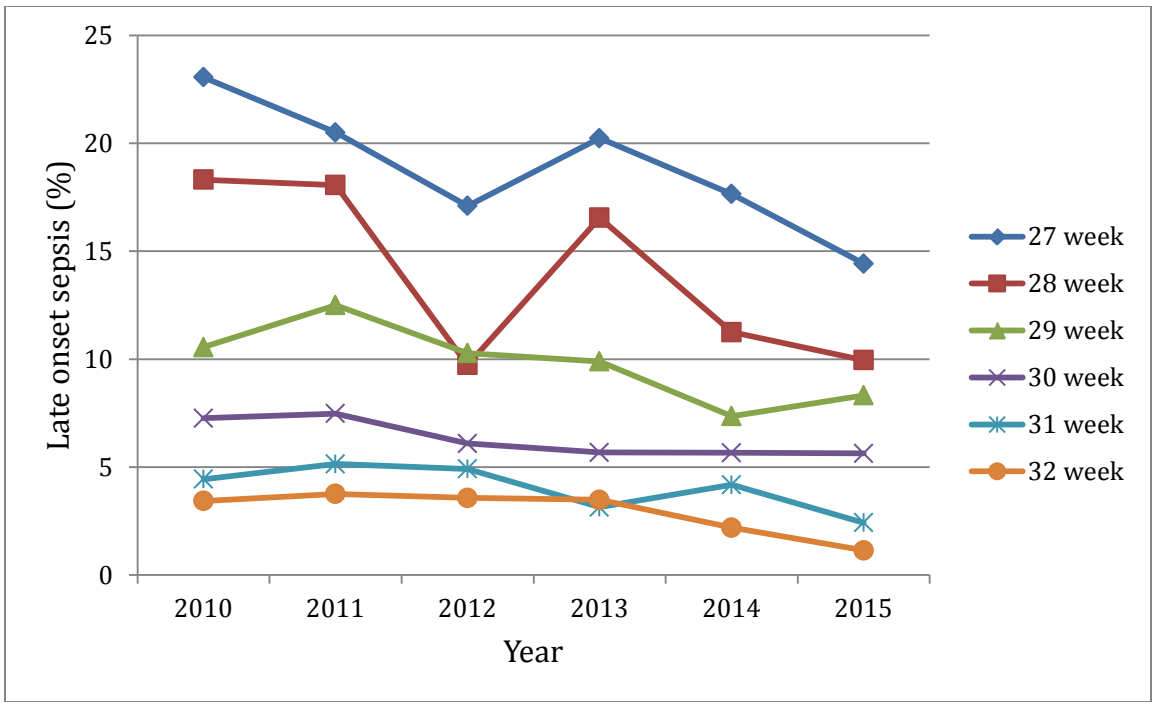


5. Late onset sepsis (with at least one infection) among neonates who survived beyond 2 days after birth

a. 23-26 weeks:

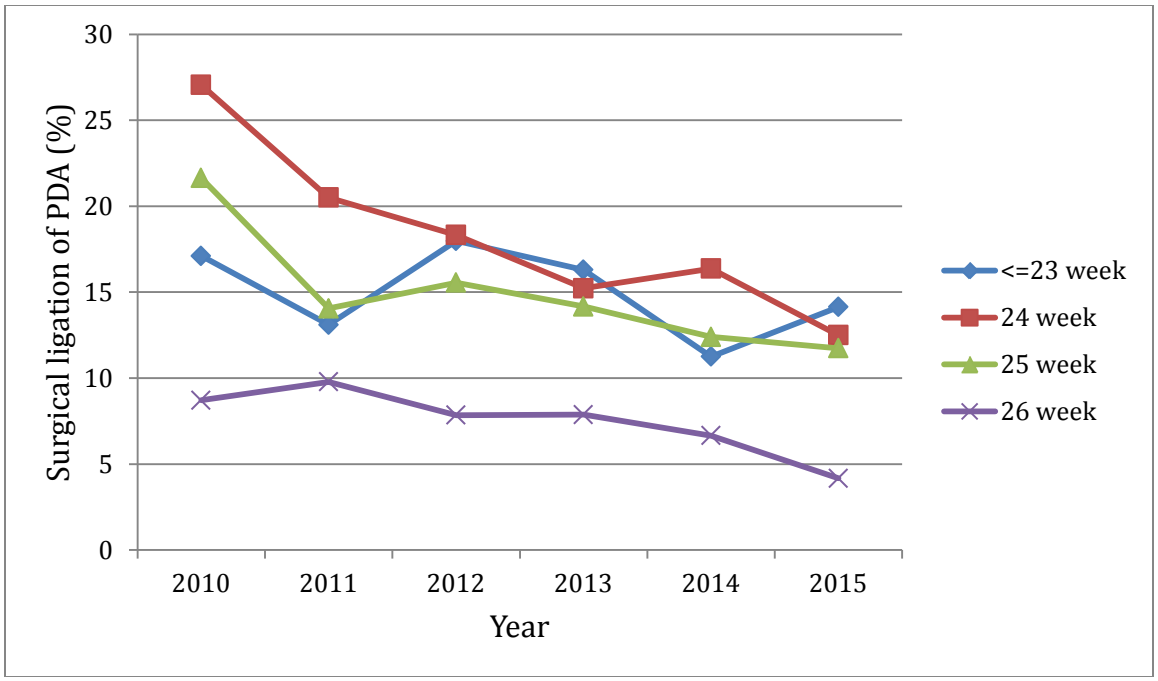


b. 27-32 weeks:

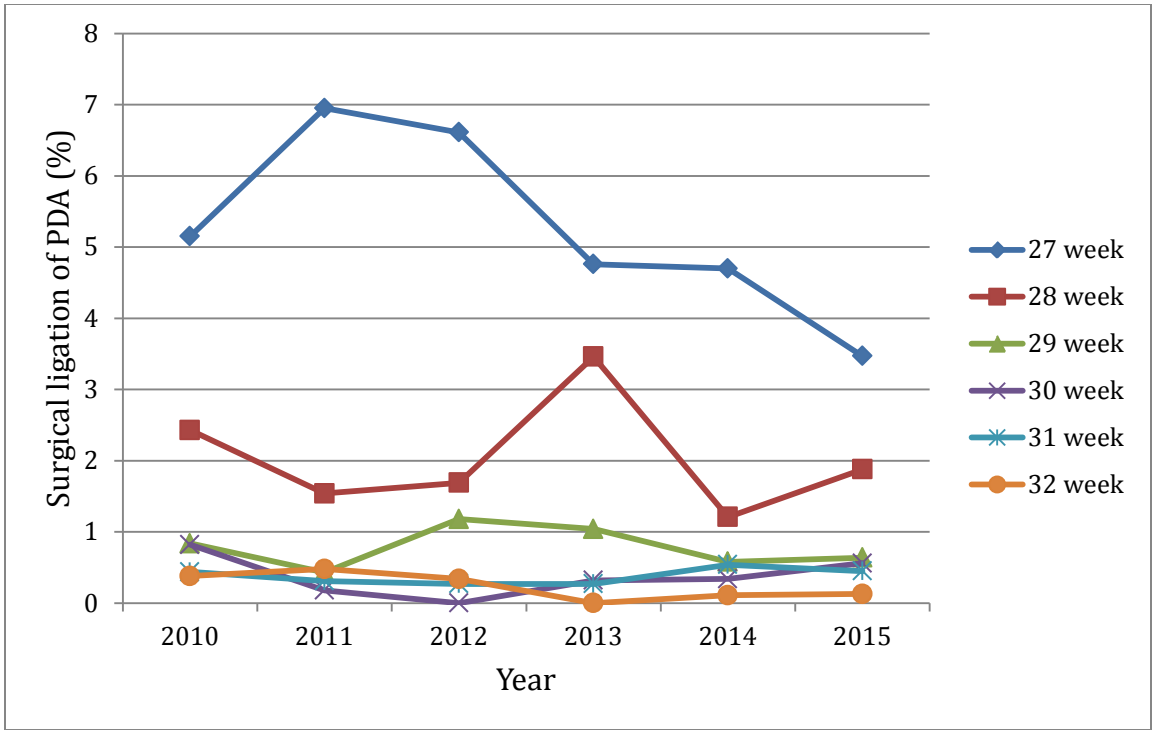


6. Surgical ligation of PDA

a. 23-26 weeks:

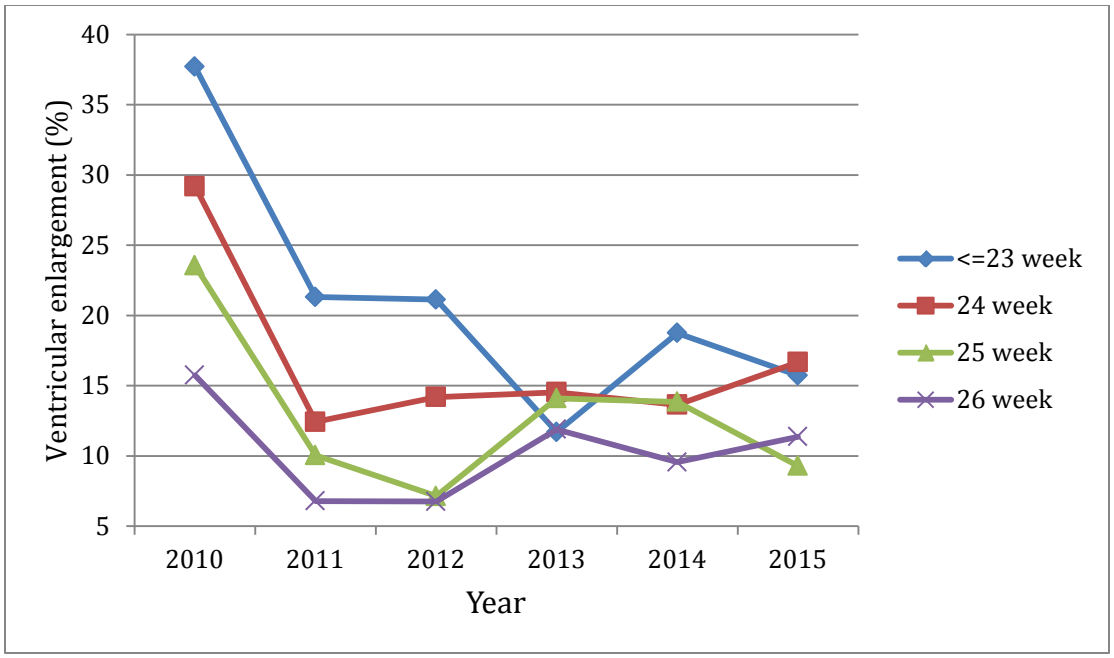


b. 27-32 weeks:

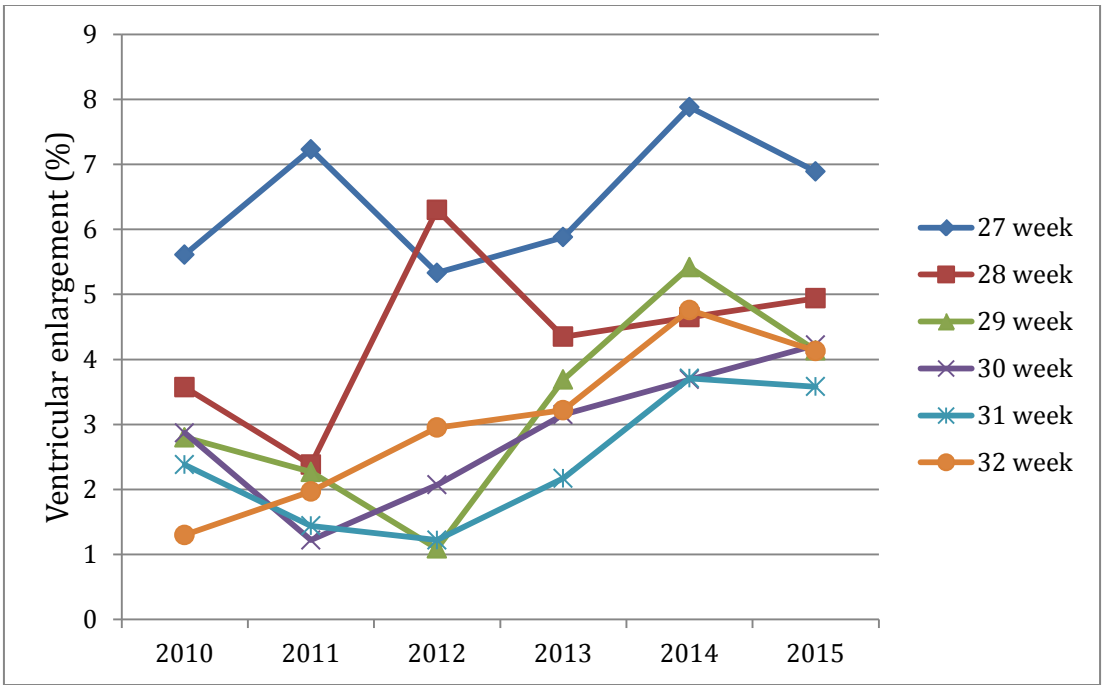


7. Ventricular enlargement: (moderate and severe VE only; among neonates who received ultrasound exams)

a. 23-26 weeks:

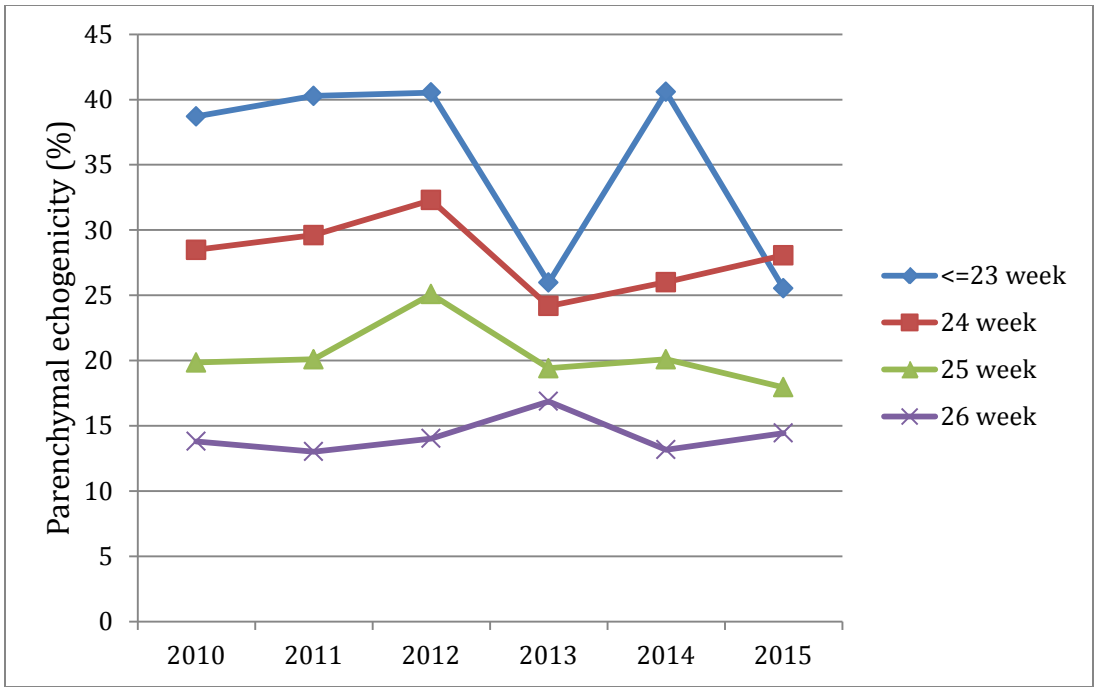


b. 27-32 weeks:

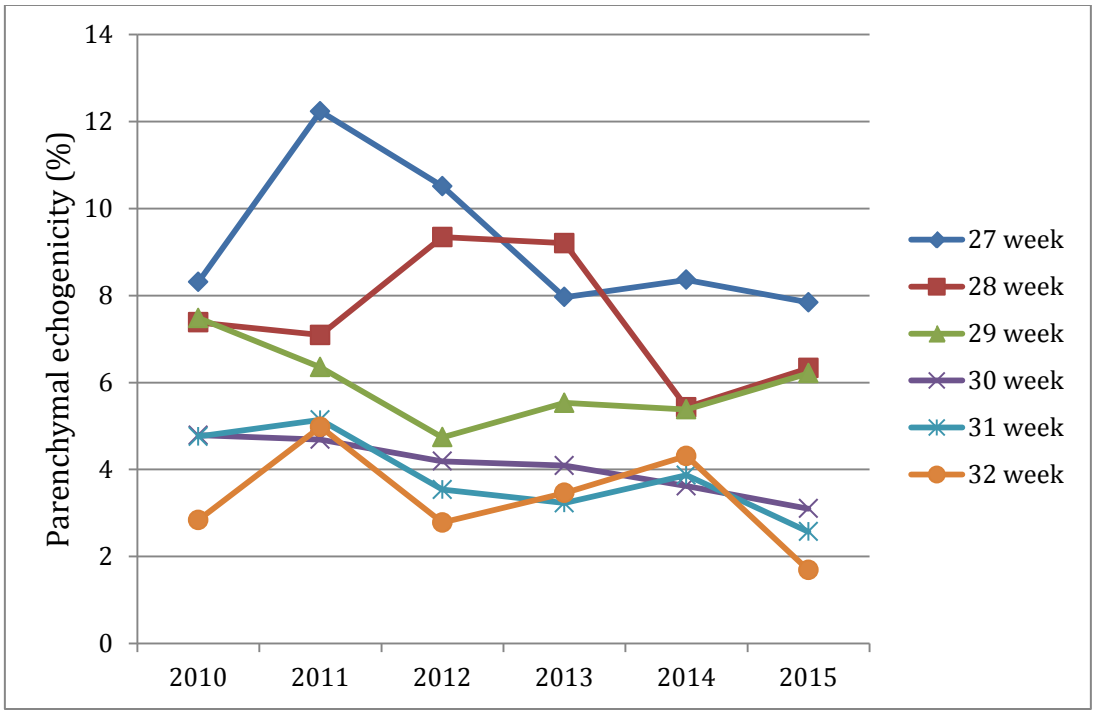


8. Parenchymal echogenicity: (among neonates who received ultrasound exams)

a. 23-26 weeks:

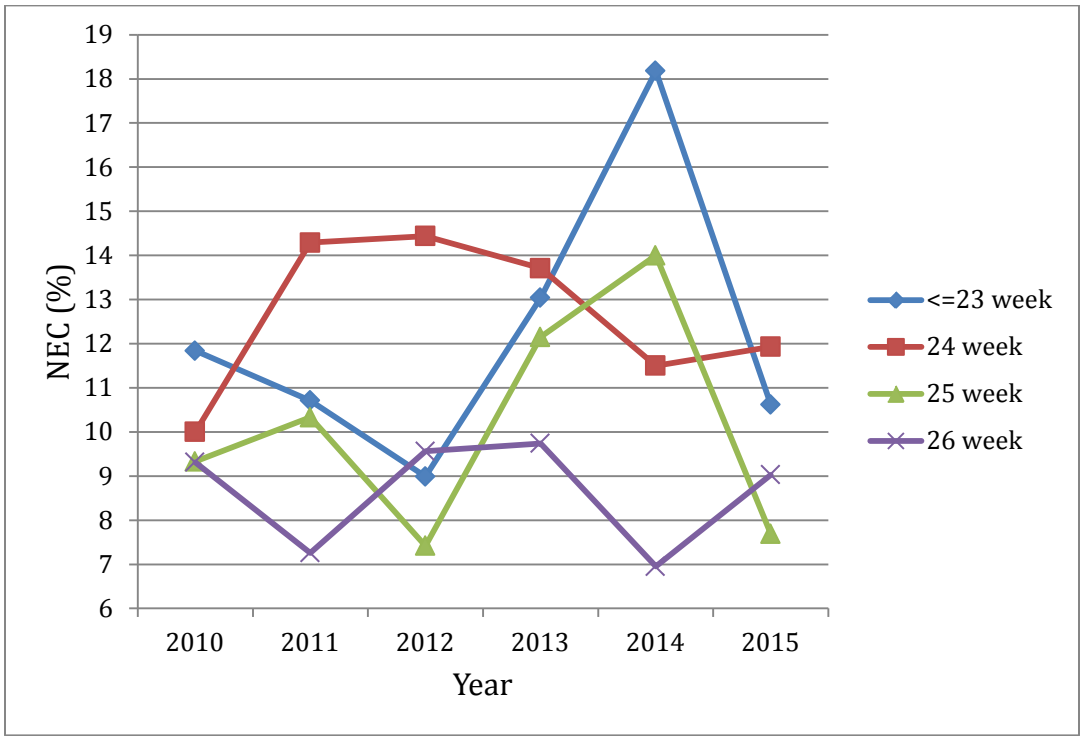


b. 27-32 weeks:

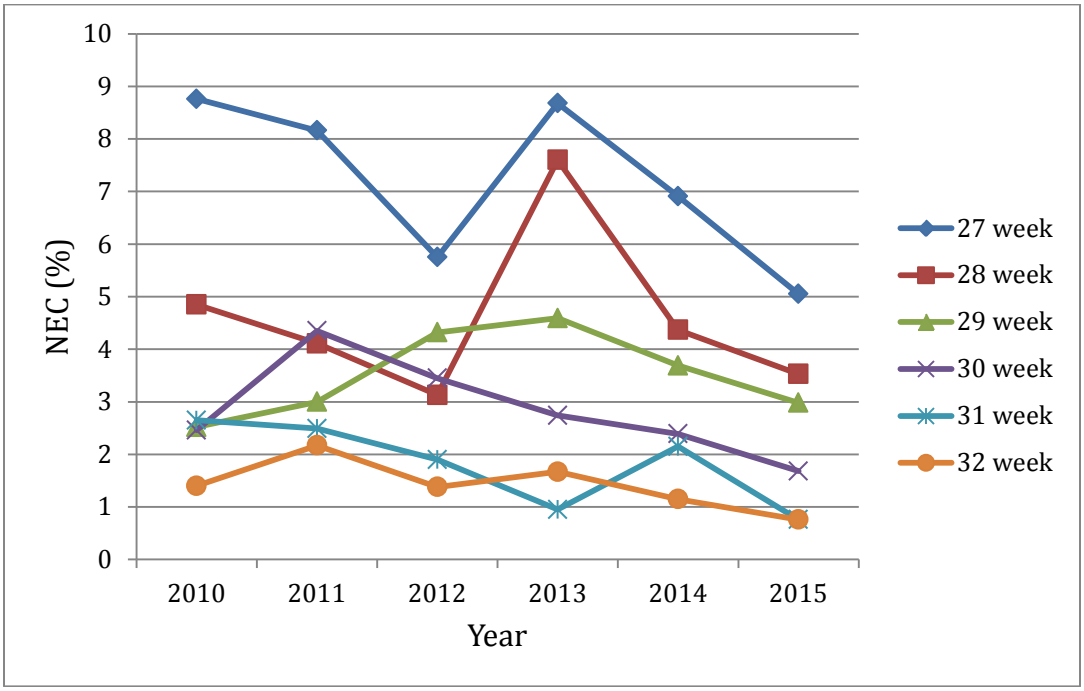


9. NEC:

a. 23-26 weeks:

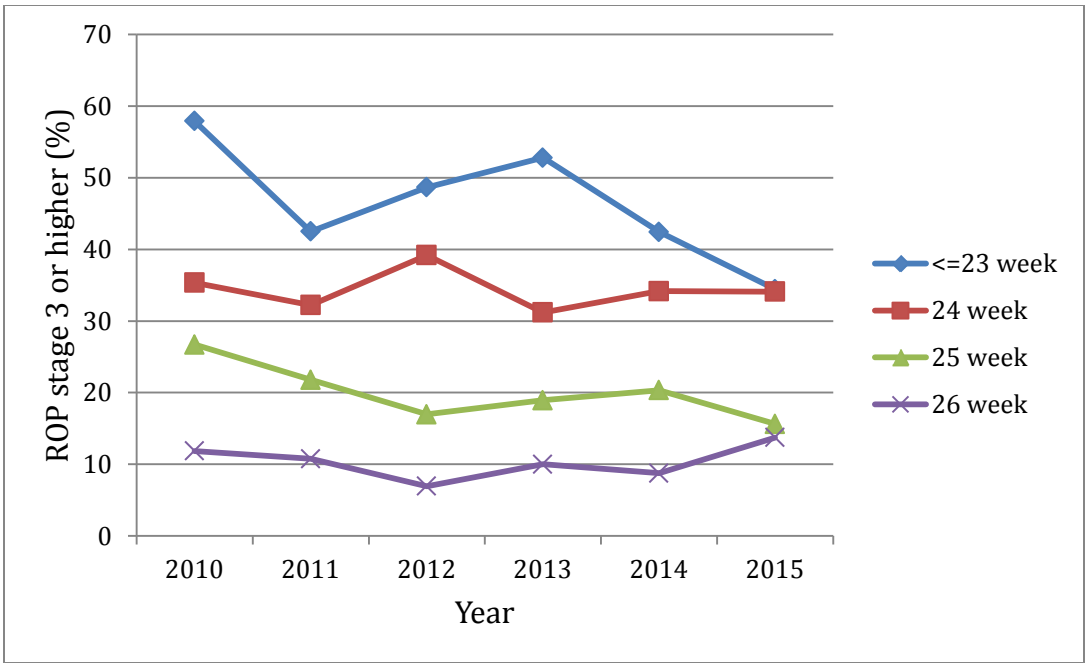


b. 27-32 weeks:

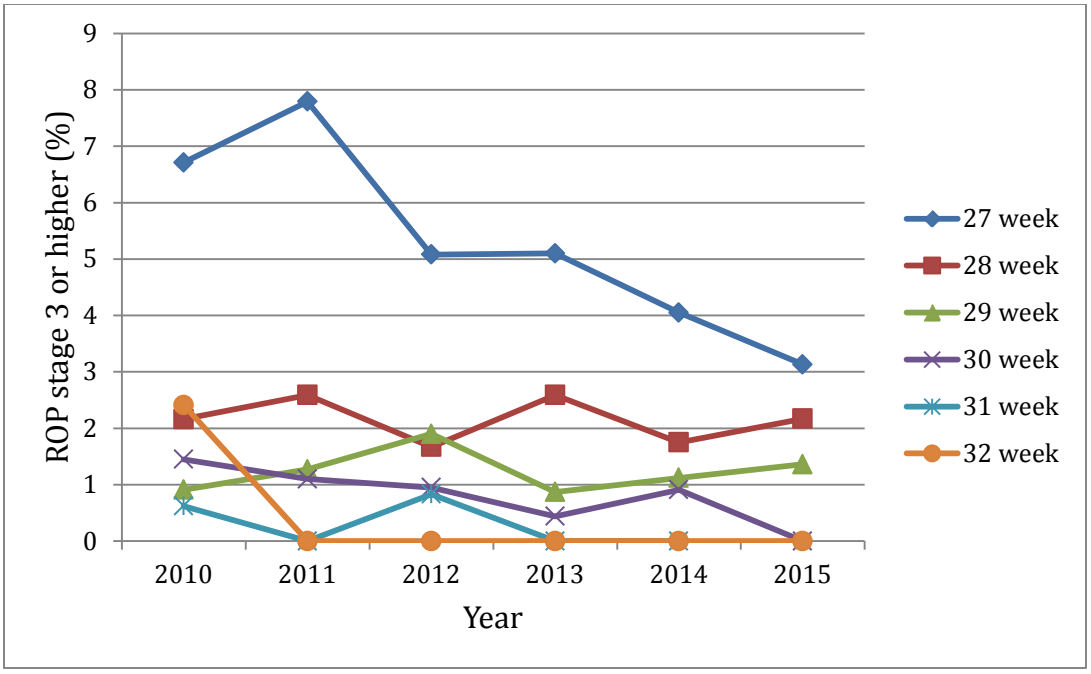


10. Stage 3, 4 and 5 ROP: (among neonates who received eye exams)

a. 23-26 weeks:

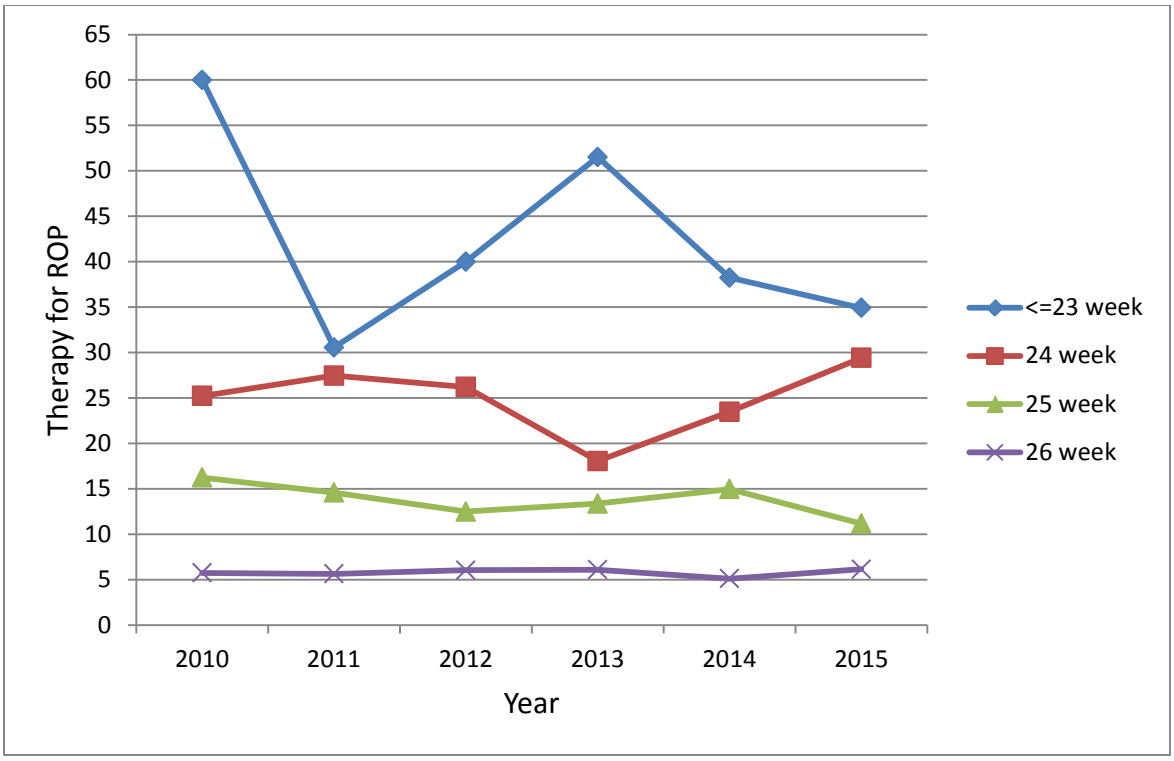


b. 27-32 weeks:

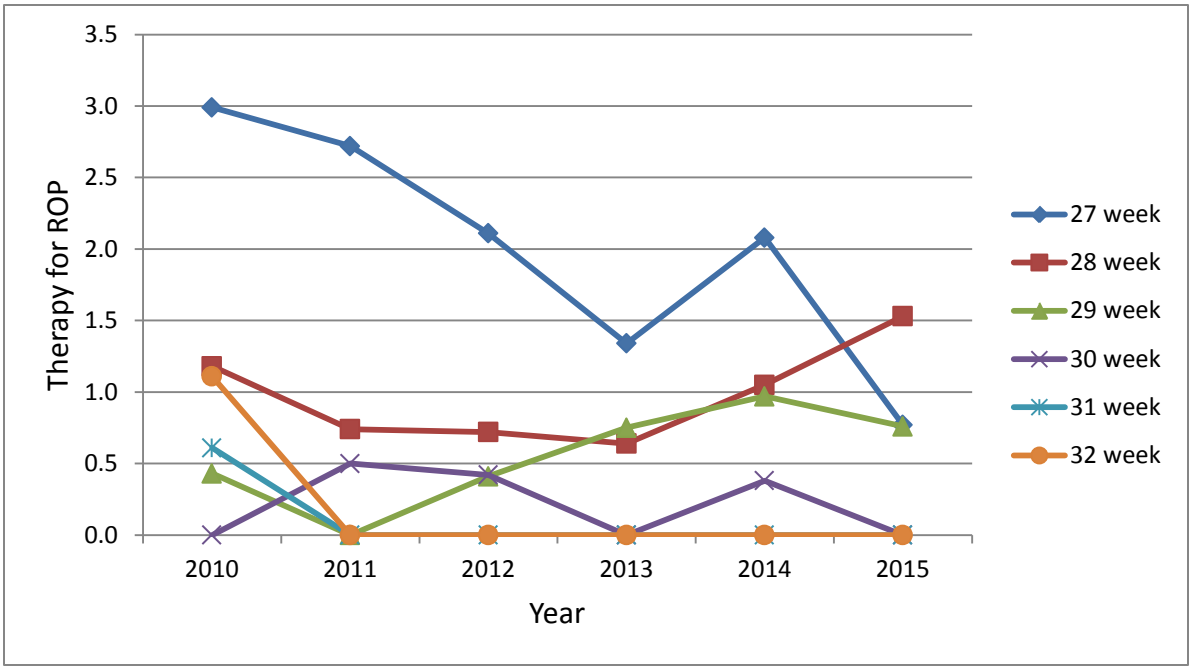


11. Therapy for ROP (among neonates who received eye exams)

a. 23-26 weeks:

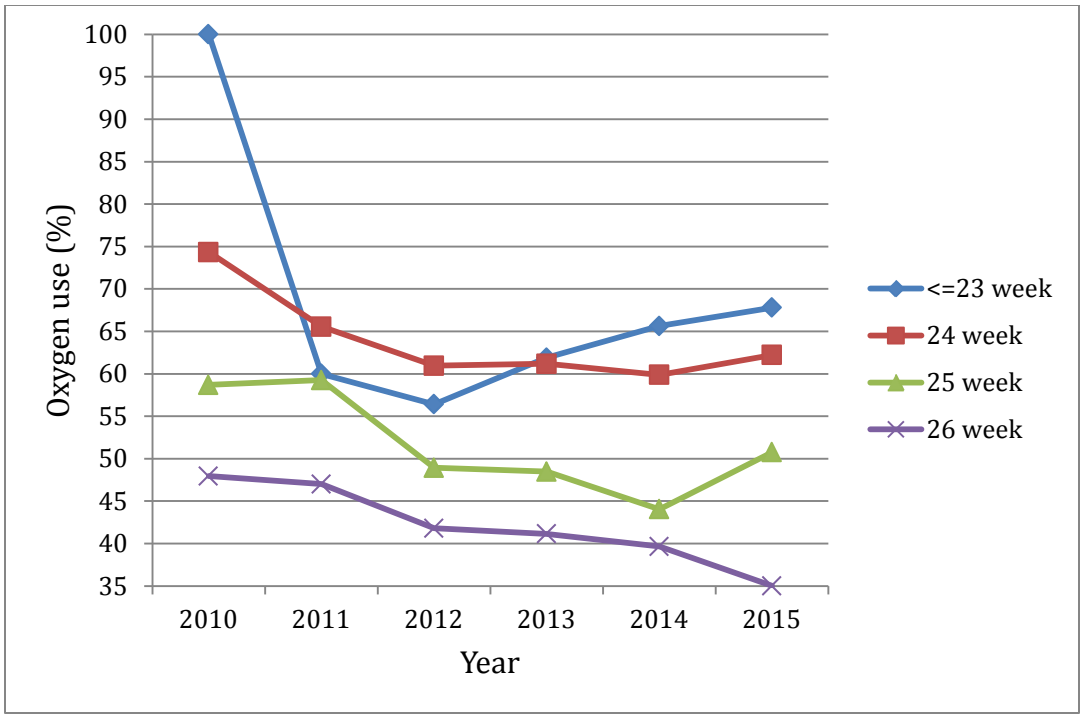


b. 27-32 weeks:

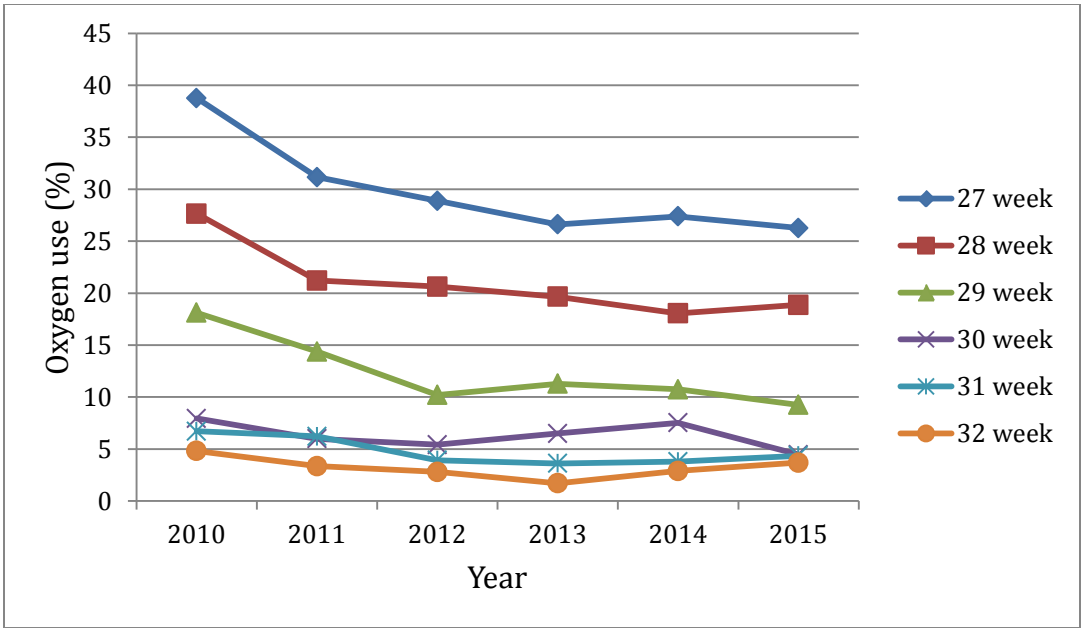


12a. Oxygen use at 36 weeks or at discharge:

a. 23-26 weeks:

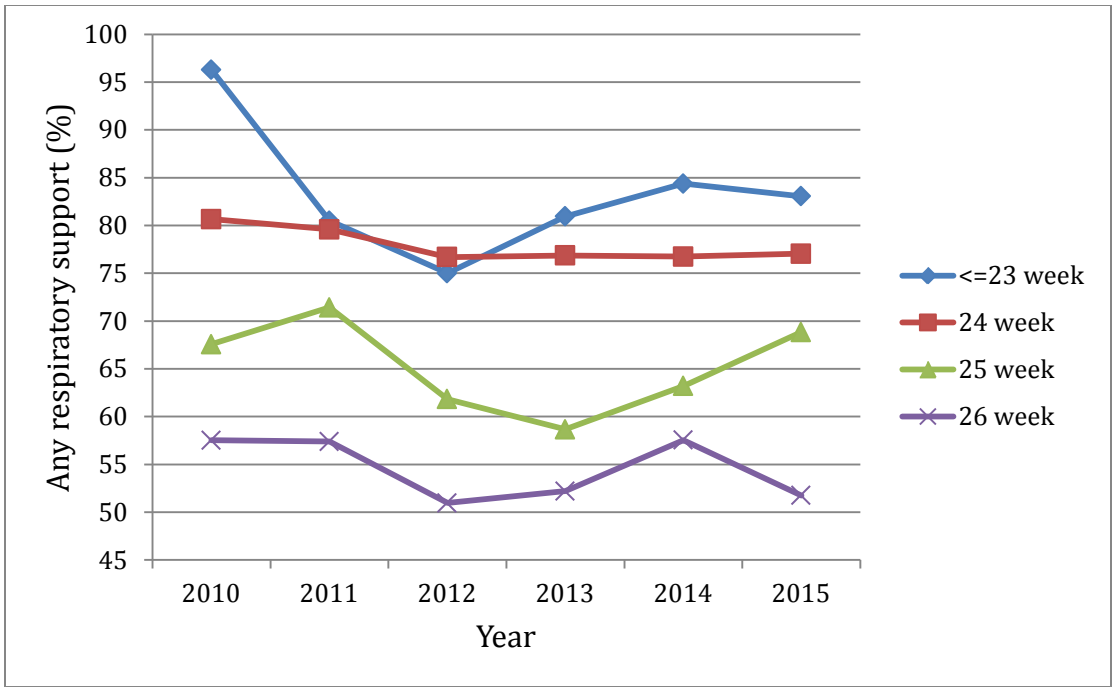


b. 27-32 weeks:

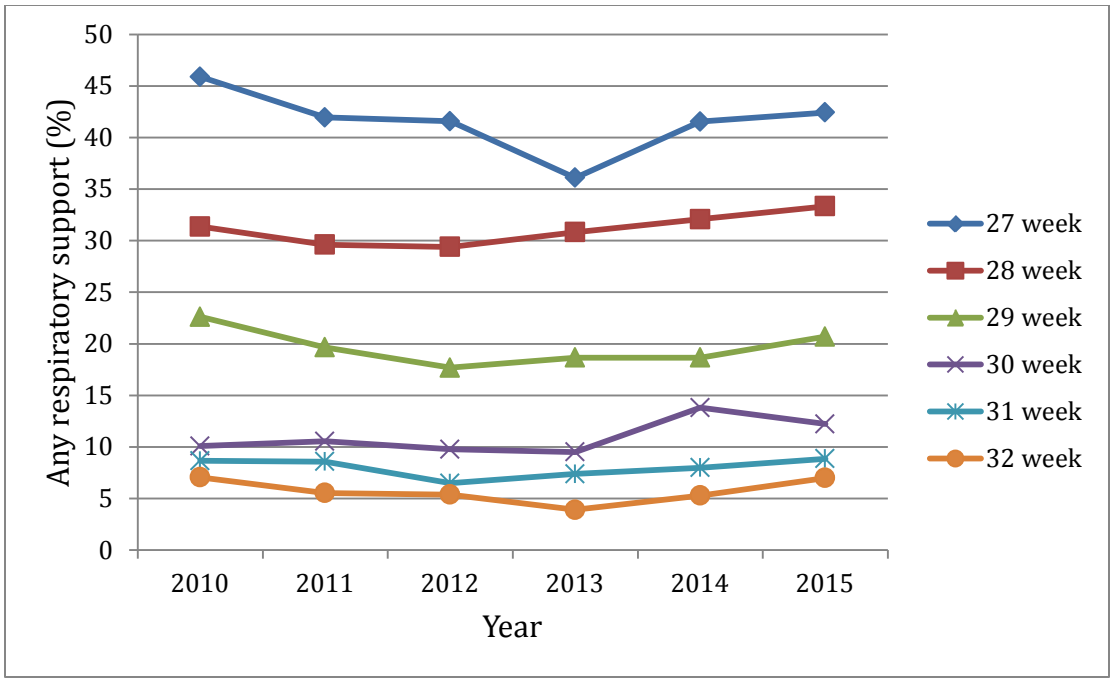


12b. Any respiratory support at 36 weeks or at discharge:

a. 23-26 weeks:

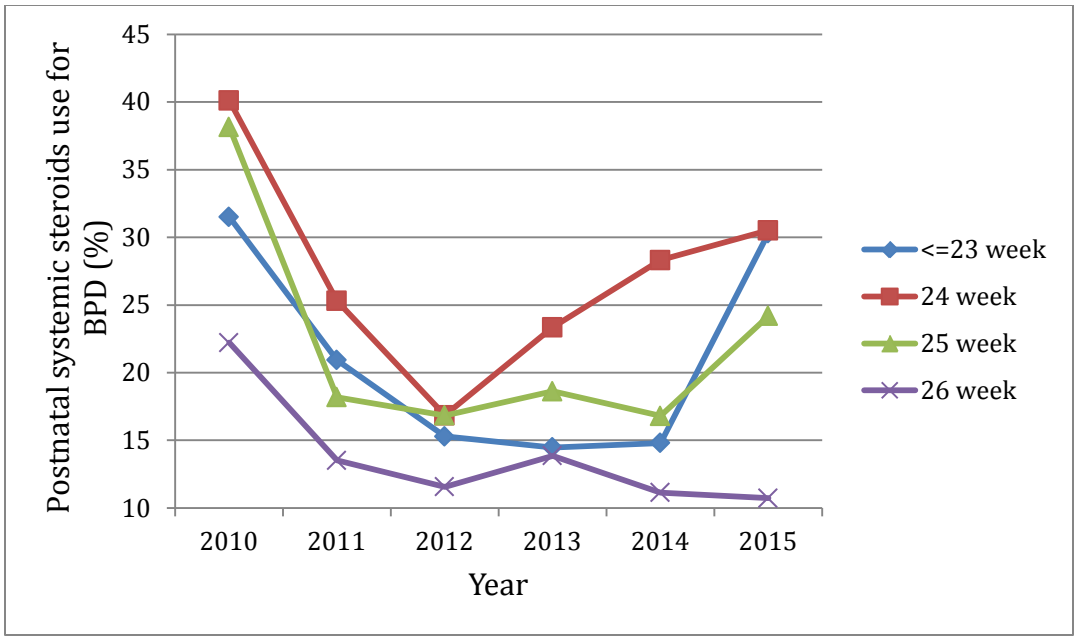


b. 27-32 weeks:

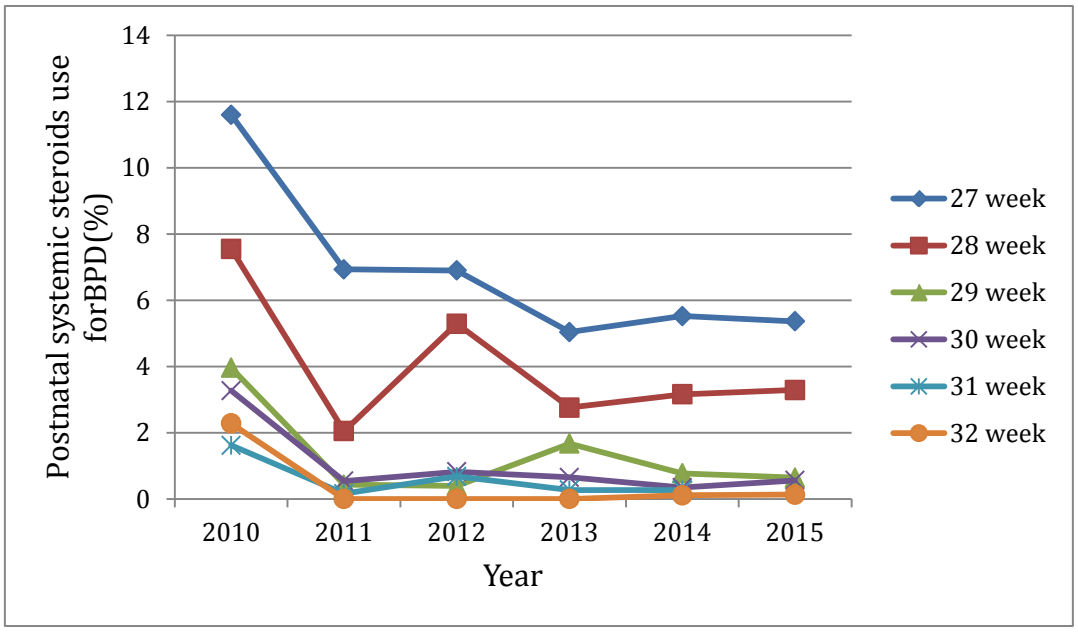


13. Postnatal systemic steroids use for BPD

a. 23-26 weeks:



b. 27-32 weeks:



I. Conclusions

The Canadian Neonatal Network™ was established in 1995. 30 Canadian NICUs participated in data collection in 2015.

The data demonstrate continuing variations in risk-adjusted outcomes and practices, and provide benchmarking information for Canadian hospitals. Individual hospitals have the opportunity to review their outcomes and launch strategies to make improvements to the care provided.

CNN researchers continue to utilize the database and produce many publications that will have significant impact on neonatal care and policy in Canada and internationally. CNN will continue to produce NICU population-based data on outcomes and practices, and apply quality improvement strategies.

J. 2015 CNN publications

Peer reviewed publications

1) Hei M, Shah PS, Lee SK, Jain A and the Canadian Neonatal Network. Outcomes for Symmetrical and Asymmetrical Small for Gestational Age Preterm Infants In Canadian Tertiary NICUs. American Journal of Perinatology. 2015 Jul; 32(8):725-32.

2) Weisz DE, Shivananda S, Asztalos E, Yee W, Synnes A, Lee SK, Lee SK, Shah PS and the Canadian Neonatal Network. Intrapartum Magnesium Sulfate and Need for Intensive Delivery Room Resuscitation. Arch Dis Child Fetal Neonatal Ed. 2015 Jan; 100(1):F59-65.

3) Chiarelli L, Mirea L, Yang J, Lee SK, Shah PS, and the Canadian Neonatal Network. Neonatal Outcomes in Very Preterm Singleton Infants Conceived Using Assisted Reproductive Technologies. Am J Perinatol. 2015 May: 32(6):515-22.

4) Shah J, Jefferies A, Yoon EW, Shah PS, Lee SK. Risk Factors and Outcomes of Late-Onset Bacterial Sepsis in Preterm Neonates Born at <32 Weeks' Gestation. American Journal of Perinatology 2015 Jun; 32(7):675-82.

5) Kirtsman M, Yoon EW, Ojah C, Cieslak Z, Lee SK, Shah PS. Nil-Per-Os Days and Necrotizing Enterocolitis in Extremely Preterm Infants. Am J Perinatol. 2015 Jul; 32(8):785-94.

6) Shah PS, Mirea L, Ng E, Solimano A, Lee SK. Association of Unit Size, Resource Utilization, and Occupancy with Outcomes of Preterm Infants. Journal of Perinatology. 2015 Jul; 35(7):522-9.

7) Melamed N, Shah J, Soraisham A, Yoon E, Lee SK, Shah PS, Murphy K. Association Between Antenatal Corticosteroid Administration-to-Birth Interval and Outcomes of Preterm Neonates. Obstetrics & Gynecology. 2015 Jun; 125(6):1377-84.

8) Wong J, Shah PS, Yoon EW, Yee W, Lee S, Dow K. Inotrope Use among Extremely Preterm Infants in Canadian Neonatal Intensive Care Units: Variation and Outcomes. Am J Perinatol. 2015 Jan; 32(1):9-14.

9) Lodha A, Seshia M, McMillan DD, Barrington K, Lee SK, Shah PS and the Canadian Neonatal Network. Association of Early Caffeine Administration and Neonatal Outcomes in Very Preterm Neonates. JAMA Pediatrics. 2015 Jan; 169(1):33-8.

10) Keir A, Yang J, Harrison A, Pelausa E, Shah PS and the Canadian Neonatal Network. Temporal changes in blood product usage in preterm neonates born at <30 weeks' gestation in Canada. Transfusion. 2015 Jun; 55(6):1340-6.

11) Keir A, Aziz K, McMillan D, Monterrosa L, Ojah C, Lee SK, Shah PS, Canadian Neonatal Network. Red Blood Cell Transfusions at 21 Days of Age or Older in Previously Transfusion-Naive Very Preterm Infants: Association with Neonatal Outcomes. Am J Perinatol. 2015 Oct; 32(12):1139-44.

12) Hossain S, Shah PS, Ye XY, Darlow BA, Lee SK, Lui K, Canadian Neonatal Network, Australian and New Zealand Neonatal Network. Outcome comparison of very preterm infants cared for in the neonatal intensive care units in Australia and New Zealand and in Canada. Journal of Paediatrics and Child Health. 2015 Sep;51(9):881-8.

13) Shah J, Singhal N, da Silva O, Rouvinez-Bouali N, Seshia M, Lee SK, Shah PS. Intestinal perforation in very preterm neonates: risk factors and outcomes. J Perinatol. 2015 Aug; 35(8):595-600.

14) Isayama T, Mirea L, Mori R, Kusuda S, Fujimura M, Lee SK, Shah PS, Neonatal Research Network of Japan and the Canadian Neonatal Network. Patent Ductus Arteriosus

Management and Outcomes in Japan and Canada: Comparison of Proactive and Selective Approaches. Am J Perinatol. 2015 Sep; 32(11):1087-94.

15) Isayama T, Shah PS, Ye XY, Dunn M, Da Silva O, Alvaro R, Lee SK. Adverse Impact of Maternal Cigarette Smoking on Preterm Infants: A Population-Based Cohort Study. Am J Perinatol 2015 Oct; 32(12):1105-11.

16) Thomas KE, Shah PS, Canning R, Harrison A, Lee SK, Dow KE. Retinopathy of prematurity: Risk factors and variability between Canadian NICUs. Journal of Neonatal-Perinatal Medicine 2015; 8(3):207-14.

17) Rolnitsky A, Lee SK, Piedbouf, Harrison A, Shah PS, Canadian Neonatal Network. Prophylactic Interventions in Neonatology: How Do They Fare in Real Life? Am J Perinatol. 2015 Oct; 32(12):1098-104.

18) Rabi Y, Shah PS, Lodha A, Soraisham A, Barrington K, Lee SK. Outcomes of preterm infants following the introduction of room air resuscitation. Resuscitation 2015 Nov; 96:252-9.

19) Ahmed M, Mohamed A, Yoon E, Aziz K, Lee SK, Shah PS. Risk of Infection Using Peripherally Inserted Central and Umbilical Catheters in Preterm Neonates. Pediatrics 2015 Dec; 136(6):1073-9.

20) Lyu Y, Shah PS, Ye XY, Warre R, Piedboeuf B, Deshpandey A, Dunn M, Lee SK; Canadian Neonatal Network. Association Between Admission Temperature and Mortality and Major Morbidity in Preterm Infants Born at Fewer Than 33 Weeks' Gestation. JAMA Pediatrics. 2015 Apr; 169(4):e150277.

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1) Ahmed Shalabi M, Mohamed A, Yoon E, Aziz K, Lee SK, Shah PS, Aziz K. Peripherally inserted central catheter (PICC) versus umbilical venous catheter as primary access in very preterm neonates. E-PAS 2015:1575.554.

2) Borenstein-Levi L, Miller SP, Grunau RE, Synnes A, Shah PS, Yoon E. Narcotics and Sedatives in the NICU. E-PAS 2015:1569.510.

3) El-Naggar W, Afifi J, McMillan D, Toye J, Kajetanowicz A, Yoon E, Shah PS. Epidemiology of meningitis in Canadian Neonatal Intensive Care Units. E-PAS 2015:4148.374.

4) Esmaeilizand R, Shah V, Ye XY, Dow K. Utilization of Central Lines in Canadian Neonatal Intensive Care Units. E-PAS 2015.

5) Esmaeilizand, Shah PS, Seshia M, Yee W, Yoon EW, Dow K. Antibiotic Exposure and Development of Necrotizing Enterocolitis in Very Preterm Neonates in Canada. E-PAS 2015:3853.101.

6) Harabor A, Soraisham AS, Shivananda S, Shah PS, Alvaro R, Lee SK. Trends and variations in inhaled nitric oxide use in preterm infants in Canadian Neonatal Intensive Care Units: A retrospective cohort study. E-PAS 2015:1587.639.

7) Soraisham AS, Harabor A, Lodha A, Shah PS, Barrington K, Lee SK. Neonatal Outcomes Following Use Of Inhaled Nitric Oxide In Preterm Infants In Canada: A Cohort Study. E-PAS 2015.

8) 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. E-PAS 2015:1593.691.

9) Jiang S, Shah PS, Lee KS, Ye XY, Rouvinez-Bouali N, Cieslak Z, Lee SK. Regional variations in outcomes and practices for outborn infants born at <33 weeks gestational age in Canada. E-PAS 2015.

10) Shah J, Melamed N, Murphy K, Lee SK, Yoon EW, Soraisham A, Shah PS. Antenatal Corticosteroids and Outcomes of Preterm Neonates <34 weeks GA: Effect of timing of administration. E-PAS 2015:3840.6.

11) Lodha A, Rabi Y, Soraisham AS, Shah PS, Yang J, Singhal N. Delayed Cord Clamping (DCC) And Need Of Neonatal Resuscitation Among Preterm Infants Born ≤28 Weeks Of Gestational Age. E-PAS 2015:4570.4.

12) Lyu Y, Jiang S, DaSilva O, Shah PS, Lee SK. Association of Intensity of Delivery Room Resuscitation with Neonatal Outcomes in Infants Born at <33 Weeks' Gestation. E-PAS 2015:1593.690.

13) Lyu Y, Xiang XY, Isayama T, Alvaro R, Nwaesei C, Shah PS, Lee SK. Systolic Blood Pressure at Admission and Neonatal Outcomes in Preterm Infants of ≤26 Weeks Gestational Age. E-PAS 2015:384107.

14) Olivier F, Bertelle V, Shah PS, Drolet C, Piedboeuf B. Impact of birth route on late onset sepsis (LOS) incidence in preterm neonates <33 weeks GA. E-PAS 2015:4148.371.

15) Purna J, Ojah C, Deshpandey A, Harrison A, Pelausa E, Shah PS. Seasonal Variation in Necrotizing Enterocolitis in preterm neonates <30 weeks gestation. E-PAS 2015:3851.92.

16) Woodward M, Williams C, Lodha A, Shah PS, Shivananda S. Mortality, morbidity and resource use among infants with Trisomy 21(TR21) admitted to Level III (L3) NICUs. E-PAS 2015:310.

17) Ting J, Roberts A, Synnes A, Canning R, Kalapesi Z, Sankaran K, Shah PS. Fungaemia in Infants admitted into Neonatal Intensive Care Units in Canada: 2003-2013. E-PAS 2015:4152.402.

18) Shah V, Mukerji A, Young J, Yee W, Seshia M, Dow K, Yoon EW. Utilization of surfactant in the era of non-invasive ventilation (NIV) in Canadian NICUs. E-PAS 2015:1599.736.

19) Elboraee MS, Kumaran K, Toye JM, Ye XY, Shah PS, Aziz K. Umbilical Lines Are an Independent Risk Factor for Adverse Outcomes in Very Preterm Babies. E-PAS 2015:1570.514.

20) Shah V, Seshia M, Dunn M, Schmolzer G. Golden Hour Management Practices for Infants <32 Wks Gestational Age in Canada. E-PAS 2015:1593.688.

21) Asztalos E, Church P, Faucher D, Riley P, Fajardo C, Shah PS. Neonatal Factors Associated With a Positive Neurodevelopmental Outcome in the Very Preterm Infant. E-PAS 2015:2185.2.

22) Isayama T, Mirea L, Reichman B, Sjors G, Modi N, Adams M, San Feliciano L, Kusuda S, Hakansson S, Lee SK, Shah PS. Variations in Patent Ductus Arteriosus Treatment of Very Preterm Neonates from 7 Countries: The International Network for Evaluating Outcomes (iNeo) Experience. E-PAS 2015:2888.316.

23) Darlow B, Lui K, Sjors G, Hakansson S, Modi N, Reichman B, Adams M, San Feliciano L, Santhakumaran S, Mirea L, Yang J, Lodha A, Shah PS. Variation in the Rate of Very Preterm Neonate Treated for Retinopathy of Prematurity (ROP) in 8 National Neonatal Databases: The International Network for Evaluation of Outcomes of (iNeo) Experience. E-PAS 2015:2926.590.

24) Lui K, Modi N, Sjors G, Reichman B, Darlow B, San Feliciano L, Mori R, Kusuda S, Adams M, Lee SK, Shah PS. Variability in Rates of Major Intraventricular Hemorrhage (IVH) and Its Impact on Mortality in Very Preterm Between 8 National Neonatal Databases: The

International Network for Evaluation of Outcomes (iNeo) Experience. E-PAS 2015:2926.592.

25) Martin L, Mirea L, Modi N, Lui K, Adams M, Reichman B, Mori R, San Feliciano L, Sjors G, Hakansson S, Shah PS. Birth Weight for Gestational Age: Impact of Using Different Growth References on the Comparison of Neonatal Outcomes Between Countries Participating in the International Network for Evaluation of Outcomes (iNeo). E-PAS 2015:2926.593.

26) Shafey A, Bashir RA, Shah PS, Synne A, Kelly E. Neurodevelopmental Outcomes of Infants Born at the Limit of Viability. E-PAS 2015:2896.384.

K. Appendices

Outcomes Definitions

Mortality: Death prior to discharge from NICU.

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.

Retinopathy of prematurity (ROP): Stage 3, 4 or 5 ROP or those requiring surgery as defined by the International Classification of Retinopathy of Prematurity[3]. ROP was scored as the highest stage in either eye identified during the admission.

Necrotizing enterocolitis (NEC): Stage 2 or 3 NEC according to Bell's classification[4].

Nosocomial infection (NI): Isolation of bacterial, fungal or viral organism from blood or cerebrospinal fluid in a symptomatic infant after 2 days of age.

Bronchopulmonary dysplasia (BPD): Defined as the need for oxygen at 36 weeks post-menstrual age or at discharge to level 2 centers with the need for respiratory support or oxygen.

Survival without major morbidities: Defined as survival at discharge from NICU without having any of BPD, NEC stage 2 or 3, IVH grade 3 or 4 or PVL, NI or ROP stage 3, 4 or 5 during the stay in NICU.

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

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

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

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	Non-Invasive
NICE	Neonatal-Perinatal Interdisciplinary Capacity Enhancement
NICU	Neonatal Intensive Care Units
NTISS	Neonatal Therapeutic Intervention Scoring System
PDA	Patent Ductus Arteriosus
PEC	Parenchymal Echodensities
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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