The Canadian Neonatal Network ™

Le Réseau Néonatal Canadien ™

Annual Report 2013 Rapport Annuel

Acknowledgements

This report is based upon data collected from 29 Health Care Organizations from across Canada that were members of the Canadian Neonatal Network™ during the year 2013. 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 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.

Coordinating Centre of the CNN

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

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Network Director:	Dr. Prakesh Shah, University of Toronto
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Cover page adapted by Priscilla Chan

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A. Executive Summary

This report from the Canadian Neonatal Network™ (CNN) is based on data from 29 tertiary sites, which contributed data in the year 2013. The CNN is funded through the Canadian Institutes of Health Research and the coordinating center at the Maternal-Infant Care Research Center is supported by Mount Sinai Hospital, Toronto, Ontario. The individual centers contribute financially by providing funding for data abstraction. The purposes of the Network are to:

- Maintain a national neonatal-perinatal database and provide the infrastructure to facilitate collaborative research
- Provide benchmarking information for Canadian sites
- Maintain a national network of multidisciplinary researchers interested in neonatal-perinatal research
- Longitudinally study outcomes and variations in medical care and
- Examine the impact of resource utilization and practice patterns on patient outcomes and costs of care
- Act on variations by informing anonymized results to sites and establishing benchmark for future quality improvement initiatives

Summary of Results/Methodology

Canadian Neonatal Network™ Database: Admissions between January 1, 2013 and December 31, 2013 who were discharged by March 31, 2014 were included.

Total number of eligible admissions to participating Canadian sites (See section D.1 for analyses)	15 520
Total number of eligible individual neonates (See section D.2. for analyses)	14 494
Total number of eligible very preterm (<33 weeks GA) neonates (See section D.3. for analyses)	4 262
Total number of eligible very low birth weight (VLBW) neonates (See section D.3. for analyses)	2 876
Total number of small for gestational age (SGA) neonates (See section D.4. for analysis)	2 410

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. 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.

Results presented in this report are comprised of:

Section D: Descriptive Analyses
Section E: Site Comparisons
Section F: Discharge Disposition and Status
Section G: Hypoxic Ischemic Encephalopathy
Section H: Trend Analyses over last 3 years

Five sites during 2013 were limited by funding and therefore were only able to contribute data from a subset of the eligible neonates admitted to their sites. Characteristics of participating CNN sites are highlighted at the outset of the presentations to provide basic information regarding network sites.

The 'missing' data on outcome variables vary for each presentation and caution should be used in interpreting the information. All reported percentages used in this report use denominator as neonates for whom data for that particular item were available.

B. Background and Objectives

Neonatal Intensive Care Units (NICUs) utilize the combined abilities of health care team members in expanding knowledge and advancing the technology to provide effective care of neonates. To support continuous improvement in newborn outcomes of Canadian sites, the CNN database provides ordinal and categorical data to identify variations in mortality, morbidity, and resource utilization. The first CNN report saw the validation of a newborn severity score [Score for Acute Neonatal Physiology (SNAP-II) [1]], a severity of illness scale. In addition we also use [Neonatal Therapeutic Intervention Scoring System (NTISS)[2]], and an instrument for assessing neonatal transport outcomes [Transport Risk Index of Physiologic Stability (TRIPS)[3]]. The use of these three scores permitted benchmarking of risk-adjusted variations in mortality and morbidity among Canadian sites. This demonstrated variations in outcomes and practices among Canadian sites, and indicated that different sites had different strengths as well as areas that should be targeted for improvement. The results suggested that practice and outcome variations are associated, and led to the inception of an additional research project investigating the targeting of specific practices for change in order to improve outcomes in sites across Canada.

The first Evidence-based Practice for Improving Quality (EPIQ1) project explored new methodologies for identifying care practices associated with good or poor outcomes, and provided an evidence-based approach to improving quality of care. Building upon traditional continuous quality improvement techniques, EPIQ1 used multidisciplinary teams at CNN sites, who worked collaboratively to implement best practice changes. Results of this study were published in 2009.[1] The second version of this project, EPIQ2, is recently completed and is published.[2] This project targeted quality improvement in all five major morbidities of preterm infants and it will also link with neurodevelopmental outcomes up at 2 years of age. Neonatal component of the study is completed and follow-up data collection is ongoing. Based on successes of EPIQ1 and EPIQ2, we have launched EPIQ 3 – Drive to zero, in July 2014.

Research using the data was overseen by the Executive Committee, which was elected by members of the Canadian Neonatal Network™. Separate ethics approvals were obtained from the participating institutions for specific projects as indicated.

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[1] Shoo K. Lee et al. **Improving the quality of care for neonates: a cluster randomized controlled trial.** Can. Med. Assoc. J., Oct 2009; 181: 469 – 476

[2] Shoo K. Lee, Prakesh S. Shah et al. **Association of a quality improvement program with neonatal outcomes in extremely preterm infants: a prospective cohort study.** Can. Med. Assoc. J., Aug 2014; [Epub ahead of print]

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 2013 data	ROP surgical / laser service?	PDA surgical service?
Victoria General Hospital	All eligible admissions	y	y	y	y	y
Children's & Women's Health Centre of BC	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
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	2013 data not available at time of report	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
Montreal Children's Hospital	All eligible admissions	n	n/a	n/a	y	y
Royal Victoria Hospital	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
* Edmonton sites transmits 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, 2013 and December 31, 2013, and were discharged by March 31, 2014. 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 14 494 patients accounted for 15 520 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. 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 15 520 eligible admissions (including readmissions) to 29 sites. 24 of these sites submitted complete data (n=14 059) on all admissions and 5 sites submitted data on a selected admission cohort (n=1461).

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

These include data from 14 494 eligible neonates admitted to 29 sites. 24 of these sites submitted complete data (n=13 252) on all eligible admitted neonates and 5 sites submitted data on selected eligible admitted neonates (n=1 242).

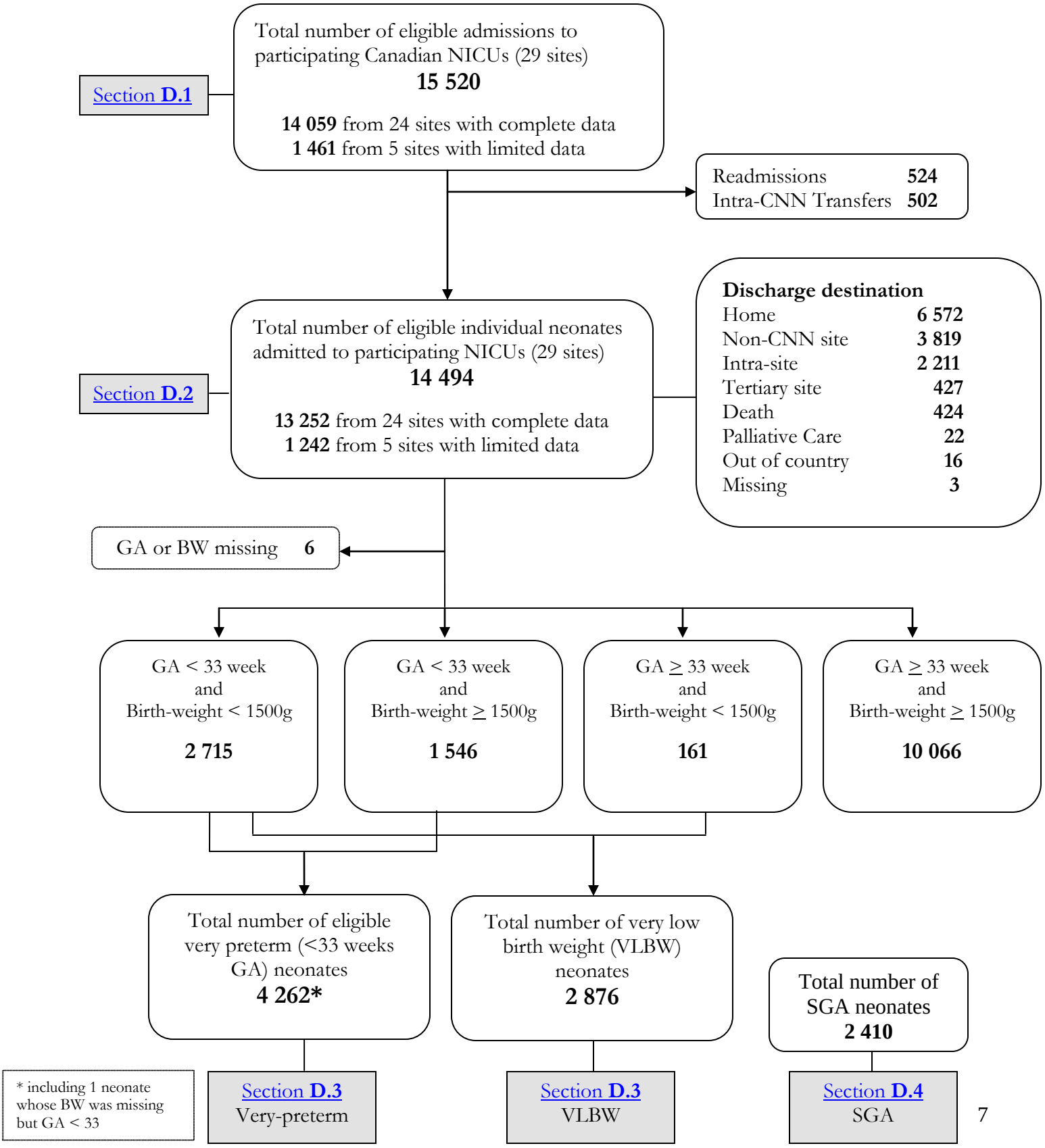
Section D.3. Analyses based on number of eligible very preterm (< 33 weeks GA) or very low BW (<1500g BW) neonates

These include data from 4 262 eligible very preterm neonates and 2 876 eligible VLBW neonates.

Section D.4. Analyses based on number of neonates who are small for gestational age (BW < 10th centile for GA)

These include data from 2 410 SGA neonates.

Canadian Neonatal Network™ Database: Admissions between January 1, 2013 and December 31, 2013 who were discharged by March 31, 2014. Readmissions from 2012, moribund, and delivery room deaths were excluded.

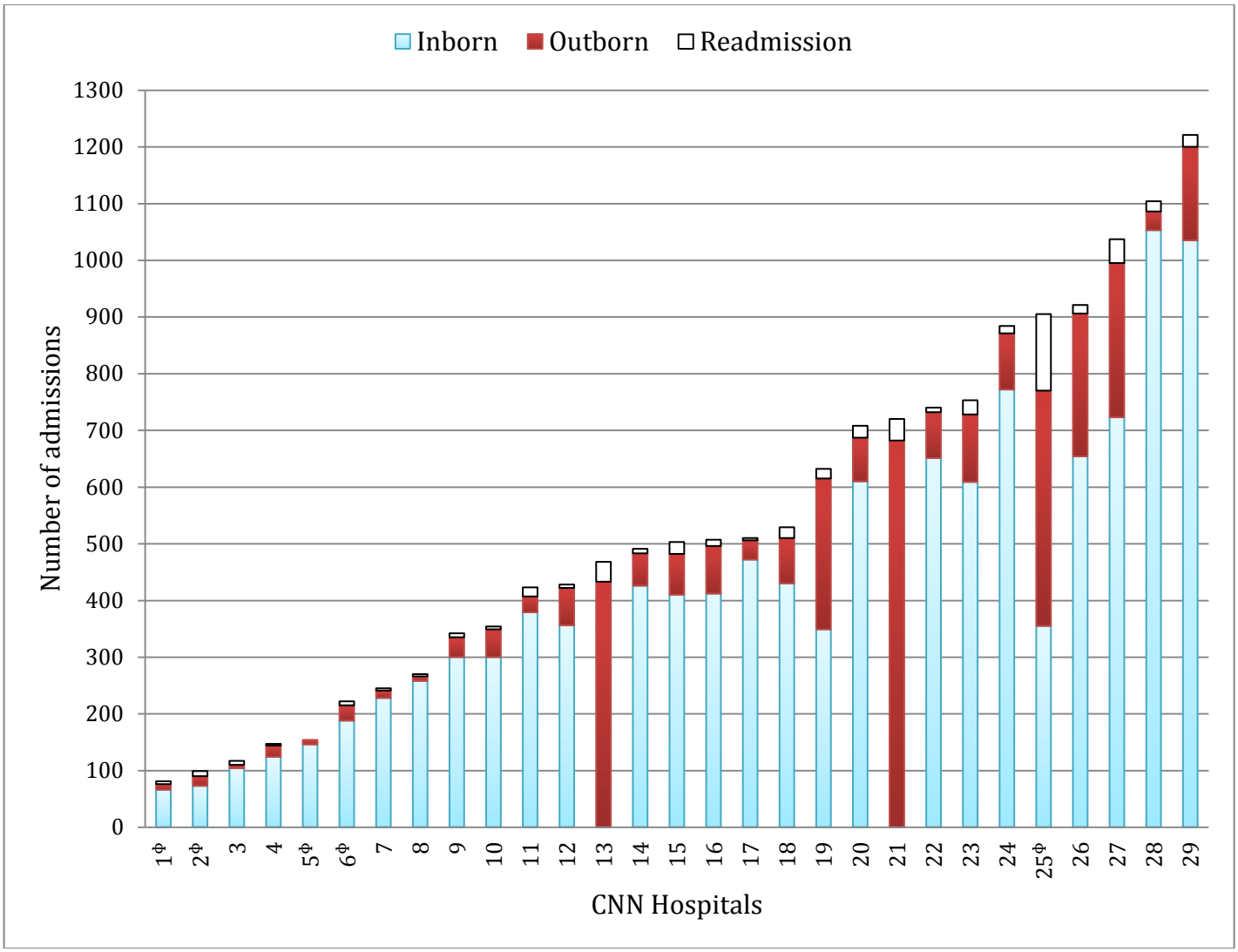


Section D.1

Analyses based on number of eligible admissions to participating sites

These include data from 15 520 eligible admissions (including readmissions) to 29 sites. 24 of these sites submitted complete data (n=14 059) on all admissions and 5 sites submitted data on a selected admission cohort (n=1 461).

Presentation #1
Admissions to Canadian Neonatal Network™ participating sites



Φ Data collected on selected cohort of eligible admissions only.

Presentation #1 (continued)
Admissions to Canadian Neonatal Network participating sites

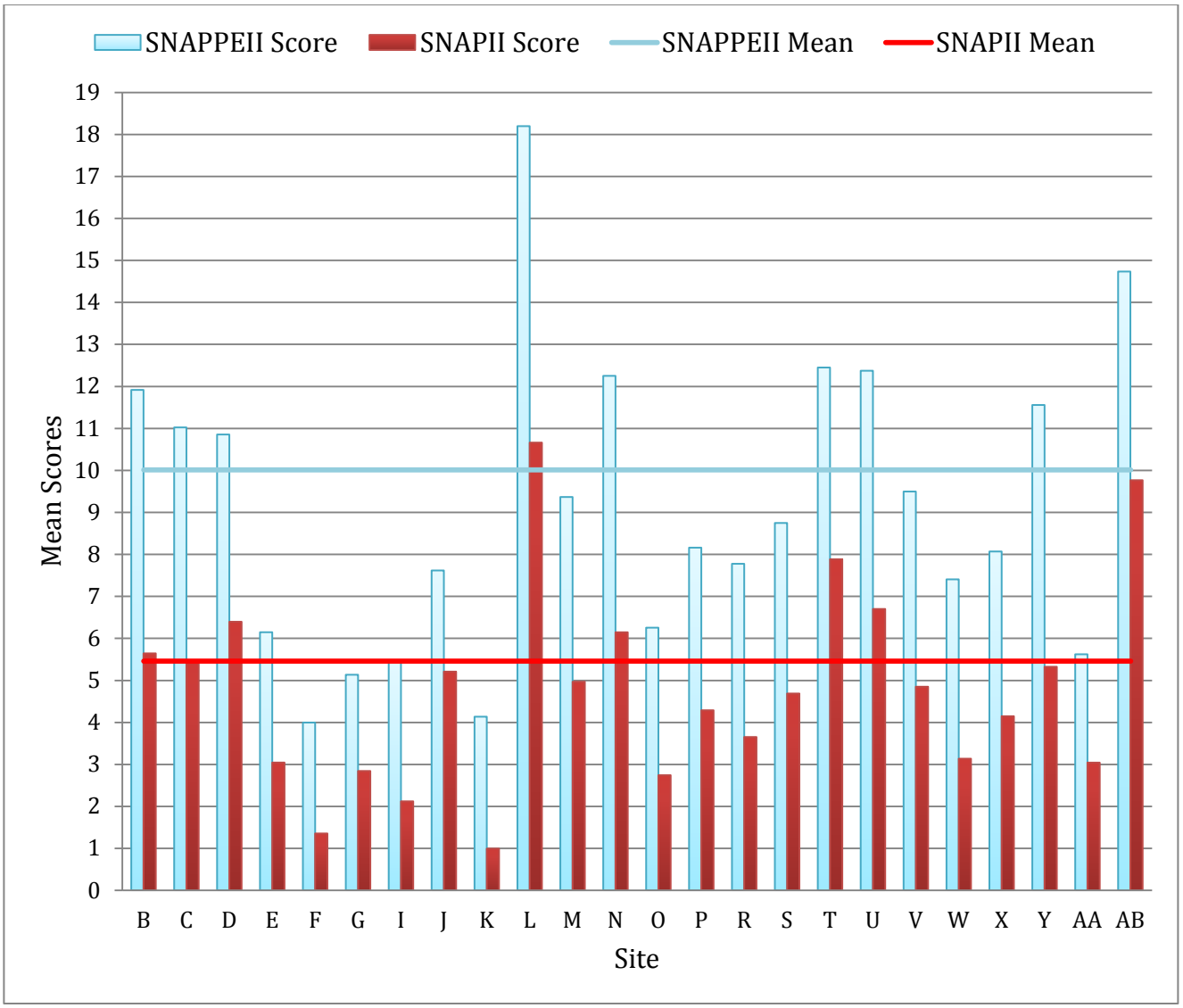
Sites		Admission Status			Total
		Inborn	Outborn	Readmission	
1ϕ	Count	66	10	5	81
	%	81.5	12.4	6.2	(100.0)
2ϕ	Count	73	17	9	99
	%	73.7	17.2	9.1	(100.0)
3	Count	104	6	7	117
	%	88.9	5.1	6.0	(100.0)
4	Count	124	20	3	147
	%	84.4	13.6	2.0	(100.0)
5ϕ	Count	146	8	0	154
	%	94.8	5.2	0.0	(100.0)
6ϕ	Count	188	27	7	222
	%	84.7	12.2	3.2	(100.0)
7	Count	228	13	4	245
	%	93.1	5.3	1.6	(100.0)
8	Count	258	8	4	270
	%	95.6	3.0	1.5	(100.0)
9	Count	300	35	7	342
	%	87.7	10.2	2.1	(100.0)
10	Count	300	49	5	354
	%	84.8	13.8	1.4	(100.0)
11	Count	379	28	16	423
	%	89.6	6.6	3.8	(100.0)
12	Count	356	66	6	428
	%	83.2	15.4	1.4	(100.0)
13	Count	0	433	35	468
	%	0.0	92.5	7.5	(100.0)
14	Count	426	57	8	491
	%	86.8	11.6	1.6	(100.0)
15	Count	410	72	21	503
	%	81.5	14.3	4.2	(100.0)

Sites		Admission status			Total
		Inborn	Outborn	Readmission	
16	Count	412	84	11	507
	%	81.3	16.6	2.2	(100.0)
17	Count	472	34	4	510
	%	92.6	6.7	0.8	(100.0)
18	Count	430	80	19	529
	%	81.3	15.1	3.6	(100.0)
19	Count	349	266	17	632
	%	55.2	42.1	2.7	(100.0)
20	Count	610	77	21	708
	%	86.2	10.9	3.0	(100.0)
21	Count	0	682	38	720
	%	0.0	94.7	5.3	(100.0)
22	Count	651	81	8	740
	%	88.0	11.0	1.1	(100.0)
23	Count	609	119	25	753
	%	80.9	15.8	3.3	(100.0)
24	Count	772	99	13	884
	%	87.3	11.2	1.5	(100.0)
25ϕ	Count	355	415	135	905
	%	39.2	45.9	14.9	(100.0)
26	Count	654	252	15	921
	%	71.0	27.4	1.6	(100.0)
27	Count	723	272	42	1037
	%	69.7	26.2	4.1	(100.0)
28	Count	1053	33	18	1104
	%	95.4	3.0	1.6	(100.0)
29	Count	1035	165	21	1221
	%	84.8	13.5	1.7	(100.0)

Total number of admissions: 15 520
Inborn: 11 488 (74.0%)
Outborn: 3 508 (22.6%)
Readmission: 524 (3.4%)
Missing data on admission status: 5 (0.03%)

COMMENTS: These analyses include 15 520 admissions to participating sites across Canada during the period of January 1, 2013 to December 31, 2013. Adjusting for readmission, these represent 14 494 Neonates. **Twenty-four sites collected data on all eligible admissions whereas five sites (marked by ϕ) collected data on selected cohort of eligible admissions only.**

Presentation #2
Admission illness severity scores (SNAP-II and SNAP-IIPE) by site
(only for sites that contributed data on all eligible admissions)
(n=24 sites, 14 059 admissions, 516 missing data on SNAP score)



Presentation #2 (continued)

Admission illness severity scores (SNAP-II and SNAP-IIPE) by site

Site		SNAP-IIPE	SNAP-II		Site		SNAP-IIPE	SNAP-II
Aϕ	Mean	16.4	7.8		**P**	Mean	8.2	4.3
	SEM	0.7	0.4			SEM	0.5	0.3
B	Mean	11.9	5.6		**Q**ϕ	Mean	13.2	8.5
	SEM	0.6	0.4			SEM	1.7	1.1
C	Mean	11.0	5.5		**R**	Mean	7.8	3.6
	SEM	0.8	0.5			SEM	0.7	0.4
D	Mean	10.9	6.4		**S**	Mean	8.7	4.7
	SEM	0.5	0.3			SEM	0.6	0.4
E	Mean	6.1	3.0		**T**	Mean	12.4	7.9
	SEM	0.4	0.3			SEM	0.5	0.3
F	Mean	4.0	1.4		**U**	Mean	12.4	6.7
	SEM	0.6	0.3			SEM	0.6	0.4
G	Mean	5.1	2.8		**V**	Mean	9.5	4.8
	SEM	0.6	0.4			SEM	0.6	0.4
Hϕ	Mean	20.5	11.5		**W**	Mean	7.4	3.1
	SEM	1.4	0.8			SEM	0.5	0.2
I	Mean	5.4	2.1		**X**	Mean	8.1	4.1
	SEM	0.6	0.3			SEM	0.6	0.3
J	Mean	7.6	5.2		**Y**	Mean	11.6	5.3
	SEM	0.6	0.4			SEM	0.7	0.5
K	Mean	4.1	1.0		**Z**ϕ	Mean	8.2	3.8
	SEM	0.8	0.3			SEM	1.1	0.6
L	Mean	18.2	10.7		**AA**	Mean	5.6	3.0
	SEM	0.8	0.5			SEM	0.6	0.4
M	Mean	9.4	5.0		**AB**	Mean	14.7	9.8
	SEM	1.3	0.8			SEM	0.6	0.3
N	Mean	12.2	6.1		**AC**ϕ	Mean	21.0	12.1
	SEM	0.7	0.4			SEM	1.9	1.2
O	Mean	6.3	2.7					
	SEM	0.6	0.3					

All eligible admissions overall (24 sites) – Mean (SEM): SNAP-IIPE 10.0 (0.1), SNAP-II 5.5 (0.1)
Selected admissions overall (5 sites) – Mean (SEM): SNAP-IIPE 16.9 (0.5), SNAP-II 8.6 (0.3)

COMMENTS: These analyses include 15 520 admissions (536 missing data on SNAP score) to participating sites across Canada during the year 2013. Adjusting for readmission, these analyses represent 14 494 Neonates. **Twenty-four 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.

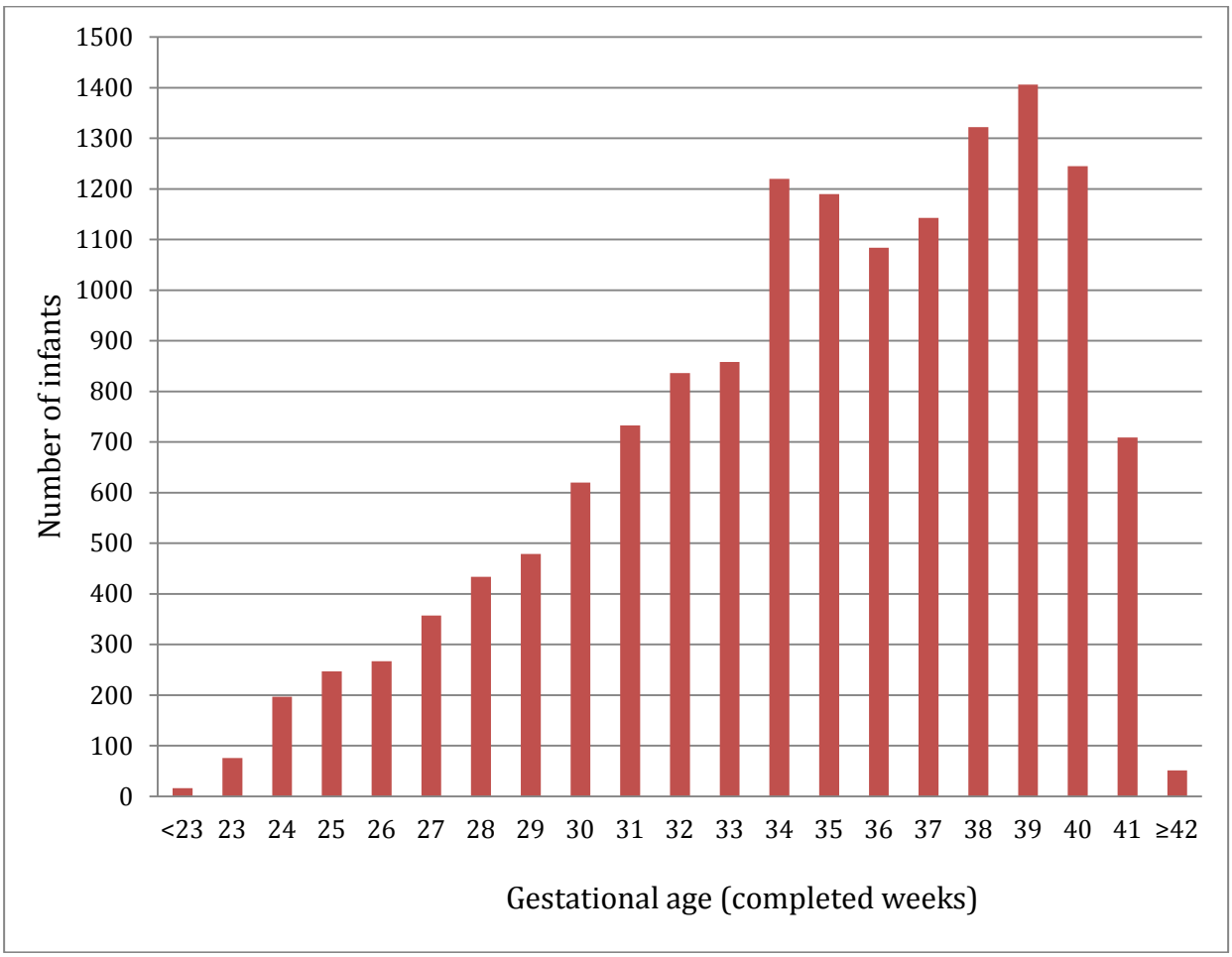
ϕ Please note that the criteria for entering neonates in the CNN dataset are not the same for these five sites and thus, the scores are not comparable with each other or with centers contributing complete data. These five sites may have included neonates at lower GAs and/or lower BWs; thus, their severity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

Section D.2

Analyses based on number of eligible neonates admitted to participating sites

These include data from 14 494 eligible neonates admitted to 29 sites. 24 of these sites submitted complete data (n=13 252) on all eligible admitted neonates and 5 sites submitted data on a selected cohort of eligible admitted neonates (n=1 242).

Presentation #3
Gestational age at birth

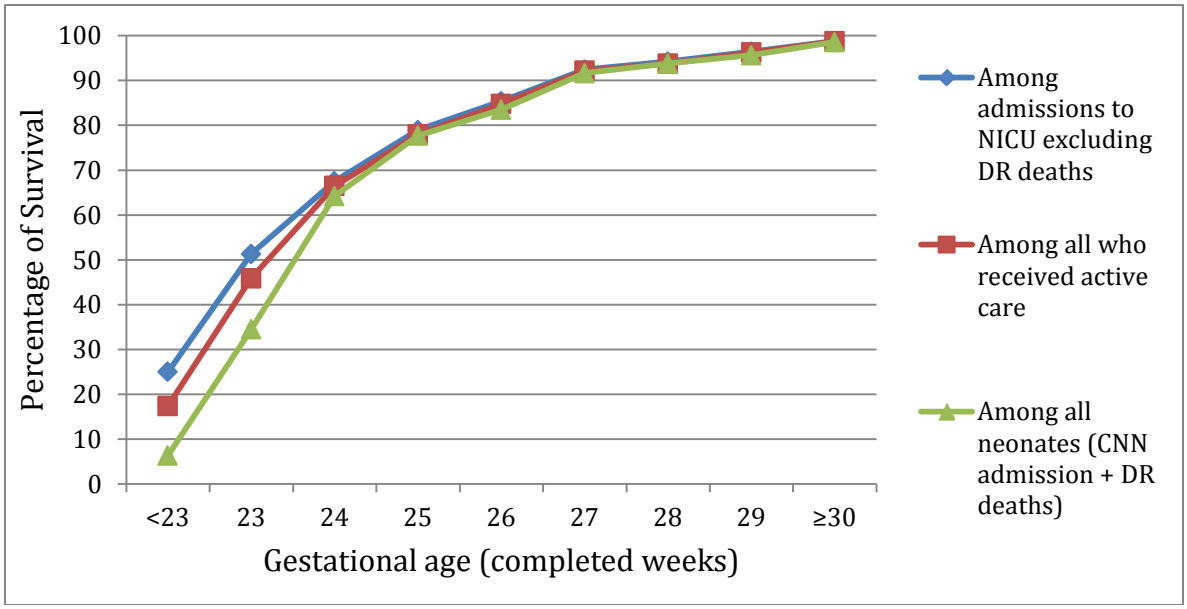


Presentation #3 (continued)
Gestational age at birth

GA in completed weeks at birth	Frequency	Percent	Cumulative percent
<23	16	0.1	0.1
23	76	0.5	0.6
24	197	1.4	2.0
25	247	1.7	3.7
26	267	1.8	5.5
27	357	2.5	8.0
28	434	3.0	11.0
29	479	3.3	14.3
30	620	4.3	18.6
31	733	5.1	23.6
32	836	5.8	29.4
33	858	5.9	35.3
34	1220	8.4	43.8
35	1190	8.2	52.0
36	1084	7.5	59.5
37	1143	7.9	67.3
38	1322	9.1	76.5
39	1406	9.7	86.2
40	1245	8.6	94.8
41	709	4.9	99.7
≥42	51	0.4	100.0
Total included	14 490	100.0	
Total # of missing (GA)	4		
Total # of infants	14 494		

COMMENTS: The GA distribution of neonates is shown here. Term babies (≥37 weeks) represent approximately 40.5% of the total number of neonates. Twenty-four sites collected data on all eligible admissions whereas five sites collected data on a selected cohort of eligible admissions.

Presentation #4
Gestational age at birth and survival to discharge (including delivery room deaths)

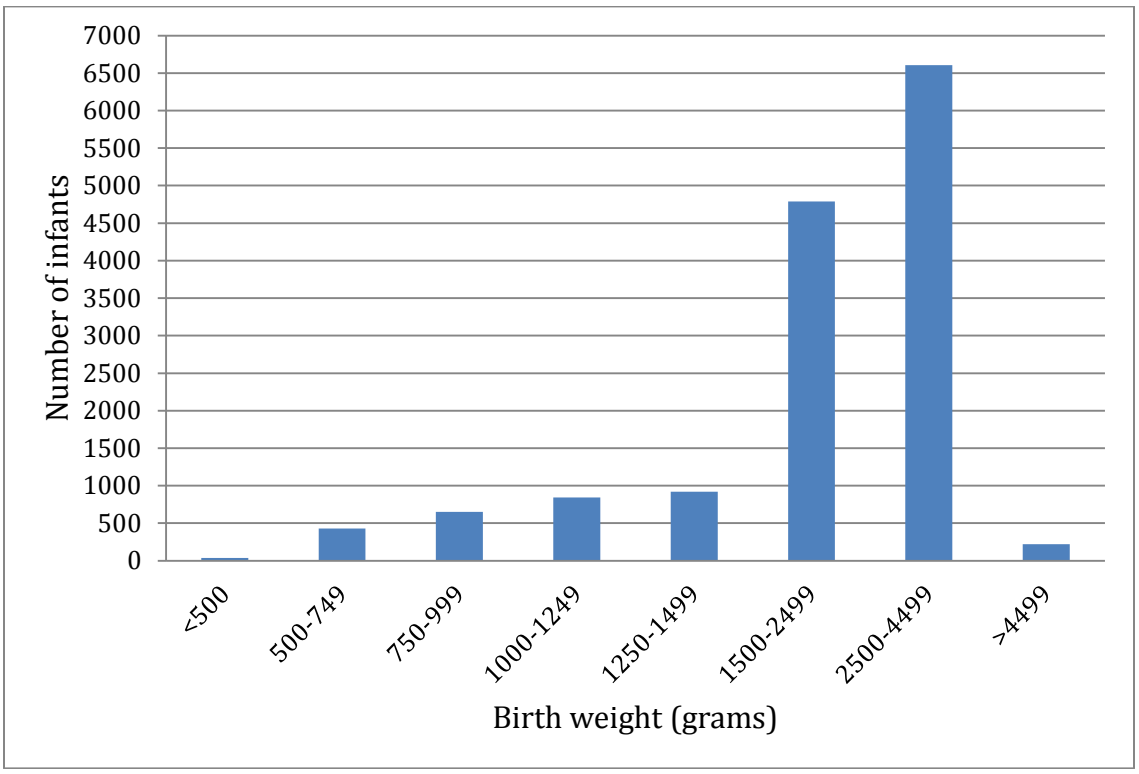


CNN admissions excluding delivery room deaths					Delivery room deaths*		Total CNN admissions including delivery room deaths*				
GA (completed weeks)	**Number of infants**	**Number of survivors**	**Percent survival among admission to NICU, excluding DR deaths**	**Number of infants who received palliative 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	16	4	25	0	40	7	63	40	23	17	6
23	76	39	51	0	28	9	113	28	85	46	35
24	197	133	68	1	6	4	207	7	200	67	64
25	247	195	79	0	1	3	251	1	250	78	78
26	267	228	85	0	4	2	273	4	269	85	84
27	357	330	92	1	1	2	360	2	358	92	92
28	434	409	94	0	0	2	436	0	436	94	94
29	479	462	96	0	3	1	483	3	480	96	96
≥30	12 417	12 266	99	7	14	12	12 443	21	12 422	99	99
Total included	14 490	14 066	97	9	97	42	14 629	106	14 523	97	96
Total # of missing (GA)	4				2	1	7	2	5		
Total # of infants	**14 494**				**99**	**43**	**14 636**	**108**	**14 528**		

***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.

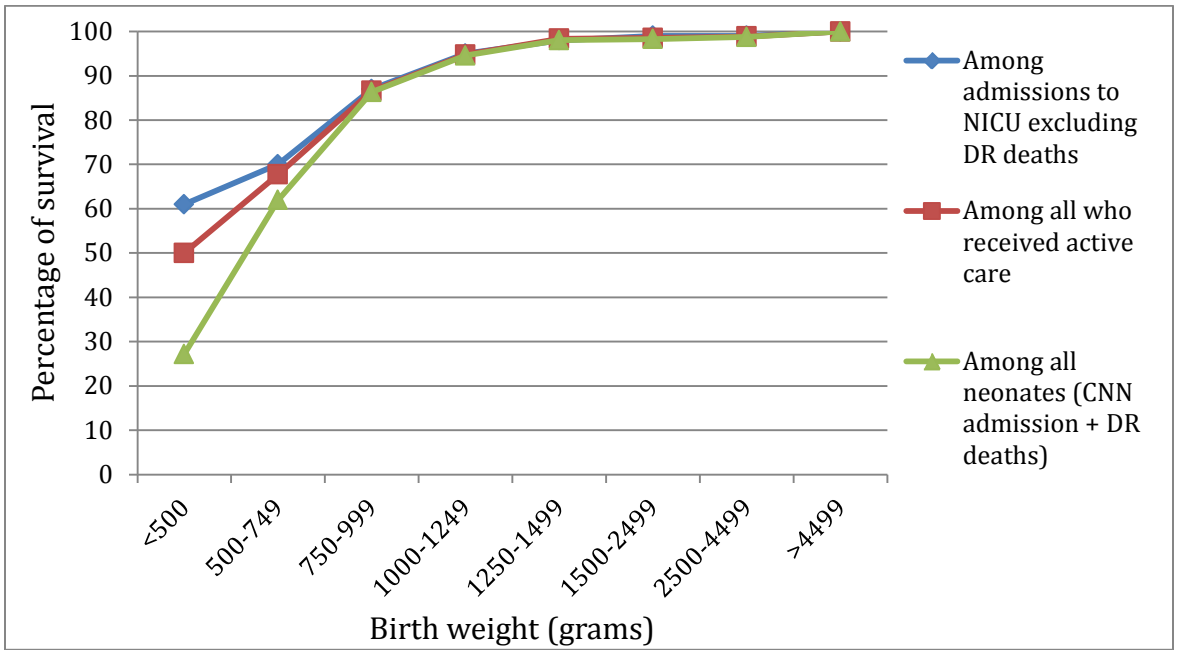
Presentation #5
Birth weight distribution



BW (grams)	Frequency	Percent from total number of neonates	Cumulative percent
<500	36	0.3	0.3
500-749	428	3.0	3.2
750-999	651	4.5	7.7
1000-1249	842	5.8	13.5
1250-1499	919	6.3	19.9
1500-2499	4788	33.1	52.9
2500-4499	6605	45.6	98.5
>4499	219	1.5	100.0
Total included	14 488	100.0	
Missing (BW)	6		
Total # of neonates	14 494		

COMMENTS: The BW distribution of neonates admitted to the sites. Seventy percent weighed more than 1 500g at birth and 47% weighed more than 2 500g. Twenty-four sites collected data on all admissions whereas five sites collected data on a selected cohort of eligible admissions only.

Presentation #6
Birth weight and survival to discharge (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	36	22	61	0	37	8	81	37	44	50	27
500-749	428	298	70	1	40	13	481	41	440	68	62
750-999	651	568	87	1	1	6	658	2	656	87	86
1000-1249	842	801	95	0	2	3	847	2	845	95	95
1250-1499	919	904	98	1	2	1	922	3	919	98	98
1500-2499	4 788	4 723	99	2	10	7	4 805	12	4 793	99	98
2500-4499	6 605	6 529	99	4	3	3	6 611	7	6 604	99	99
>4499	219	219	100	0	0	0	219	0	219	100	100
Total included	14 488	14 064	97	9	95	41	14 624	104	14 520	97	96
Missing (BW)	6				4	2	12	4	8		
Total # of neonates	14 494				**99**	**43**	**14 636**	**99**	**14 537**		

***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 #7
Maternal characteristics

Characteristics					**GA at birth (completed weeks)**			
		Missing	**Unknown**		**<33**	**33 - 36**	**≥37**	**Total**
Total		4			**4262**	**4352**	**5867**	**14490**
No prenatal care		77	563	N	63	42	47	152
				%	1.6	1.0	0.8	1.1
Illicit drug use		5		N	212	171	383	766
				%	5.0	3.9	6.5	5.3
Smoking		5		N	562	566	771	1899
				%	13.2	13.0	13.1	13.1
Maternal hypertension		73	352	N	749	828	476	2053
				%	18.4	19.4	8.3	14.6
Maternal diabetes		74	430	N	496	661	735	1892
				%	12.3	15.6	12.9	13.5
Assisted pregnancy		75	401	N	627	484	225	1336
				%	15.3	11.4	4.0	9.5
Multiples		4		N	1380	1254	186	2820
				%	32.4	28.8	3.2	19.5
$MgSO_4$ for neuroprotection		73	605	N	1831	318	50	2199
				%	45.9	7.7	0.9	15.9
Prenatal steroids	None	420		N	506	2720	5593	8819
				%	12.3	64.2	97.8	62.7
	Partial			N	822	222	7	1051
				%	20.0	5.2	0.1	7.5
	Complete			N	2786	1296	122	4204
				%	67.7	30.6	2.1	29.9
Mode of birth	Vaginal	13	30	N	1699	2142	3609	7450
				%	40.0	49.3	61.6	51.6
	C/S			N	2549	2200	2252	7001
				%	60.0	50.7	38.4	48.4
Presentation	Vertex	71	572	N	2677	3386	5251	11314
				%	66.3	81.3	92.9	81.7
	Breech			N	1138	692	330	2160
				%	28.2	16.6	5.8	15.6
	Other			N	220	88	69	377
				%	5.5	2.1	1.2	2.7
Rupture of membranes	<24 h	73	475	N	3205	3706	5278	12189
				%	78.7	87.7	93.5	87.4
	24h to 1wk			N	510	362	360	1232
				%	12.5	8.6	6.4	8.8
	>1 wk			N	357	158	10	525
				%	8.8	3.7	0.2	3.8

Presentation #7 (continued)
Maternal characteristics

Characteristics					**GA at birth (completed weeks)**			
		Missing	**Unknown**		**<33**	**33 - 36**	**≥37**	**Total**
Total					**4262**	**4352**	**5867**	**14490**
Chorioamnionitis*		5	4334	N	589	149	339	1077
				%	19.5	4.6	8.7	10.6
Antenatal interventions**		2244	216	N	126	80	41	247
				%	3.6	2.2	0.8	2.1
Delayed cord clamping	≤ 29 sec	634	4349	N	87	28	12	127
				%	2.9	1.0	0.3	1.3
	30-44 sec			N	155	113	30	298
				%	5.2	3.9	0.8	3.1
	≥45 sec			N	765	503	139	1407
				%	25.7	17.3	3.8	14.8
	Yes, but timing unknown			N	72	84	60	216
				%	2.4	2.9	1.7	2.3
	No			N	1895	2172	3392	7459
				%	63.7	74.9	93.4	78.5

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

** Antenatal interventions include Fetal transfusion, Fetal reduction, Laser ablation, Amnioreduction, Shunt placement etc.

Presentation #8
Resuscitation (GA < 31 weeks)

Action taken			**GA at birth (completed weeks)**								
			≤23	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**Total**
Total			**92**	**197**	**247**	**267**	**357**	**434**	**479**	**620**	**2693**
Palliative		N	0	1	0	0	1	0	0	0	2
		%	0.0	0.5	0.0	0.0	0.3	0.0	0.0	0.0	0.1
No resuscitation needed/provided		N	1	0	4	1	4	9	28	65	112
		%	1.1	0.0	1.6	0.4	1.1	2.1	5.9	10.5	4.2
CPAP only		N	15	32	61	94	178	213	253	317	1163
		%	16.3	16.2	24.7	35.2	49.9	49.1	52.9	51.1	43.2
PPV via mask		N	74	150	173	192	237	286	288	307	1707
		%	80.4	76.1	70.0	71.9	66.4	65.9	60.3	49.5	63.4
PPV via ETT		N	81	166	176	169	152	153	107	91	1095
		%	88.0	84.3	71.3	63.3	42.6	35.3	22.4	14.7	40.7
Chest compression		N	14	10	18	13	13	17	13	15	113
		%	15.2	5.1	7.3	4.9	3.6	3.9	2.7	2.4	4.2
Epinephrine		N	4	6	7	8	7	3	4	2	41
		%	4.4	3.1	2.8	3.0	2.0	0.7	0.8	0.3	1.5
Unknown		N	2	2	4	5	2	3	8	7	33
		%	2.2	1.0	1.6	1.9	0.6	0.7	1.7	1.1	1.2
Any resuscitation provided*		N	89	194	238	260	345	411	413	496	2446
		%	96.7	98.5	96.4	97.4	96.6	94.7	86.4	80.0	90.9
Initial gas	Air	N	9	34	32	44	69	99	154	176	617
		%	9.8	17.3	13.0	16.5	19.3	22.8	32.2	28.4	22.9
	Suppl. O_2	N	40	81	125	144	189	229	189	227	1224
		%	43.5	41.1	50.6	53.9	52.9	52.8	39.5	36.6	45.5
	100% O_2	N	28	58	48	45	51	42	34	35	341
		%	30.4	29.4	19.4	16.9	14.3	9.7	7.1	5.7	12.7
	Unknown	N	9	20	31	28	36	37	50	64	275
		%	9.8	10.2	12.6	10.5	10.1	8.5	10.4	10.3	10.2
	Missing	N	6	4	11	6	12	27	52	118	236
		%	6.5	2.0	4.5	2.3	3.4	6.2	10.9	19.0	8.8
Maximum O_2 conc. during resus.	21%	N	0	0	1	1	1	11	15	21	50
		%	0.0	0.0	0.4	0.4	0.3	2.5	3.1	3.4	1.9
	22-40%	N	9	17	31	56	84	134	128	172	631
		%	9.8	8.6	12.6	21.0	23.5	30.9	26.7	27.7	23.4
	41-70%	N	8	28	41	45	70	85	93	104	474
		%	8.7	14.2	16.6	16.9	19.6	19.6	19.4	16.8	17.6
	>70%	N	64	127	139	125	150	140	119	133	997
		%	69.6	64.5	56.3	46.8	42.0	32.3	24.8	21.5	37.0
	Missing	N	11	25	35	40	52	64	124	190	541
		%	12.0	12.7	14.2	15.0	14.6	14.8	25.9	30.7	20.1

* 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.

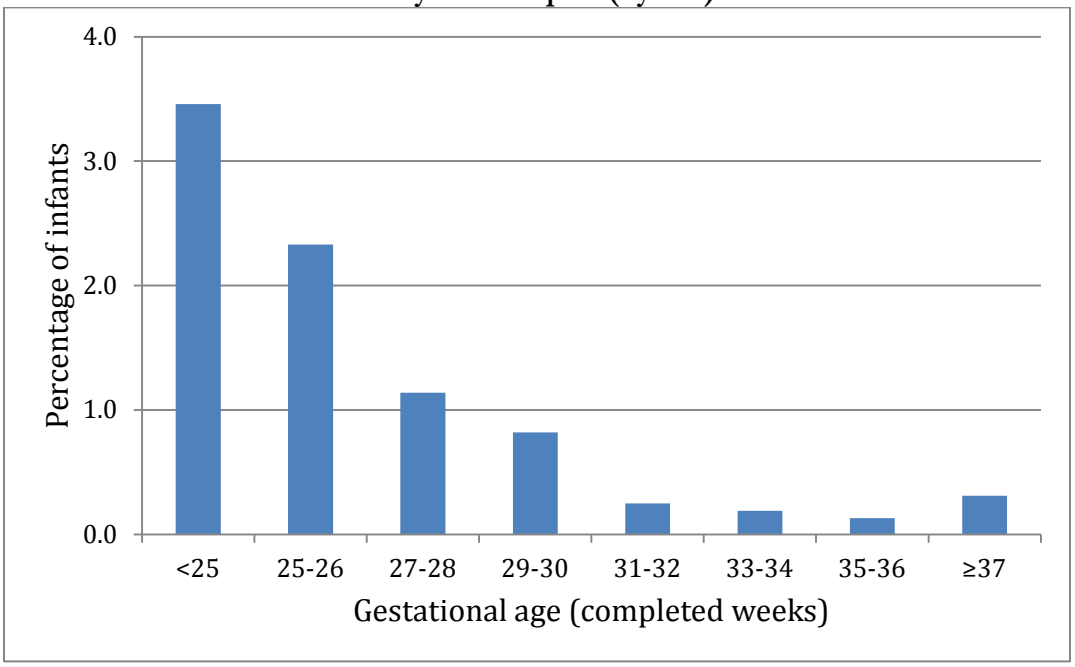
Presentation #8 (continued)
Resuscitation (GA ≥ 31 weeks)

Action taken			**GA at birth (completed weeks)**							
			31	**32**	**33**	**34**	**35**	**36**	**≥37**	**Total**
Total			**733**	**836**	**858**	**1220**	**1190**	**1084**	**5876**	**11797**
Palliative		N	0	0	1	1	1	2	2	7
		%	0.0	0.0	0.1	0.1	0.1	0.2	0.0	0.1
No resuscitation needed / provided		N	126	163	243	416	466	419	2186	4019
		%	17.2	19.5	28.3	34.1	39.2	38.7	37.2	34.1
CPAP only		N	347	358	236	283	231	183	1001	2639
		%	47.3	42.8	27.5	23.2	19.4	16.9	17.0	22.8
PPV via mask		N	309	325	251	281	285	214	1645	3310
		%	42.2	38.9	29.3	23.1	24.0	19.7	28.0	28.1
PPV via ETT		N	96	72	49	42	56	63	507	885
		%	13.1	8.6	5.7	3.5	4.7	5.8	8.6	7.5
Chest compression		N	24	22	11	11	19	17	165	269
		%	3.3	2.6	1.3	0.9	1.6	1.6	2.8	2.3
Epinephrine		N	8	10	4	6	9	6	70	113
		%	1.1	1.2	0.5	0.5	0.8	0.6	1.2	1.0
Unknown		N	5	7	10	14	14	22	118	190
		%	0.7	0.8	1.2	1.2	1.2	2.0	2.0	1.6
Any resuscitation provided*		N	514	549	400	464	423	355	2318	5023
		%	70.1	65.7	46.6	38.1	35.6	32.8	39.5	42.6
Initial gas	Air	N	198	240	206	271	243	214	1258	2630
		%	27.0	28.7	24.0	22.2	20.4	19.7	21.4	22.3
	Suppl. O_2	N	244	238	163	184	168	132	721	1850
		%	33.3	28.5	19.0	15.1	14.1	12.2	12.3	15.7
	100% O_2	N	36	34	33	43	45	47	320	558
		%	4.9	4.1	3.9	3.5	3.8	4.3	5.5	4.7
	Unknown	N	61	79	78	123	103	111	690	1245
		%	8.3	9.5	9.1	10.1	8.7	10.2	11.7	10.6
	Missing	N	194	245	378	599	631	580	2887	5514
		%	26.5	29.3	44.1	49.1	53.0	53.5	49.1	46.7
Maximum O_2 conc. during resus	21%	N	35	38	64	113	107	103	469	929
		%	4.8	4.6	7.5	9.3	9.0	9.5	8.0	7.9
	22-40%	N	180	190	146	176	144	106	547	1489
		%	24.6	22.7	17.0	14.4	12.1	9.8	9.3	12.6
	41-70%	N	102	112	61	61	52	56	276	720
		%	13.9	13.4	7.1	5.0	4.4	5.2	4.7	6.1
	>70%	N	124	111	98	112	115	105	761	1426
		%	16.9	13.3	11.4	9.2	9.7	9.7	13.0	12.1
	Missing	N	292	385	489	758	772	714	3823	7233
		%	39.8	46.1	57.0	62.1	64.9	65.9	65.1	61.3

* 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.

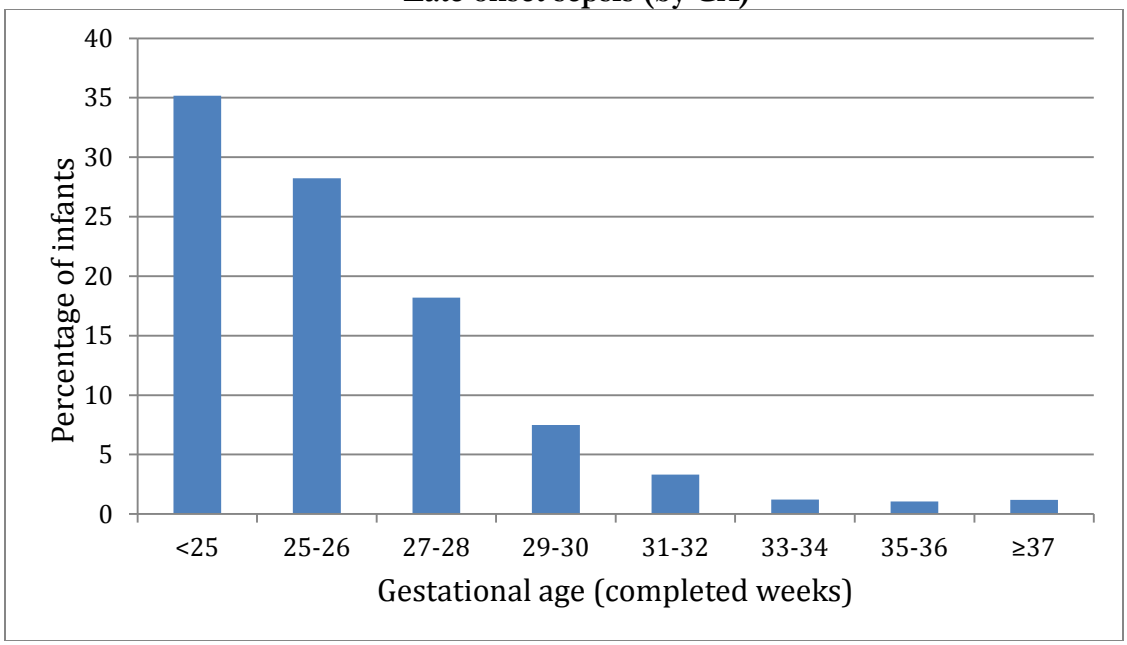
Presentation #9
Early onset sepsis (by GA)



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	289	10	3.5	10	5	1	4
25-26	514	12	2.3	13	5	5	3
27-28	791	9	1.1	9	4	2	3
29-30	1 096	9	0.8	9	5	1	3
31-32	1 569	4	0.3	4	1	0	3
33-34	2 078	4	0.2	4	3	0	1
35-36	2 274	3	0.1	3	0	2	1
≥37	5 876	18	0.3	18	2	3	13
Total included	**14 487**	**69**	**0.5**	**70**	**25**	**14**	**31**
Missing	**7**						
Total # of neonates	**14 494**						

COMMENTS: Early onset sepsis is indicated by positive bacterial, viral or fungal culture in blood and/or cerebrospinal fluid, in the first two days after birth. Two neonates had two organisms isolated. In other category, top five organisms were: Streptococci (n=6), Haemophilus influenza (n=5), Cytomegalovirus (n=5), Enterococci (n=4), Staphylococci (n=3). 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.

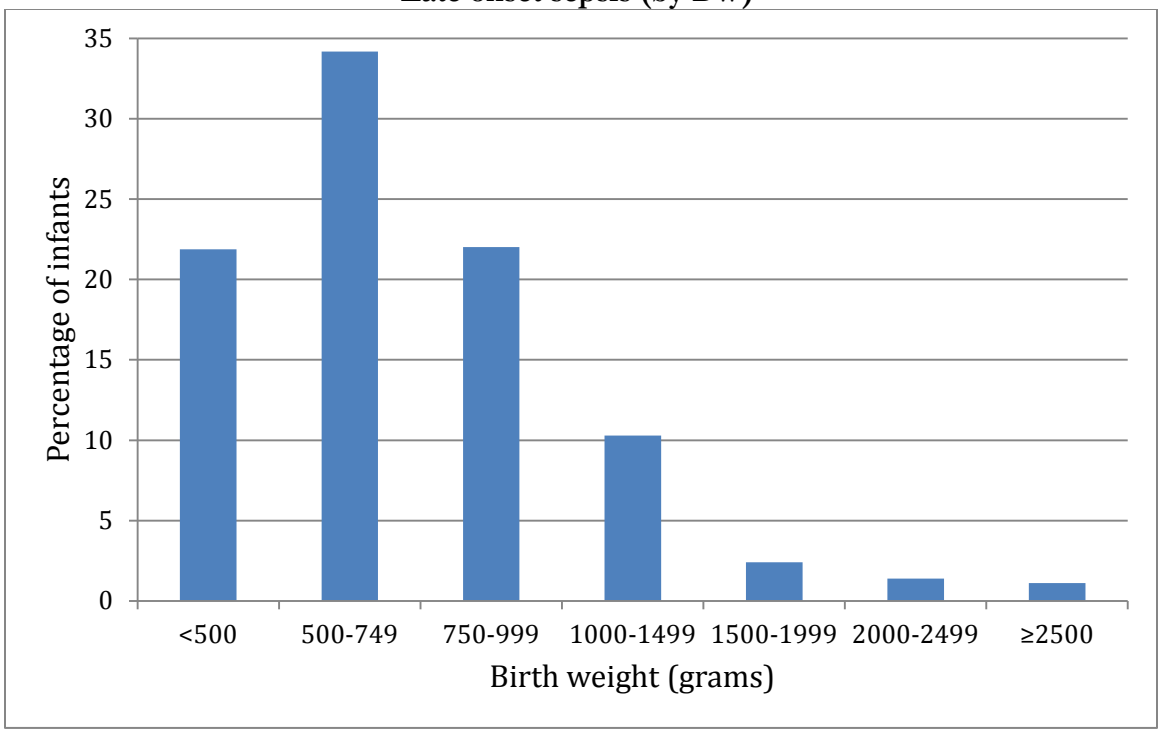
Presentation #10
Late onset sepsis (by GA)



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	289	36	253	89	23	35	123	56	15	7	11	34
25-26	514	11	503	142	22	28	173	113	15	13	7	25
27-28	791	11	780	142	17	18	168	98	18	10	1	41
29-30	1 099	5	1 094	82	11	7	98	63	5	5	0	25
31-32	1 569	3	1 566	52	0	3	52	39	1	2	0	10
33-34	2 078	5	2 073	25	4	1	30	20	3	3	0	4
35-36	2 274	11	2 263	24	2	1	29	12	3	3	0	11
≥37	5 876	15	5 861	70	6	1	85	31	7	8	1	38
Total included	14 490	97	14 393	626	85	4	758	432	67	51	20	188
Missing (GA)	4											
Total # of neonates	**14 494**											

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: Staphylococci (n=34), Enterococci (n=32), GBS (n=30), Klebsiella (n=26), Candida albicans (n=17).

Presentation #11
Late onset sepsis (by 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	36	4	32	7	4	22	12	8	0	1	2	1
500-749	428	33	395	135	22	34	169	91	17	16	9	36
750-999	651	15	636	140	24	22	174	109	13	8	5	39
1000-1499	1 761	11	1 750	180	23	10	214	128	22	13	3	48
1500-1999	2 256	6	2 250	54	1	2	55	40	2	1	0	12
2000-2499	2 532	6	2 526	35	5	1	42	21	3	5	0	13
≥2500	6 824	22	6 802	75	6	1	92	35	10	7	1	39
Total included	14 488	97	14 391	626	85	4	758	432	67	51	20	188
Missing (BW)	6											
Total # of neonates	**14 494**											

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: Staphylococci (n=34), Enterococci (n=32), GBS (n=30), Klebsiella (n=26), Candida albicans (n=17).

Presentation #12
Other diagnoses / interventions / procedures by GA groups

Characteristics				**GA at birth (completed weeks)**						
				≤25	**26 - 28**	**29 - 30**	**31 - 32**	**33 - 36**	**≥37**	**Total**
Total				536	1058	1099	1569	4352	5876	14490
		Missing								
Prophylactic	Indomethacin	2	N	103	43	6	2	1	1	156
			%	19.2	4.1	0.6	0.1	0.0	0.0	1.1
	HFV	2	N	18	27	6	1	1	3	56
			%	3.4	2.6	0.6	0.1	0.0	0.1	0.4
	Probiotics	2	N	25	61	70	84	8	0	248
			%	4.7	5.8	6.4	5.4	0.2	0.0	1.7
	Phototherapy	2	N	54	99	73	78	185	96	585
			%	10.1	9.4	6.6	5.0	4.3	1.6	4.0
	L-Arginine	2	N	11	29	6	3	1	0	50
			%	2.1	2.7	0.6	0.2	0.0	0.0	0.3
RDS	Unknown	64	N	1	1	1	0	4	3	10
			%	0.2	0.1	0.1	0.0	0.1	0.1	0.1
	Uncertain		N	11	31	25	48	64	39	218
			%	2.1	2.9	2.4	3.1	1.5	0.7	1.5
	None		N	36	172	425	960	3751	5662	11006
			%	6.7	16.3	40.1	62.1	86.2	96.4	76.3
	Definite		N	488	854	610	539	531	170	3192
			%	91.0	80.7	57.5	34.8	12.2	2.9	22.1
Surfactant in first 30 min			N	177	165	55	25	8	0	430
			%	33.0	15.6	5.0	1.6	0.2	0.0	3.0
Surfactant at any time			N	460	672	394	303	287	152	2268
			%	85.8	63.5	35.9	19.3	6.6	2.6	15.7
Pneumothorax diagnosis		2	N	34	49	30	31	136	331	611
			%	6.3	4.6	2.7	2.0	3.1	5.6	4.2
Pneumothorax treatment**	Observation	2	N	8	15	5	8	62	224	322
			%	1.5	1.4	0.5	0.5	1.4	3.8	2.2
	Needle drainage	2	N	14	21	10	9	24	40	118
			%	2.6	2.0	0.9	0.6	0.6	0.7	0.8
	Chest tube	2	N	21	31	25	21	65	66	229
			%	3.9	2.9	2.3	1.3	1.5	1.1	1.6
	100% O_2	2	N	4	8	3	3	10	32	60
			%	0.8	0.8	0.3	0.2	0.2	0.5	0.4
Seizures	Definite /suspected	63	N	42	25	16	21	64	396	564
			%	7.8	2.4	1.5	1.4	1.5	6.7	3.9

** One infant can have multiple treatments

Presentation #12 (continued)
Other diagnoses / interventions / procedures by GA groups

Characteristics				**GA at birth (completed weeks)**						
				≤25	**26 - 28**	**29 - 30**	**31 - 32**	**33 - 36**	**≥37**	**Total**
Total				536	1058	1099	1569	4352	5876	14490
		Missing								
Operations	Laparotomy	2	N	49	43	29	27	119	191	458
			%	9.1	4.1	2.6	1.7	2.7	3.3	3.2
	Thoracotomy	2	N	7	10	5	9	33	117	181
			%	1.3	1.0	0.5	0.6	0.8	2.0	1.2
	VP shunt	2	N	9	10	6	1	6	11	43
			%	1.7	1.0	0.6	0.1	0.1	0.2	0.3
Gastro-intestinal perforation	Spontaneous	152	N	17	10	8	4	11	11	61
			%	3.2	1.0	0.8	0.3	0.3	0.2	0.4
	NEC related		N	30	15	8	10	8	3	74
			%	5.6	1.4	0.8	0.7	0.2	0.1	0.5
Acquired stricture		2	N	8	3	5	4	5	2	27
			%	1.5	0.3	0.5	0.3	0.1	0.0	0.2
Acute bilirubin encephalopathy		2	N	0	1	1	1	1	8	12
			%	0.0	0.1	0.1	0.1	0.0	0.1	0.1
Exchange transfusion		2	N	0	0	2	4	2	18	26
			%	0.0	0.0	0.2	0.3	0.1	0.3	0.2
Congenital anomaly*	None		N	410	830	920	1362	3651	4378	11551
			%	76.5	78.5	83.7	86.8	83.9	74.5	79.7
	Minor		N	102	171	126	135	378	711	1623
			%	19.0	16.2	11.5	8.6	8.7	12.1	11.2
	Major		N	24	57	53	72	323	787	1316
			%	4.5	5.4	4.8	4.6	7.4	13.4	9.1

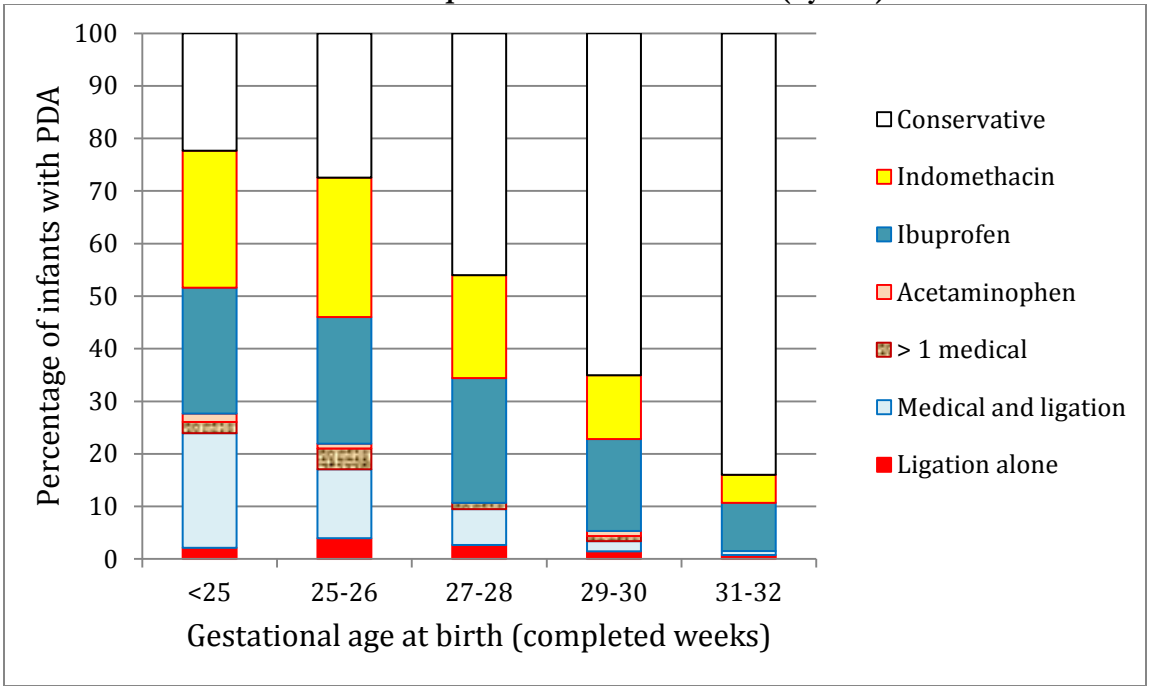
* Please see appendix in section M for detailed description of congenital anomaly classifications

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 4 262 eligible very preterm neonates and 2 876 eligible VLBW neonates.

Presentation #13
Treatment of patent ductus arteriosus (by GA)

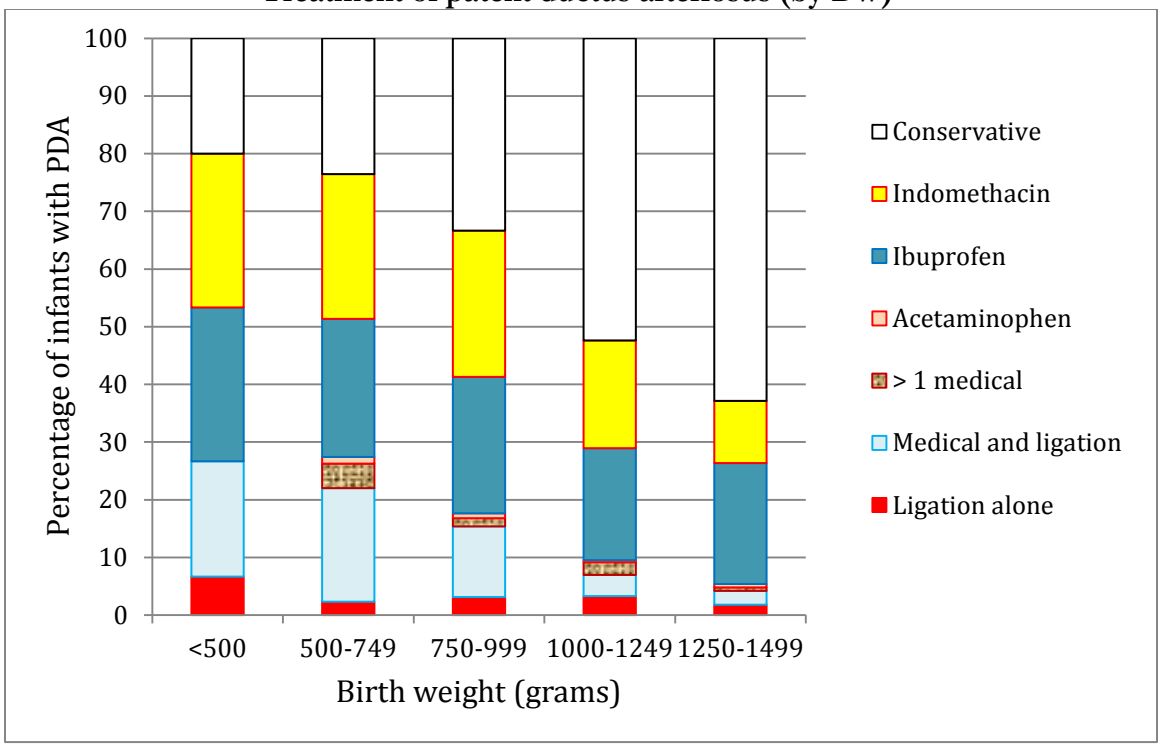


Birth GA (completed weeks)		Total	PDA information unknown	No PDA	Neonates with PDA	Treatment†						
						Conservative	Indo	Ibu	Acetaminophen	> 1 medical*	Medical and ligation#	Ligation alone
<25	**N**	289	24	77	188	42	49	45	3	4	41	4
	%					22%	26%	24%	2%	2%	22%	2%
25-26	**N**	514	10	176	328	90	87	79	3	13	43	13
	%					27%	27%	24%	1%	4%	13%	4%
27-28	**N**	791	8	446	337	155	66	80	0	4	23	9
	%					46%	20%	24%	0%	1%	7%	3%
29-30	**N**	1099	5	888	206	134	25	36	2	2	4	3
	%					65%	12%	17%	1%	1%	2%	1%
31-32	**N**	1569	7	1431	131	110	7	12	0	0	1	1
	%					84%	5%	9%	0%	0%	1%	1%
Total included	**N**	4262	54	3018	1190	531	234	252	8	23	112	30
	%					45%	20%	21%	1%	2%	9%	3%

†The percentages of treatment of patent ductus arteriosus are calculated out of number of neonates with diagnosed 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
Treatment of patent ductus arteriosus (by BW)

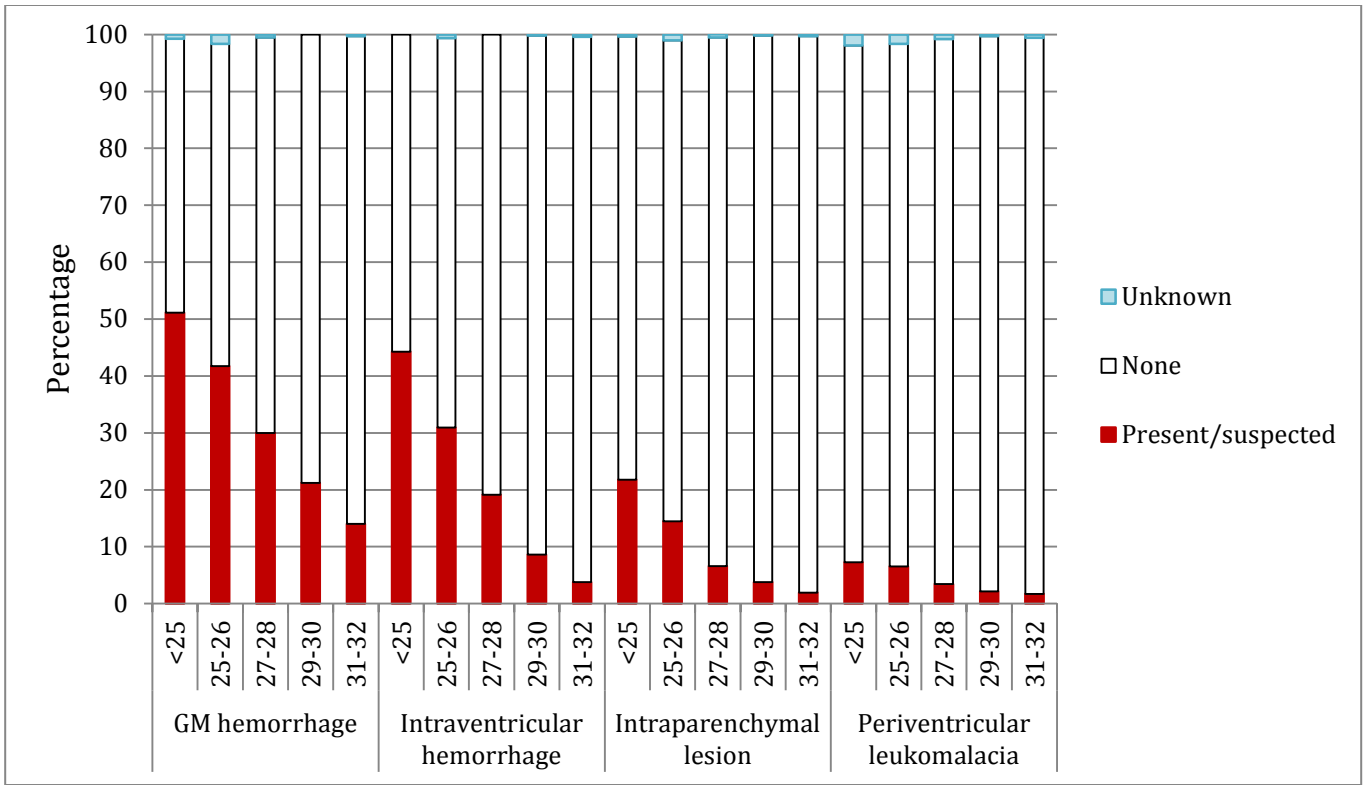


BW (grams)		Total	PDA information unknown	No PDA	Neonates with PDA	Treatment†						
						Conservative	Indo	Ibu	Acetaminophen	> 1 medical*	Medical and ligation#	Ligation alone
<500	**N**	36	3	18	15	3	4	4	0	0	3	1
	%					20%	27%	27%	0%	0%	20%	7%
500-749	**N**	428	23	146	259	61	65	62	3	11	51	6
	%					24%	25%	24%	1%	4%	20%	2%
750-999	**N**	651	13	287	351	117	89	83	3	5	43	11
	%					33%	25%	24%	1%	1%	12%	3%
1000-1249	**N**	842	4	565	273	143	51	53	1	6	10	9
	%					52%	19%	19%	0%	2%	4%	3%
1250-1499	**N**	919	5	747	167	105	18	35	1	1	4	3
	%					63%	11%	21%	1%	1%	2%	2%
Total included	**N**	2876	48	1763	1065	429	227	237	8	23	111	30
	%					40%	21%	22%	1%	2%	10%	3%

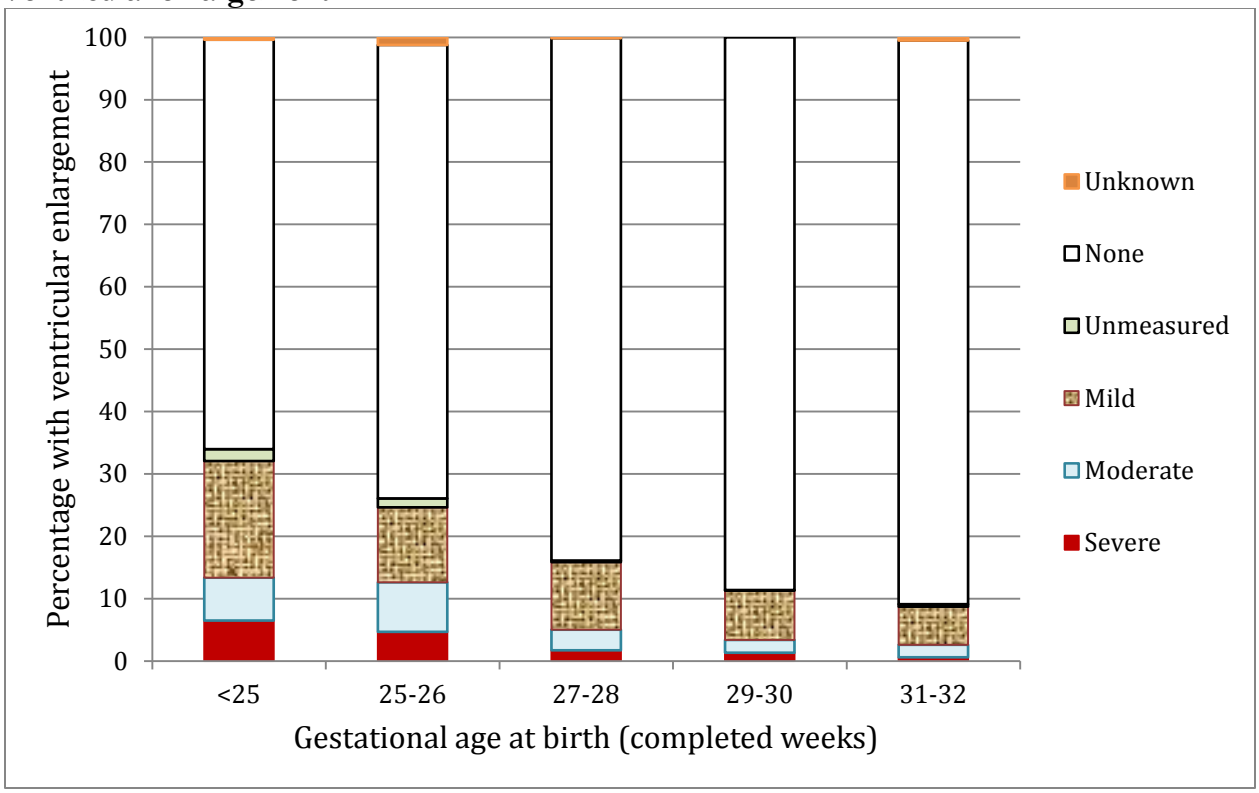
†The percentages of treatment of patent ductus arteriosus are calculated out of number of neonates with diagnosed PDA.
*>1 medical = 2 or 3 of (Indomethacin or Ibuprofen or Acetaminophen)
#Medical and ligation = Ligation + at least one of (Indomethacin or Ibuprofen or Acetaminophen)

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 (by GA)



Ventricular enlargement

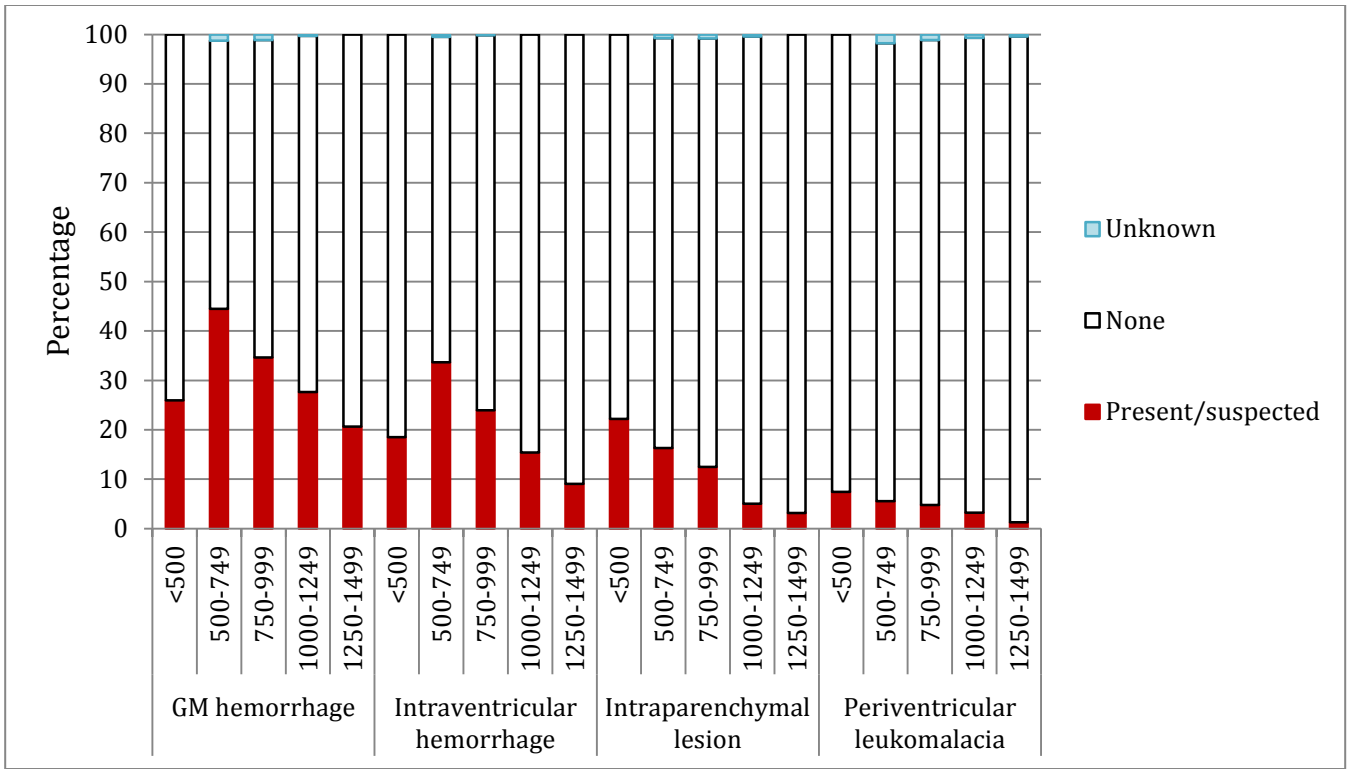


Presentation #15 (continued)
Neuroimaging findings (by GA)

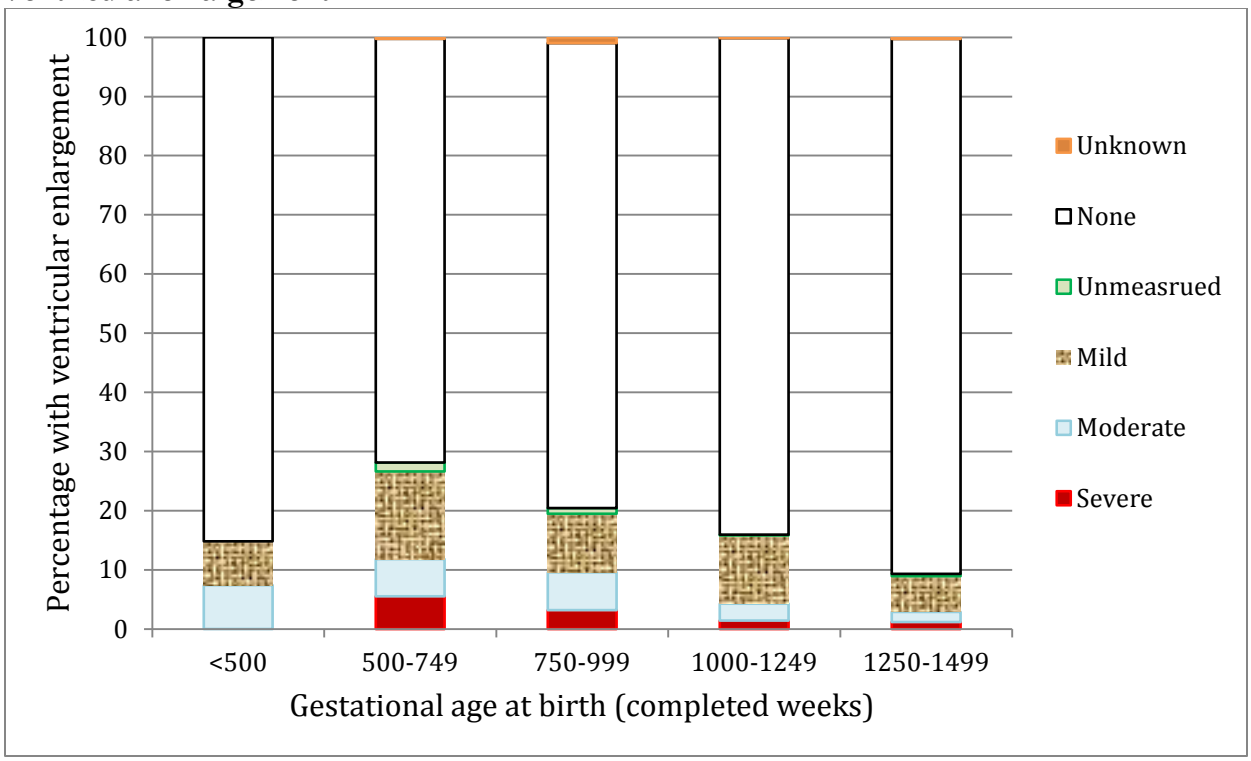
GA at birth (completed weeks)		Total number	Neuro-imaging available	Neuroimaging findings																
				GM hemorrhage			Intraventricular hemorrhage			Ventricular enlargement						Intraparenchymal lesion			Periventricular leukomalacia		
				Present/suspected	None	Unknown	Present/suspected	None	Unknown	Mild	Moderate	Severe	Unmeasured	None	Unknown	Present/suspected	None	Unknown	Present/suspected	None	Unknown
<25	N	289	262	134	126	2	116	146	0	49	18	17	5	172	1	57	204	1	19	238	5
	%			51%	48%	1%	44%	56%	0%	19%	7%	6%	2%	66%	0%	22%	78%	0%	7%	91%	2%
25-26	N	514	491	205	278	8	152	336	3	59	39	23	7	357	6	71	415	5	32	451	8
	%			42%	57%	2%	31%	68%	1%	12%	8%	5%	1%	73%	1%	14%	85%	1%	7%	92%	2%
27-28	N	791	757	227	526	4	145	612	0	82	25	13	2	634	1	50	703	4	26	725	6
	%			30%	69%	1%	19%	81%	0%	11%	3%	2%	0%	84%	0%	7%	93%	1%	3%	96%	1%
29-30	N	1099	975	207	768	0	84	889	2	77	20	13	1	864	0	37	936	2	21	951	3
	%			21%	79%	0%	9%	91%	0%	8t	2%	1%	0%	89%	0%	4%	96%	0%	2%	98%	0%
31-32	N	1569	998	140	855	3	38	956	4	61	20	6	4	902	5	19	976	3	17	975	6
	%			14%	86%	0%	4%	96%	0%	6%	2%	1%	0%	90%	1%	2%	98%	0%	2%	98%	1%
Total included	N	4262	3483	913	2553	17	535	2939	9	328	122	72	19	2929	13	234	3234	15	115	3340	28
	%			26%	73%	0%	15%	84%	0%	9%	4%	2%	1%	84%	0%	7%	93%	0%	3%	96%	1%

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

Presentation #16
Neuroimaging findings (by BW)



Ventricular enlargement



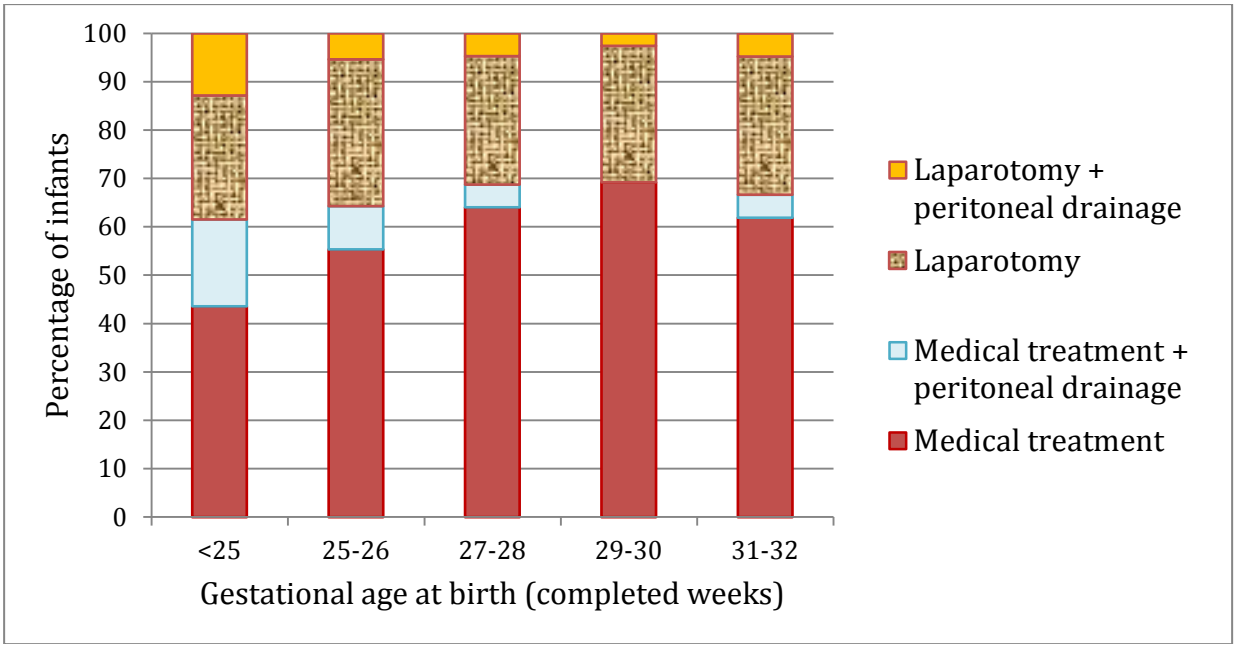
Presentation #16 (continued)
Neuroimaging findings (by BW)

BW (grams)		Total number	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	36	27	7	20	0	5	22	0	2	2	0	0	23	0	6	21	0	2	25	0
	%			26%	74%	0%	19%	81%	0%	7%	7%	0%	0%	85%	0%	22%	78%	0%	7%	93%	0%
500-749	N	428	398	177	216	5	134	262	2	59	25	22	6	285	1	65	330	3	22	369	7
	%			44%	54%	1%	34%	66%	1%	15%	6%	6%	2%	72%	0%	16%	83%	1%	6%	93%	2%
750-999	N	651	626	217	402	7	150	475	1	62	40	20	6	492	6	78	543	5	30	589	7
	%			35%	64%	1%	24%	76%	0%	10%	6%	3%	1%	79%	1%	12%	87%	1%	5%	94%	1%
1000-1249	N	842	771	213	556	2	119	652	0	89	22	11	1	647	1	39	729	3	25	741	5
	%			28%	72%	0%	15%	85%	0%	12%	3%	1%	0%	84%	0%	5%	95%	0%	3%	96%	1%
1250-1499	N	919	761	157	604	0	69	692	0	46	13	9	3	688	2	24	737	0	10	748	3
	%			21%	79%	0%	9%	91%	0%	6%	2%	1%	0%	90%	0%	3%	97%	0%	1%	98%	0%
Total included	N	2876	2583	771	1798	14	477	2103	3	258	102	62	16	2135	10	212	2360	11	89	2472	22
	%			30%	70%	1%	18%	81%	0%	10%	4%	2%	1%	83%	0%	8%	91%	0%	3%	96%	1%

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

Presentation #17

Necrotizing enterocolitis and treatment modalities received (by GA)



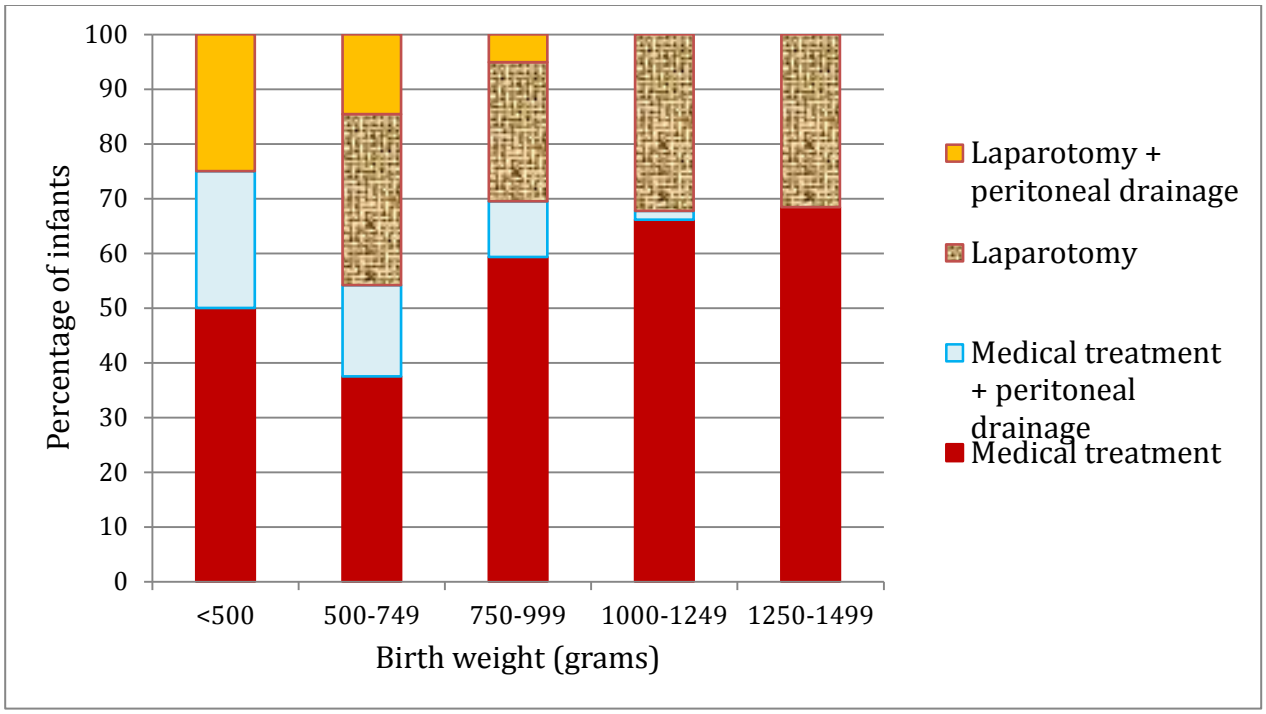
GA at birth (completed weeks)		Total number of neonates	Missing data on NEC	No NEC	NEC*	Neonates with necrotizing enterocolitis**			
						Medical treatment only	Medical + peritoneal drainage	Laparotomy	Laparotomy + peritoneal drainage
<25	N	289	0	250	39	17	7	10	5
	%			87%	13%	44%	18%	26%	13%
25-26	N	514	0	458	56	31	5	17	3
	%			89%	11%	55%	9%	30%	5%
27-28	N	791	0	727	64	41	3	17	3
	%			92%	8%	64%	5%	27%	5%
29-30	N	1099	0	1060	39	27	0	11	1
	%			96%	4%	69%	0%	28%	3%
31-32	N	1569	0	1548	21	13	1	6	1
	%			99%	1%	62%	5%	29%	5%
Total	N	4262	0	4043	219	129	16	61	13
	%			95%	5%	59%	7%	28%	6%

***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 $\geq$ 33:
GA 33-36: 25 (0.6%), GA $\geq$ 37: 11 (0.2%)

Presentation #18
Necrotizing enterocolitis and treatment modalities received (by BW)



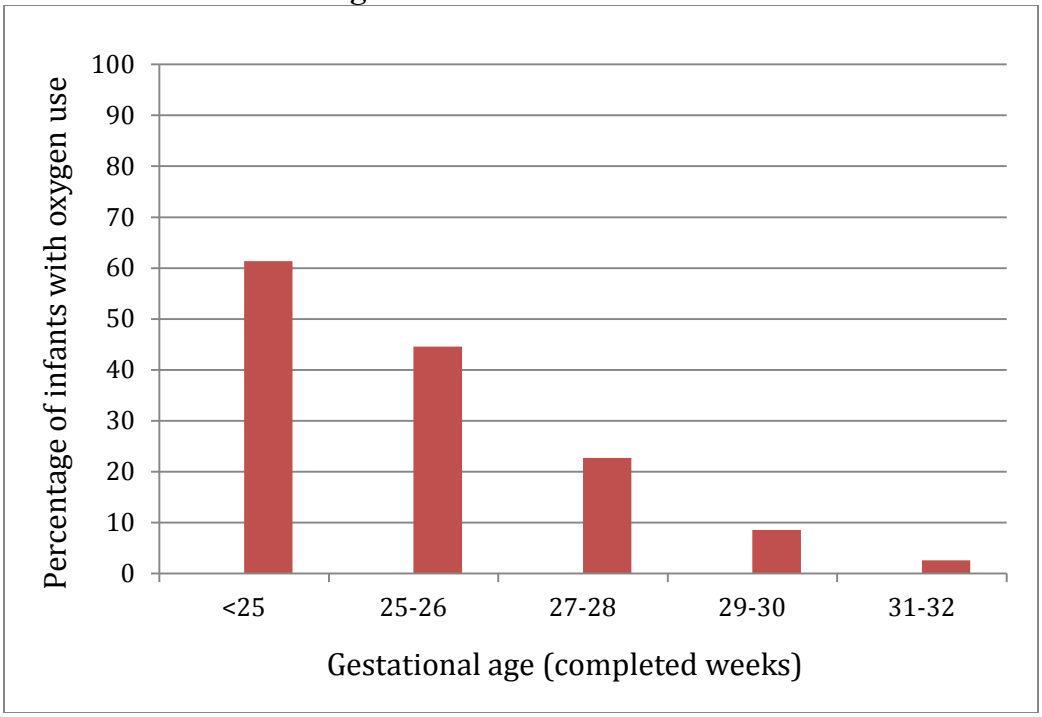
Birth weight (grams)		Total number of neonates	Missing data on NEC	No NEC	NEC*	Neonates with necrotizing enterocolitis**			
						Medical treatment only	Medical + peritoneal drainage	Laparotomy	laparotomy + peritoneal drainage
<500	N	36	0	32	4	2	1	0	1
	%			89%	11%	50%	25%	0%	25%
500-749	N	428	0	380	48	18	8	15	7
	%			89%	11%	38%	17%	31%	15%
750-999	N	651	0	592	59	35	6	15	3
	%			91%	9%	59%	10%	25%	5%
1000-1249	N	842	0	780	62	41	1	20	0
	%			93%	7%	66%	2%	32%	0%
1250-1499	N	919	0	900	19	13	0	6	0
	%			98%	2%	68%	0%	32%	0%
Total	N	2876	0	2684	192	109	16	56	11
	%			93%	7%	57%	8%	29%	6%

***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 BW $\geq$ 1500:
BW 1500-2499: 46 (1.0%), BW $\geq$ 2500: 17 (0.3%)

Presentation #19a
Oxygen use (by GA) at 36 weeks or at discharge among neonates with GA <33 weeks

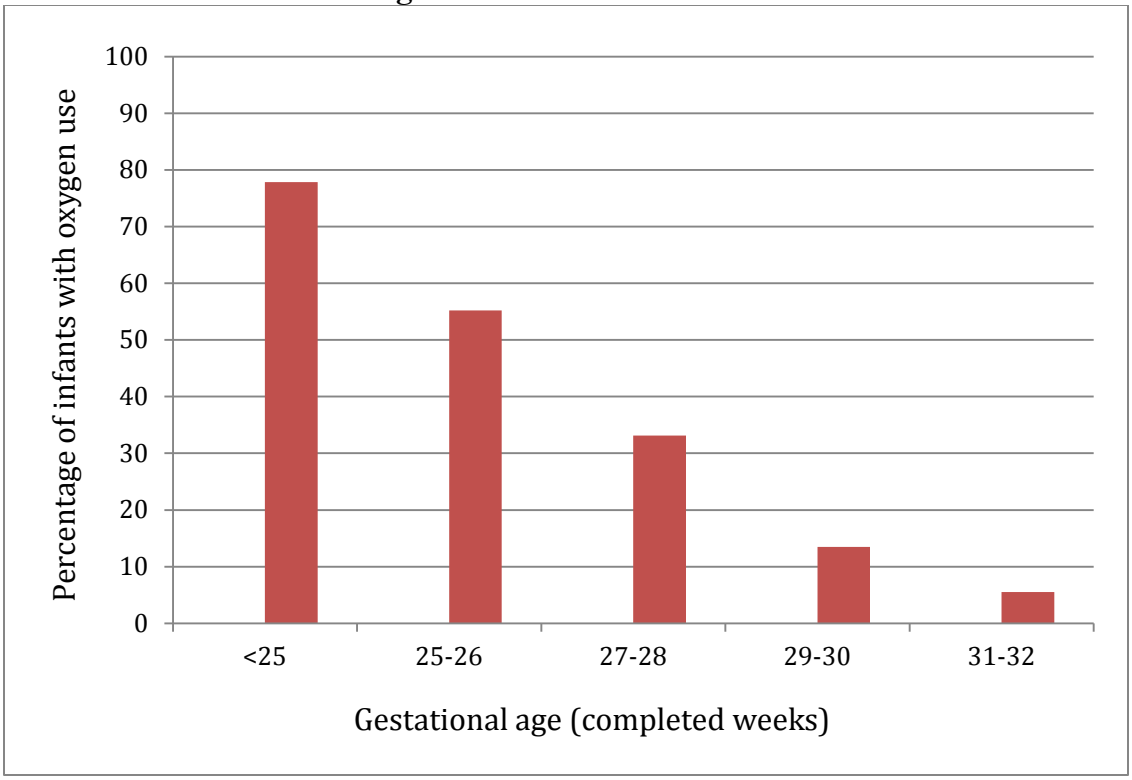


GA	Total number of neonates	Number of neonates whose oxygen use is unknown*	Number of neonates with known results	Number of neonates with oxygen use at 36 weeks or discharge	% of neonates with oxygen use at 36 weeks or discharge among neonates with known results
<25	289	113	176	108	61
25-26	514	92	422	188	45
27-28	791	52	739	168	23
29-30	1 099	38	1 061	91	9
31-32	1 569	32	1 537	40	3
Total	**4 262**	**327**	**3 935**	**595**	**15**

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

Presentation #19b
Any respiratory support (by GA) at 36 weeks or at discharge among neonates with GA <33 weeks

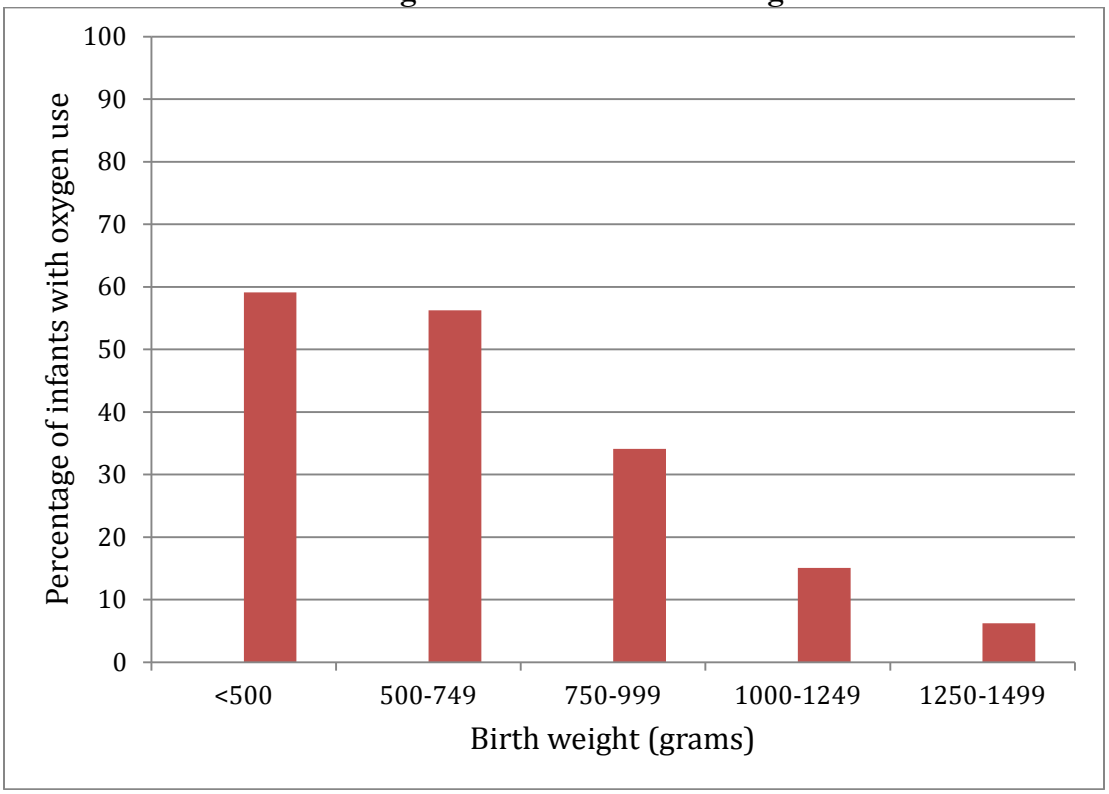


GA	Total number of neonates	Number of neonates whose oxygen use or respiratory support is unknown*	Number of neonates with known results	Number of neonates with respiratory support at 36 weeks or at discharge	% of neonates with respiratory support at 36 weeks or at discharge, among neonates with known results
<25	289	113	176	137	78
25-26	514	92	422	233	55
27-28	791	52	739	245	33
29-30	1 099	38	1 061	143	13
31-32	1 569	32	1 537	85	6
Total	**4 262**	**327**	**3 935**	**843**	**21**

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

Presentation #20a
Oxygen use (by BW) at 36 weeks or at discharge among neonates with BW < 1500g

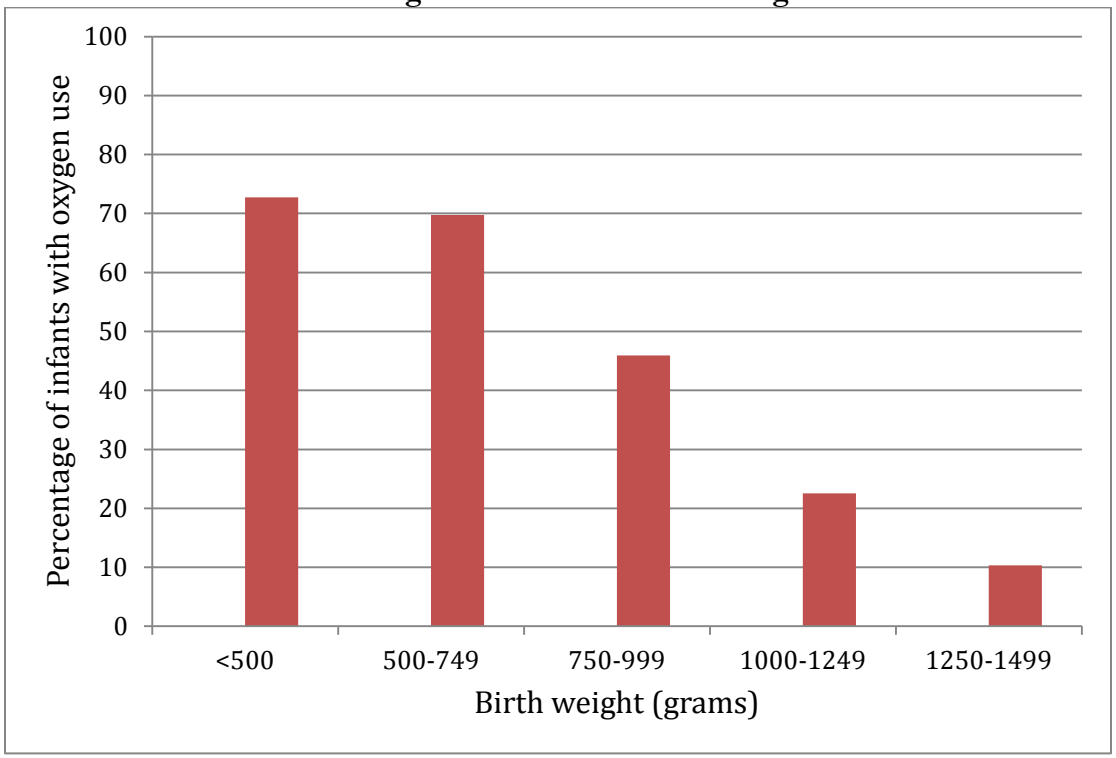


BW (grams)	Total number of neonates	Number of neonates whose oxygen use is unknown*	Number of neonates with known results	Number of neonates with oxygen use at 36 weeks or at discharge	% of neonates with oxygen use at 36 weeks or at discharge among neonates with known results
<500	36	14	22	13	59
500-749	428	124	304	171	56
750-999	651	85	566	193	34
1000-1249	842	47	795	120	15
1250-1499	919	17	902	56	6
Total	**2 876**	**287**	**2 589**	**553**	**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

Presentation #20b
Any respiratory support (by BW) at 36 weeks or at discharge among neonates with BW < 1500g

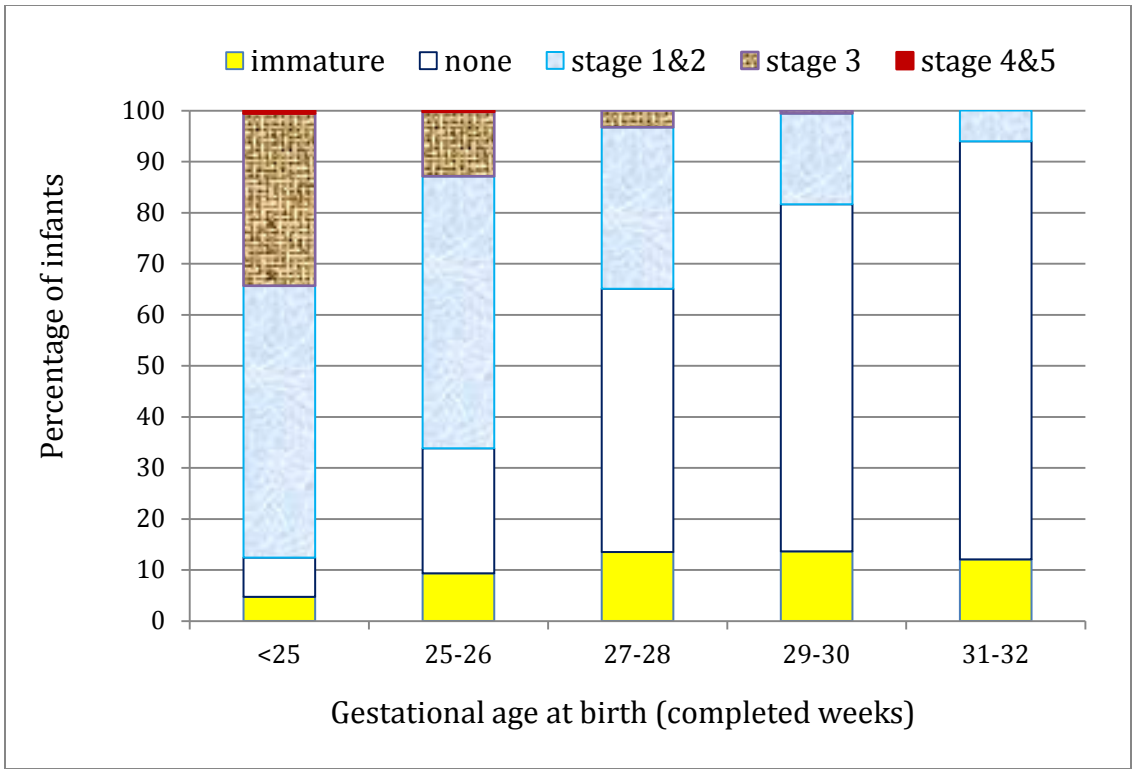


BW (grams)	Total number of neonates	Number of neonates whose oxygen use is unknown*	Number of neonates with known results	Number of neonates with respiratory support at 36 weeks or at discharge	% of neonates with respiratory support at 36 weeks or at discharge among neonates with known results
<500	36	14	22	16	73
500-749	428	124	304	212	70
750-999	651	85	566	260	46
1000-1249	842	47	795	179	23
1250-1499	919	17	902	93	10
Total	**2 876**	**287**	**2 589**	**760**	**29**

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

Presentation #21
Retinopathy of prematurity (by GA)

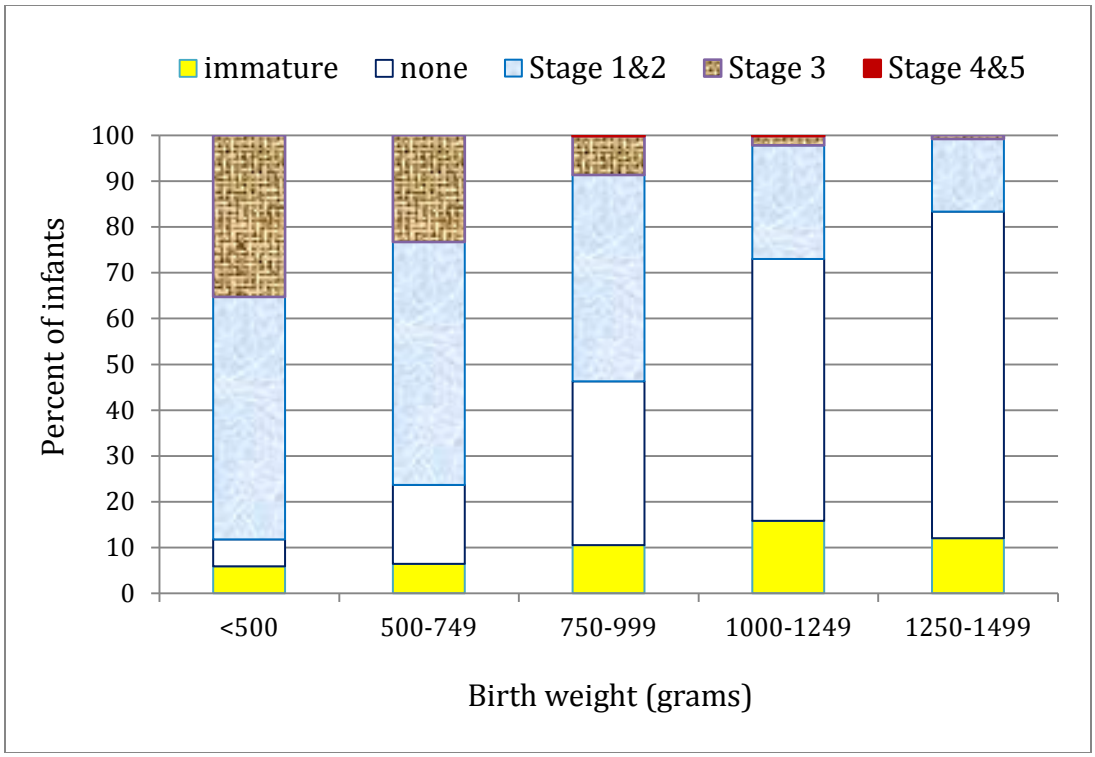


GA (completed weeks)		Total number of neonates	Number of neonates alive at 6 weeks	Number of neonates with known eye examination results	Retinopathy of prematurity*				
					Immature	None	Stages 1 & 2	Stage 3	Stage 4 & 5
<25	N	289	183	169	8	13	90	57	1
	%				5%	8%	53%	34%	1%
25-26	N	514	435	396	37	97	211	50	1
	%				9%	24%	53%	13%	0.3%
27-28	N	791	748	607	82	313	192	20	0
	%				14%	52%	32%	3%	0%
29-30	N	1099	1077	528	72	359	94	3	0
	%				14%	68%	18%	1%	0%
31-32	N	1569	1551	232	28	190	14	0	0
	%				12%	82%	6%	0%	0%
Total included	N	4262	3994	1932	227	972	601	130	2
	%				12%	50%	31%	7%	0.1%

***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). 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 (by BW)



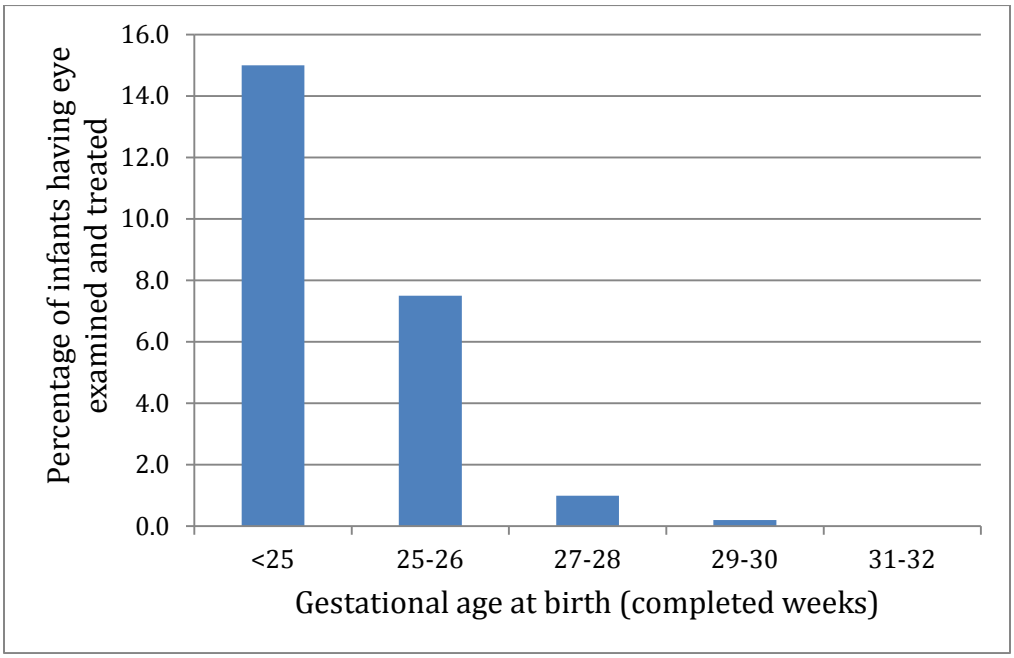
BW (grams)		Total number of neonates	Number of neonates alive at 6 weeks	Number of neonates with known eye examination results	Retinopathy of prematurity*				
					Immature	None	Stages 1 & 2	Stage 3	Stage 4 & 5
<500	N	36	22	17	1	1	9	6	0
	%				6%	6%	53%	35%	0%
500-749	N	428	316	296	19	51	157	69	0
	%				6%	17%	53%	23%	0%
750-999	N	651	578	495	52	177	223	42	1
	%				11%	36%	45%	8%	0.2%
1000-1249	N	842	805	544	86	311	135	11	1
	%				16%	57%	25%	2%	0.2%
1250-1499	N	919	905	366	44	261	58	3	0
	%				12%	71%	16%	1%	0%
Total included	N	2876	2626	1718	202	801	582	131	2
	%				12%	47%	34%	8%	0.1%

***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). 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

Laser/Anti-VEGF therapy for neonates with retinopathy of prematurity (by GA)

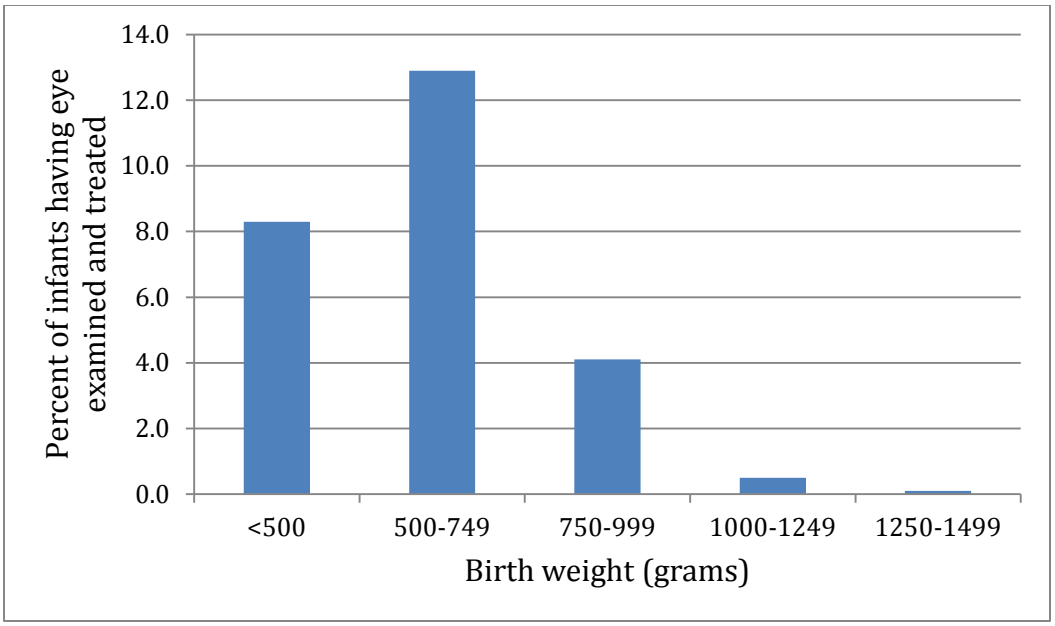


Birth GA (completed weeks)		Total number of neonates	Number of neonates with known eye examination results	Therapy for retinopathy of prematurity *	Therapy for retinopathy of prematurity			
					Laser	Anti-VEGF	Both Laser and Anti-VEGF	Other surgery**
<25	**N**	289	169	43	24	15	4	1
	%			15%				
25-26	**N**	514	396	38	17	19	2	0
	%			7%				
27-28	**N**	791	607	6	4	2	0	0
	%			1%				
29-30	**N**	1099	528	2	2	0	0	0
	%			0.2%				
31-32	**N**	1569	232	0	0	0	0	0
	%			0%				
Total included	**N**	4262	1932	89	47	36	6	1
	%			5%				

***The percentages of patient who received therapy are calculated out of number of neonates with known eye examination results.**
****One neonate who had other surgery also received both laser and anti-VEGF treatments.**

COMMENTS: Retinopathy of prematurity is defined according to the International Classification of Retinopathy of Prematurity (ICROP). 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
Laser/Anti-VEGF therapy for neonates with retinopathy of prematurity (by BW)



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	36	17	3	1	2	0	0
	%			8%				
500-749	N	428	296	55	30	21	4	0
	%			13%				
750-999	N	651	495	26	14	11	1	1
	%			4%				
1000-1249	N	842	544	4	1	2	1	0
	%			0.5%				
1250-1499	N	919	366	1	1	0	0	0
	%			0.1%				
Total included	N	2876	1718	89	47	36	6	1
	%			6%				

***The percentages of patient who received therapy are calculated out of number of neonates with known eye examination results.**
****One neonate who had other surgery also received both laser and anti-VEGF treatments.**

COMMENTS: Retinopathy of prematurity is defined according to the International Classification of Retinopathy of Prematurity (ICROP). 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
Gestational age specific mortality or significant morbidity (six morbidities)

GA	Number of neonates	Number survived (%)	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	92	43 (47)	16	1 (6)	4 (25)	4 (25)	3 (19)	2 (13)	2 (13)	0
24	197	133 (68)	56	7 (13)	19 (34)	17 (30)	10 (18)	3 (5)	0	0
25	247	195 (79)	76	15 (20)	26 (34)	18 (24)	13 (17)	4 (5)	0	0
26	267	228 (85)	92	29 (32)	37 (40)	17 (18)	9 (10)	0	0	0
27	357	330 (92)	140	65 (46)	49 (35)	16 (11)	8 (6)	2 (1)	0	0
28	434	409 (94)	158	91 (58)	45 (28)	18 (11)	4 (3)	0	0	0
29	479	462 (96)	154	103 (67)	43 (28)	5 (3)	3 (2)	0	0	0
30	620	609 (98)	236	190 (81)	40 (17)	6 (3)	0	0	0	0
31	733	724 (99)	256	225 (88)	26 (10)	5 (2)	0	0	0	0
32	836	825 (99)	350	314 (90)	30 (9)	5 (1)	1 (0)	0	0	0
Total	**4262**	**3958 (93)**	**1534**	**1040 (68)**	**319 (21)**	**111 (7)**	**51 (3)**	**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. IVH grade 3 or 4 or PVL
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
Gestational age specific mortality or significant morbidity (three morbidities)

GA	Number of neonates	Number survived (%)	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	92	43 (47)	16	4 (25)	5 (31)	6 (38)	1 (6)
24	197	133 (68)	56	16 (29)	26 (46)	14 (25)	0
25	247	195 (79)	76	30 (39)	27 (36)	19 (25)	0
26	267	228 (85)	92	43 (47)	37 (40)	10 (11)	2 (2)
27	357	330 (92)	140	86 (61)	44 (31)	10 (7)	0
28	434	409 (94)	158	114 (72)	40 (25)	4 (3)	0
29	479	462 (96)	154	129 (83)	24 (16)	1 (1)	0
30	620	609 (98)	236	212 (90)	22 (9)	2 (1)	0
31	733	724 (99)	256	238 (93)	16 (6)	2 (1)	0
32	836	825 (99)	350	333 (95)	15 (4)	2 (1)	0
Total	**4262**	**3958 (93)**	**1534**	**1205 (79)**	**256 (17)**	**70 (5)**	**3 (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

Section D.4

Analyses based on number of neonates who are small for gestational age (BW < 10th centile for GA)

These include data from 2 410 SGA neonates. Published birth weight centile for Canadian population were used to classify infants as SGA.

Kramer MS, Platt RW, Wen SW, Joseph KS, Allen A, Abrahamowicz M, Blondel B, Bréart G; Fetal/Infant Health Study Group of the Canadian Perinatal Surveillance System.
A new and improved population-based Canadian reference for birth weight for gestational age. Pediatrics 2001;108(2):E35.

Presentation #26
Outcomes of SGA and non-SGA infants

				GA at birth (completed weeks)						
	Outcome	**Missing**		**≤27**	**28-29**	**30-31**	**32-33**	**34-36**	**≥37**	**Total**
SGA			**N**	**98**	**85**	**132**	**199**	**769**	**1127**	**2410**
	Mortality		N	32	11	3	5	13	17	81
			%	32.7	12.9	2.3	2.5	1.7	1.5	3.4
	Nosocomial infection	1	N	27	12	7	14	12	15	87
			%	27.6	14.3	5.3	7.0	1.6	1.3	3.6
	Surgical ligation of PDA	2	N	14	3	1	1	2	8	29
			%	14.3	3.5	0.8	0.5	0.3	0.7	1.2
	NEC	2	N	10	5	6	6	6	2	35
			%	10.2	5.9	4.6	3.0	0.8	0.2	1.5
	Ventricular dilatation or PEC	1306	N	15	8	5	4	7	19	58
			%	16.7	9.8	4.1	3.1	3.2	5.5	5.9
	Oxygen use at 36 weeks or at discharge if earlier	45	N	41	27	20	2	0	0	90
			%	60.3	36.0	15.5	1.0	0.0	0.0	3.8
	ROP stage 3 or higher or treatment for ROP	2025	N	15	4	0	0	1	0	20
			%	23.4	6.9	0.0	0.0	3.1	0.0	7.2

				GA at birth (completed weeks)						
	Outcome	**Missing**		**≤27**	**28-29**	**30-31**	**32-33**	**34-36**	**≥37**	**Total**
Non SGA			**N**	**1060**	**822**	**1221**	**1492**	**2720**	**4739**	**12054**
	Mortality		N	198	31	17	13	33	50	342
			%	18.7	3.8	1.4	0.9	1.2	1.1	2.8
	Nosocomial infection	2	N	274	105	51	27	25	55	537
			%	25.9	12.8	4.2	1.8	0.9	1.2	4.5
	Surgical ligation of PDA	1	N	103	17	3	3	6	40	172
			%	9.7	2.1	0.3	0.2	0.2	0.8	1.4
	NEC	3	N	115	50	18	15	12	9	219
			%	10.9	6.1	1.5	1.0	0.4	0.2	1.8
	Ventricular dilatation or PEC	7109	N	243	75	46	30	18	79	491
			%	24.3	9.8	4.7	5.7	4.2	6.4	9.9
	Oxygen use at 36 weeks or at discharge if earlier	279	N	341	104	45	12	0	0	502
			%	39.8	13.1	3.8	0.8	0.0	0.0	4.3
	ROP stage 3 or higher or treatment for ROP	10507	N	107	5	1	0	0	0	113
			%	15.1	1.1	0.4	0.0	0.0	0.0	7.3

E. Site Comparisons

E.1. Site Comparisons – Survival / Mortality

Presentation #27
Site-specific survival rates by 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***
Aϕ	56.8	90.2	96.7	97.9	98.7	95.2	91.2	97.9	94.4
B	33.3	69.2	94.1	100.0	97.4	100.0	96.4	97.7	96.5
C	50.0	85.7	82.6	95.8	100.0	100.0	98.4	100.0	96.5
D	80.0	83.3	93.8	96.9	97.9	98.1	97.4	98.7	97.2
E	33.3	90.0	95.2	100.0	100.0	99.2	99.3	99.4	98.9
F	0.0	100.0	83.3	100.0	100.0	96.3	100.0	100.0	98.5
G	NA	0.0	100.0	100.0	100.0	100.0	100.0	98.1	98.3
Hϕ	53.8	74.1	91.4	94.9	98.7	NA	100.0	NA	90.7
I	0.0	71.4	88.9	100.0	96.0	100.0	100.0	96.3	96.7
J	50.0	75.0	83.3	100.0	100.0	100.0	98.5	98.4	97.9
K	100.0	NA	100.0	100.0	100.0	100.0	100.0	100.0	100.0
L	76.2	92.1	95.9	96.4	98.6	97.3	97.2	97.5	96.2
M	50.0	66.7	100.0	100.0	100.0	100.0	100.0	97.9	97.9
N	62.5	87.5	96.5	96.9	100.0	100.0	100.0	99.3	96.1
O	66.7	88.9	94.1	100.0	100.0	100.0	100.0	100.0	99.4
P	75.0	85.7	95.2	96.9	100.0	100.0	98.6	99.1	98.6
Qϕ	12.5	71.4	93.8	92.0	100.0	100.0	NA	NA	86.7
R	100.0	100.0	90.0	100.0	100.0	100.0	100.0	99.3	99.1
S	80.0	90.9	100.0	100.0	100.0	100.0	100.0	100.0	99.4
T	76.9	77.5	94.4	98.8	97.8	98.9	99.6	98.8	97.4
U	42.9	66.7	88.9	94.0	96.7	98.7	97.5	97.0	94.9
V	50.0	50.0	100.0	94.7	98.0	99.0	99.0	99.6	98.4
W	61.5	84.2	91.4	100.0	98.7	99.1	99.4	99.0	97.9
X	60.0	91.3	94.1	97.6	98.7	99.0	100.0	100.0	97.7
Y	NA	NA	100.0	100.0	100.0	100.0	96.8	99.6	99.3
Zϕ	100.0	100.0	100.0	100.0	97.7	100.0	NA	NA	98.6
AA	100.0	54.5	100.0	100.0	100.0	100.0	97.8	100.0	98.5
AB	65.2	80.0	90.9	95.6	98.1	97.2	95.9	99.5	95.7
ACϕ	36.4	88.9	90.5	98.1	100.0	100.0	NA	NA	90.9
Overall survival rate for GA**	60.9	82.3	93.4	97.5	98.7	99.1	98.5	98.9	97.1

These analyses include 14 490 neonates from 29 sites (4 neonates had missing data for GA).
Twenty-four sites collected data on all eligible admissions whereas five 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

Presentation #28
Site-specific survival rates by BW

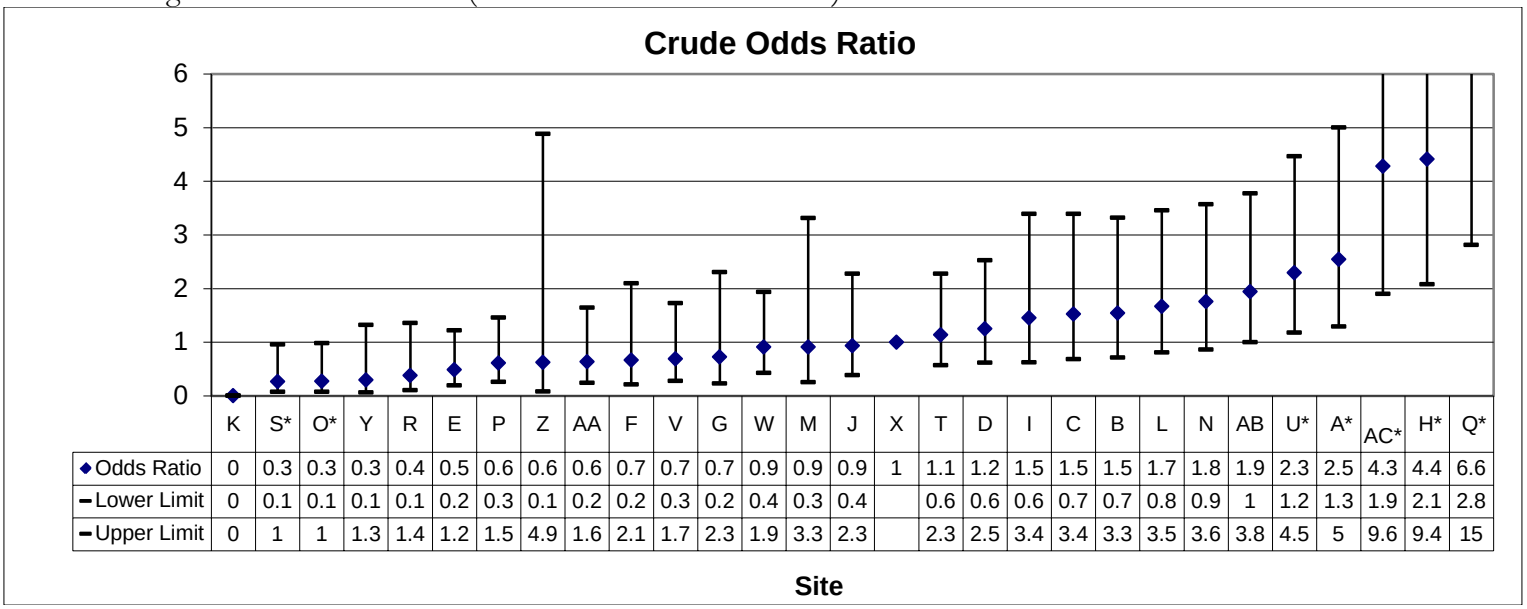
Site	Percentage survival for each BW (g) category							
	<500	**500-749**	**750-999**	**1000-1249**	**1250-1499**	**1500-2499**	**≥2500**	**Overall survival rate for sites***
Aϕ	NA	63.0	88.9	96.2	100.0	97.1	97.0	94.4
B	NA	60.0	68.8	100.0	100.0	98.2	97.5	96.5
C	NA	38.9	95.2	100.0	100.0	99.4	99.4	96.5
D	100.0	78.3	87.2	95.7	98.2	97.1	98.7	97.2
E	NA	66.7	94.4	95.0	100.0	98.8	99.8	98.9
F	100.0	0.0	100.0	80.0	100.0	98.7	100.0	98.5
G	NA	0.0	66.7	100.0	100.0	100.0	98.6	98.3
Hϕ	50.0	60.0	82.8	91.3	97.6	98.6	100.0	90.7
I	NA	50.0	69.2	100.0	91.7	97.7	98.8	96.7
J	50.0	66.7	75.0	85.7	100.0	100.0	98.3	97.9
K	NA	100.0	100.0	NA	100.0	100.0	100.0	100.0
L	66.7	85.7	93.2	94.2	98.1	95.6	98.6	96.2
M	0.0	100.0	66.7	100.0	100.0	100.0	98.1	97.9
N	71.4	74.5	92.6	93.6	98.7	100.0	99.4	96.1
O	NA	77.8	90.0	100.0	100.0	100.0	100.0	99.4
P	100.0	87.5	84.2	95.5	100.0	99.2	99.2	98.6
Qϕ	0.0	25.0	63.6	94.7	100.0	100.0	NA	86.7
R	100.0	100.0	100.0	87.5	100.0	98.4	100.0	99.1
S	100.0	66.7	100.0	100.0	100.0	100.0	100.0	99.4
T	33.3	81.6	88.5	97.1	100.0	98.5	98.9	97.4
U	0.0	53.8	82.9	92.5	95.0	98.2	96.5	94.9
V	NA	50.0	83.3	80.0	100.0	98.9	99.6	98.4
W	0.0	76.5	86.4	92.5	96.8	99.0	99.3	97.9
X	0.0	81.3	90.5	91.2	97.9	99.5	100.0	97.7
Y	NA	NA	100.0	100.0	100.0	97.8	99.6	99.3
Zϕ	NA	100.0	100.0	100.0	100.0	97.2	NA	98.6
AA	NA	83.3	80.0	94.7	100.0	100.0	99.2	98.5
AB	50.0	70.6	82.9	98.7	96.5	97.9	98.5	95.7
ACϕ	0.0	68.4	90.0	100.0	94.6	95.0	NA	90.8
Overall survival rate for BW**	61.1	69.6	87.3	95.1	98.4	98.6	98.9	97.1

These analyses include 14 488 neonates from 29 sites (6 neonates had missing data for BW).
Twenty-four sites collected data on all eligible admissions whereas five 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

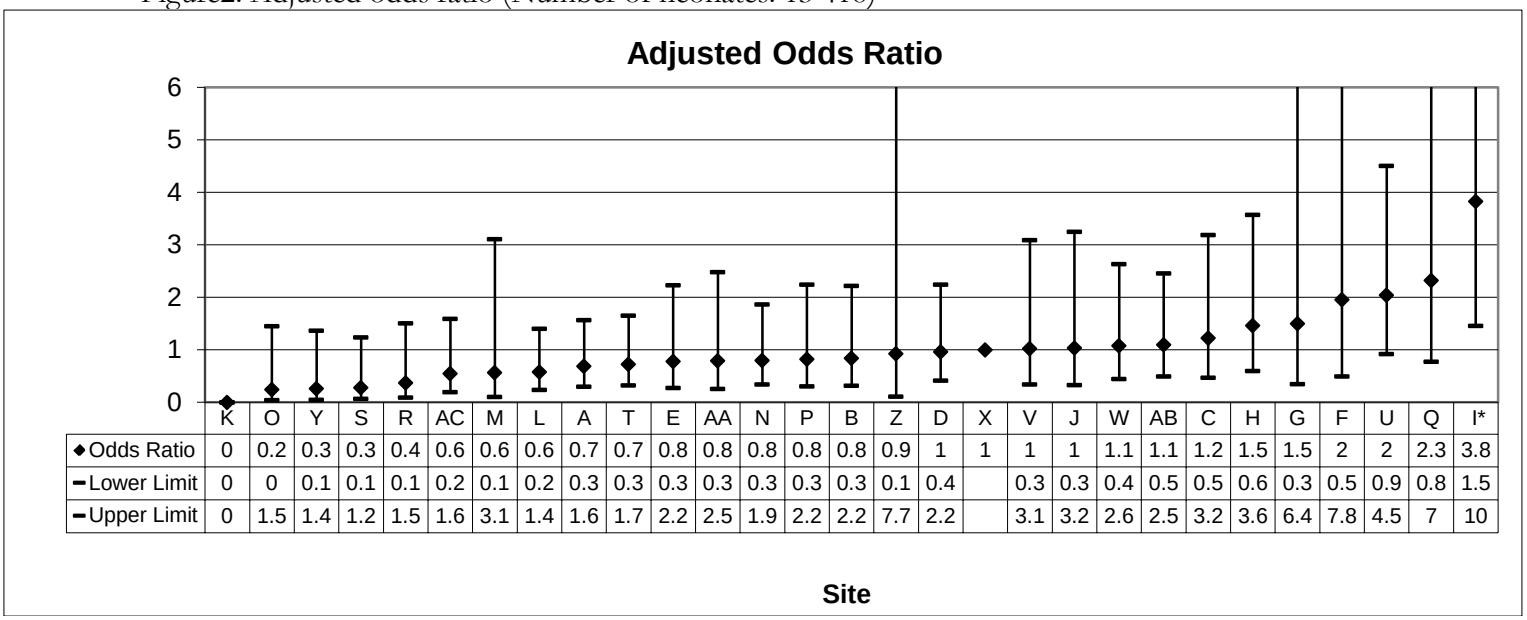
Presentation #29a
Mortality among all neonates

Figure1: Crude odds ratio (Number of neonates: 14 494)



	K	S*	O*	Y	R	E	P	Z	AA	F	V	G	W	M	J	X	T	D	I	C	B	L	N	AB	U*	A*	AC*	H*	Q*
Odds Ratio	0	0.3	0.3	0.3	0.4	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.9	0.9	0.9	1	1.1	1.2	1.5	1.5	1.5	1.7	1.8	1.9	2.3	2.5	4.3	4.4	6.6
Lower Limit	0	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.2	0.2	0.3	0.2	0.4	0.3	0.4		0.6	0.6	0.6	0.7	0.7	0.8	0.9	1	1.2	1.3	1.9	2.1	2.8
Upper Limit	0	1	1	1.3	1.4	1.2	1.5	4.9	1.6	2.1	1.7	2.3	1.9	3.3	2.3		2.3	2.5	3.4	3.4	3.3	3.5	3.6	3.8	4.5	5	9.6	9.4	15

Figure2: Adjusted odds ratio (Number of neonates: 13 418)



	K	O	Y	S	R	AC	M	L	A	T	E	AA	N	P	B	Z	D	X	V	J	W	AB	C	H	G	F	U	Q	I*
Odds Ratio	0	0.2	0.3	0.3	0.4	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.9	1	1	1	1	1.1	1.1	1.2	1.5	1.5	2	2	2.3	3.8
Lower Limit	0	0	0.1	0.1	0.1	0.2	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.1	0.4		0.3	0.3	0.4	0.5	0.5	0.6	0.3	0.5	0.9	0.8	1.5
Upper Limit	0	1.5	1.4	1.2	1.5	1.6	3.1	1.4	1.6	1.7	2.2	2.5	1.9	2.2	2.2	7.7	2.2		3.1	3.2	2.6	2.5	3.2	3.6	6.4	7.8	4.5	7	10

Reference site: X

***Sites significantly different from reference site (P<0.05)**

Inclusion criteria:
All neonates included

Significant predictors identified by multivariate analysis and adjusted for:

Congenital anomalies	SNAP-II
Apgar at 5 min	GA
Antenatal corticosteroid	Outborn
SGA (BW <10th centile for GA)	

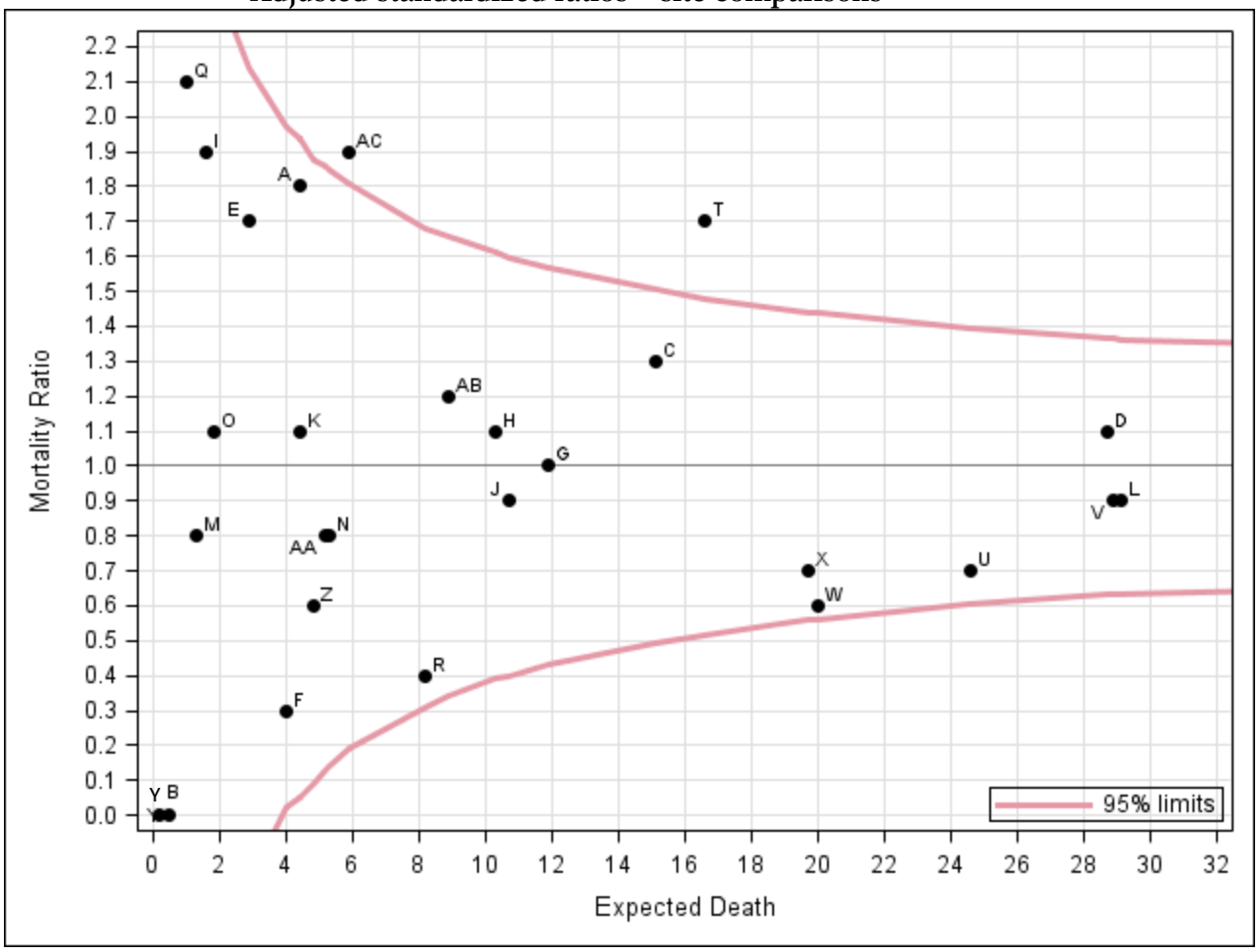
Mortality is attributed to the network site of first admission

Presentation # 29b
Mortality among neonates with 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	
A	81	8	4.4	1.8	0.8	3.6
B	12	0	0.2	0.0	.	18.4
C	209	20	15.1	1.3	0.8	2.0
D	346	32	28.7	1.1	0.8	1.6
E	61	5	2.9	1.7	0.6	4.0
F	78	1	4.0	0.3	0.0	1.4
G*	139	12	11.9	1.0	0.5	1.8
H	181	11	10.3	1.1	0.5	1.9
I	29	3	1.6	1.9	0.4	5.5
J	184	10	10.7	0.9	0.4	1.7
K	91	5	4.4	1.1	0.4	2.7
L	353	25	29.1	0.9	0.6	1.3
M	65	1	1.3	0.8	0.0	4.3
N	121	4	5.3	0.8	0.2	1.9
O	54	2	1.8	1.1	0.1	4.0
P	74	5	2.1	2.4	0.8	5.6
Q	23	2	1.0	2.1	0.2	7.2
R	120	3	8.2	0.4	0.1	1.1
S	54	6	2.0	3.0	1.1	6.5
T	262	28	16.6	1.7	1.1	2.4
U	287	17	24.6	0.7	0.4	1.1
V	362	26	28.9	0.9	0.6	1.3
W	219	12	20.0	0.6	0.3	1.0
X	242	14	19.7	0.7	0.4	1.2
Y	13	0	0.5	0.0	.	7.4
Z	93	3	4.8	0.6	0.1	1.8
AA	108	4	5.2	0.8	0.2	2.0
AB	111	11	8.9	1.2	0.6	2.2
AC*	84	11	5.9	1.9	0.9	3.3

Please note that site codes for Presentations 29b and 29c are different from the site codes used in other presentations of this report.
Neonates with major congenital anomalies are excluded.
Variables adjusted for in the prediction model: GA, SGA, Sex, SNAPII > 20
* Sites G and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites. (See next page for full explanation)

Presentations # 29c
Mortality among neonates with GA<33 weeks
Adjusted standardized ratios – site comparisons



Explanation for Presentation 29b
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 29c
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 alphabetical 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 –

Morbidities
and
Risks Adjusted Analyses

Presentation #30
Site-specific morbidities among neonates with GA<33 weeks

Site	Number	Mortality	Severe neurological injury	Severe ROP	CLD	NEC stage 2 or 3	Late onset sepsis	Mortality or severe morbidity
	N	%	%	%	%	%	%	%
K	<60	0.0	7.7	0.0	7.1	0.0	0.0	7.1
F		10.0	11.5	0.0	7.4	3.3	3.3	26.7
Y		0.0	8.3	0.0	7.1	0.0	0.0	13.3
M		3.7	4.0	0.0	0.0	0.0	3.7	7.4
G		8.3	4.2	0.0	4.6	0.0	12.5	25.0
I		10.5	15.4	10.5	3.9	5.3	3.5	24.6
R	61-90	2.4	16.4	3.9	14.6	0.0	8.4	26.5
J		7.6	6.4	0.0	14.8	6.1	16.7	30.3
V		6.3	4.3	0.0	9.3	0.0	12.5	27.5
B		9.2	13.9	17.9	25.0	8.1	10.3	46.0
Z		1.5	2.9	0.0	0.0	0.0	17.4	20.3
Q		13.6	15.4	10.3	14.5	4.6	8.0	37.5
O	91-200	3.1	10.9	16.7	12.1	0.0	13.4	26.8
E		3.5	10.7	4.0	8.2	2.6	7.9	21.9
S		2.4	6.5	9.4	7.4	2.4	24.0	32.0
AA		5.3	12.7	5.6	5.7	4.3	7.5	24.5
X		5.4	2.2	0.9	6.8	6.5	23.7	34.4
C		11.0	12.9	9.4	10.3	3.4	17.8	34.8
P		3.9	12.9	13.5	16.1	1.6	6.3	27.3
AC		9.2	6.9	6.1	19.7	11.8	23.2	46.4
W		6.4	8.1	2.5	19.9	5.9	8.0	31.6
T	>200	7.1	9.6	11.4	16.8	5.2	8.1	30.3
H		9.4	11.1	6.9	18.0	4.7	8.5	33.3
D		6.3	9.7	20.8	13.7	5.5	11.7	32.0
U		11.0	6.9	4.8	20.1	5.9	14.3	35.5
AB		9.4	18.2	5.0	21.4	7.4	11.6	40.5
L		5.6	12.0	7.0	15.0	5.6	21.1	34.9
N		7.2	17.3	10.5	16.5	6.1	9.9	34.2
A		7.4	23.2	24.0	19.8	6.6	5.9	36.9
Total CNN		7.1	11.9	7.7	15.1	5.1	11.9	33.0

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

*Site Q and AC do not have complete data for infants with GA < 33 and may not be comparable with other sites.

Presentation #31
Site-specific morbidities among GA<29 weeks

Site	Number range	Mortality	Severe neurological injury	Severe ROP	CLD	NEC stage 2 or 3	Late onset sepsis	Mortality or severe morbidity
	N	%	%	%	%	%	%	%
K	<20	0.0	25.0	0.0	25.0	0.0	0.0	25.0
I		27.8	27.8	14.3	7.1	5.6	5.6	50.0
G		40.0	20.0	0.0	0.0	0.0	20.0	60.0
Z		0.0	12.5	0.0	0.0	0.0	12.5	25.0
F		33.3	33.3	0.0	16.7	11.1	0.0	66.7
M		20.0	20.0	0.0	0.0	0.0	20.0	40.0
Y		0.0	0.0	0.0	0.0	0.0	0.0	0.0
V		27.3	10.0	0.0	37.5	0.0	27.3	81.8
AA	20-40	17.2	20.7	12.5	8.3	10.3	17.2	48.3
J		25.0	15.0	0.0	46.7	15.0	35.0	70.0
R		7.1	25.0	8.0	33.3	0.0	21.4	57.1
Q		32.3	24.1	21.4	42.9	9.7	9.7	67.7
B		21.2	24.1	21.4	43.5	9.1	15.2	69.7
O		10.3	21.4	27.3	40.0	0.0	27.6	65.5
E		11.8	30.3	10.0	26.7	2.9	20.6	58.8
P		10.3	18.4	23.3	45.7	5.1	15.4	66.7
C	41-100	24.5	20.8	13.2	23.1	4.1	30.6	63.3
W		16.4	12.3	3.9	47.4	11.9	17.9	64.2
X		11.9	3.1	1.7	18.6	11.9	46.3	67.2
H		21.3	25.4	10.4	39.0	8.0	18.7	70.7
U		25.6	12.4	10.6	49.2	11.6	34.9	70.9
AC		18.3	11.9	7.7	40.7	19.7	33.8	76.1
S		6.7	9.5	8.7	19.5	4.4	51.1	62.2
D		12.4	17.0	29.3	31.4	11.3	24.7	65.0
L	> 100	9.3	15.5	7.9	29.5	10.2	33.3	56.5
A		17.2	40.3	27.7	47.5	13.1	13.8	75.9
T		13.9	13.9	13.8	34.2	10.2	16.8	54.7
AB		17.5	26.9	6.8	41.4	12.3	22.1	68.8
N		12.7	24.8	11.8	30.6	9.9	17.7	59.1
Total CNN		16.0	20.7	12.3	34.7	10.0	23.4	64.2

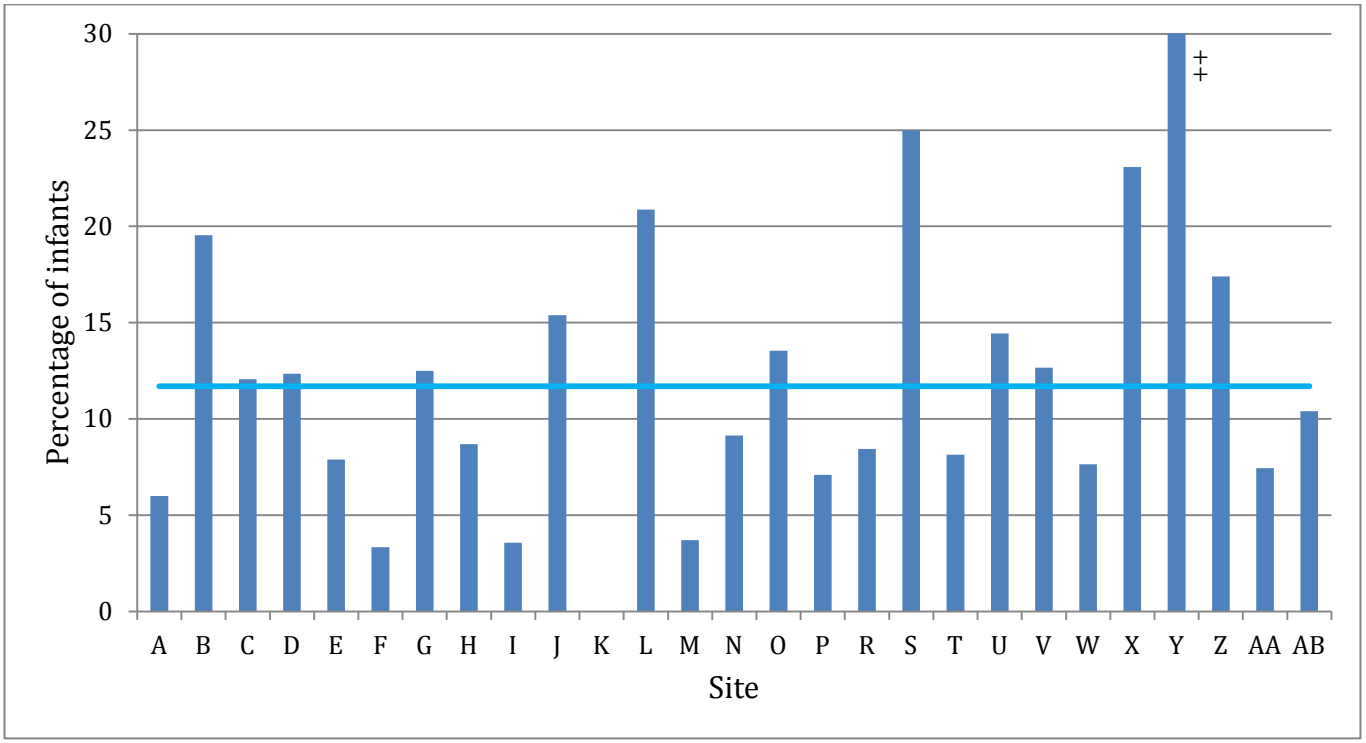
Mortality or morbidity = Mortality prior to discharge or any of the five morbidities

E.2.1. Site Comparisons – Late Onset Sepsis

In this section (Presentations #32 to #35), late onset sepsis was attributed to the hospital where the sepsis was acquired. For all other presentations in this report, all morbidities including late onset sepsis were attributed to the hospital where the infant was first admitted.

Presentation #32

Late onset sepsis* among neonates with GA<33 weeks – site rates
Sites that contributed data on all eligible admissions for neonates with GA < 33
(n=27 sites, 3 967 neonates, 54 excluded due to death before 3 days of age)

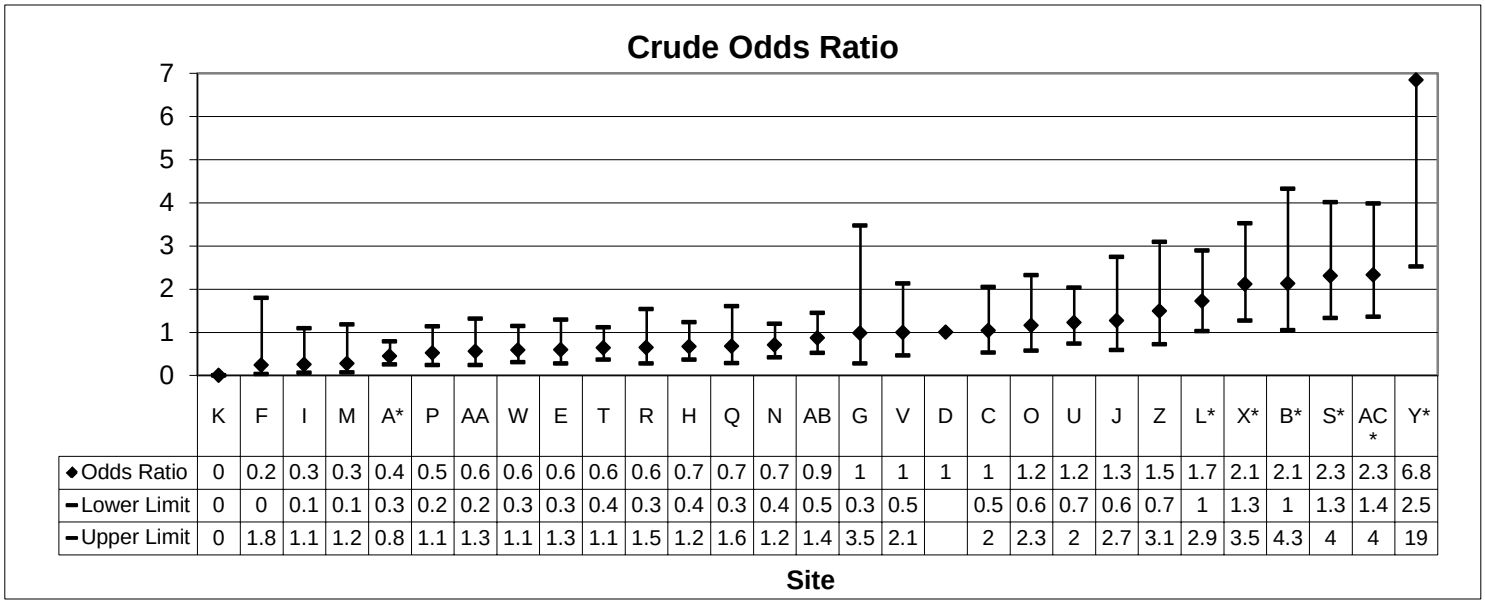


‡ Site Y has a late onset sepsis rate of 60% but not shown completely in the graph. Please refer to the table for the actual percentage for site Y.

Site	A	B	C	D	E	F	G	H	I	J
%	6.0	19.5	12.1	12.4	7.9	3.3	12.5	8.7	3.6	15.4
Site	**K**	**L**	**M**	**N**	**O**	**P**	**R**	**S**	**T**	**U**
%	0.0	20.9	3.7	9.1	13.5	7.1	8.4	25.0	8.1	14.4
Site	**V**	**W**	**X**	**Y**	**Z**	**AA**	**AB**	**Whole network**		
%	12.7	7.7	23.1	60.0	17.4	7.4	10.4	11.7		

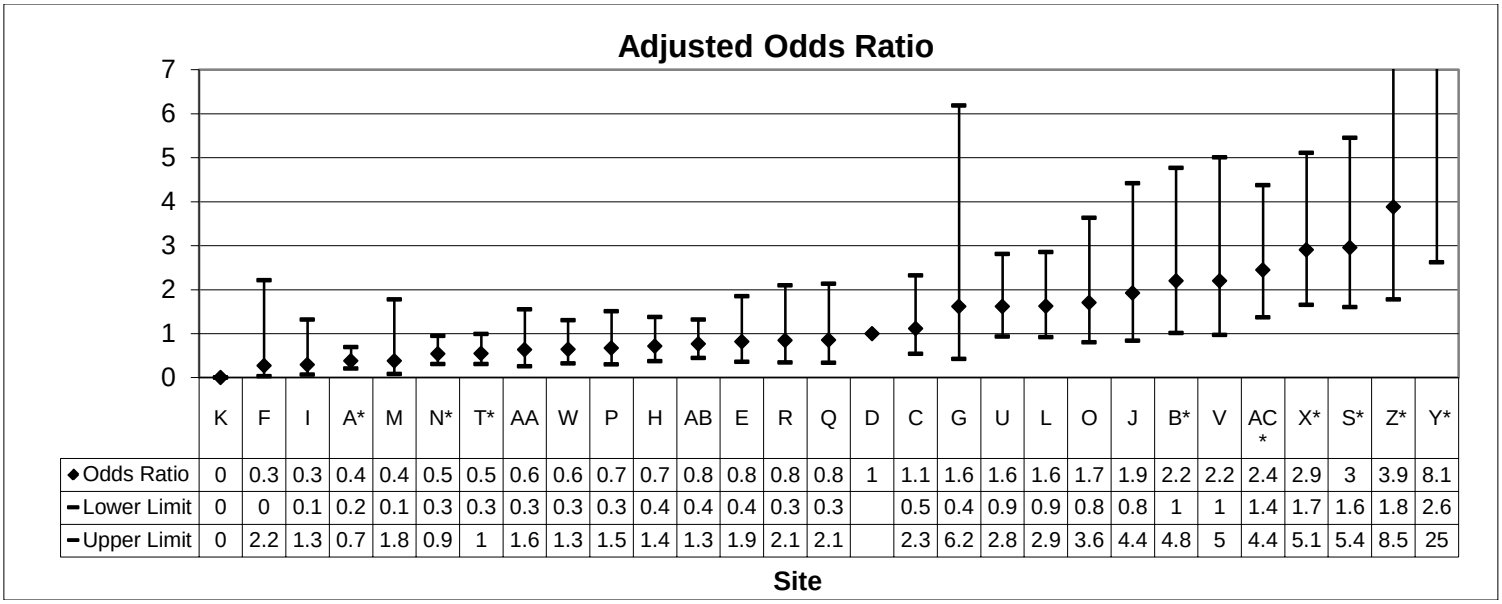
COMMENTS: *Late onset sepsis is defined as any positive blood and/or cerebrospinal fluid culture after 2 days of age (analysis is neonate-based and deaths before 3 days of age are excluded).
For presentations #32 to #35, late onset sepsis was attributed to the hospital where the sepsis was actually acquired. For all other presentations in this report, all morbidities including late onset sepsis were attributed to the hospital where the infant was first admitted.

Presentation #33a
Late onset sepsis among neonates with GA<33 weeks



	K	F	I	M	A*	P	AA	W	E	T	R	H	Q	N	AB	G	V	D	C	O	U	J	Z	L*	X*	B*	S*	AC*	Y*
◆Odds Ratio	0	0.2	0.3	0.3	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.9	1	1	1	1	1.2	1.2	1.3	1.5	1.7	2.1	2.1	2.3	2.3	6.8
━Lower Limit	0	0	0.1	0.1	0.3	0.2	0.2	0.3	0.3	0.4	0.3	0.4	0.3	0.4	0.5	0.3	0.5		0.5	0.6	0.7	0.6	0.7	1	1.3	1	1.3	1.4	2.5
━Upper Limit	0	1.8	1.1	1.2	0.8	1.1	1.3	1.1	1.3	1.1	1.5	1.2	1.6	1.2	1.4	3.5	2.1		2	2.3	2	2.7	3.1	2.9	3.5	4.3	4	4	19

Number of neonates: 3 989



	K	F	I	A*	M	N*	T*	AA	W	P	H	AB	E	R	Q	D	C	G	U	L	O	J	B*	V	AC*	X*	S*	Z*	Y*
◆Odds Ratio	0	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.8	1	1.1	1.6	1.6	1.6	1.7	1.9	2.2	2.2	2.4	2.9	3	3.9	8.1
━Lower Limit	0	0	0.1	0.2	0.1	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3		0.5	0.4	0.9	0.9	0.8	0.8	1	1	1.4	1.7	1.6	1.8	2.6
━Upper Limit	0	2.2	1.3	0.7	1.8	0.9	1	1.6	1.3	1.5	1.4	1.3	1.9	2.1	2.1		2.3	6.2	2.8	2.9	3.6	4.4	4.8	5	4.4	5.1	5.4	8.5	25

Number of neonates: 3 989

Reference site: D

Inclusion criteria:
GA < 33 weeks
Age at admission less than 4 days
Remained in site beyond 2 days after birth

Sites Q and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites.

Significant predictors identified by multivariate analysis and adjusted for:
GA

Outcome is attributed to the site in which the infection occurred first (adjusted for transfer)

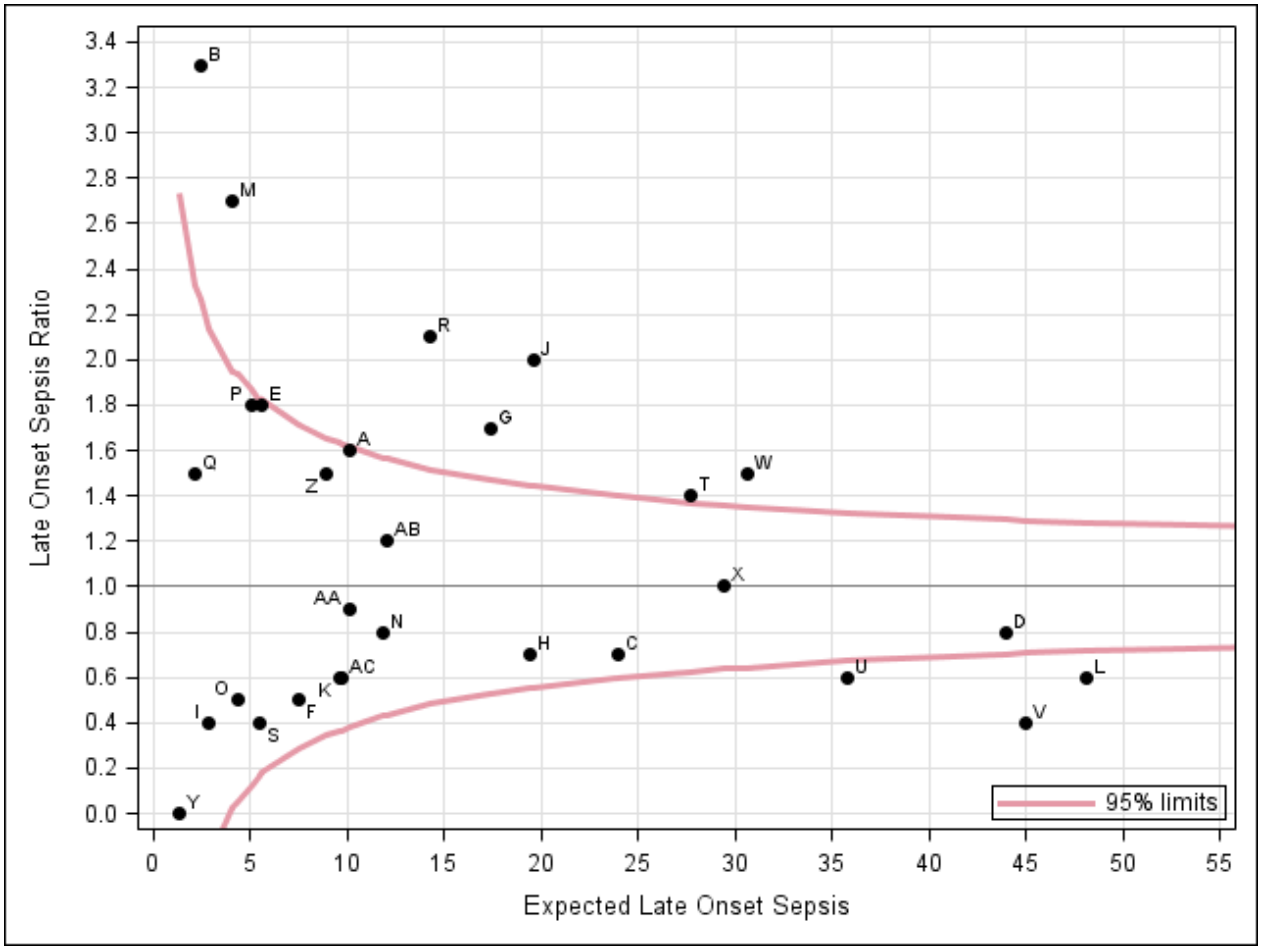
***Sites significantly different from reference site (P<0.05)**

Presentation #33b
Late onset sepsis among neonates with 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	
A	88	16	10.1	1.6	0.9	2.6
B	20	8	2.4	3.3	1.4	6.6
C	209	17	24.0	0.7	0.4	1.1
D	342	36	44.0	0.8	0.6	1.1
E	60	10	5.6	1.8	0.9	3.3
F	78	4	7.5	0.5	0.1	1.4
G*	137	30	17.4	1.7	1.2	2.5
H	180	13	19.4	0.7	0.4	1.1
I	29	1	2.8	0.4	0.0	2.0
J	182	40	19.6	2.0	1.5	2.8
K	91	6	9.6	0.6	0.2	1.4
L	350	31	48.1	0.6	0.4	0.9
M	65	11	4.1	2.7	1.3	4.8
N	122	9	11.8	0.8	0.3	1.4
O	54	2	4.4	0.5	0.1	1.6
P	74	9	5.1	1.8	0.8	3.3
Q	23	3	2.1	1.5	0.3	4.2
R	121	30	14.3	2.1	1.4	3.0
S	54	2	5.5	0.4	0.0	1.3
T	262	38	27.7	1.4	1.0	1.9
U	287	20	35.8	0.6	0.3	0.9
V	362	17	45.0	0.4	0.2	0.6
W	218	45	30.6	1.5	1.1	2.0
X	243	30	29.4	1.0	0.7	1.5
Y	13	0	1.3	0.0	.	2.8
Z	93	13	8.9	1.5	0.8	2.5
AA	108	9	10.1	0.9	0.4	1.7
AB	105	14	12.0	1.2	0.6	2.0
AC*	84	6	9.7	0.6	0.2	1.3

Please note that site codes for Presentations 33b and 33c are different from the site codes used in other presentations of this report.
Neonates with major congenital anomalies are excluded.
Variables adjusted for in the prediction model: GA, SGA, Sex, SNAPII > 20
* Sites G and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites. (See next page for full explanation)

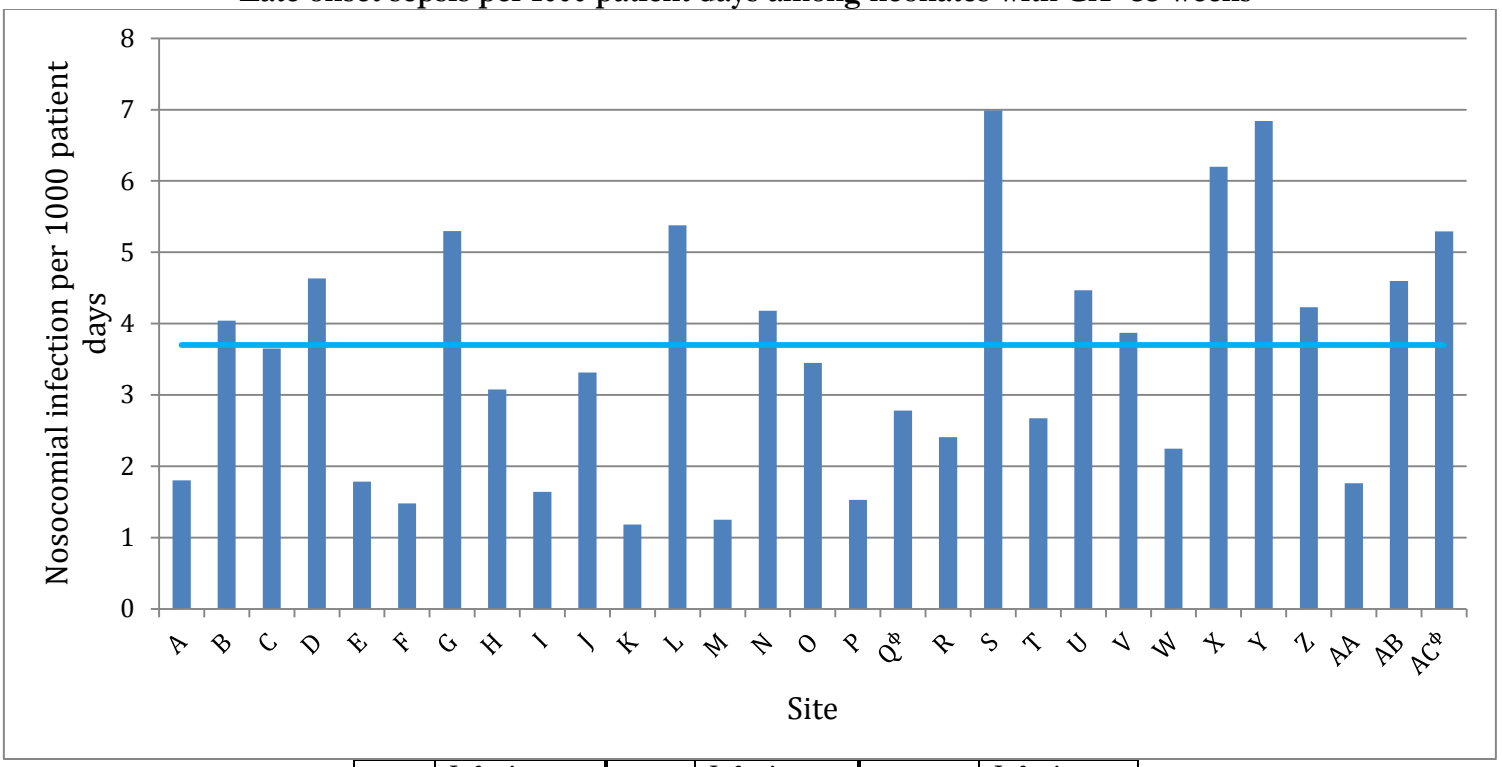
Presentation # 33c
Late onset sepsis among neonates with GA<33 weeks
Adjusted standardized ratios – site comparisons



Explanation for Presentation 33b
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 deaths/expected deaths
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 33c
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 alphabetical 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 #34
Late onset sepsis per 1000 patient days among neonates with GA<33 weeks



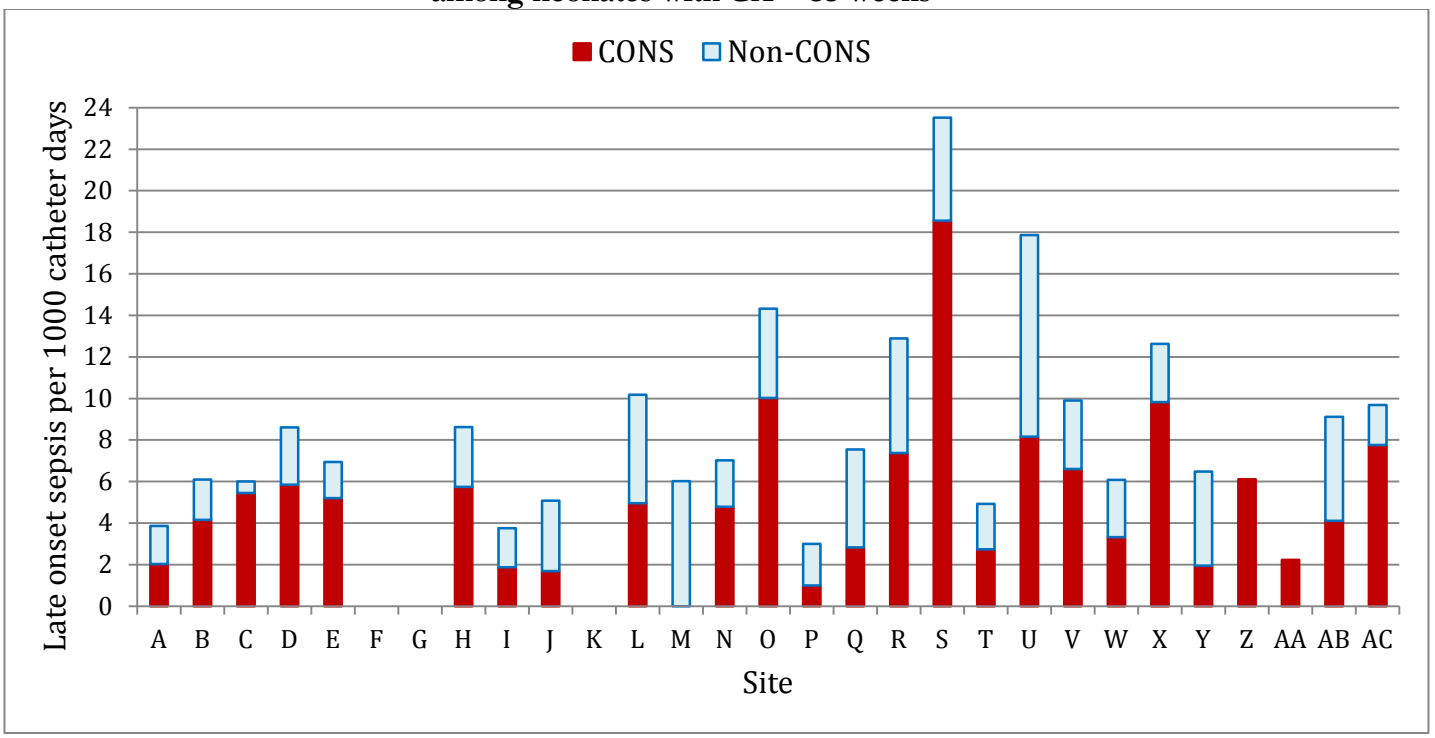
Site	Infections per 1000 patient days	Site	Infections per 1000 patient days	Site	Infections per 1000 patient days
A	1.8	**K**	1.2	**U**	4.5
B	4.0	**L**	5.4	**V**	3.9
C	3.6	**M**	1.3	**W**	2.2
D	4.6	**N**	4.2	**X**	6.2
E	1.8	**O**	3.4	**Y**	6.8
F	1.5	**P**	1.5	**Z**	4.2
G	5.3	**Qϕ**	2.8	**AA**	1.8
H	3.1	**R**	2.4	**AB**	4.6
I	1.6	**S**	7.0	**ACϕ**	5.3
J	3.3	**T**	2.7		
				Whole network	3.7

Total number of neonates = 4 262

***Note that the criteria for entering neonates with GA <33 in the CNN dataset are not the same for sites Q and AC, 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.

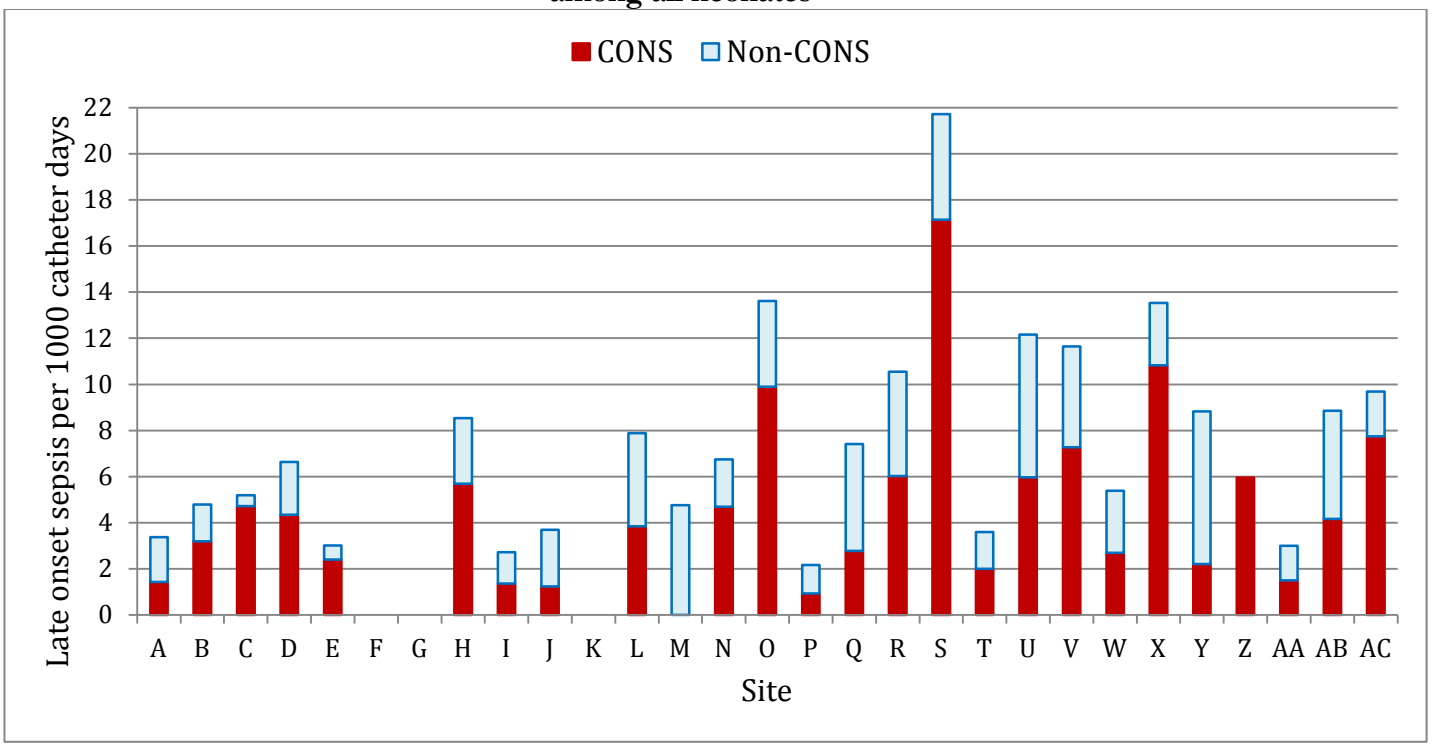
Presentation #35a
Central Line-Associated Bloodstream Infections (CLABSI) per 1000 central line* days among neonates with GA < 33 weeks



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	10	9	4923	2.0	1.8	**P**	2	4	2001	1.0	2.0
B	15	7	3611	4.2	1.9	**Q**	3	5	1061	2.8	4.7
C	10	1	1834	5.5	0.5	**R**	4	3	543	7.4	5.5
D	17	8	2906	5.8	2.8	**S**	15	4	808	18.6	5.0
E	3	1	576	5.2	1.7	**T**	10	8	3652	2.7	2.2
F	0	0	113	0.0	0.0	**U**	21	25	2574	8.2	9.7
G	0	0	21	0.0	0.0	**V**	2	1	303	6.6	3.3
H	12	6	2088	5.7	2.9	**W**	6	5	1808	3.3	2.8
I	1	1	533	1.9	1.9	**X**	14	4	1426	9.8	2.8
J	1	2	591	1.7	3.4	**Y**	3	7	1543	1.9	4.5
K	0	0	82	0.0	0.0	**Z**	3	0	491	6.1	0.0
L	18	19	3633	5.0	5.2	**AA**	1	0	449	2.2	0.0
M	0	1	166	0.0	6.0	**AB**	14	17	3404	4.1	5.0
N	15	7	3135	4.8	2.2	**AC**	12	3	1548	7.8	1.9
O	7	3	698	10.0	4.3						
						Total	**219**	**151**	**46521**	**4.7**	**3.2**

*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 #35b
Central Line-Associated Bloodstream Infections (CLABSI) per 1000 central line* days among all neonates

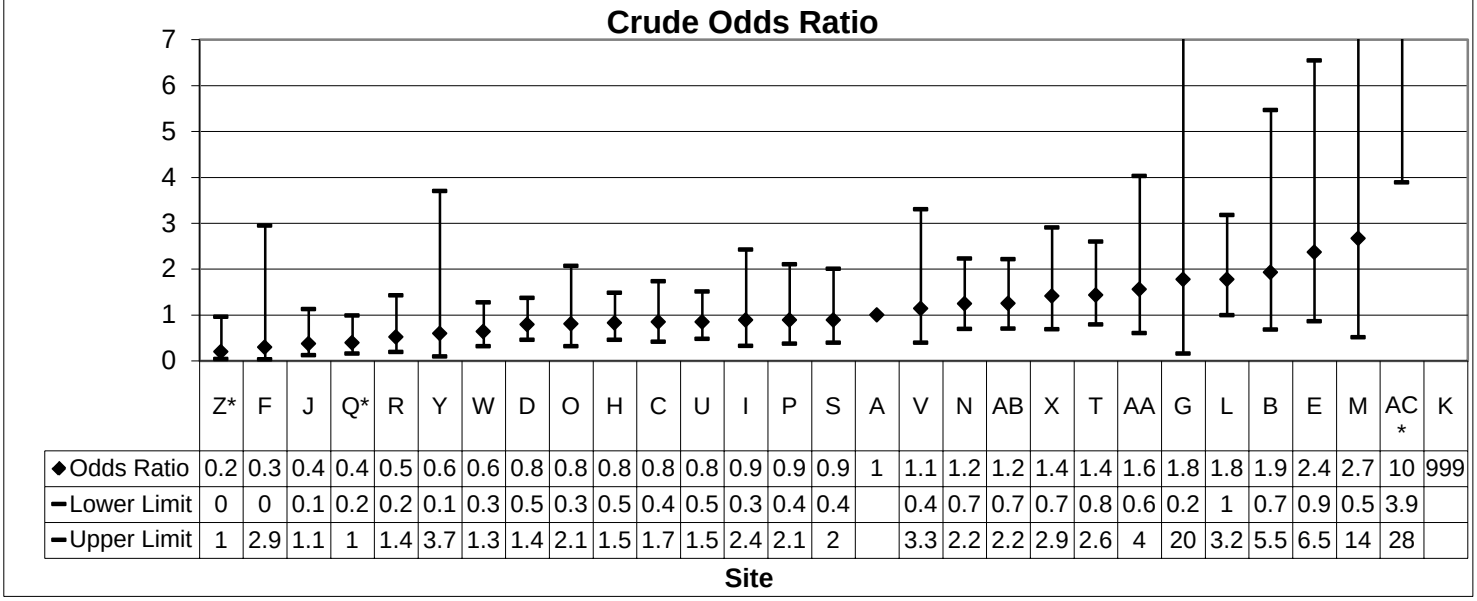


Site	CLABSI**		Central line days	CLABSI per 1000 central line days		Site	CLABSI**		Catheter days	CLABSI per 1000 central line days	
	CONS	Non-CONS		CONS	Non-CONS		CONS	Non-CONS		CONS	Non-CONS
A	11	15	7693	1.4	1.9	**P**	3	4	3225	0.9	1.2
B	24	12	7523	3.2	1.6	**Q**	3	5	1079	2.8	4.6
C	10	1	2119	4.7	0.5	**R**	4	3	664	6.0	4.5
D	21	11	4826	4.4	2.3	**S**	15	4	875	17.1	4.6
E	4	1	1661	2.4	0.6	**T**	10	8	4999	2.0	1.6
F	0	0	206	0.0	0.0	**U**	26	27	4357	6.0	6.2
G	0	0	28	0.0	0.0	**V**	5	3	687	7.3	4.4
H	12	6	2108	5.7	2.8	**W**	7	7	2596	2.7	2.7
I	1	1	735	1.4	1.4	**X**	16	4	1478	10.8	2.7
J	1	2	812	1.2	2.5	**Y**	9	27	4075	2.2	6.6
K	0	0	98	0.0	0.0	**Z**	3	0	504	6.0	0.0
L	22	23	5712	3.9	4.0	**AA**	1	1	666	1.5	1.5
M	0	1	210	0.0	4.8	**AB**	16	18	3842	4.2	4.7
N	16	7	3408	4.7	2.1	**AC**	12	3	1548	7.8	1.9
O	8	3	808	9.9	3.7						
						Total	**260**	**197**	**68542**	**3.8**	**2.9**

*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.

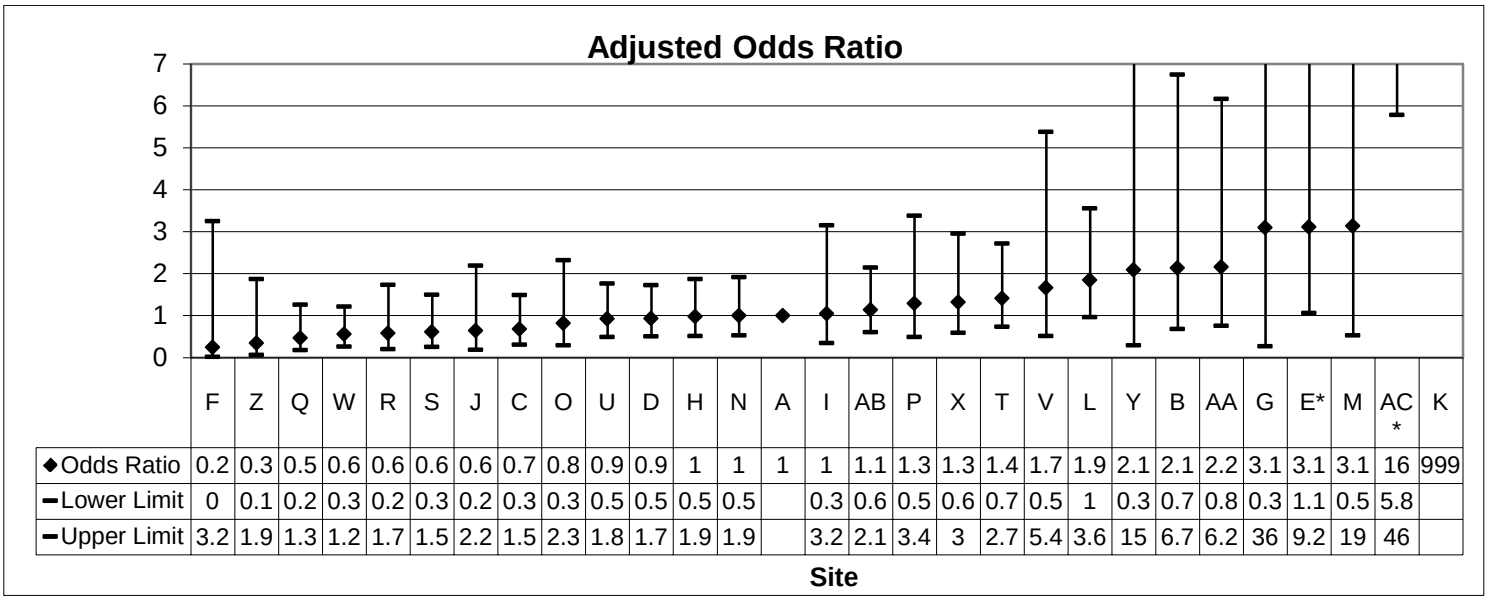
Presentation #36

Treatment[#] for PDA among neonates with GA<33 weeks



	Z*	F	J	Q*	R	Y	W	D	O	H	C	U	I	P	S	A	V	N	AB	X	T	AA	G	L	B	E	M	AC*	K
◆Odds Ratio	0.2	0.3	0.4	0.4	0.5	0.6	0.6	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	1	1.1	1.2	1.2	1.4	1.4	1.6	1.8	1.8	1.9	2.4	2.7	10	999
━Lower Limit	0	0	0.1	0.2	0.2	0.1	0.3	0.5	0.3	0.5	0.4	0.5	0.3	0.4	0.4		0.4	0.7	0.7	0.7	0.8	0.6	0.2	1	0.7	0.9	0.5	3.9	
━Upper Limit	1	2.9	1.1	1	1.4	3.7	1.3	1.4	2.1	1.5	1.7	1.5	2.4	2.1	2		3.3	2.2	2.2	2.9	2.6	4	20	3.2	5.5	6.5	14	28	

Number of neonates: 1 190



	F	Z	Q	W	R	S	J	C	O	U	D	H	N	A	I	AB	P	X	T	V	L	Y	B	AA	G	E*	M	AC*	K
◆Odds Ratio	0.2	0.3	0.5	0.6	0.6	0.6	0.6	0.7	0.8	0.9	0.9	1	1	1	1	1.1	1.3	1.3	1.4	1.7	1.9	2.1	2.1	2.2	3.1	3.1	3.1	16	999
━Lower Limit	0	0.1	0.2	0.3	0.2	0.3	0.2	0.3	0.3	0.5	0.5	0.5	0.5		0.3	0.6	0.5	0.6	0.7	0.5	1	0.3	0.7	0.8	0.3	1.1	0.5	5.8	
━Upper Limit	3.2	1.9	1.3	1.2	1.7	1.5	2.2	1.5	2.3	1.8	1.7	1.9	1.9		3.2	2.1	3.4	3	2.7	5.4	3.6	15	6.7	6.2	36	9.2	19	46	

Number of neonates: 1 190

Reference site: A

Inclusion criteria:
GA <33 weeks
Neonates who had PDA

Outcome is attributed to the network site of first admission

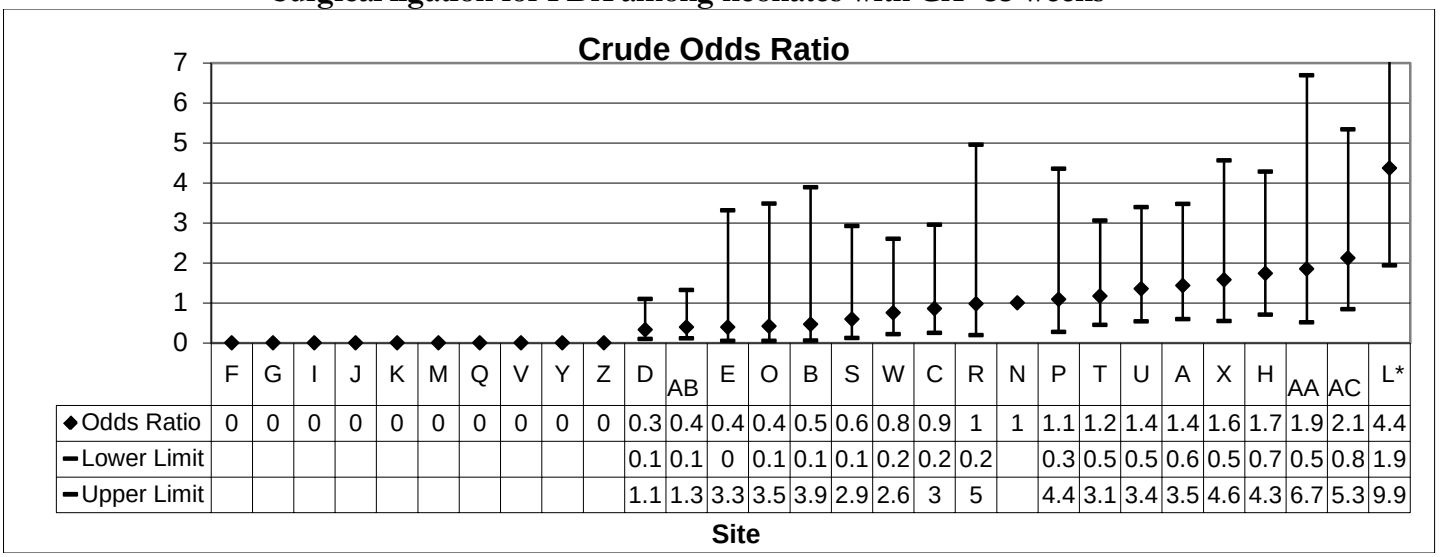
[#]Treatment of PDA includes any of indomethacin, ibuprofen, or ligation

Significant predictors identified by multivariate analysis and adjusted for:
GA

***Sites significantly different from reference site (P<0.05)**

Sites Q and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites.

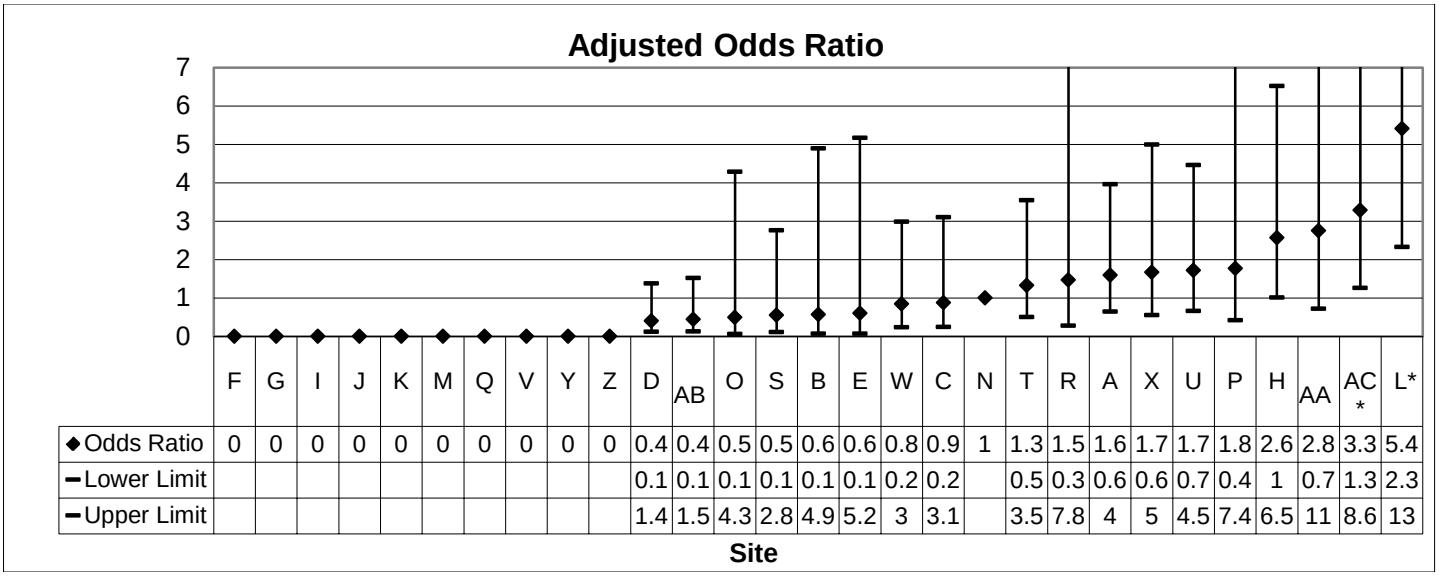
Presentation #37
Surgical ligation for PDA among neonates with GA<33 weeks



	F	G	I	J	K	M	Q	V	Y	Z	D	AB	E	O	B	S	W	C	R	N	P	T	U	A	X	H	AA	AC	L*
◆Odds Ratio	0	0	0	0	0	0	0	0	0	0	0.3	0.4	0.4	0.4	0.5	0.6	0.8	0.9	1	1	1.1	1.2	1.4	1.4	1.6	1.7	1.9	2.1	4.4
━Lower Limit											0.1	0.1	0	0.1	0.1	0.1	0.2	0.2	0.2		0.3	0.5	0.5	0.6	0.5	0.7	0.5	0.8	1.9
━Upper Limit											1.1	1.3	3.3	3.5	3.9	2.9	2.6	3	5		4.4	3.1	3.4	3.5	4.6	4.3	6.7	5.3	9.9

Site

Number of neonates: 1 080



	F	G	I	J	K	M	Q	V	Y	Z	D	AB	O	S	B	E	W	C	N	T	R	A	X	U	P	H	AA	AC*	L*
◆Odds Ratio	0	0	0	0	0	0	0	0	0	0	0.4	0.4	0.5	0.5	0.6	0.6	0.8	0.9	1	1.3	1.5	1.6	1.7	1.7	1.8	2.6	2.8	3.3	5.4
━Lower Limit											0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2		0.5	0.3	0.6	0.6	0.7	0.4	1	0.7	1.3	2.3
━Upper Limit											1.4	1.5	4.3	2.8	4.9	5.2	3	3.1		3.5	7.8	4	5	4.5	7.4	6.5	11	8.6	13

Site

Number of neonates: 1 080

Reference site: N

Inclusion criteria:
GA <33 weeks
Neonates who had PDA

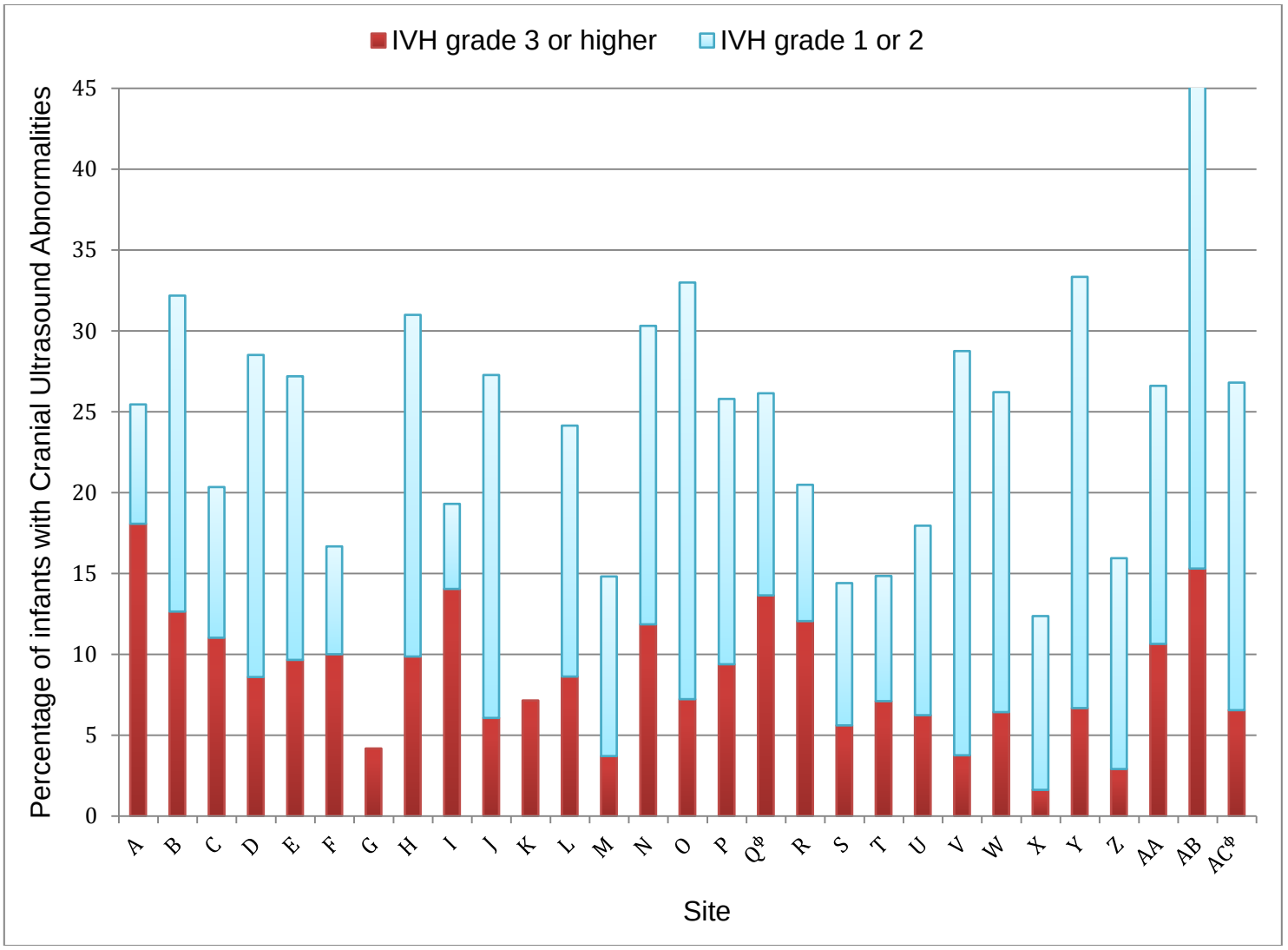
***Sites significantly different from reference site (P<0.05)**

Outcome is attributed to the network site of first admission

Significant predictors identified by multivariate analysis and adjusted for:
GA

Sites Q and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites.

Presentation #38
Neuroimaging abnormalities among neonates with GA<33 weeks



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

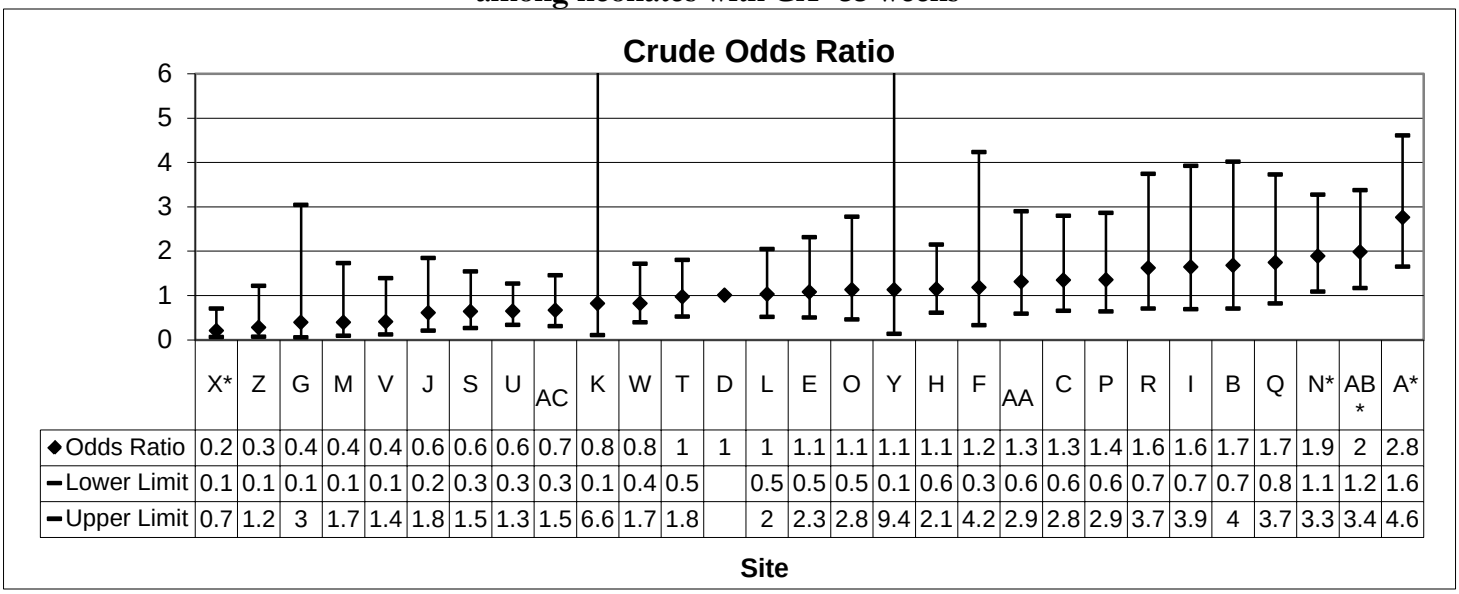
Presentation #38 (continued)
Neuroimaging abnormalities among neonates with GA<33 weeks – site rates

Site	<25	25-26	27-28	29-30	31-32	Overall rate* per sites %
A	52.3	39.0	28.3	11.5	2.6	18.1
B	0.0	38.5	11.8	26.7	0.0	12.6
C	16.7	21.4	21.7	12.5	0.0	11.0
D	20.0	16.7	14.6	3.1	4.3	8.6
E	66.7	40.0	19.1	0.0	2.1	9.7
F	100.0	0.0	16.7	0.0	0.0	10.0
G	NA	50.0	0.0	0.0	0.0	4.2
H	38.5	37.0	8.6	1.7	2.5	9.9
I	100.0	28.6	11.1	14.3	4.0	14.0
J	50.0	0.0	8.3	0.0	4.0	6.1
K	100.0	NA	0.0	0.0	0.0	7.1
L	33.3	13.2	6.1	5.5	2.9	8.6
M	100.0	0.0	0.0	0.0	0.0	3.7
N	31.3	29.7	12.9	3.1	0.0	11.9
O	33.3	33.3	11.8	0.0	2.2	7.2
P	25.0	42.9	0.0	9.4	3.5	9.4
Q$^{\phi}$	25.0	42.9	12.5	4.0	12.5	13.6
R	50.0	0.0	30.0	7.1	3.7	12.1
S	0.0	4.6	16.7	10.0	0.0	5.6
T	23.1	17.5	7.0	3.7	1.1	7.1
U	7.1	14.8	11.1	3.0	4.2	6.2
V	0.0	0.0	20.0	0.0	4.0	3.8
W	7.7	10.5	14.3	2.3	4.0	6.4
X	0.0	4.4	2.9	2.4	0.0	1.6
Y	NA	NA	0.0	0.0	11.1	6.7
Z	100.0	0.0	0.0	0.0	2.3	2.9
AA	33.3	36.4	6.7	10.3	0.0	10.6
AB	30.4	30.8	19.7	9.9	4.6	15.3
AC$^{\phi}$	18.2	11.1	9.5	3.9	0.0	6.5
Overall rate per GA group %**	30.1	23.7	13.0	5.5	2.6	9.7

Total number of neonates = 4 262
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 sites Q and AC and thus, the rates may not be comparable with other sites.

*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

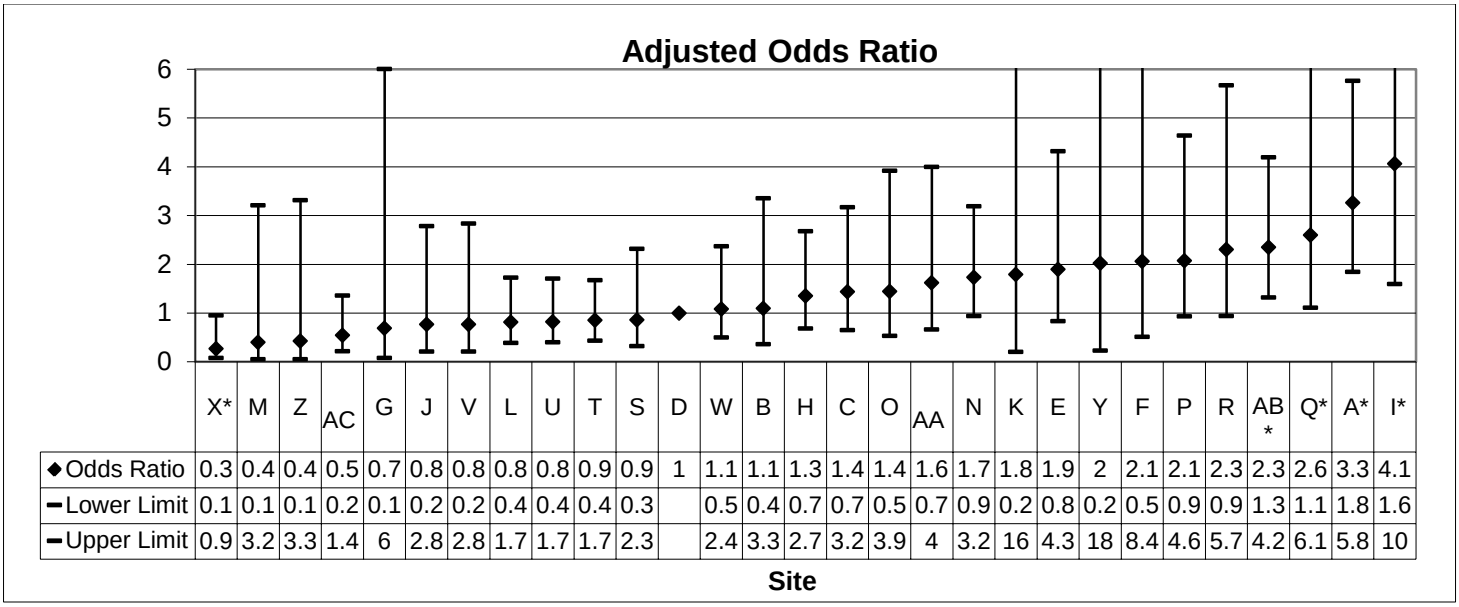
Presentation #39a
Neuroimaging abnormalities (IVH grade 3 or 4 or PVL)
among neonates with GA<33 weeks



	X*	Z	G	M	V	J	S	U	AC	K	W	T	D	L	E	O	Y	H	F	AA	C	P	R	I	B	Q	N*	AB*	A*
◆Odds Ratio	0.2	0.3	0.4	0.4	0.4	0.6	0.6	0.6	0.7	0.8	0.8	1	1	1	1.1	1.1	1.1	1.1	1.2	1.3	1.3	1.4	1.6	1.6	1.7	1.7	1.9	2	2.8
━Lower Limit	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.1	0.4	0.5		0.5	0.5	0.5	0.1	0.6	0.3	0.6	0.6	0.6	0.7	0.7	0.7	0.8	1.1	1.2	1.6
━Upper Limit	0.7	1.2	3	1.7	1.4	1.8	1.5	1.3	1.5	6.6	1.7	1.8		2	2.3	2.8	9.4	2.1	4.2	2.9	2.8	2.9	3.7	3.9	4	3.7	3.3	3.4	4.6

Site

Number of neonates: 3 382



	X*	M	Z	AC	G	J	V	L	U	T	S	D	W	B	H	C	O	AA	N	K	E	Y	F	P	R	AB*	Q*	A*	I*
◆Odds Ratio	0.3	0.4	0.4	0.5	0.7	0.8	0.8	0.8	0.8	0.9	0.9	1	1.1	1.1	1.3	1.4	1.4	1.6	1.7	1.8	1.9	2	2.1	2.1	2.3	2.3	2.6	3.3	4.1
━Lower Limit	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.4	0.4	0.4	0.3		0.5	0.4	0.7	0.7	0.5	0.7	0.9	0.2	0.8	0.2	0.5	0.9	0.9	1.3	1.1	1.8	1.6
━Upper Limit	0.9	3.2	3.3	1.4	6	2.8	2.8	1.7	1.7	1.7	2.3		2.4	3.3	2.7	3.2	3.9	4	3.2	16	4.3	18	8.4	4.6	5.7	4.2	6.1	5.8	10

Site

Number of neonates: 3 249

Reference site: D

Inclusion criteria:
GA <33 weeks
Age at admission less than 4 days
Neuroimaging results available

***Sites significantly different from reference site (P<0.05)**

Significant predictors identified by multivariate analysis and adjusted for:

GA	Antenatal corticosteroid
Male	SNAP-II Score

Sites Q and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites.

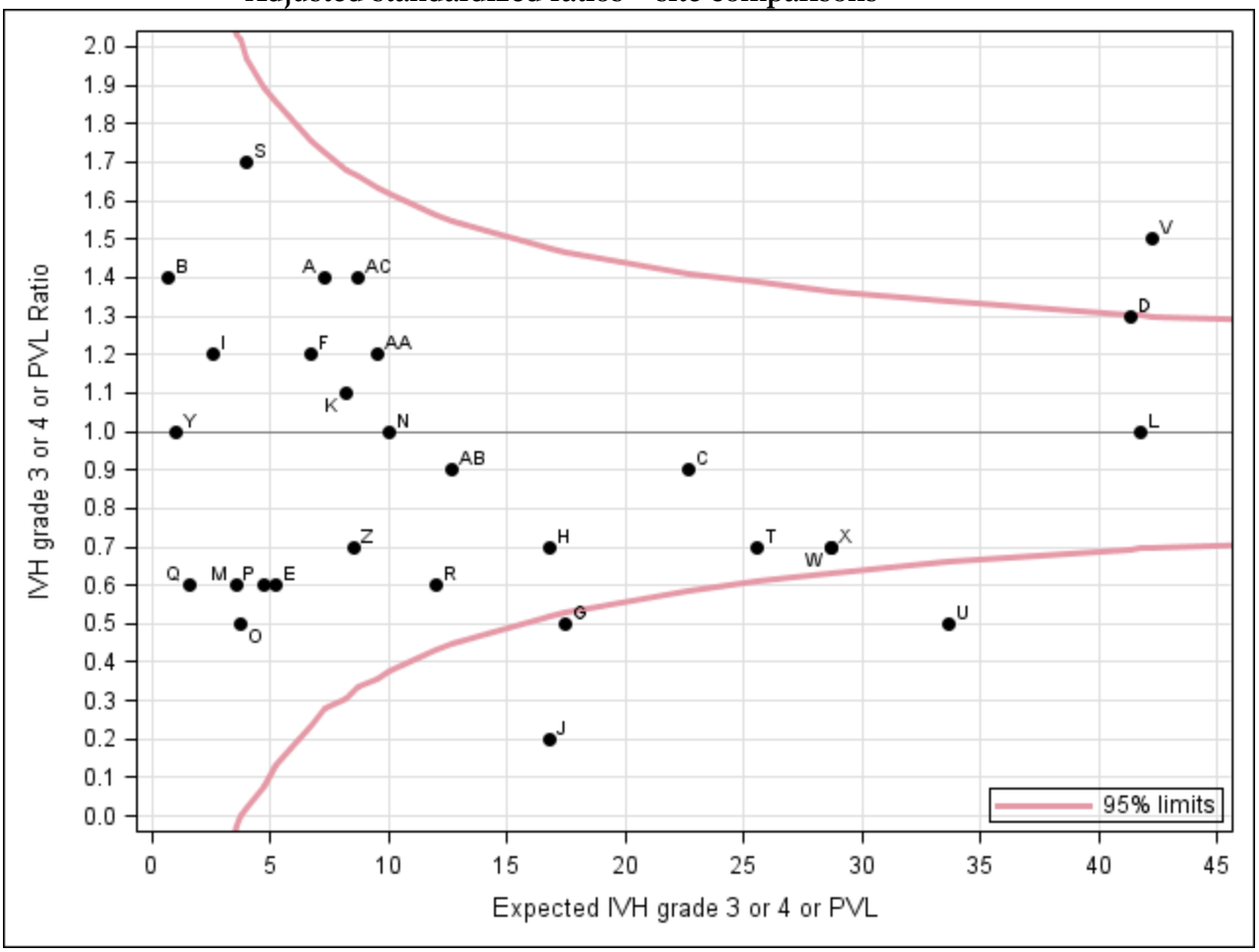
Outcome is attributed to the network site of first admission

Presentation# 39b
IVH grade 3 or 4 or PVL among neonates with 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	
A	73	10	7.3	1.4	0.7	2.5
B	10	1	0.7	1.4	0.0	8.0
C	185	21	22.7	0.9	0.6	1.4
D	291	54	41.4	1.3	1.0	1.7
E	58	3	5.2	0.6	0.1	1.7
F	56	8	6.7	1.2	0.5	2.4
G*	133	8	17.5	0.5	0.2	0.9
H	144	12	16.8	0.7	0.4	1.2
I	25	3	2.6	1.2	0.2	3.4
J	134	3	16.8	0.2	0.0	0.5
K	76	9	8.2	1.1	0.5	2.1
L	239	41	41.8	1.0	0.7	1.3
M	65	2	3.6	0.6	0.1	2.0
N	87	10	10.0	1.0	0.5	1.8
O	50	2	3.7	0.5	0.1	2.0
P	64	3	4.7	0.6	0.1	1.9
Q	23	1	1.6	0.6	0.0	3.5
R	104	7	12.0	0.6	0.2	1.2
S	49	7	4.0	1.7	0.7	3.6
T	236	17	25.6	0.7	0.4	1.1
U	207	17	33.7	0.5	0.3	0.8
V	281	63	42.3	1.5	1.1	1.9
W	158	19	28.7	0.7	0.4	1.0
X	215	21	28.7	0.7	0.5	1.1
Y	12	1	1.0	1.0	0.0	5.6
Z	61	6	8.5	0.7	0.3	1.5
AA	97	11	9.5	1.2	0.6	2.1
AB	96	12	12.7	0.9	0.5	1.7
AC*	74	12	8.7	1.4	0.7	2.4

Please note that site codes for Presentations 39b and 39c are different from the site codes used in other presentations of this report.
Neonates with major congenital anomalies are excluded.
Variables adjusted for in the prediction model: GA, SGA, Sex, SNAPII > 20
* Sites G and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites. (See next page for full explanation)

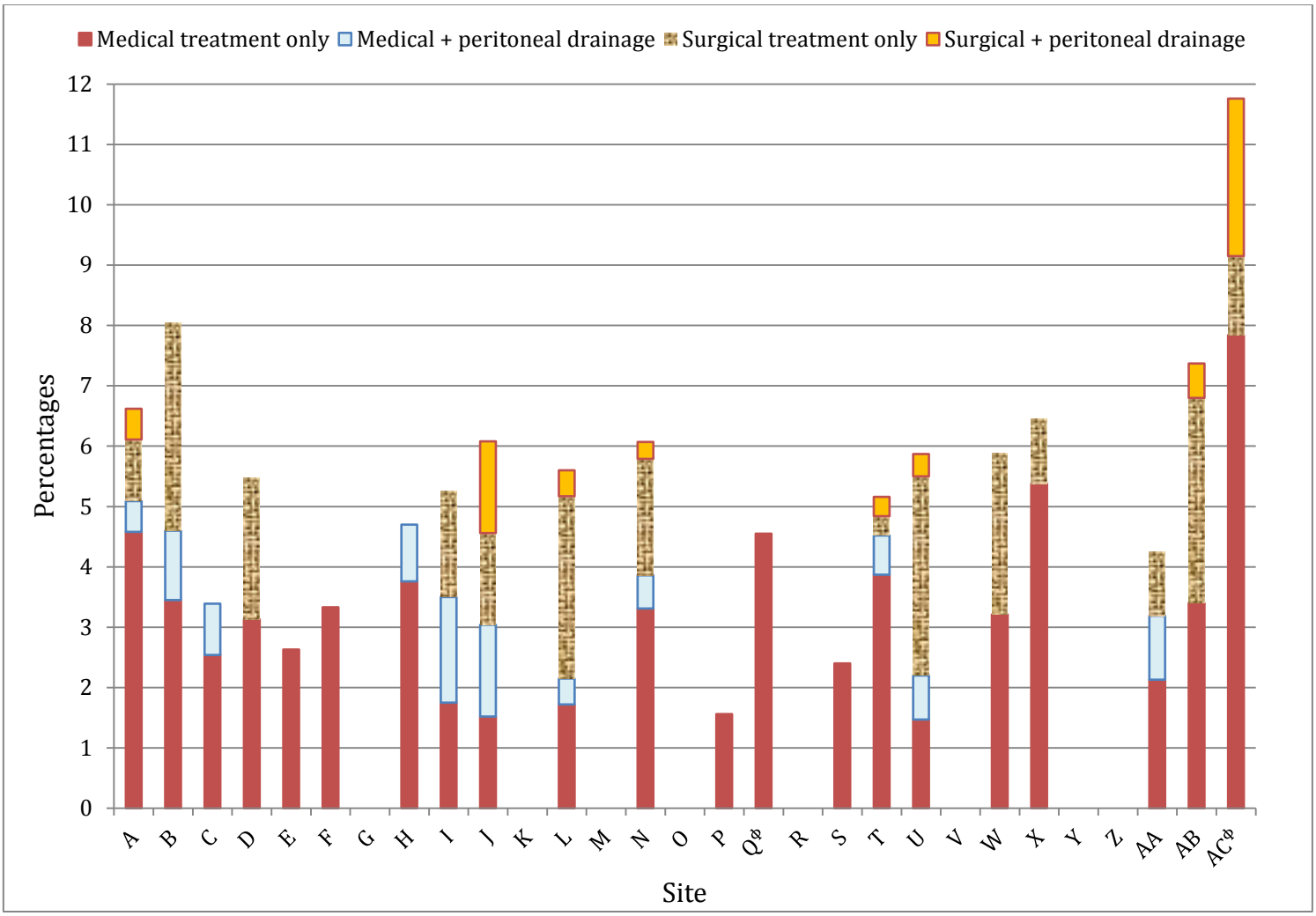
Presentation #39c
IVH grade 3 or 4 or PVL among neonates with GA<33 weeks
Adjusted standardized ratios – site comparisons



Explanation for Presentation 39b
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 deaths/expected deaths
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 39c
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 alphabetical 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 #40
Necrotizing enterocolitis (≥stage 2) among neonates with GA<33 weeks



Presentation #40 (continued)

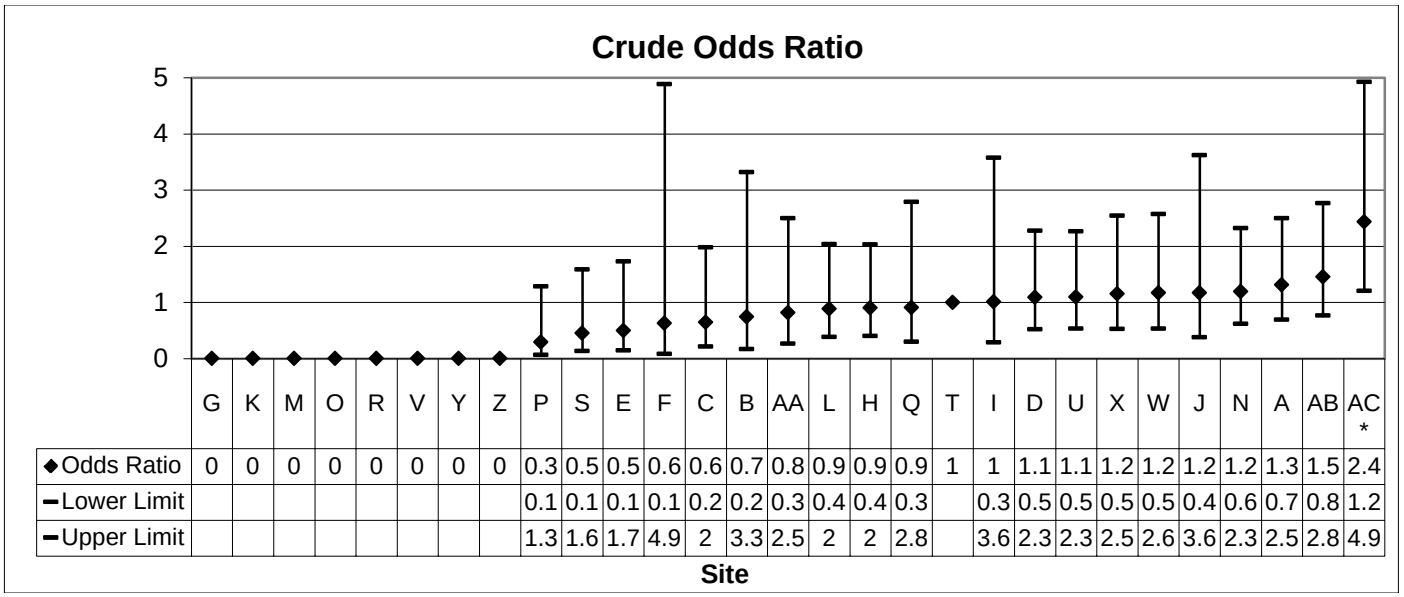
Necrotizing enterocolitis (≥stage 2) among neonates with GA<33 weeks – site rates

Site	Treatment (%)				
	Medical treatment only	Medical + peritoneal drainage	Surgical treatment only	Surgical + peritoneal drainage	Any
A	4.6	0.5	1.0	0.5	6.6
B	3.5	1.2	3.5	0.0	8.1
C	2.5	0.9	0.0	0.0	3.4
D	3.1	0.0	2.3	0.0	5.5
E	2.6	0.0	0.0	0.0	2.6
F	3.3	0.0	0.0	0.0	3.3
G	0.0	0.0	0.0	0.0	0.0
H	3.8	0.9	0.0	0.0	4.7
I	1.8	1.8	1.8	0.0	5.3
J	1.5	1.5	1.5	1.5	6.1
K	0.0	0.0	0.0	0.0	0.0
L	1.7	0.4	3.0	0.4	5.6
M	0.0	0.0	0.0	0.0	0.0
N	3.3	0.6	1.9	0.3	6.1
O	0.0	0.0	0.0	0.0	0.0
P	1.6	0.0	0.0	0.0	1.6
Qϕ	4.6	0.0	0.0	0.0	4.6
R	0.0	0.0	0.0	0.0	0.0
S	2.4	0.0	0.0	0.0	2.4
T	3.9	0.7	0.3	0.3	5.2
U	1.5	0.7	3.3	0.4	5.9
V	0.0	0.0	0.0	0.0	0.0
W	3.2	0.0	2.7	0.0	5.9
X	5.4	0.0	1.1	0.0	6.5
Y	0.0	0.0	0.0	0.0	0.0
Z	0.0	0.0	0.0	0.0	0.0
AA	2.1	1.1	1.1	0.0	4.3
AB	3.4	0.0	3.4	0.6	7.4
ACϕ	7.8	0.0	1.3	2.6	11.8
Total	3.0	0.4	1.4	0.3	5.1

COMMENTS: These analyses include 4 262 neonates from 29 sites. **Twenty-seven sites collected data on all eligible admissions for neonates with GA < 33 weeks whereas two sites (marked by ϕ) collected data on selected eligible admissions only.**

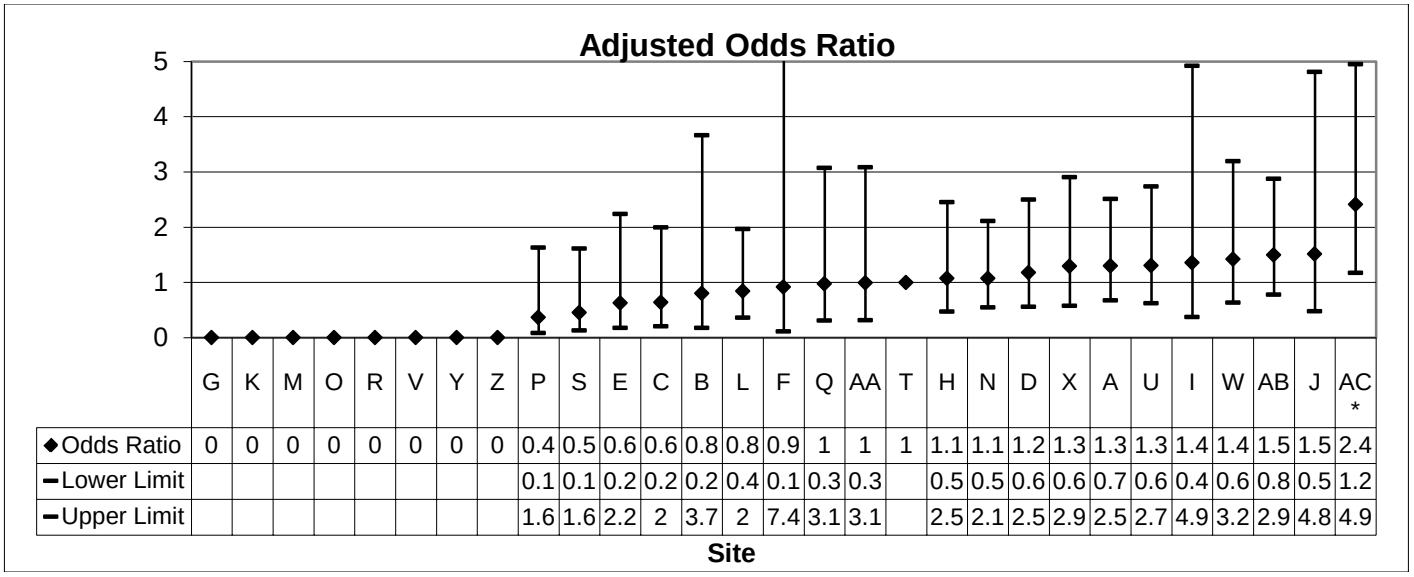
ϕNote that the criteria for entering neonates with GA **<33 weeks** in the CNN dataset are not same for sites Q and AC and thus, the rates may not be comparable with other sites.

Presentation #41a
Necrotizing enterocolitis (≥ stage 2) among neonates with GA<33 weeks



	G	K	M	O	R	V	Y	Z	P	S	E	F	C	B	AA	L	H	Q	T	I	D	U	X	W	J	N	A	AB	AC *
◆Odds Ratio	0	0	0	0	0	0	0	0	0.3	0.5	0.5	0.6	0.6	0.7	0.8	0.9	0.9	0.9	1	1	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.5	2.4
━Lower Limit									0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.3		0.3	0.5	0.5	0.5	0.5	0.4	0.6	0.7	0.8	1.2
━Upper Limit									1.3	1.6	1.7	4.9	2	3.3	2.5	2	2	2.8		3.6	2.3	2.3	2.5	2.6	3.6	2.3	2.5	2.8	4.9

Number of neonates: 3 849



	G	K	M	O	R	V	Y	Z	P	S	E	C	B	L	F	Q	AA	T	H	N	D	X	A	U	I	W	AB	J	AC *
◆Odds Ratio	0	0	0	0	0	0	0	0	0.4	0.5	0.6	0.6	0.8	0.8	0.9	1	1	1	1.1	1.1	1.2	1.3	1.3	1.3	1.4	1.4	1.5	1.5	2.4
━Lower Limit									0.1	0.1	0.2	0.2	0.2	0.4	0.1	0.3	0.3		0.5	0.5	0.6	0.6	0.7	0.6	0.4	0.6	0.8	0.5	1.2
━Upper Limit									1.6	1.6	2.2	2	3.7	2	7.4	3.1	3.1		2.5	2.1	2.5	2.9	2.5	2.7	4.9	3.2	2.9	4.8	4.9

Number of neonates: 3 682

Reference site: T

Inclusion criteria:
GA < 33 weeks
Age at admission less than 4 days

Outcome is attributed to the network site of first admission

All the neonates who meet the criteria in sites G, K, M, O, R, V, Y, and Z did not have NEC stage 2 or higher (Odds Ratio: 0)

Significant predictors identified by multivariate analysis and adjusted for:
GA Cesarean section

***Sites significantly different from reference site (P<0.05)**

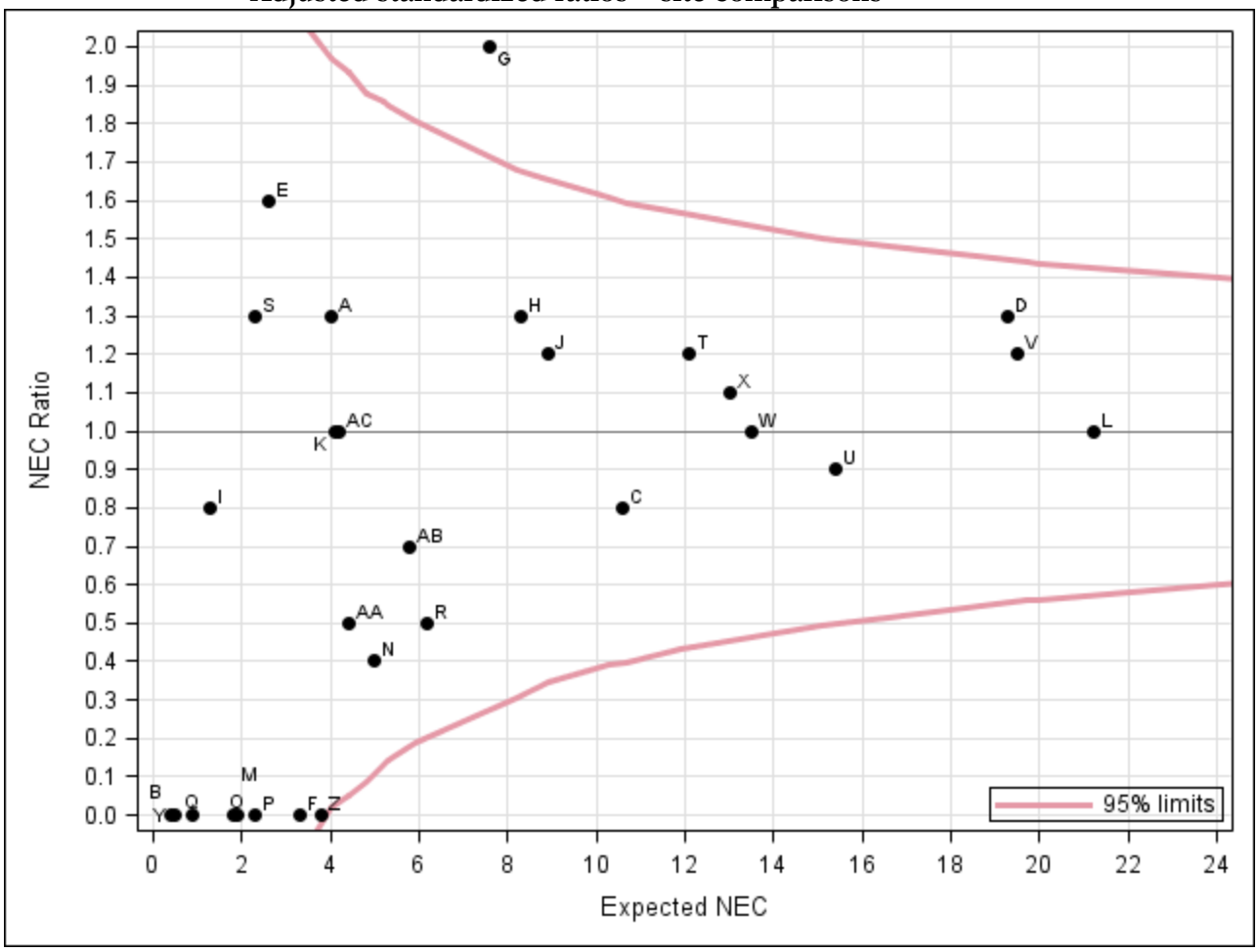
Site Q and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites.

Presentation #41b
Necrotizing enterocolitis (≥ stage 2) among neonates with 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	
A	81	5	4.0	1.3	0.4	2.9
B	12	0	0.4	0.0	.	9.2
C	209	9	10.6	0.8	0.4	1.6
D	346	26	19.3	1.3	0.9	2.0
E	61	4	2.6	1.6	0.4	3.9
F	78	0	3.3	0.0	.	1.1
G*	139	15	7.6	2.0	1.1	3.3
H	181	11	8.3	1.3	0.7	2.4
I	29	1	1.3	0.8	0.0	4.3
J	184	11	8.9	1.2	0.6	2.2
K	91	4	4.1	1.0	0.3	2.5
L	353	22	21.2	1.0	0.7	1.6
M	65	0	1.8	0.0	.	2.0
N	121	2	5.0	0.4	0.0	1.4
O	54	0	1.9	0.0	.	1.9
P	74	0	2.3	0.0	.	1.6
Q	23	0	0.9	0.0	.	4.1
R	120	3	6.2	0.5	0.1	1.4
S	54	3	2.3	1.3	0.3	3.8
T	262	15	12.1	1.2	0.7	2.0
U	287	14	15.4	0.9	0.5	1.5
V	362	23	19.5	1.2	0.7	1.8
W	219	13	13.5	1.0	0.5	1.6
X	242	14	13.0	1.1	0.6	1.8
Y	13	0	0.5	0.0	.	7.4
Z	93	0	3.8	0.0	.	1.0
AA	108	2	4.4	0.5	0.1	1.6
AB	111	4	5.8	0.7	0.2	1.8
AC*	84	4	4.2	1.0	0.3	2.4

Please note that site codes for Presentations 41b and 41c are different from the site codes used in other presentations of this report.
Neonates with major congenital anomalies are excluded.
Variables adjusted for in the prediction model: GA, SGA, Sex, SNAPII > 20
* Sites G and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites. (See next page for full explanation)

Presentation #41c
Necrotizing enterocolitis (≥ stage 2) among neonates with GA<33 weeks
Adjusted standardized ratios – site comparisons



Explanation for Presentation 41b
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 deaths/expected deaths
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 41c
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 alphabetical 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 #42
Oxygen use at 36 weeks or at discharge (if earlier) or death among neonates with GA <33 weeks at birth – site rates

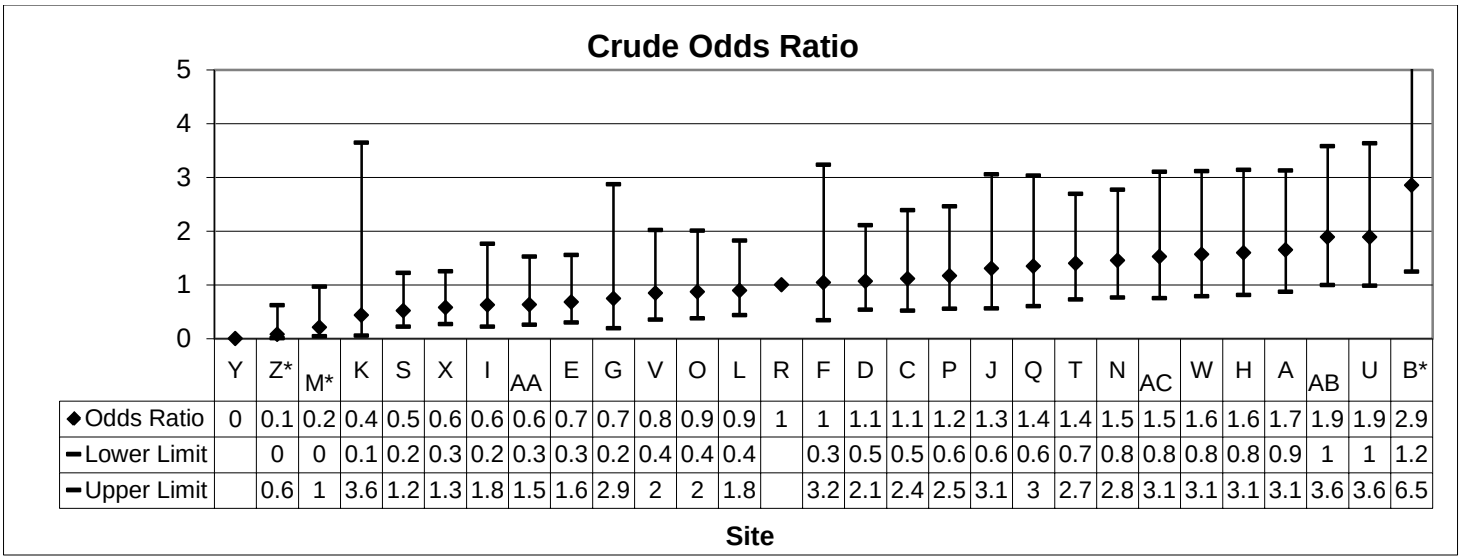
GA at birth						
Site	**<25**	**25-26**	**27-28**	**29-30**	**31-32**	**Overall rate for sites**
A	86.4	51.2	38.3	13.8	3.4	25.8
B	100.0	66.7	40.0	38.5	10.8	32.5
C	50.0	42.9	30.4	8.3	2.2	18.6
D	68.0	62.5	12.5	12.3	2.1	18.8
E	66.7	60.0	19.1	3.0	0.0	11.4
F	100.0	100.0	16.7	25.0	0.0	16.7
G	NA	100.0	0.0	11.1	0.0	12.5
H	84.6	51.9	40.0	20.3	3.8	25.4
I	100.0	14.3	22.2	0.0	8.0	12.3
J	100.0	75.0	41.7	4.8	4.0	21.2
K	100.0	NA	0.0	0.0	0.0	7.1
L	65.0	44.4	16.7	5.8	3.0	18.8
M	50.0	33.3	0.0	0.0	0.0	3.7
N	68.8	45.3	22.4	7.3	3.5	22.0
O	100.0	55.6	35.3	0.0	2.2	14.9
P	100.0	50.0	42.9	9.4	1.8	18.8
Q[ϕ]	100.0	100.0	25.0	16.0	0.0	26.1
R	100.0	16.7	35.0	10.7	0.0	15.7
S	40.0	28.6	16.7	3.3	0.0	9.7
T	65.4	56.4	26.1	9.8	3.4	22.3
U	92.3	84.6	37.2	19.4	8.4	27.2
V	100.0	75.0	20.0	15.8	6.0	15.0
W	76.9	52.6	48.6	9.1	6.6	24.6
X	70.0	30.4	14.7	4.8	1.3	11.8
Y	NA	NA	0.0	100.0	0.0	7.1
Z	0.0	NA	0.0	0.0	2.3	1.5
AA	66.7	45.5	0.0	7.9	0.0	10.8
AB	72.7	66.2	28.8	14.3	7.4	28.1
AC[ϕ]	100.0	66.7	31.0	4.2	3.9	26.9
Overall rate for GA group	76.1	53.9	27.2	10.5	3.7	20.7

Total number of neonates = 4 214. 48 neonates were excluded due to first admission after week 36. NA = no data available.

[ϕ]Note that the criteria for entering neonates with GA <33 weeks in the CNN dataset are not the same for sites Q and AC and thus, the rates may not be comparable with other sites. Outcomes are attributed to the site of first admission.

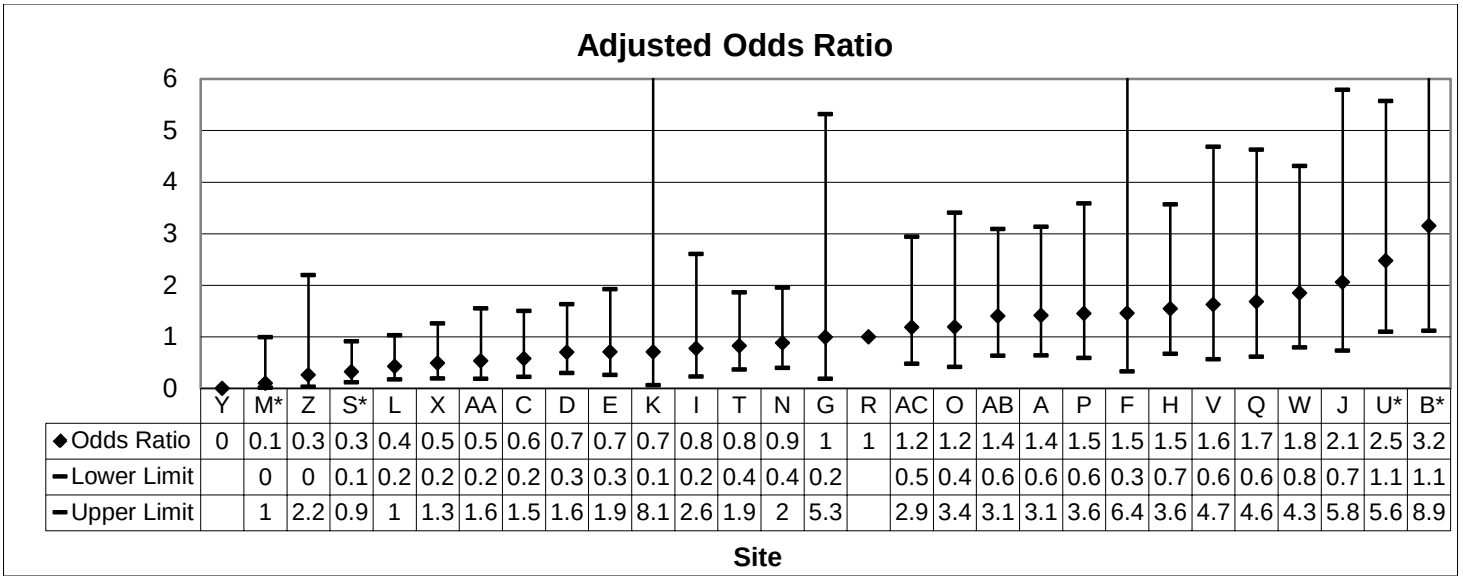
Comments: Neonates were classified as having oxygen use at 36 weeks as follows: a) receiving supplemental oxygen at week 36 postmenstrual age (PMA) or b) discharged prior to week 36 PMA and receiving supplemental oxygen at discharge. Neonates were excluded from analysis if the first admission was after week36. There were no requirements for chest radiographs at the time of diagnosis. Deaths prior to week 36 PMA are included.

Presentation #43
Oxygen use at 36 weeks or at discharge (if earlier) or death among neonates with GA <33 weeks at birth



	Y	Z*	M*	K	S	X	I	AA	E	G	V	O	L	R	F	D	C	P	J	Q	T	N	AC	W	H	A	AB	U	B*
◆Odds Ratio	0	0.1	0.2	0.4	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.9	0.9	1	1	1.1	1.1	1.2	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.9	1.9	2.9
━Lower Limit		0	0	0.1	0.2	0.3	0.2	0.3	0.3	0.2	0.4	0.4	0.4		0.3	0.5	0.5	0.6	0.6	0.6	0.7	0.8	0.8	0.8	0.8	0.9	1	1	1.2
━Upper Limit		0.6	1	3.6	1.2	1.3	1.8	1.5	1.6	2.9	2	2	1.8		3.2	2.1	2.4	2.5	3.1	3	2.7	2.8	3.1	3.1	3.1	3.1	3.6	3.6	6.5

Number of neonates: 4 043



	Y	M*	Z	S*	L	X	AA	C	D	E	K	I	T	N	G	R	AC	O	AB	A	P	F	H	V	Q	W	J	U*	B*
◆Odds Ratio	0	0.1	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.7	0.7	0.8	0.8	0.9	1	1	1.2	1.2	1.4	1.4	1.5	1.5	1.5	1.6	1.7	1.8	2.1	2.5	3.2
━Lower Limit		0	0	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.1	0.2	0.4	0.4	0.2		0.5	0.4	0.6	0.6	0.6	0.3	0.7	0.6	0.6	0.8	0.7	1.1	1.1
━Upper Limit		1	2.2	0.9	1	1.3	1.6	1.5	1.6	1.9	8.1	2.6	1.9	2	5.3		2.9	3.4	3.1	3.1	3.6	6.4	3.6	4.7	4.6	4.3	5.8	5.6	8.9

Number of neonates: 3 918

Reference site: R

Inclusion criteria:
GA <33 weeks
Age at admission less than 4 days

Sites Q and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites.

Significant predictors identified by multivariate analysis and adjusted for:
GA SGA (BW <10th percentile for GA)
SNAP-II Score Apgar at 5 minutes

***Sites significantly different from reference site (P<0.05)**

Outcome is attributed to the network site of first admission

Presentation #44
Oxygen use at 36 weeks or at discharge (if earlier) among neonates with GA<33 weeks – site rates

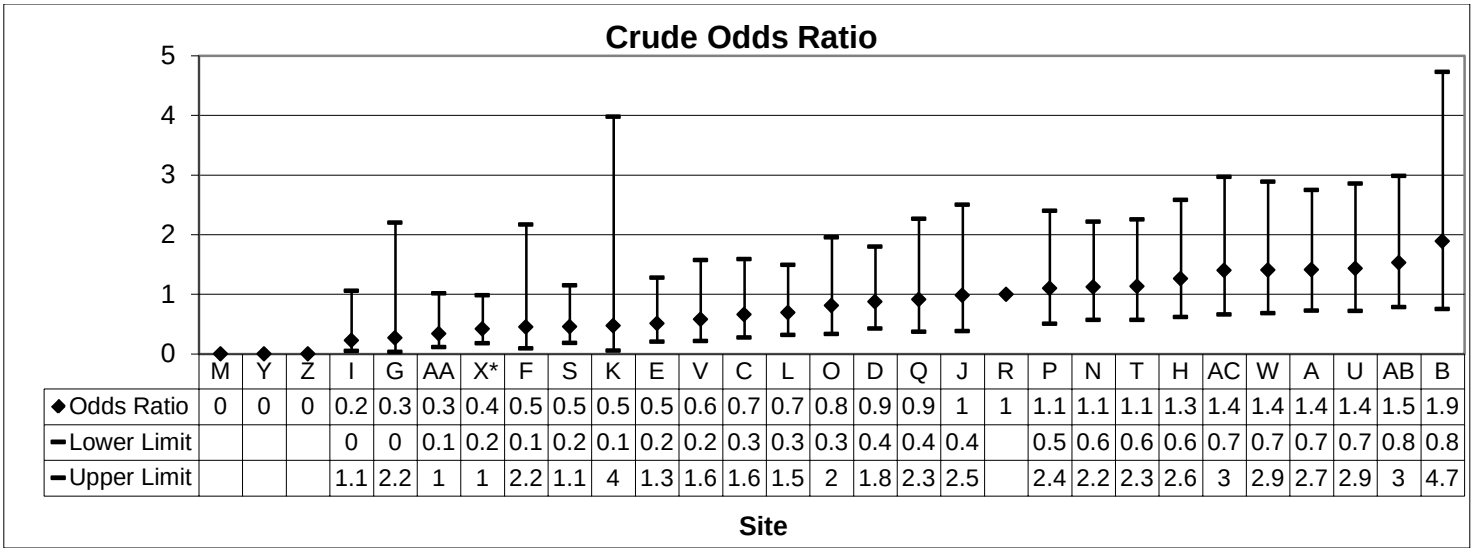
GA at birth						
Site	**<25**	**25-26**	**27-28**	**29-30**	**31-32**	**Overall rate for sites**
A	76.0	46.0	36.2	12.0	2.1	19.8
B	100.0	50.0	35.7	38.5	8.3	25.0
C	14.3	33.3	20.0	4.4	2.2	10.3
D	60.0	57.1	6.7	9.5	0.0	13.7
E	0.0	55.6	15.0	3.0	0.0	8.2
F	NA	100.0	0.0	25.0	0.0	7.4
G	NA	NA	0.0	11.1	0.0	4.6
H	71.4	35.0	34.4	17.5	2.6	18.0
I	NA	0.0	12.5	0.0	4.2	3.9
J	100.0	66.7	30.0	4.8	4.0	14.8
K	100.0	NA	0.0	0.0	0.0	7.1
L	56.3	39.4	13.0	3.9	3.0	15.0
M	0.0	0.0	0.0	0.0	0.0	0.0
N	52.4	37.5	20.5	4.3	3.5	16.5
O	100.0	50.0	31.3	0.0	2.2	12.1
P	100.0	41.7	40.0	9.4	1.8	16.1
Q$^{\phi}$	100.0	100.0	20.0	8.7	0.0	14.5
R	100.0	16.7	31.6	10.7	0.0	14.6
S	25.0	21.1	16.7	3.3	0.0	7.4
T	55.0	43.3	23.9	8.6	1.2	16.8
U	80.0	80.0	29.0	15.6	6.8	20.1
V	100.0	50.0	20.0	11.1	4.1	9.3
W	62.5	43.8	45.5	9.1	5.3	19.9
X	50.0	23.8	9.4	2.4	0.0	6.8
Y	NA	NA	0.0	100.0	0.0	7.1
Z	0.0	NA	0.0	0.0	0.0	0.0
AA	66.7	0.0	0.0	7.9	0.0	5.7
AB	57.1	58.5	23.0	11.4	5.7	21.4
AC$^{\phi}$	100.0	62.5	23.7	2.1	3.9	19.7
Overall rate for GA group	61.4	44.6	22.7	8.6	2.6	15.1

Total number of neonates = 3 935.
327 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 sites Q and AC and thus, the rates may not be comparable with other sites. Outcomes are attributed to the site of first admission.

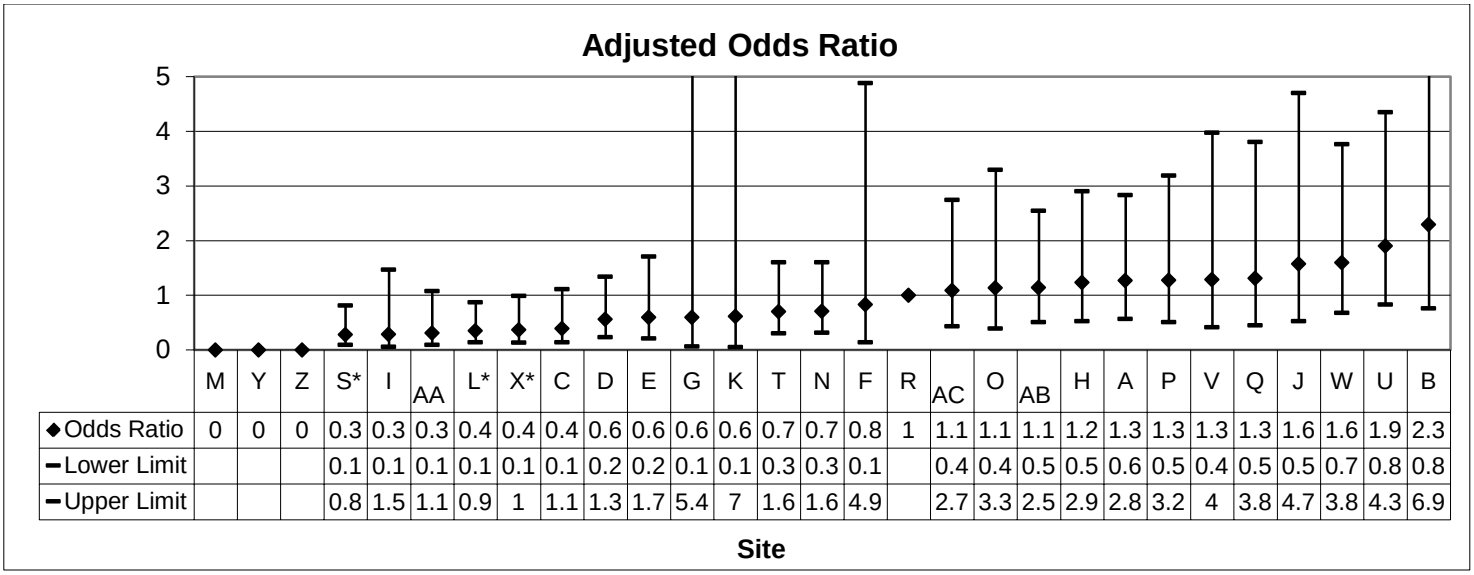
Comments: Neonates were classified as having oxygen use at 36 weeks as follows: a) receiving supplemental oxygen at week 36 postmenstrual age (PMA) or b) discharged prior to week 36 PMA and receiving supplemental oxygen at discharge. Neonates were excluded from analysis if they died prior to week 36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

Presentation #45a
Oxygen use at 36 weeks or at discharge (if earlier)
among neonates with GA<33 weeks



	M	Y	Z	I	G	AA	X*	F	S	K	E	V	C	L	O	D	Q	J	R	P	N	T	H	AC	W	A	U	AB	B
◆Odds Ratio	0	0	0	0.2	0.3	0.3	0.4	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.8	0.9	0.9	1	1	1.1	1.1	1.1	1.3	1.4	1.4	1.4	1.4	1.5	1.9
━Lower Limit				0	0	0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4		0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.8
━Upper Limit				1.1	2.2	1	1	2.2	1.1	4	1.3	1.6	1.6	1.5	2	1.8	2.3	2.5		2.4	2.2	2.3	2.6	3	2.9	2.7	2.9	3	4.7

Number of neonates: 3 816



	M	Y	Z	S*	I	AA	L*	X*	C	D	E	G	K	T	N	F	R	AC	O	AB	H	A	P	V	Q	J	W	U	B
◆Odds Ratio	0	0	0	0.3	0.3	0.3	0.4	0.4	0.4	0.6	0.6	0.6	0.6	0.7	0.7	0.8	1	1.1	1.1	1.1	1.2	1.3	1.3	1.3	1.3	1.6	1.6	1.9	2.3
━Lower Limit				0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.3	0.3	0.1		0.4	0.4	0.5	0.5	0.6	0.5	0.4	0.5	0.5	0.7	0.8	0.8
━Upper Limit				0.8	1.5	1.1	0.9	1	1.1	1.3	1.7	5.4	7	1.6	1.6	4.9		2.7	3.3	2.5	2.9	2.8	3.2	4	3.8	4.7	3.8	4.3	6.9

Number of neonates: 3 705

Reference site: R

Inclusion criteria:
GA <33 weeks
Age at admission less than 4 days
Survival to 36 weeks post-menstrual age or discharge

Outcome is attributed to the network site of first admission

Significant predictors identified by multivariate analysis and adjusted for:
GA SGA (BW <10th percentile for GA)
Apgar at 5 minutes SNAP-II Score

***Sites significantly different from reference site (P<0.05)**

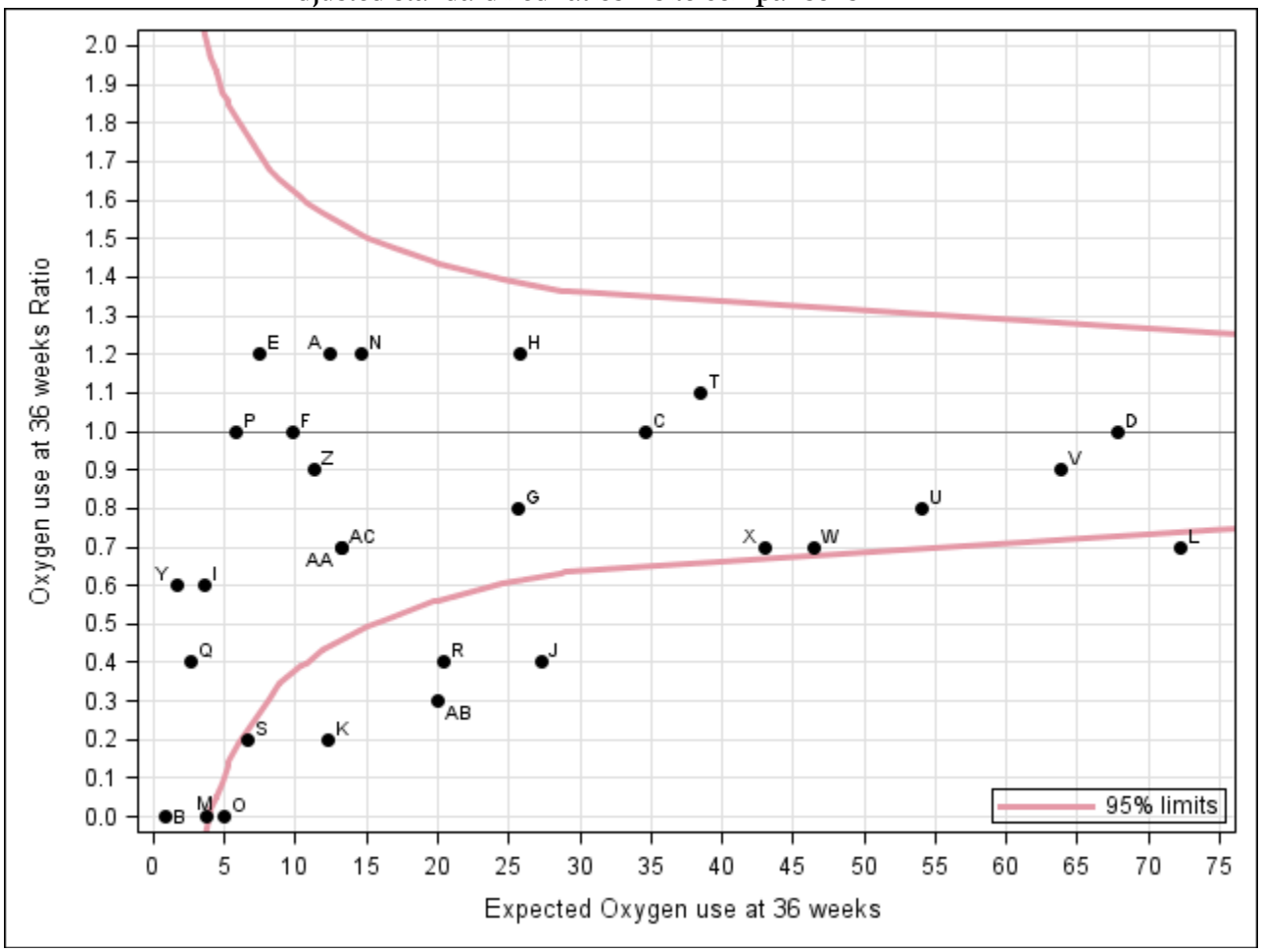
Site Q and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites.

Presentation #45b
Oxygen use at 36 weeks or at discharge (if earlier)
among neonates with 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	
A	66	15	12.4	1.2	0.7	2.0
B	12	0	0.8	0.0	.	4.6
C	190	33	34.6	1.0	0.7	1.3
D	316	66	67.8	1.0	0.8	1.2
E	56	9	7.4	1.2	0.6	2.3
F	77	10	9.8	1.0	0.5	1.9
G*	120	20	25.7	0.8	0.5	1.2
H	171	32	25.8	1.2	0.8	1.8
I	26	2	3.6	0.6	0.1	2.0
J	174	11	27.3	0.4	0.2	0.7
K	85	3	12.3	0.2	0.1	0.7
L	330	54	72.3	0.7	0.6	1.0
M	64	0	3.7	0.0	.	1.0
N	117	17	14.6	1.2	0.7	1.9
O	52	0	5.0	0.0	.	0.7
P	69	6	5.8	1.0	0.4	2.3
Q	21	1	2.7	0.4	0.0	2.1
R	116	9	20.4	0.4	0.2	0.8
S	49	1	6.6	0.2	0.0	0.8
T	234	44	38.5	1.1	0.8	1.5
U	267	42	54.0	0.8	0.6	1.1
V	332	58	63.8	0.9	0.7	1.2
W	203	31	46.5	0.7	0.5	0.9
X	229	31	43.0	0.7	0.5	1.0
Y	13	1	1.6	0.6	0.0	3.5
Z	87	10	11.3	0.9	0.4	1.6
AA	104	9	13.2	0.7	0.3	1.3
AB	101	7	20.0	0.3	0.1	0.7
AC*	73	9	13.3	0.7	0.3	1.3

Please note that site codes for Presentations 45b and 45c are different from the site codes used in other presentations of this report.
Neonates with major congenital anomalies are excluded.
Variables adjusted for in the prediction model: GA, SGA, Sex, SNAPII > 20
* Sites G and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites. (See next page for full explanation)

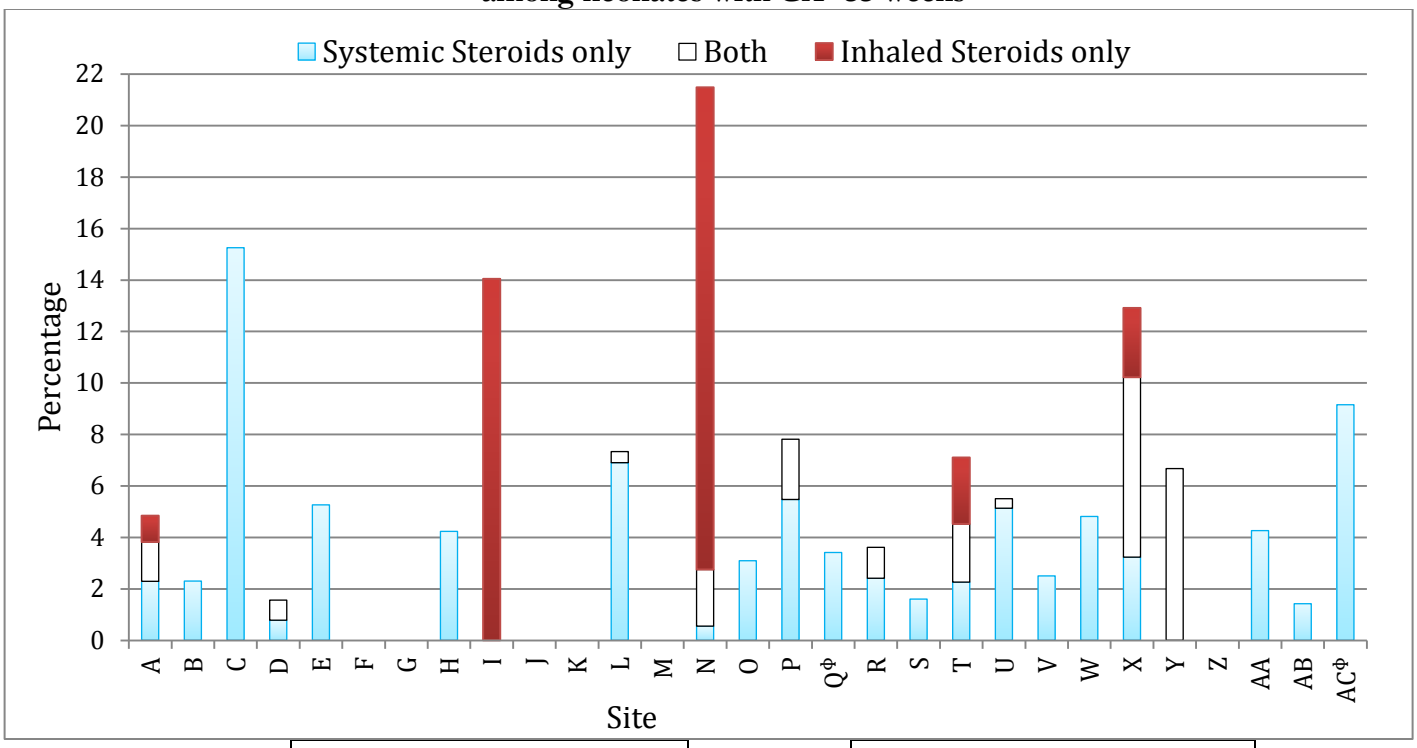
Presentation #45c
Oxygen use at 36 weeks or at discharge (if earlier)
among neonates with GA<33 weeks
Adjusted standardized ratios – site comparisons



Explanation for Presentation 45b
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 deaths/expected deaths
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 45c
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 alphabetical 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
Postnatal use of steroids for treatment of Chronic Lung Disease (CLD) among neonates with GA<33 weeks†



Site	Postnatal steroid use (%)		
	Systemic Steroids only	Both	Inhaled Steroids only
A	2.3	1.5	1.0
B	2.3	0.0	0.0
C	15.3	0.0	0.0
D	0.8	0.8	0.0
E	5.3	0.0	0.0
F	0.0	0.0	0.0
G	0.0	0.0	0.0
H	4.2	0.0	0.0
I	0.0	0.0	14.0
J	0.0	0.0	0.0
K	0.0	0.0	0.0
L	6.9	0.4	0.0
M	0.0	0.0	0.0
N	0.6	2.2	18.7
O	3.1	0.0	0.0

Site	Postnatal steroid use (%)		
	Systemic Steroids only	Both	Inhaled Steroids only
P	5.5	2.3	0.0
Q$^{\phi}$	3.4	0.0	0.0
R	2.4	1.2	0.0
S	1.6	0.0	0.0
T	2.3	2.3	2.6
U	5.1	0.4	0.0
V	2.5	0.0	0.0
W	4.8	0.0	0.0
X	3.2	7.0	2.7
Y	0.0	6.7	0.0
Z	0.0	0.0	0.0
AA	4.3	0.0	0.0
AB	1.4	0.0	0.0
AC$^{\phi}$	9.2	0.0	0.0
Total	3.3	1.0	2.2

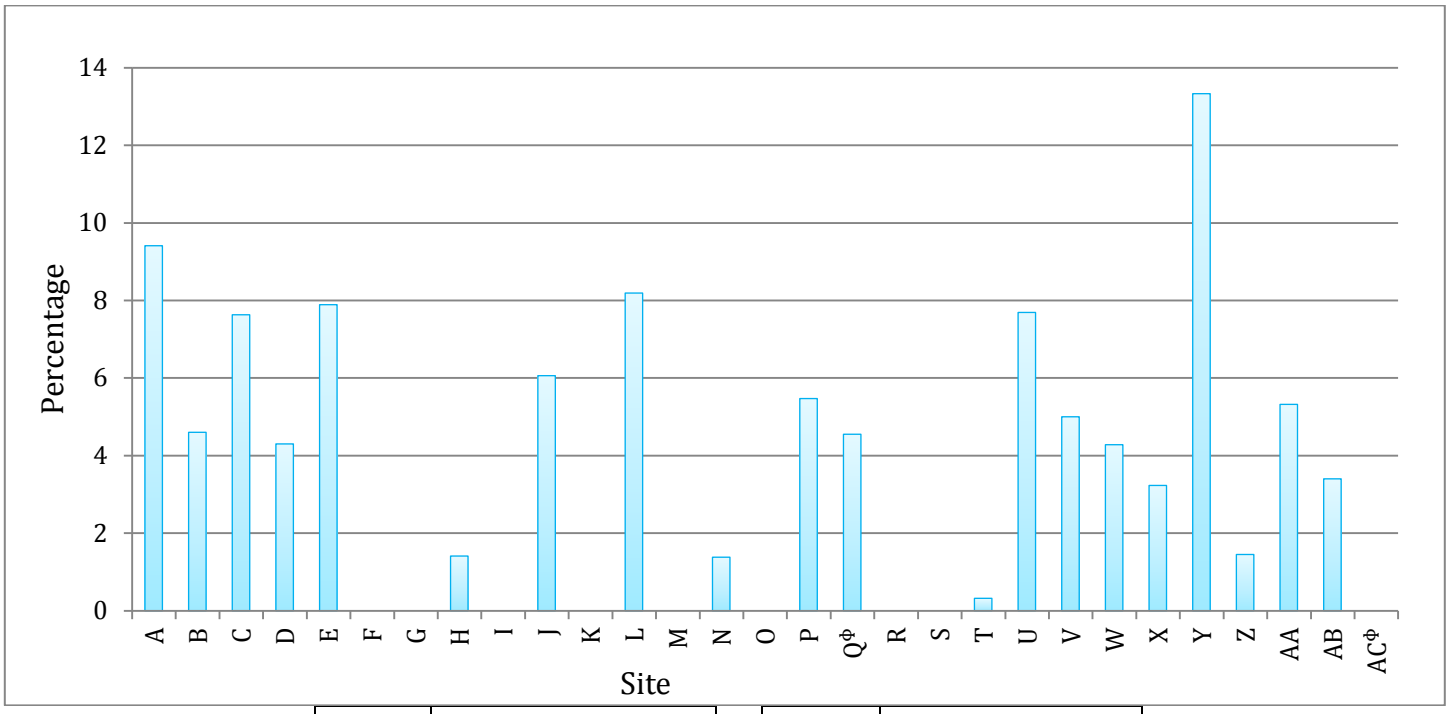
Total number of neonates = 4 262

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

$^{\Phi}$Note that the criteria for entering neonates with GA <33 in the CNN dataset are not the same for sites Q and AC 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 #46b
Postnatal use of systemic steroids for hypotension among neonates with GA<33 weeks†



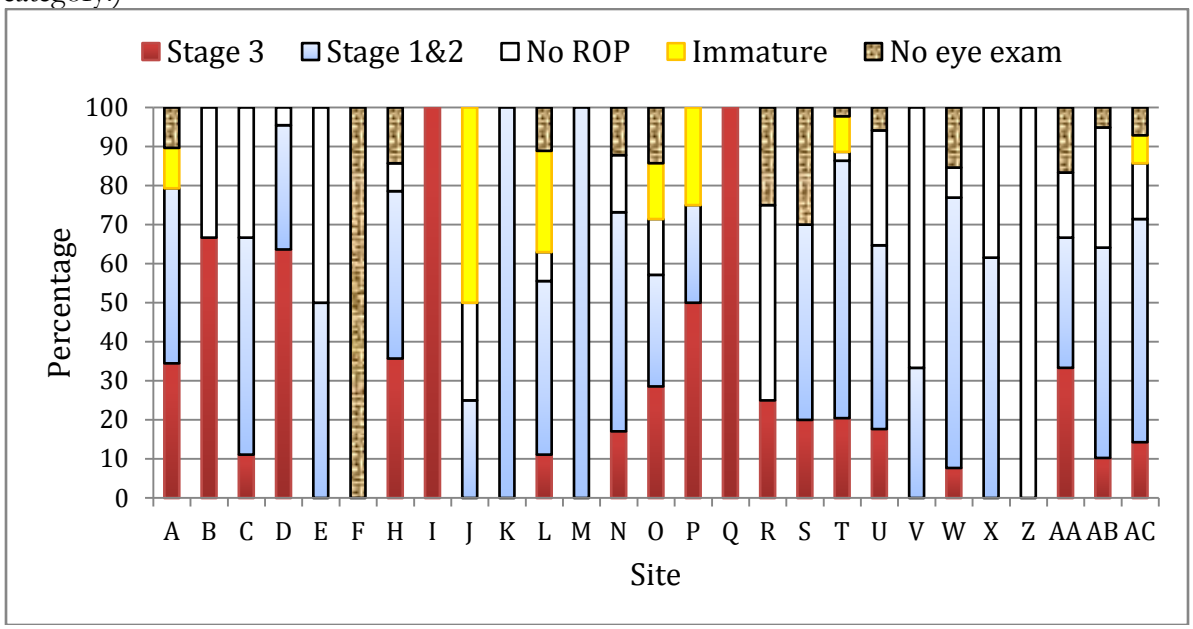
Site	Postnatal systemic steroids use for hypotension (%)
A	9.4
B	4.6
C	7.6
D	4.3
E	7.9
F	0.0
G	0.0
H	1.4
I	0.0
J	6.1
K	0.0
L	8.2
M	0.0
N	1.4
O	0.0

Site	Postnatal systemic steroids use for hypotension (%)
P	5.5
Qϕ	4.6
R	0.0
S	0.0
T	0.3
U	7.7
V	5.0
W	4.3
X	3.2
Y	13.3
Z	1.5
AA	5.3
AB	3.4
ACϕ	0.0
Total	4.0

Total number of neonates = 4 262
† 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 sites Q and AC and thus, the rates may not be comparable with other sites.
COMMENTS: Specific criteria for these treatments in each site are not documented here.

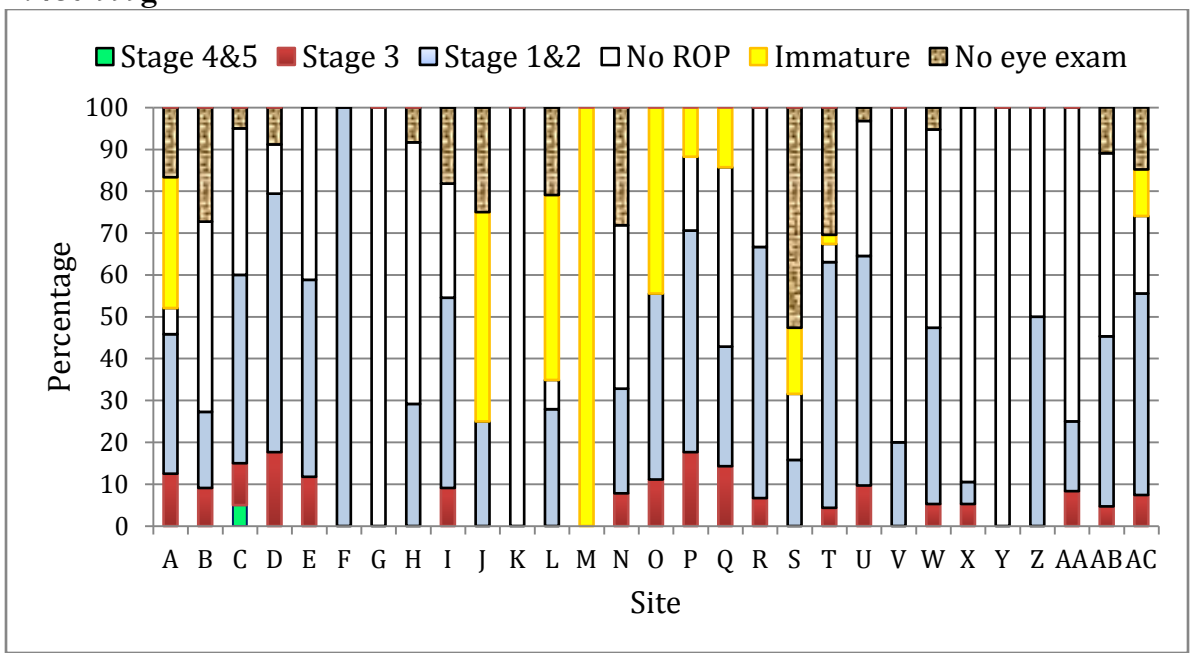
Presentation #47a
Retinopathy of prematurity among neonates with BW <1000g and who survived beyond 6 weeks

A. <750g (Note that no sites had neonates diagnosed with Stage 4/5 ROP in this BW category.)



There were no neonates in sites G and Y in this BW category.

B. 750-999g

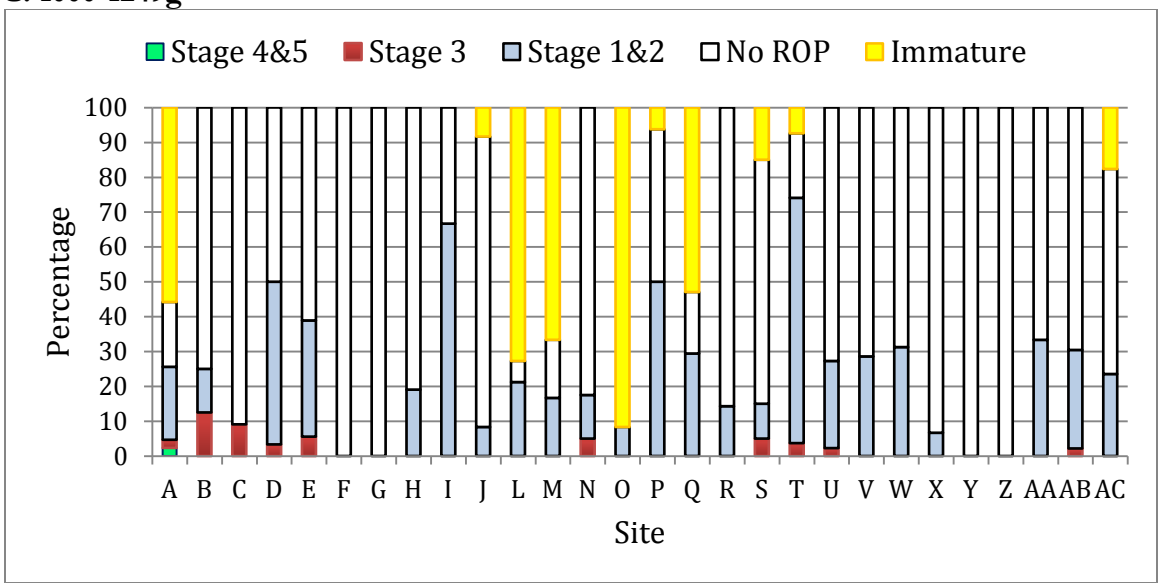


Note that for sites G and Y, among those neonates with eye exams, none was diagnosed with ROP, so the incidence is zero.

*Neonates who were transferred to non-participating CNN units are not captured here.

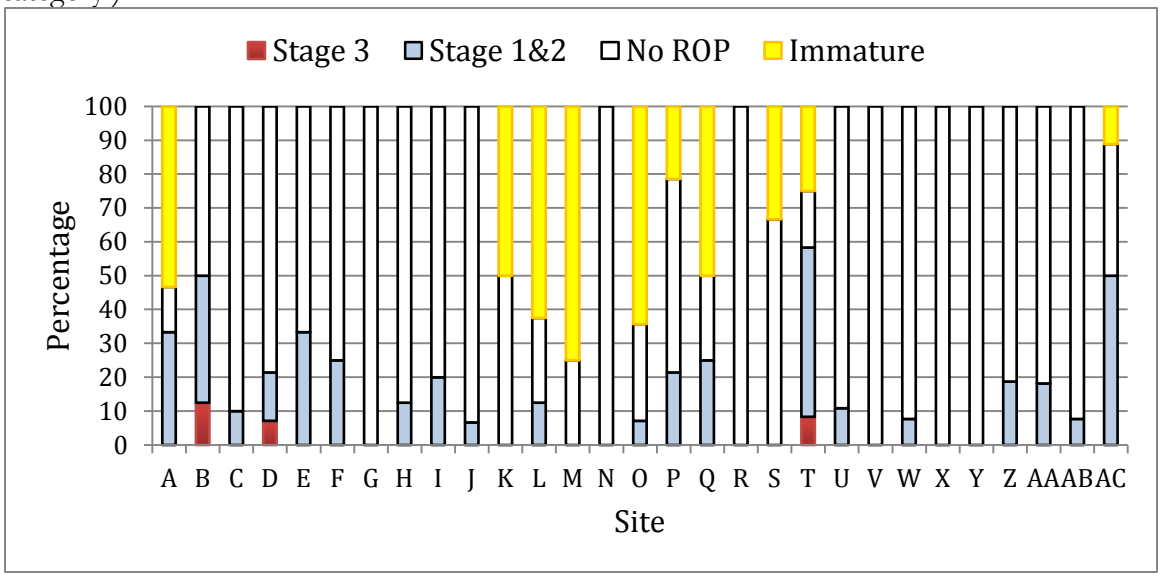
Presentation #47b
Retinopathy of prematurity among neonates with BW <1500g and who had eye exams*

C. 1000-1249g



There were no neonates in site K in this BW category. Note that for sites F, G, Y and Z, among those neonates with eye exams, none was diagnosed with ROP, so the incidence is zero.

D. 1250-1499g (Note that no sites had neonates diagnosed with Stage 4/5 ROP in this BW category.)

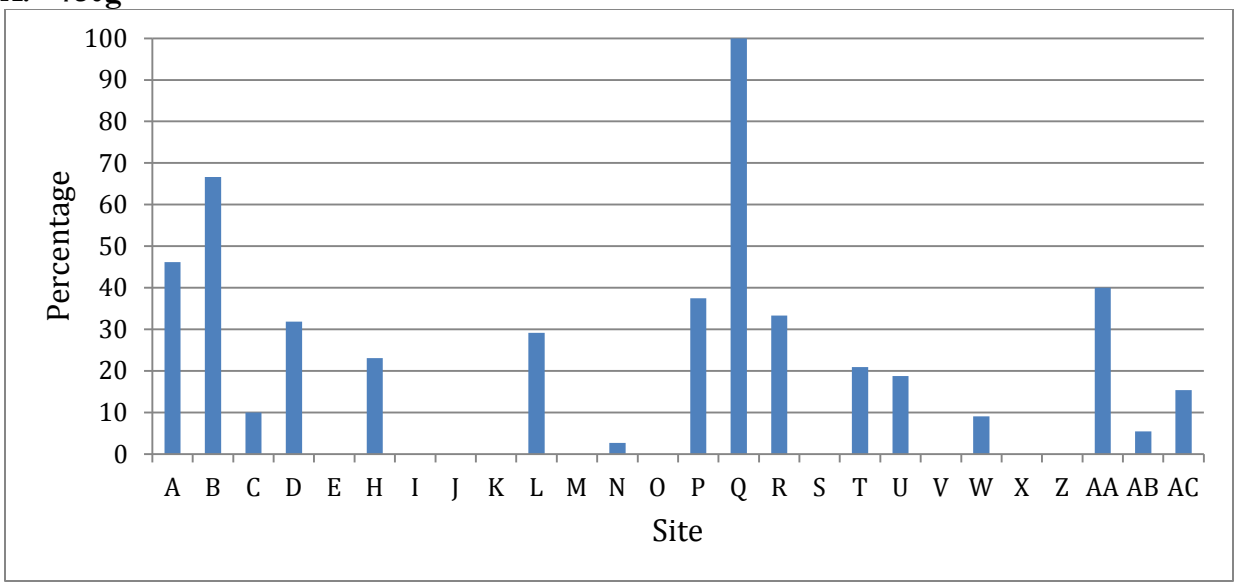


Note that for site G, N, R, V, X and Y, among those neonates with eye exams, none were diagnosed with ROP, so the incidence is zero.

COMMENTS: Not all centers have data on neonates in each BW category.
***Only neonates with eye exams performed were included in this presentation because eye exams were not performed for large percentage of neonates in these BW categories.**

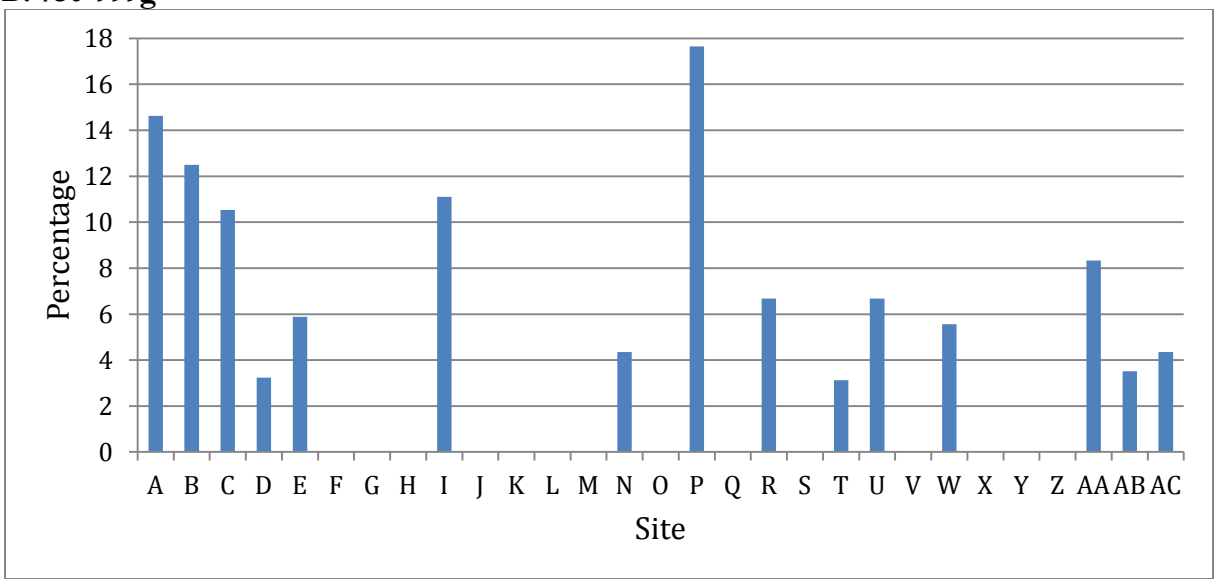
Presentation #48
Treatment for retinopathy of prematurity among neonates with BW <1000g and who had eye exams

A. <750g



For sites E, I, J, K, M, O, S, V, X, and Z, none of the neonates received treatment. No neonates in site F received eye exam. There were no neonates in sites G and Y in this BW category.

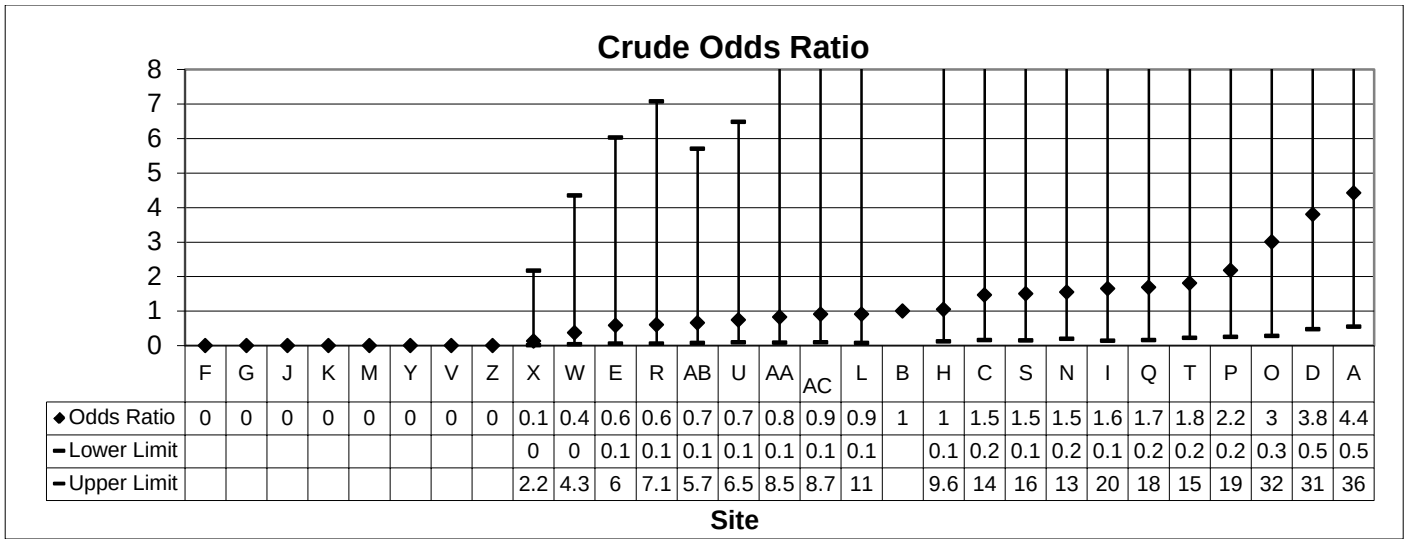
B. 750-999g



For sites F, H, J, K, L, M, O, Q, S, V, X, and Z, none of the neonates received treatment. For sites G and Y, no neonates were diagnosed with ROP for this BW subgroup.

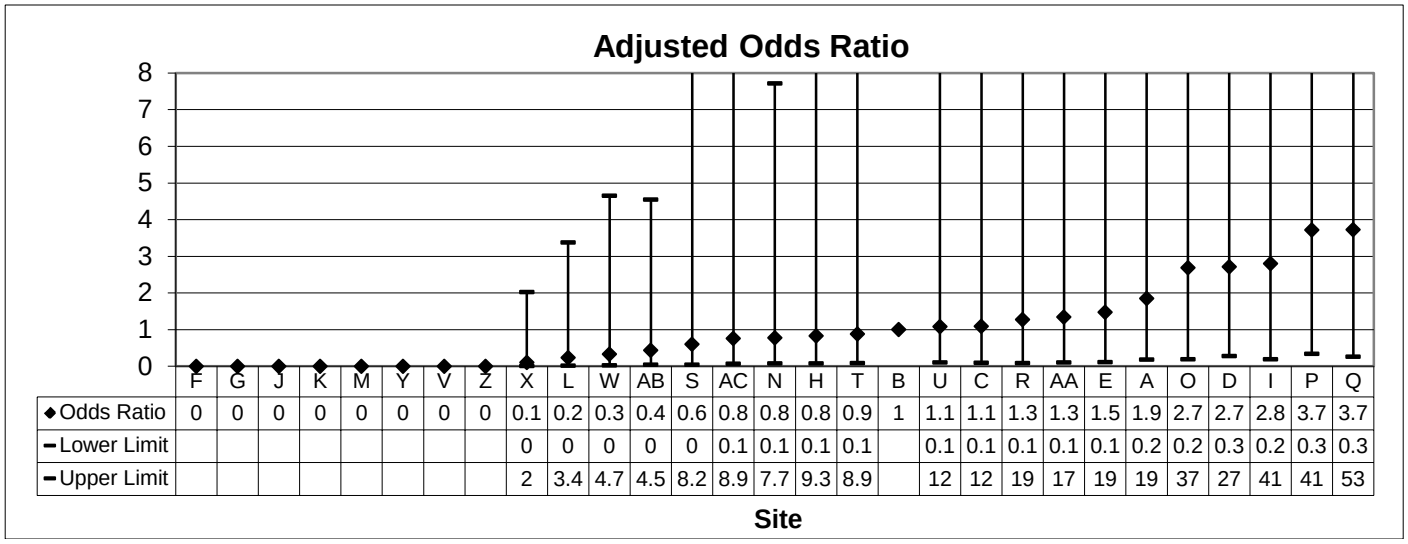
COMMENTS: Not all centers have data on neonates in each BW category. Treatment includes Anti-VEGF therapy, surgery or both.

Presentation #49a
Retinopathy of prematurity stage 3 and higher among neonates with GA<33 weeks



	F	G	J	K	M	Y	V	Z	X	W	E	R	AB	U	AA	AC	L	B	H	C	S	N	I	Q	T	P	O	D	A
◆Odds Ratio	0	0	0	0	0	0	0	0	0.1	0.4	0.6	0.6	0.7	0.7	0.8	0.9	0.9	1	1	1.5	1.5	1.5	1.6	1.7	1.8	2.2	3	3.8	4.4
━Lower Limit									0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.3	0.5	0.5
━Upper Limit									2.2	4.3	6	7.1	5.7	6.5	8.5	8.7	11		9.6	14	16	13	20	18	15	19	32	31	36

Number of neonates: 1 462



	F	G	J	K	M	Y	V	Z	X	L	W	AB	S	AC	N	H	T	B	U	C	R	AA	E	A	O	D	I	P	Q
◆Odds Ratio	0	0	0	0	0	0	0	0	0.1	0.2	0.3	0.4	0.6	0.8	0.8	0.8	0.9	1	1.1	1.1	1.3	1.3	1.5	1.9	2.7	2.7	2.8	3.7	3.7
━Lower Limit									0	0	0	0	0	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.3	0.3
━Upper Limit									2	3.4	4.7	4.5	8.2	8.9	7.7	9.3	8.9		12	12	19	17	19	19	37	27	41	41	53

Number of neonates: 1 457

Reference site: B

Inclusion criteria:
GA < 33 weeks Screened for ROP
Age at admission less than 4 days

Outcome is attributed to the network site of first admission

All the neonates who meet the criteria in sites F, G, J, K, M, Y, V, and Z did not have retinopathy of prematurity stage 3 and higher (Odds Ratio: 0)

Significant predictors identified by multivariate analysis and adjusted for:
GA SGA (BW <10th centile for GA)

***Sites significantly different from reference site (P<0.05)**

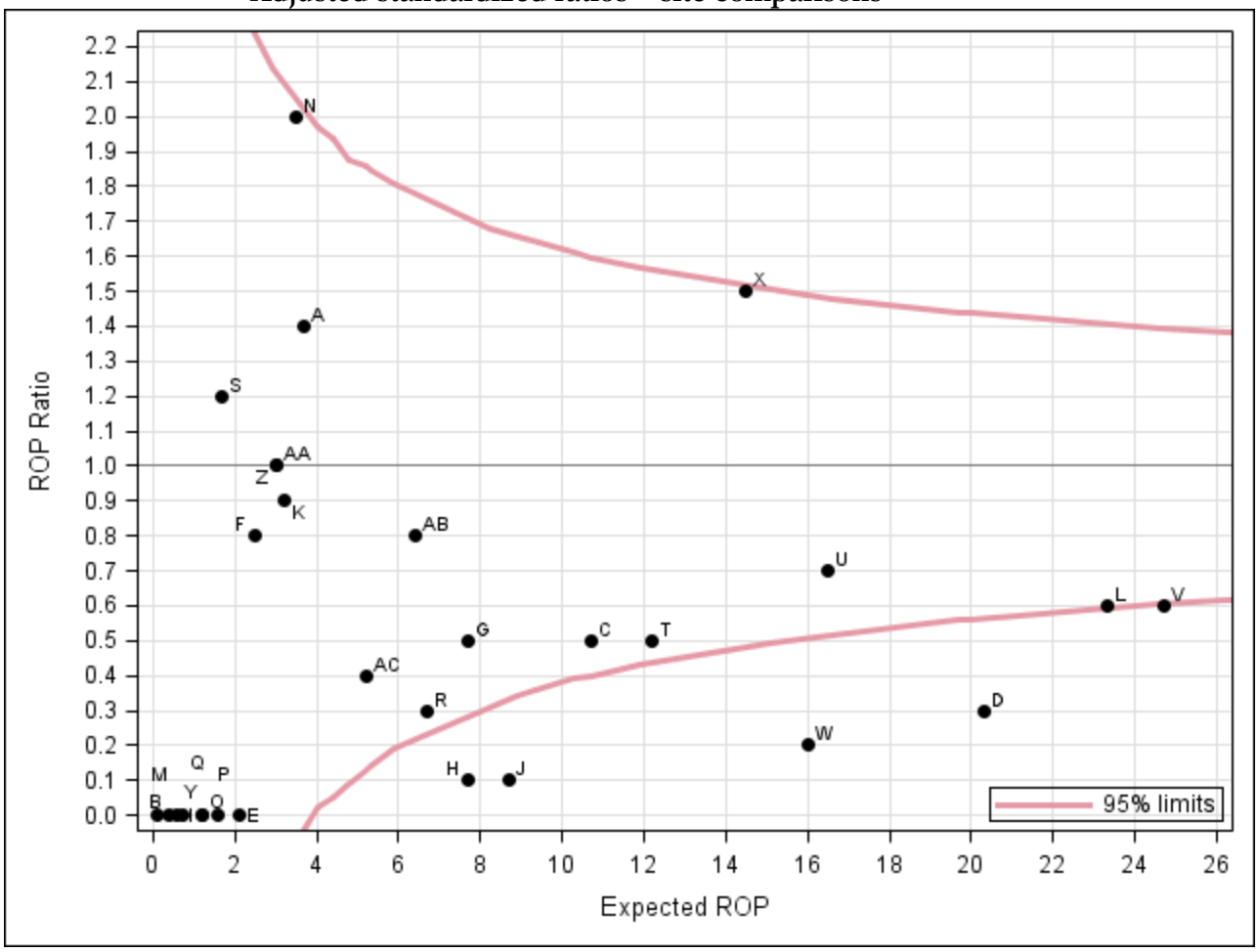
Sites Q and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites.

Presentation #49b
Retinopathy of prematurity stage 3 and higher among neonates with 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	
A	25	5	3.7	1.4	0.4	3.2
B	4	0	0.1	0.0	.	36.9
C	69	5	10.7	0.5	0.2	1.1
D	157	7	20.3	0.3	0.1	0.7
E	27	0	2.1	0.0	.	1.8
F	46	2	2.5	0.8	0.1	2.9
G*	55	4	7.7	0.5	0.1	1.3
H	77	1	7.7	0.1	0.0	0.7
I	19	0	1.2	0.0	.	3.1
J	109	1	8.7	0.1	0.0	0.6
K	51	3	3.2	0.9	0.2	2.7
L	129	13	23.3	0.6	0.3	1.0
M	60	0	0.6	0.0	.	6.1
N	47	7	3.5	2.0	0.8	4.1
O	10	0	1.6	0.0	.	2.3
P	36	0	1.2	0.0	.	3.1
Q	18	0	0.7	0.0	.	5.3
R	30	2	6.7	0.3	0.0	1.1
S	17	2	1.7	1.2	0.1	4.2
T	141	6	12.2	0.5	0.2	1.1
U	94	11	16.5	0.7	0.3	1.2
V	65	15	24.7	0.6	0.3	1.0
W	43	3	16.0	0.2	0.0	0.5
X	100	21	14.5	1.5	0.9	2.2
Y	6	0	0.4	0.0	.	9.2
Z	17	3	3.0	1.0	0.2	2.9
AA	71	3	3.0	1.0	0.2	2.9
AB	50	5	6.4	0.8	0.3	1.8
AC*	28	2	5.2	0.4	0.0	1.4

Please note that site codes for Presentations 49b and 49c are different from the site codes used in other presentations of this report.
Neonates with major congenital anomalies are excluded.
Variables adjusted for in the prediction model: GA, SGA, Sex, SNAPII > 20
* Sites G and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites. (See next page for full explanation)

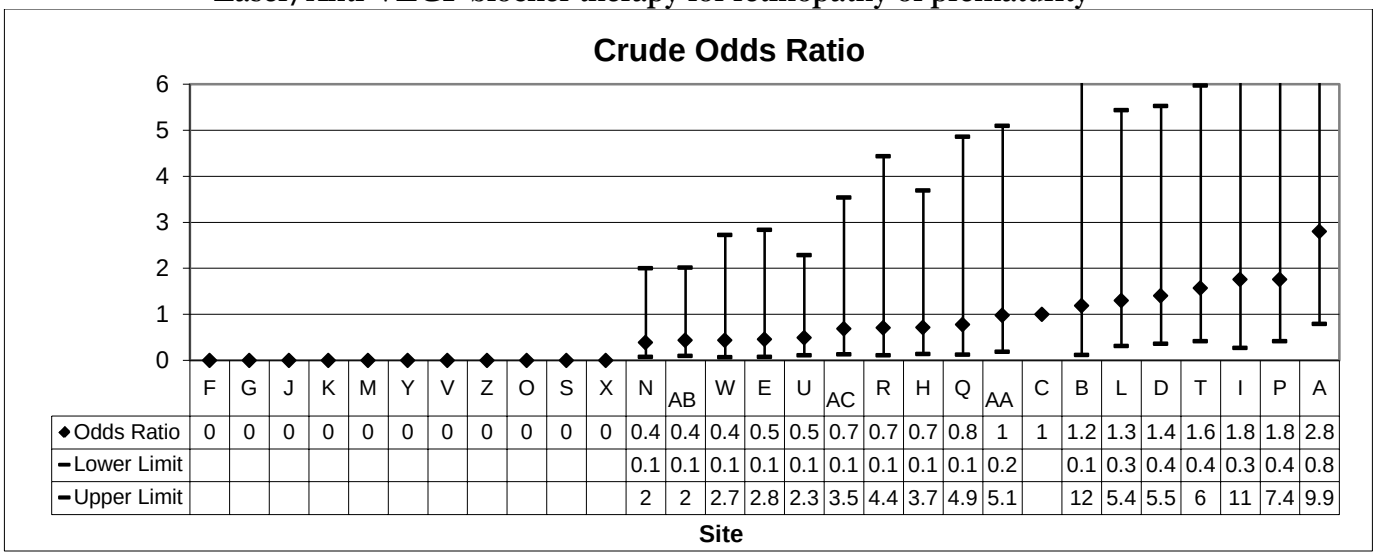
Presentation #49c
Retinopathy of prematurity stage 3 and higher among neonates with GA<33weeks
Adjusted standardized ratios – site comparisons



Explanation for Presentation 49b
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 deaths/expected deaths
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

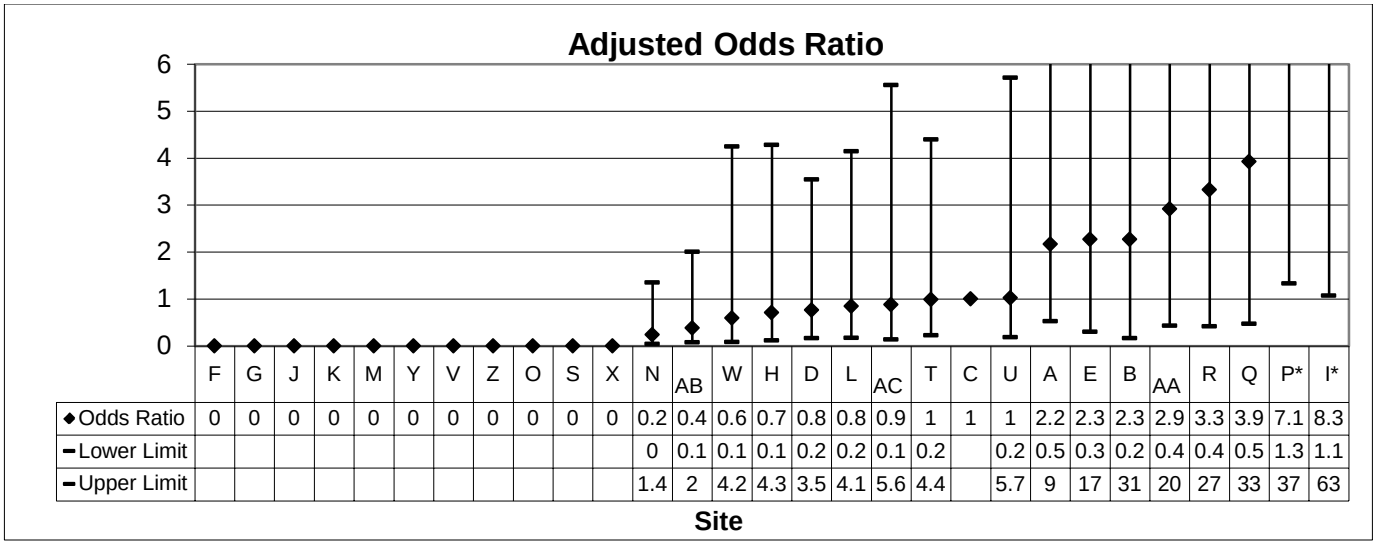
Explanation for Presentation 49c
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with alphabetical notation: Site and its location matching x and y axis values
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 #50
Laser/Anti-VEGF blocker therapy for retinopathy of prematurity



	F	G	J	K	M	Y	V	Z	O	S	X	N	AB	W	E	U	AC	R	H	Q	AA	C	B	L	D	T	I	P	A
◆Odds Ratio	0	0	0	0	0	0	0	0	0	0	0	0.4	0.4	0.4	0.5	0.5	0.7	0.7	0.7	0.8	1	1	1.2	1.3	1.4	1.6	1.8	1.8	2.8
━Lower Limit												0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2		0.1	0.3	0.4	0.4	0.3	0.4	0.8
━Upper Limit												2	2	2.7	2.8	2.3	3.5	4.4	3.7	4.9	5.1		12	5.4	5.5	6	11	7.4	9.9

Number of neonates: 1 686



	F	G	J	K	M	Y	V	Z	O	S	X	N	AB	W	H	D	L	AC	T	C	U	A	E	B	AA	R	Q	P*	I*
◆Odds Ratio	0	0	0	0	0	0	0	0	0	0	0	0.2	0.4	0.6	0.7	0.8	0.8	0.9	1	1	1	2.2	2.3	2.3	2.9	3.3	3.9	7.1	8.3
━Lower Limit												0	0.1	0.1	0.1	0.2	0.2	0.1	0.2		0.2	0.5	0.3	0.2	0.4	0.4	0.5	1.3	1.1
━Upper Limit												1.4	2	4.2	4.3	3.5	4.1	5.6	4.4		5.7	9	17	31	20	27	33	37	63

Number of neonates: 1 664

Reference site: C

Inclusion criteria:
GA <33 weeks Screened for ROP
Age at admission less than 4 days

Outcome is attributed to the network site of first admission

All the neonates who meet the criteria in sites F, G, J, K, M, Y, V, Z, O, S, and X were not treated (Odds Ratio: 0) [No neonates had ROP grade 3 or higher in sites G, Y, Z]

Significant predictors identified by multivariate analysis and adjusted for:
GA SGA (BW <10th centile for GA)

***Sites significantly different from reference site (P<0.05)**

Refer to presentations #23 and #24 for the actual numbers of therapy for retinopathy of prematurity.

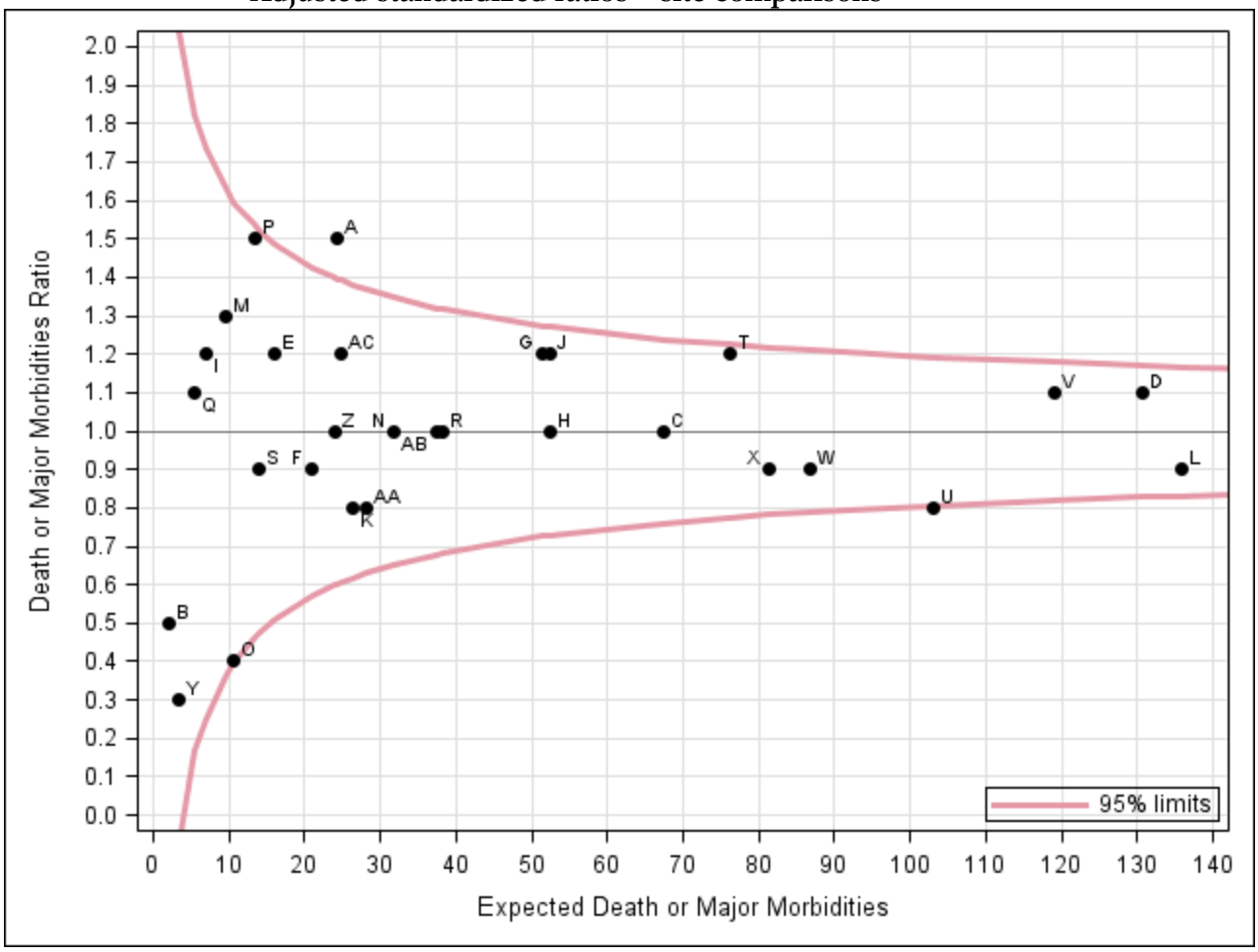
Sites Q and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites.

Presentation #51a
Mortality or major morbidity among neonates with 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	
A	81	36	24.4	1.5	1.0	2.0
B	12	1	2.1	0.5	0.0	2.7
C	209	69	67.5	1.0	0.8	1.3
D	346	139	130.8	1.1	0.9	1.3
E	61	19	16.1	1.2	0.7	1.8
F	78	18	21.0	0.9	0.5	1.4
G*	139	60	51.4	1.2	0.9	1.5
H	181	55	52.5	1.0	0.8	1.4
I	29	8	6.9	1.2	0.5	2.3
J	184	62	52.4	1.2	0.9	1.5
K	91	20	26.3	0.8	0.5	1.2
L	353	120	135.8	0.9	0.7	1.1
M	65	13	9.6	1.3	0.7	2.3
N	121	31	31.7	1.0	0.7	1.4
O	54	4	10.7	0.4	0.1	1.0
P	74	20	13.4	1.5	0.9	2.3
Q	23	6	5.5	1.1	0.4	2.4
R	120	39	38.2	1.0	0.7	1.4
S	54	13	14.1	0.9	0.5	1.6
T	262	91	76.1	1.2	1.0	1.5
U	287	78	103.0	0.8	0.6	0.9
V	362	127	119.0	1.1	0.9	1.3
W	219	77	86.8	0.9	0.7	1.1
X	242	76	81.5	0.9	0.7	1.2
Y	13	1	3.4	0.3	0.0	1.6
Z	93	25	24.1	1.0	0.7	1.5
AA	108	24	28.2	0.8	0.5	1.3
AB	111	36	37.4	1.0	0.7	1.3
AC*	84	30	24.9	1.2	0.8	1.7

Major morbidity = IVH 3 or 4 or PVL or CLD or ROP >stage 2 or NEC or Nosocomial sepsis
Please note that site codes for Presentations 51a & 51b are different from the site codes used in other presentations of this report.
Neonates with major congenital anomalies are excluded.
Variables adjusted for in the prediction model: GA, SGA, Sex, SNAPII > 20
* Sites G and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites. (See next page for full explanation)

Presentation #51b
Mortality or major morbidity among neonates with GA<33 weeks
Adjusted standardized ratios – site comparisons



Explanation for Presentation 51a
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 deaths/expected deaths
Columns 6 and 7: 95% CI around the adjusted standardized ratio for the outcome

Explanation for Presentation 51b
X-axis: Expected number of neonates with outcome (value from Column 4 of previous presentation)
Y-axis: Adjusted standardized ratio (value from Column 5 of previous presentation)
Dark points with alphabetical 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 #52a
Benchmarking for sites which contributed all eligible admissions with GA<33 weeks

Among all neonates														
Grouping according to number of neonates	**< 300 neonates**							**301 – 485 neonates**						
Parameter / Site rank	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
SNAP-II-PE adjusted mortality rates (%)	K	Y	Z	M	F	G	H	R	O	AA	J	X	C	I
Early onset sepsis rate (%)	M	Y	Z	F	H	G	K	R	AA	I	X	O	C	J
Late onset sepsis rate (SNAP-II-PE adjusted) (%)	K	F	M	G	Y	H	Z	R	I	AA	O	J	C	X
Late onset sepsis /1000 patient days	K	F	M	G	H	Z	Y	I	AA	R	J	C	O	X
Death or at least one of major morbidities (%)	K	G	F	M	Y	Z	H	I	O	R	AA	J	C	X

Among neonates <33 weeks														
Grouping according to number of neonates	**< 60 neonates**						**61 – 115 neonates**							
Parameter / Site rank	**1**	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Non-receipt of antenatal steroid (%)	M	I	G	F	Y	K	Z	O	J	V	E	R	AA	B
Surgical ligation of PDA (%)	F	G	I	K	M	Y	J	V	Z	E	O	B	R	AA
Stage 2 or 3 NEC (adjusted odds ratio)[1]	G	K	M	Y	F	I	O	R	V	Z	E	B	AA	J
Stage 3-5 ROP (adjusted odds ratio)[2]	F	G	K	M	Y	K	J	V	Z	B	R	AA	E	O
Oxygen use at 36 wks (adjusted odds ratio)[3]	M	Y	I	G	K	F	Z	AA	E	R	O	V	J	B
VE or PEC (adjusted odds ratio)[4]	M	G	K	Y	F	I	Z	J	V	B	O	AA	E	R
Use of systemic steroids (%)	F	K	M	I	G	Y	Z	O	R	AA	V	J	B	E
SNAP-II-PE adjusted mortality for GA<33 wks (%)	K	Y	F	G	M	I	Z	R	E	O	AA	V	J	B
Death or at least one of major morbidities (%)	K	M	Y	I	G	F	Z	E	AA	R	O	V	J	B

Among neonates < 1500g														
Grouping according to number of neonates	**< 35 neonates**							**35 – 70 neonates**						
Parameter / Site rank	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Non-receipt of antenatal steroid (%)	Z	I	M	F	G	Y	K	O	E	V	J	R	AA	B
Surgical ligation of PDA (%)	F	G	I	K	M	Y	Z	J	V	E	O	B	R	AA
Stage 2 or 3 NEC (adjusted odds ratio)[1]	G	K	M	Y	Z	I	F	O	R	V	B	E	AA	J
Stage 3-5 ROP (adjusted odds ratio)[2]	F	G	K	M	Y	Z	I	J	V	B	R	AA	E	O
Oxygen use at 36 wks (adjusted odds ratio)[3]	G	M	Y	Z	I	K	F	AA	E	R	O	V	J	B
VE or PEC (adjusted odds ratio)[4]	Y	Z	M	G	F	K	I	V	O	J	R	B	AA	E
Use of systemic steroids (%)	F	K	M	Z	I	G	Y	O	AA	R	B	J	V	E
SNAP-II-PE adjusted mortality for <1500g (%)	K	Y	Z	F	M	G	I	R	E	O	AA	J	V	B
Death or at least one of major morbidities (%)	Y	K	M	Z	I	G	F	AA	E	R	O	V		B

Variables adjusted for (selected based on univariate association and varied with outcomes)
[1] Stage 2 or 3 NEC – GA, Cesarean section
[2] Stage 3-5 ROP – GA, SGA (BW <10th centile for GA)
[3] Oxygen use at 36 wks – GA, Apgar at 5 minutes, SNAP-II Score, SGA (BW <10th centile for GA)
[4] VE or PEC – GA, Gender, Antenatal corticosteroid, SNAP-II Score

Presentation #52a (continued)

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

Among all of neonates													
486 – 800 neonates								**> 800 neonates**					Grouping according to number of neonates
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**1**	**2**	**3**	**4**	**5**	**Parameter / Site rank**
S	P	E	L	V	B	N	A	T	D	W	AB	U	SNAP-II-PE adjusted mortality rates (%)
V	B	L	S	P	A	E	N	W	U	T	D	AB	Early onset sepsis rate (%)
P	E	V	A	N	B	S	L	T	W	D	AB	U	Late onset sepsis rate (SNAP-II-PE adjusted) (%)
E	P	A	V	N	B	L	S	W	T	U	AB	D	Late onset sepsis /1000 patient days
E	V	P	S	B	L	N	A	W	T	D	U	AB	Death or at least one of major morbidities (%)

Among neonates <33 weeks													
116 – 250 neonates							**>250 neonates**						Grouping according to number of neonates
1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**	**3**	**4**	**5**	**6**	**Parameter / Site rank**
C	P	H	S	X	L	W	T	AB	U	D	A	N	Non-receipt of antenatal steroid (%)
S	W	C	P	X	H	L	D	AB	N	T	U	A	Surgical ligation of PDA
P	S	C	L	H	X	W	T	N	D	A	U	AB	Stage 2 or 3 NEC (adjusted odds ratio)[1]
X	L	W	S	H	C	P	AB	N	T	U	A	D	Stage 3-5 ROP (adjusted odds ratio)[2]
S	L	X	C	H	P	W	D	T	N	AB	A	U	Oxygen use at 36 wks (adjusted odds ratio)[3]
X	L	S	W	H	C	P	U	T	D	N	AB	A	VE or PEC (adjusted odds ratio)[4]
H	S	W	X	P	L	C	N	AB	D	T	U	A	Use of systemic steroids (%)
S	P	L	W	H	X	C	D	T	A	N	AB	U	SNAP-II-PE adjusted mortality for GA<33 wks (%)
P	W	S	H	X	C	L	T	D	N	U	A	AB	Death or at least one of major morbidities (%)

Among neonates < 1500g													
71 – 170 neonates							**>170 neonates**						Grouping according to number of neonates
1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**	**3**	**4**	**5**	**6**	**Parameter / Site rank**
C	P	S	H	D	X	W	T	AB	U	A	N	L	Non-receipt of antenatal steroid (%)
D	S	C	W	P	X	H	AB	N	T	A	U	L	Surgical ligation of PDA
C	P	S	H	D	X	W	L	N	T	A	AB	U	Stage 2 or 3 NEC (adjusted odds ratio)[1]
X	W	S	H	C	D	P	L	AB	N	T	U	A	Stage 3-5 ROP (adjusted odds ratio)[2]
S	X	C	D	H	P	W	L	N	T	AB	A	U	Oxygen use at 36 wks (adjusted odds ratio)[3]
X	W	S	D	H	C	P	U	L	T	N	AB	A	VE or PEC (adjusted odds ratio)[4]
H	D	S	W	X	P	C	N	AB	T	A	U	L	Use of systemic steroids (%)
S	P	D	W	X	H	C	L	T	A	N	AB	U	SNAP-II-PE adjusted mortality for <1500g (%)
P	S	D	C	H	W	X	T	N	L	AB	U	A	Death or at least one of major morbidities (%)

Variables adjusted for (selected based on univariate association and varied with outcomes)

[1] Stage 2 or 3 NEC – GA, Cesarean section

[2] Stage 3-5 ROP – GA, SGA (BW <10th centile for GA)

[3] Oxygen use at 36 wks – GA, Apgar at 5 minutes, SNAP-II Score, SGA (BW <10th centile for GA)

[4] VE or PEC – GA, Gender, Antenatal corticosteroid, SNAP-II Score

Presentation #52b
Benchmarking for sites which contributed all eligible admissions with GA<29 weeks

According to total number of neonates															
Grouping according to number of neonates	< 15 neonates							15 – 35 neonates							
Parameter / Site rank	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Non-receipt of antenatal steroid (%)	V	M	Z	G	F	K	Y	I	Q	J	E	R	AA	O	B
Surgical ligation of PDA	F	G	K	M	V	Y	Z	I	J	Q	E	B	O	R	AA
Stage 2 or 3 NEC (adjusted odds ratio)[1]	G	K	M	V	Y	Z	F	O	R	E	B	I	Q	AA	J
Stage 3-5 ROP (adjusted odds ratio)[2]	F	G	K	M	Y	V	Z	J	B	R	AA	E	I	O	Q
Oxygen use at 36 wks (adjusted odds ratio)[3]	G	M	Y	Z	F	K	V	AA	I	E	R	O	Q	B	J
VE or PEC (adjusted odds ratio)[4]	Y	Z	V	M	G	F	K	J	B	O	AA	Q	R	E	I
Use of systemic steroids (%)	F	K	M	Y	Z	G	V	I	O	B	Q	AA	R	J	E
SNAP-II-PE adjusted mortality (%)	K	Y	Z	F	M	G	V	R	O	E	I	AA	J	Q	B
Death or at least one of major morbidities (%)	Y	K	Z	M	G	F	V	AA	I	R	E	O	Q	B	J

Variables adjusted for (selected based on univariate association and varied with outcomes)
[1] Stage 2 or 3 NEC – GA, Cesarean section
[2] Stage 3-5 ROP – GA, SGA (BW <10th centile for GA)
[3] Oxygen use at 36 wks – GA, Apgar at 5 minutes, SNAP-II Score, SGA (BW <10th centile for GA)
[4] VE or PEC – GA, Gender, Antenatal corticosteroid, SNAP-II Score

Presentation 52b (continued)
Benchmarking for sites which contributed all eligible admissions with GA<29 weeks

According to total number of neonates														
36 – 80 neonates							**>80 neonates**							Grouping according to number of neonates
1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Parameter / Site rank**
S	P	C	H	AC	X	W	T	U	AB	N	D	A	L	Non-receipt of antenatal steroid (%)
S	C	W	P	X	H	AC	AB	D	N	T	A	U	L	Surgical ligation of PDA
C	S	P	H	X	W	AC	L	N	T	U	D	A	AB	Stage 2 or 3 NEC (adjusted odds ratio)[1]
X	S	W	AC	H	C	P	L	AB	N	T	U	A	D	Stage 3-5 ROP (adjusted odds ratio)[2]
S	X	C	AC	H	P	W	L	D	N	T	AB	A	U	Oxygen use at 36 wks (adjusted odds ratio)[3]
X	S	AC	W	C	P	H	L	U	T	D	N	AB	A	VE or PEC (adjusted odds ratio)[4]
W	H	S	AC	P	X	C	N	D	AB	T	A	U	L	Use of systemic steroids (%)
S	P	AC	W	H	X	C	L	D	T	N	A	AB	U	SNAP-II-PE adjusted mortality (%)
S	C	W	P	X	H	AC	T	L	N	D	AB	U	A	Death or at least one of major morbidities (%)

Variables adjusted for (selected based on univariate association and varied with outcomes)
[1] Stage 2 or 3 NEC – GA, Cesarean section
[2] Stage 3-5 ROP – GA, SGA (BW <10th centile for GA)
[3] Oxygen use at 36 wks – GA, Apgar at 5 minutes, SNAP-II Score, SGA (BW <10th centile for GA)
[4] VE or PEC – GA, Gender, Antenatal corticosteroid, SNAP-II Score

F. Discharge Disposition and Status

Presentation #53

Discharge destination

		GA (completed weeks)								
		< 25	**25-26**	**27-28**	**29-30**	**31-32**	**33-34**	**35-36**	**≥37**	**Total**
Home	N	72	168	298	390	606	1033	1142	2861	6570
	%	24.9	32.7	37.7	35.5	38.6	49.7	50.2	48.7	45.4
Community hospital	N	52	162	373	597	844	794	470	527	3819
	%	18.0	31.5	47.2	54.3	53.8	38.2	20.7	9.0	26.4
Tertiary hospital	N	21	42	24	26	26	32	46	210	427
	%	7.3	8.2	3.0	2.4	1.7	1.5	2.0	3.6	2.9
Died	N	113	91	52	28	20	19	34	67	424
	%	39.1	17.7	6.6	2.6	1.3	0.9	1.5	1.1	2.9
Palliative care (home/other institute)	N	0	0	0	0	1	2	4	15	22
	%	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.2
Another inpatient area in site	N	31	46	42	55	68	197	576	2194	3209
	%	10.7	9.0	5.3	5.0	4.3	9.5	25.3	37.4	22.2
Out of country discharge	N	0	5	2	3	4	1	1	0	16
	%	0.0	1.0	0.3	0.3	0.3	0.1	0.0	0.0	0.1
Total included	N	289	514	791	1099	1569	2078	2273	5874	14487
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Discharge destination missing	N									3
GA missing	N									4
Total	N									14494

Presentation #54

Support at discharge among neonates who were discharged home

		GA (completed weeks)								
		< 25	**25-26**	**27-28**	**29-30**	**31-32**	**33-34**	**35-36**	**≥37**	**Total**
Total available	N	289	514	791	1099	1569	2078	2274	5876	14490
Number of infants who survived and were discharged home	**N**	**72**	**168**	**298**	**390**	**606**	**1033**	**1142**	**2861**	**6570**
Oxygen	N	22	27	20	4	0	2	1	11	87
	%	30.6	16.1	6.7	1.0	0.0	0.2	0.1	0.4	1.3
Monitor	N	9	10	11	5	4	7	26	89	161
	%	12.5	6.0	3.7	1.3	0.7	0.7	2.3	3.1	2.5
Enterostomy	N	0	2	1	1	1	1	4	10	20
	%	0.0	1.2	0.3	0.3	0.2	0.1	0.4	0.4	0.3
Gavage	N	3	7	8	12	6	7	6	37	86
	%	4.2	4.2	2.7	3.1	1.0	0.7	0.5	1.3	1.3
Tracheostomy	N	0	0	0	0	0	1	0	1	2
	%	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Gastrostomy	N	1	0	3	0	2	1	2	13	22
	%	1.4	0.0	1.0	0.0	0.3	0.1	0.2	0.5	0.3
Ventilation	N	0	0	0	1	0	0	0	1	2
	%	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
CPAP	N	0	1	0	0	2	0	0	3	6
	%	0.0	0.6	0.0	0.0	0.3	0.0	0.0	0.1	0.1
Breast milk only	N	24	49	105	131	214	372	416	1150	2461
	%	33.3	29.2	35.2	33.6	35.3	36.0	36.4	40.2	37.5
Formula only	N	24	55	90	120	155	237	256	626	1563
	%	33.3	32.7	30.2	30.8	25.6	22.9	22.4	21.9	23.8
Both breast milk and formula	N	24	61	100	125	224	415	464	1062	2475
	%	33.3	36.3	33.6	32.1	37.0	40.2	40.6	37.1	37.7

Note: All the percentages in this presentation are calculated out of the number of infants who survived and were discharged home.

There were 71 neonates who were missing breast milk / formula information.

G. Hypoxic Ischemic Encephalopathy

Presentation #55

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**	62	153	48	14	277
	No	122	34	31	34	221
	Unknown	0	0	0	2	2
	Total	**184**	**187**	**79**	**50**	**500**

B. Reason for not receiving hypothermia treatment*

Reason	**Number**
Chromosomal anomalies	1
Major congenital anomalies	3
Weight < 2000g or GA < 35 weeks	36
Extreme condition	25
Head trauma or intracranial hemorrhage	6
Mild HIE	117
Unit policy	25
Health care team preference	5
Delayed transfer	22
Parental request	0
Unknown	16

*One neonate can have more than one reason.

C. Time of admission

Time	**Number**
<6 hours from birth	287
6 – 12 hours from birth	146
>12 hours from birth	56
Total**	489

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

Presentation #55 (continued)

Hypoxic Ischemic Encephalopathy

D. Characteristics of neonates who received hypothermia (N=277)

Characteristics	N		Results
Method	277	Selective head	4 (1%)
		Whole body cooling	273 (99%)
Target temperature	277	< 33^0C	1 (0.4%)
		33-34^0C	244 (88%)
		33.5-34.5^0C	22 (8%)
		34-35^0C	9 (3%)
		34.5-35.5^0C	0 (0%)
		Unknown	1 (0.4%)
Seizures at initiation	277		101 (36%)
Seizures at completion	277		21 (8%)
Side effects during hypothermia	269	Hypotension	160 (59%)
	262	Thrombocytopenia	208 (79%)
	267	Coagulopathy	182 (68%)
	252	Persistent metabolic acidosis	220 (87%)
Death	277		24 (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**	20	3	0	5	20	48
	Stage 2	40	49	7	15	53	164
	Stage 3	3	9	24	3	3	42
	Unknown	1	0	1	17	4	23
	Total	64	61	32	40	80	277

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

Presentation #55 (continued)
Hypoxic Ischemic Encephalopathy
For neonates* who received hypothermia (N=277)

Characteristics		N	Mean	SD	Min	1st Q	Median	3rd Q	Max	Outside of recommendation	Time taken to achieve target
Timing** of hypothermia (in hours)	**Initiation**	263	4.6	5.8	0.0	1.5	3.4	5.5	51.3	After 6 hours 44 (17%)	
	Target temp achieved	263	7.4	8.5	0.6	3.7	5.2	7.5	70.5	After 10 hours 37 (14%)	After 4 hours of initiation 43 (16%)
	Age at re-warming	272	70.7	19.0	3.4	73.5	75.6	77.8	124.1	After 78 hours 64 (24%)	Re-warming started >72 hours after initiation 42 (16%)
	Age at return of temp to normal	253	84.0	19.4	9.8	81.5	84.8	89.2	137.6	After 86 hours 103 (41%)	Took >8 hours to return temperature to normal after starting re-warming 141 (56%)
Temperature during hypothermia	**Lowest temp during hypothermia**	275	32.6	0.8	27.2	32.4	32.8	33.1	35.6	Lowest temp < 32.5C 73 (27%)	
	Highest temp during hypothermia	275	34.2	0.7	30.3	33.8	34.0	34.5	37.4	Highest temp > 35.5C 18 (7%)	

*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 4 years

This section includes trend analyses in the last 4 years (2010-13) 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.

Number of neonates by admission year and GA

	GA										
Year	**<23**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**
2010	9	73	172	270	333	388	371	480	611	678	788
2011	15	86	166	242	318	332	391	467	553	643	828
2012	28	85	184	285	294	348	416	510	610	738	872
2013	16	76	197	247	267	357	434	479	620	733	836

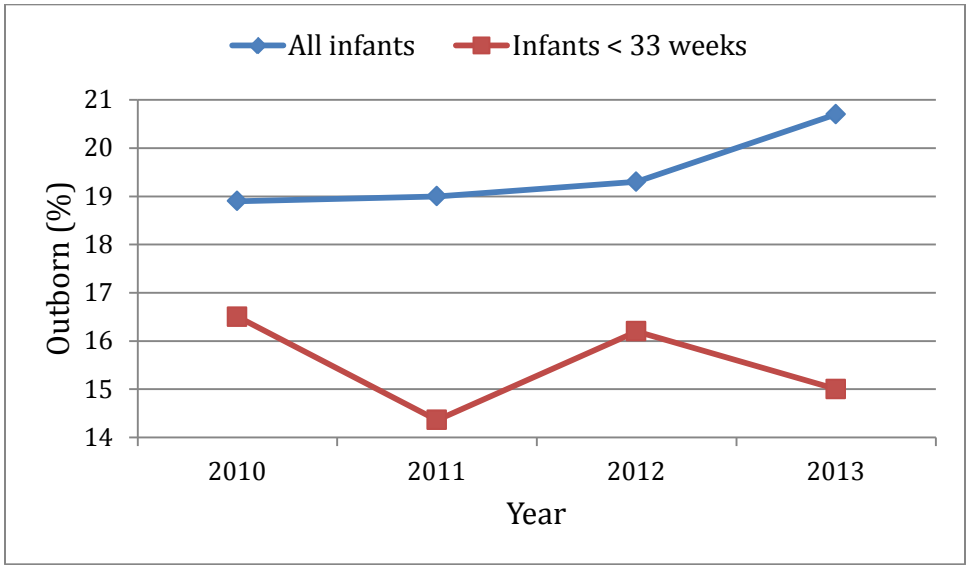
Number of neonates by admission year and birth weight

	Birth weight				
Year	**< 500**	**500 - 749**	**750 - 999**	**1000 - 1249**	**1250 – 1499**
2010	32	436	792	819	879
2011	31	383	660	680	794
2012	48	441	696	815	922
2013	36	428	651	842	919

1. Neonates in the participating sites: Admission status:

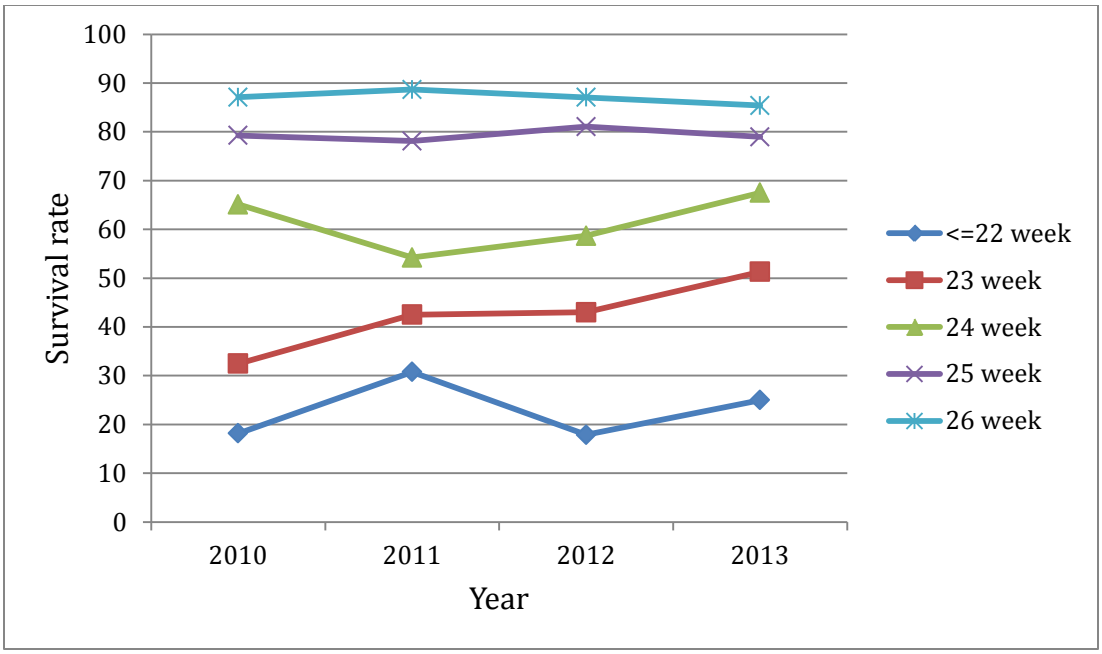
		All infants			Infants with GA<33 weeks		
Year	**Number of Sites**	**Total Number of Neonates***	**Inborn (%)**	**Outborn (%)**	**Number of Neonates* with GA<33**	**Inborn (%)**	**Outborn (%)**
2010	**27**	13 147	10 662 (81.1%)	2 485 (18.9%)	3 383	2 824 (83.5%)	559 (16.5%)
2011	**30**	13 548	10 972 (81.0%)	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%)

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

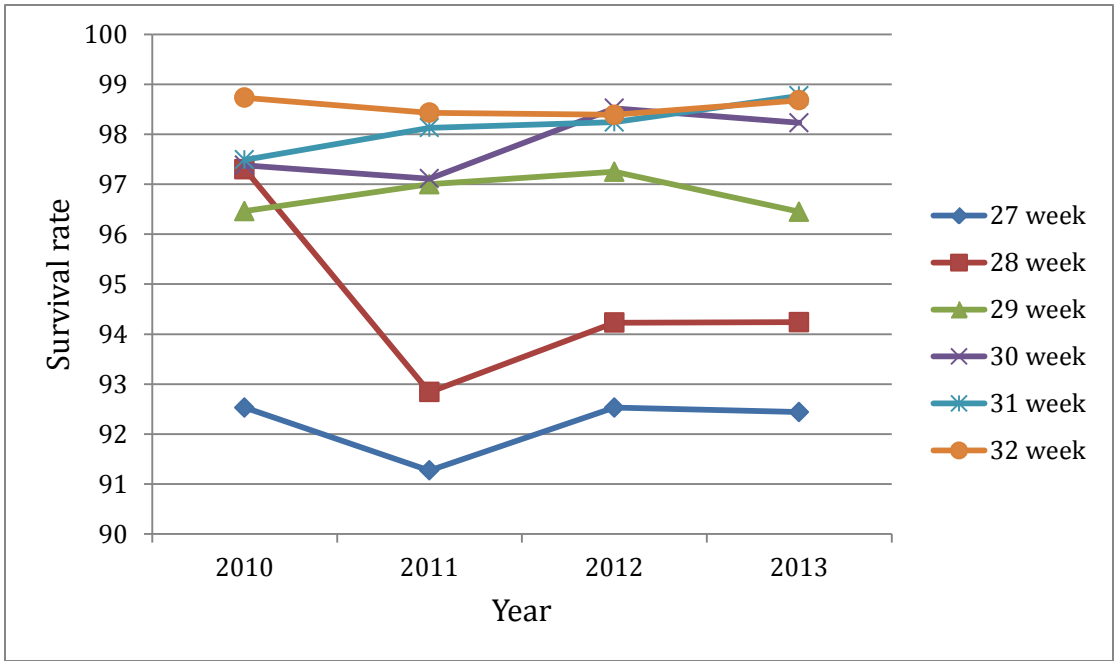


2. Survival rate:

a. 22-26 weeks:

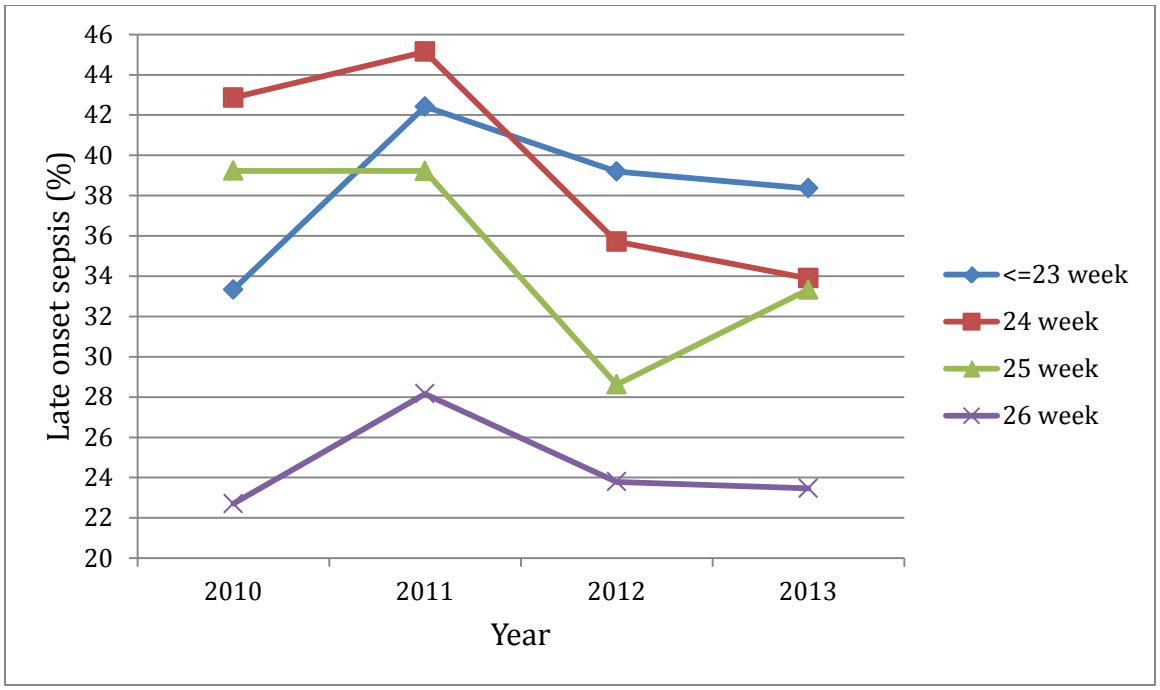


b. 27-32 weeks:

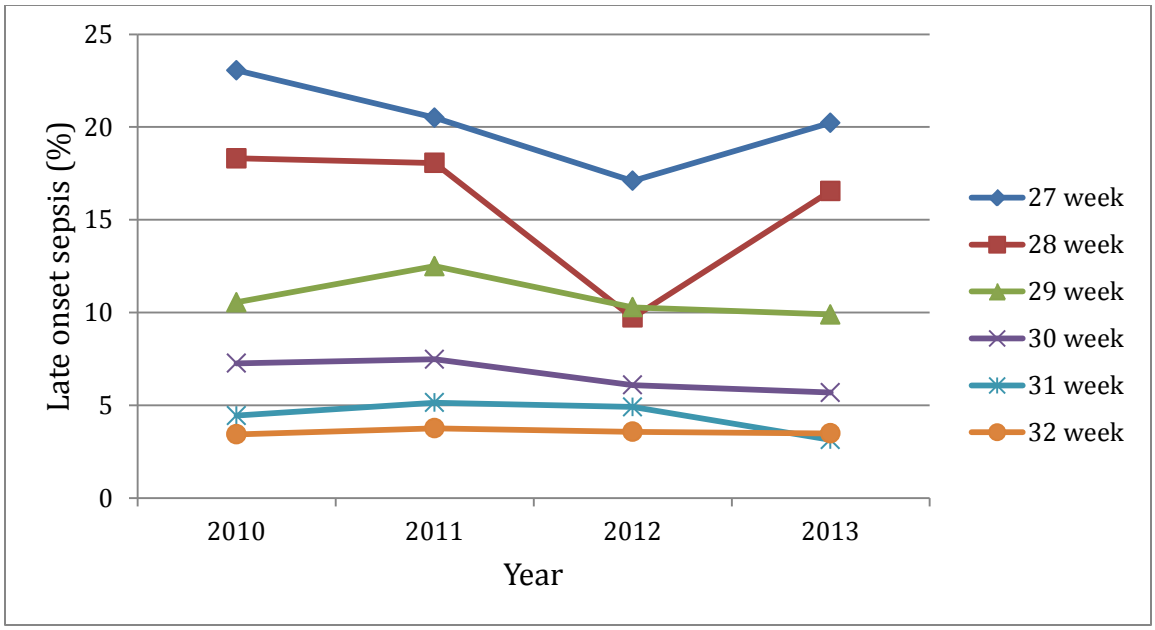


3. Late onset sepsis (with at least one infection) among neonates who survived beyond 2 days after birth

a. 23-26 weeks:

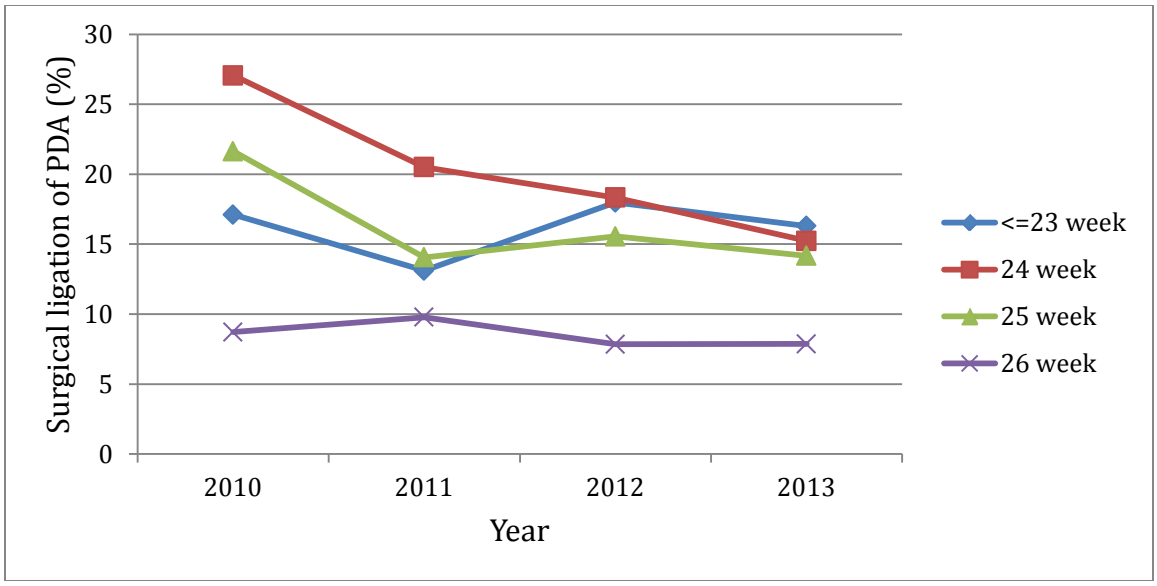


b. 27-32 weeks:

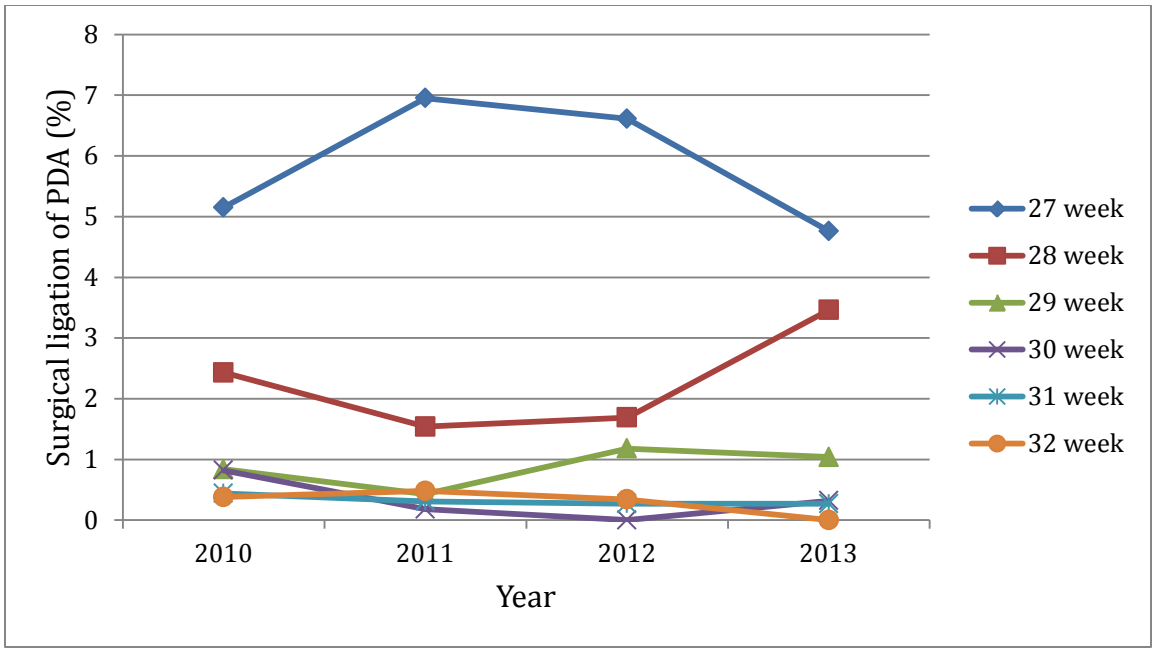


4. Surgical ligation of PDA

a. 23-26 weeks:

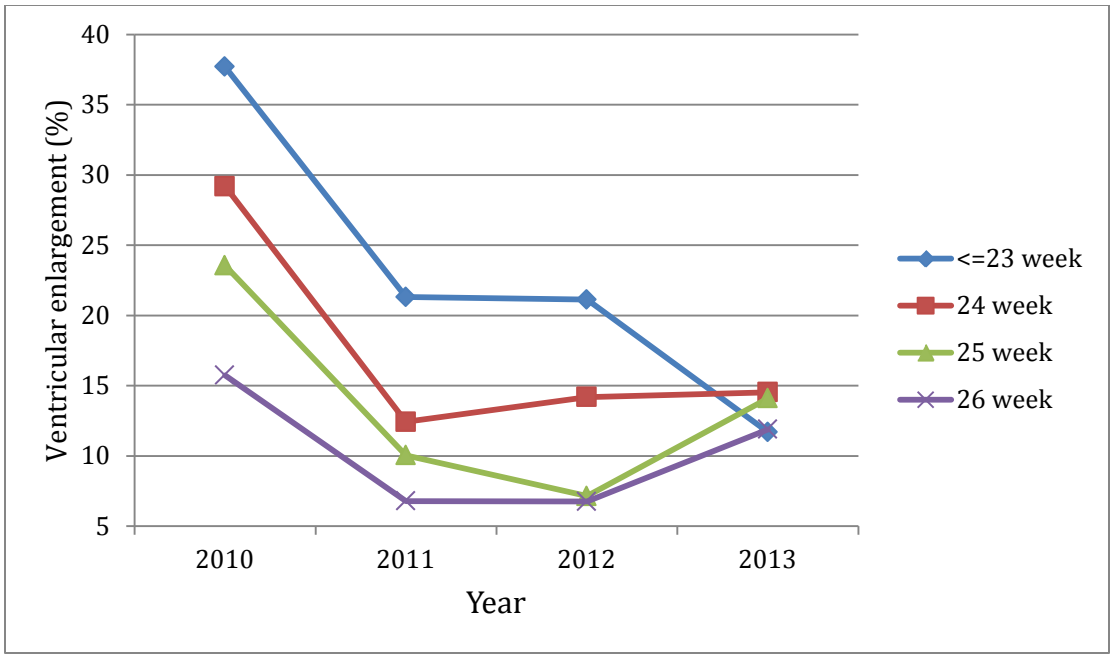


b. 27-32 weeks:

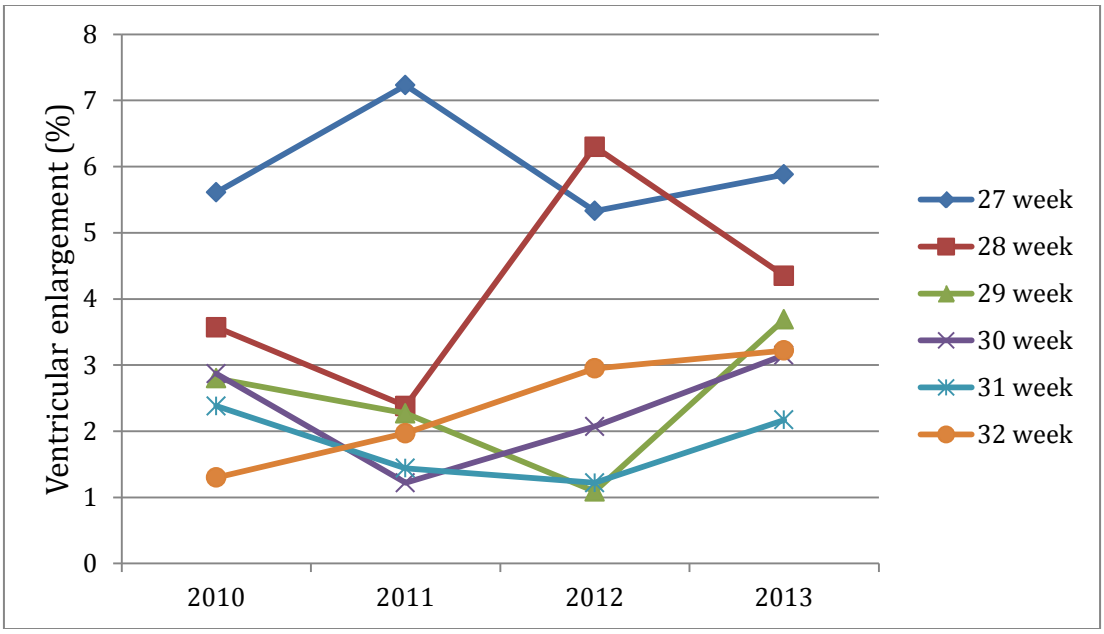


5. Ventricular enlargement: (moderate and severe VE only; among neonates who received ultrasound exams)

a. 23-26 weeks:

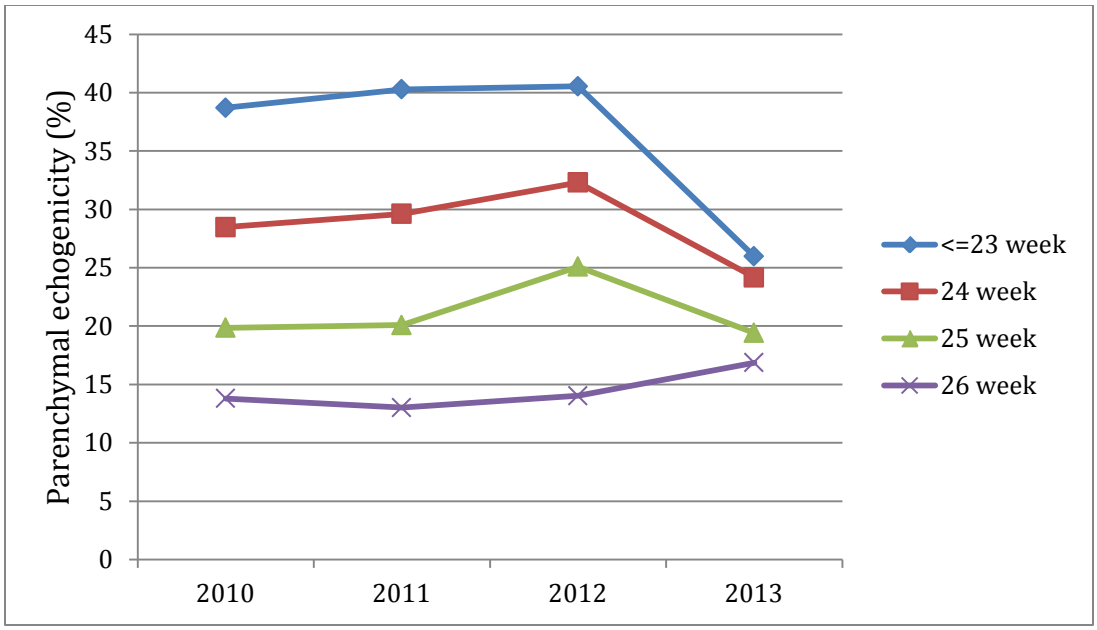


b. 27-32 weeks:

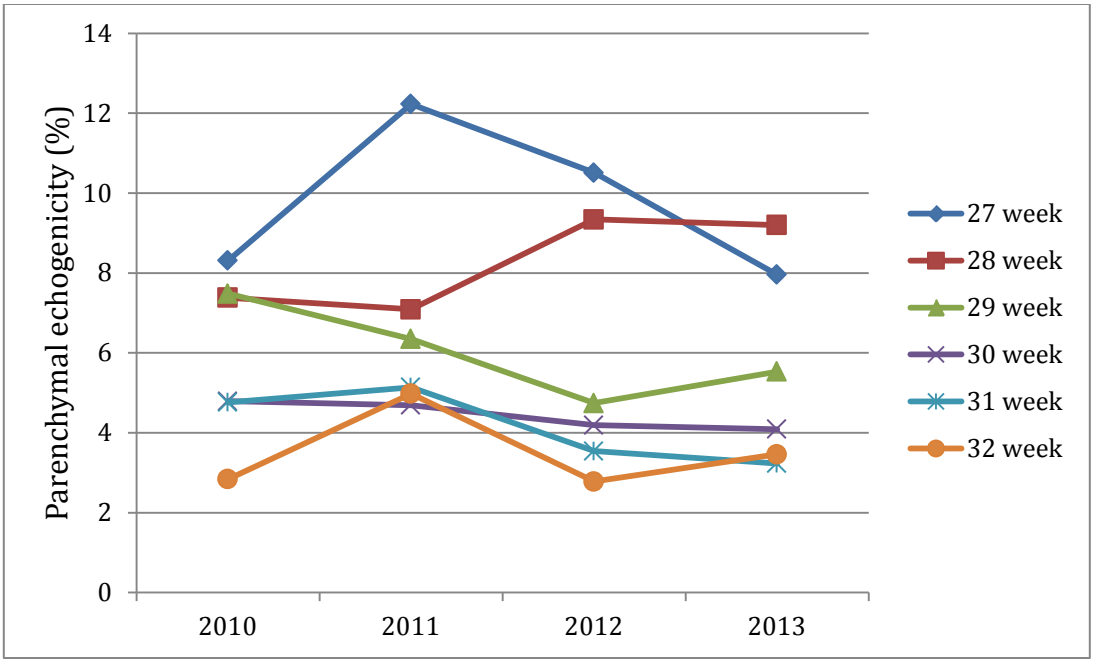


6. Parenchymal echogenicity: (among neonates who received ultrasound exams)

a. 23-26 weeks:

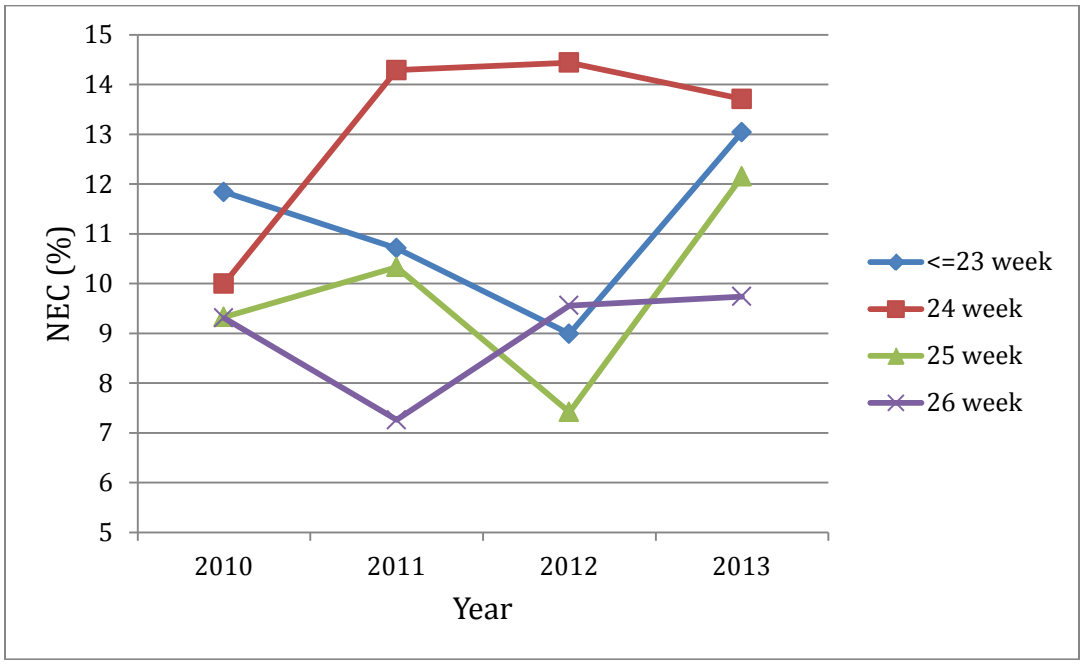


b. 27-32 weeks:

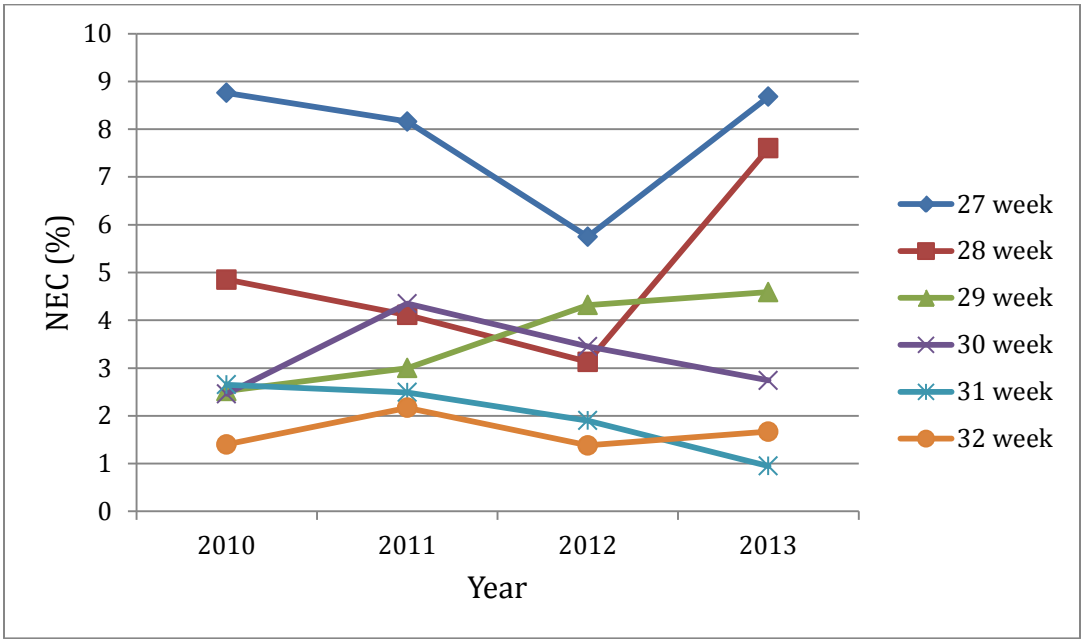


7. NEC:

a. 23-26 weeks:

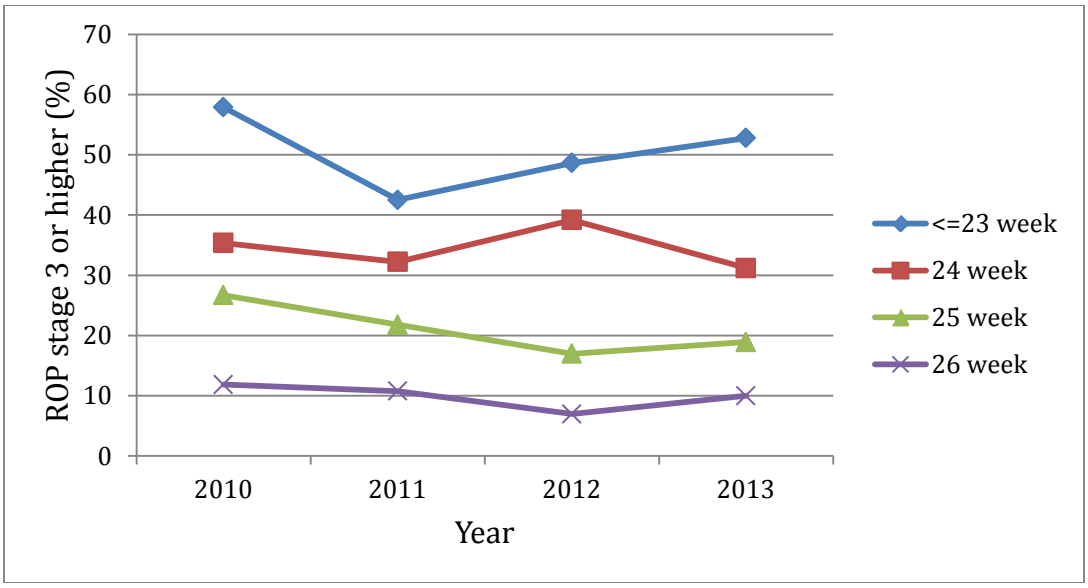


b. 27-32 weeks:

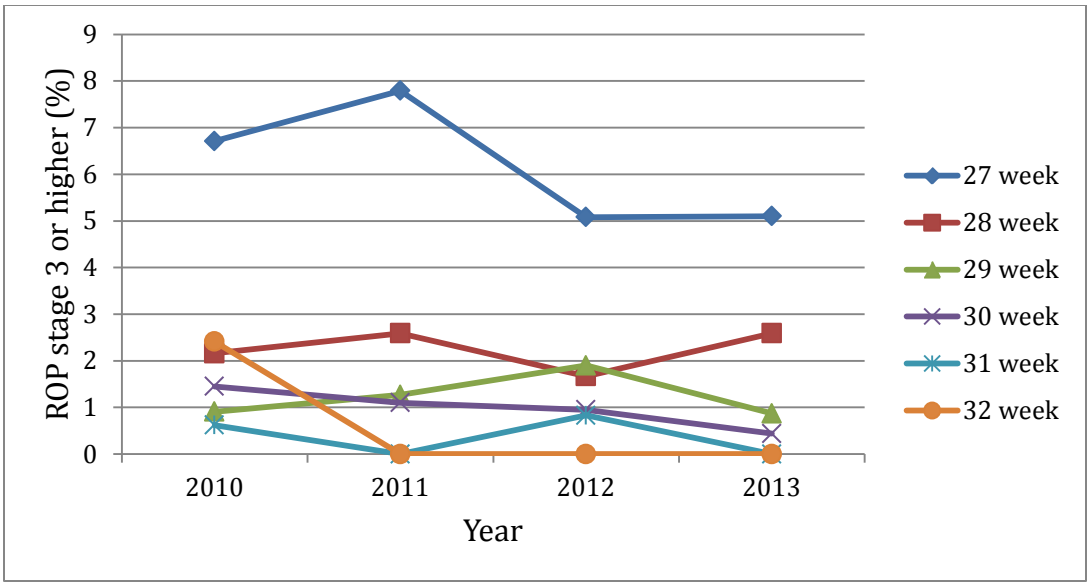


8. Stage 3, 4 and 5 ROP: (among neonates who received eye exams)

a. 23-26 weeks:

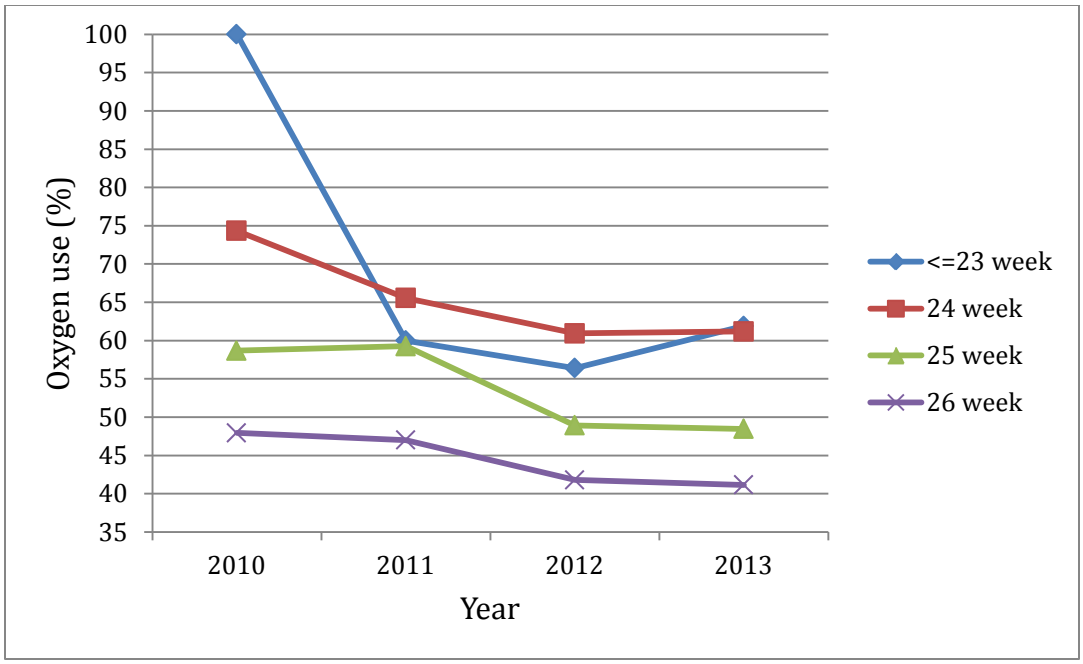


b. 27-32 weeks:

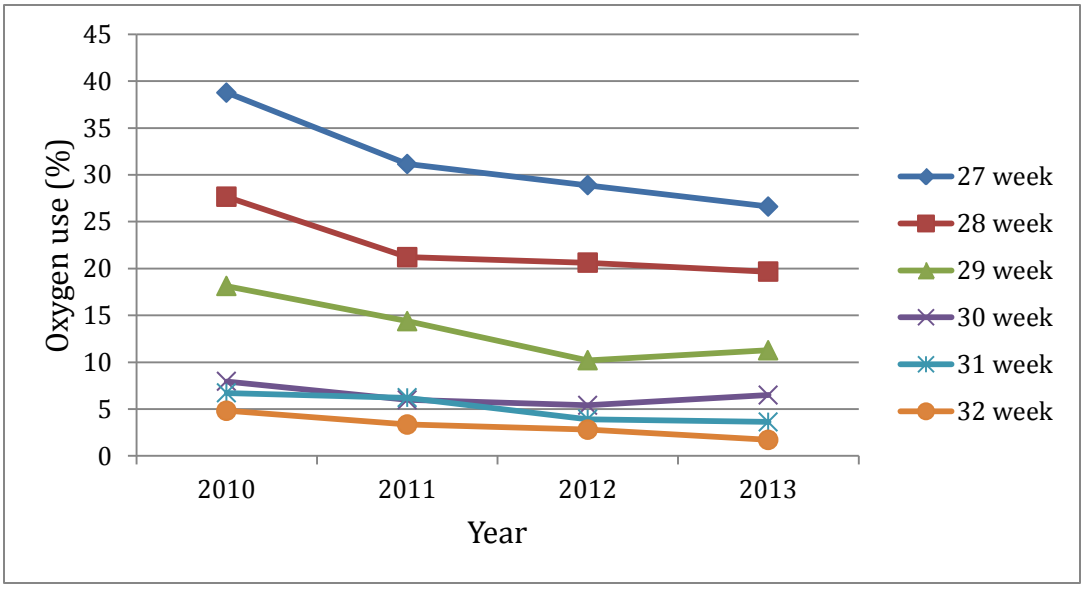


9a. Oxygen use at 36 weeks or at discharge:

a. 23-26 weeks:

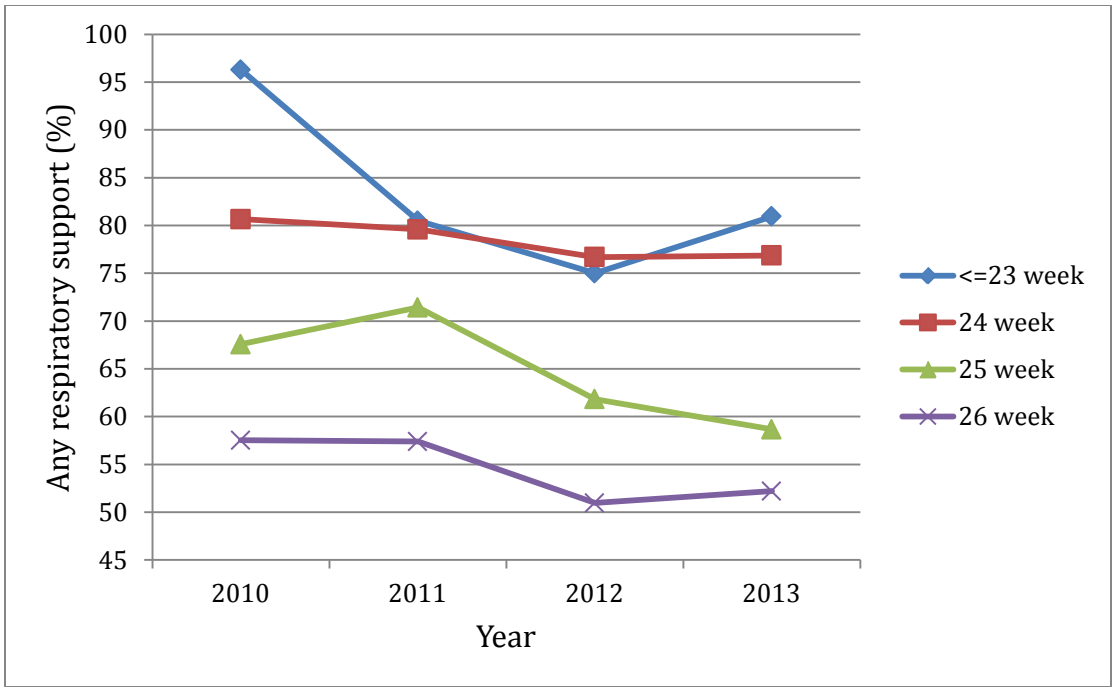


b. 27-32 weeks:

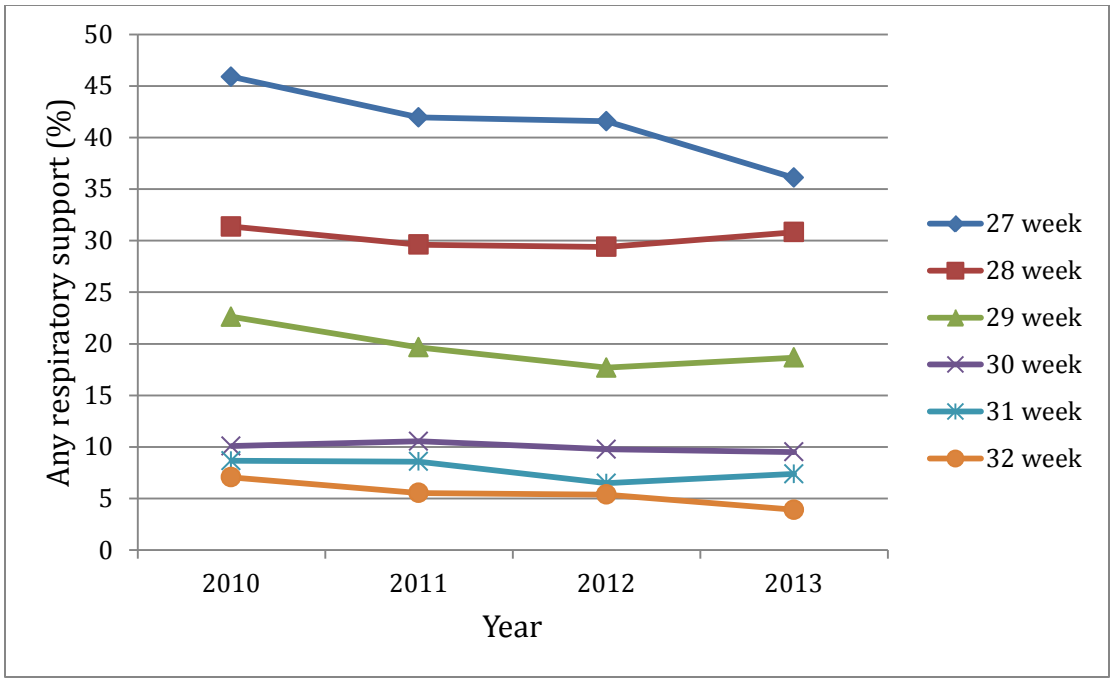


9b. Any respiratory support at 36 weeks or at discharge:

a. 23-26 weeks:

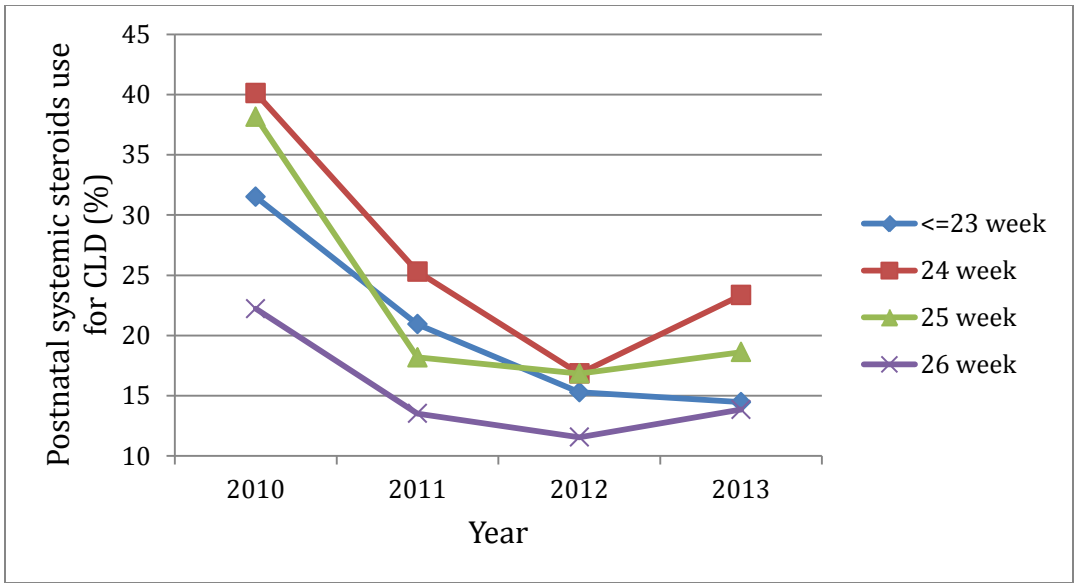


b. 27-32 weeks:

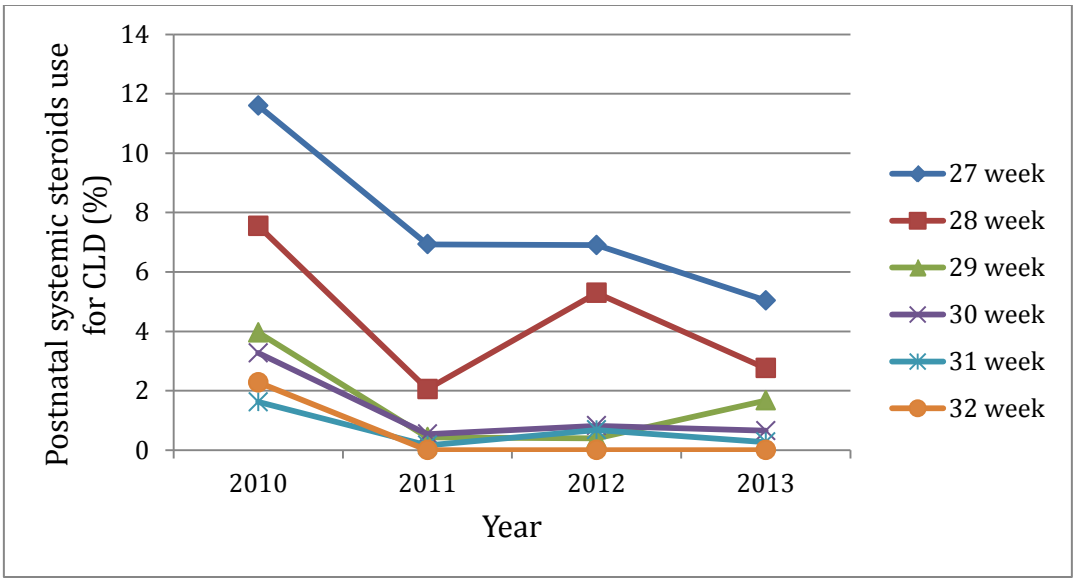


10. Postnatal systemic steroids use for CLD

a. 23-26 weeks:

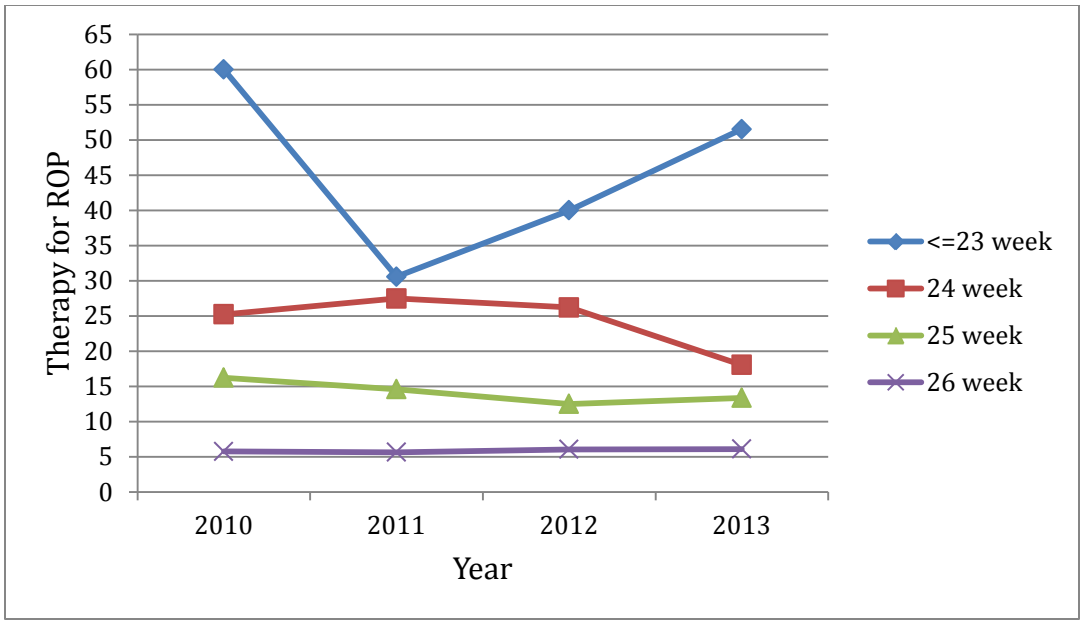


b. 27-32 weeks:

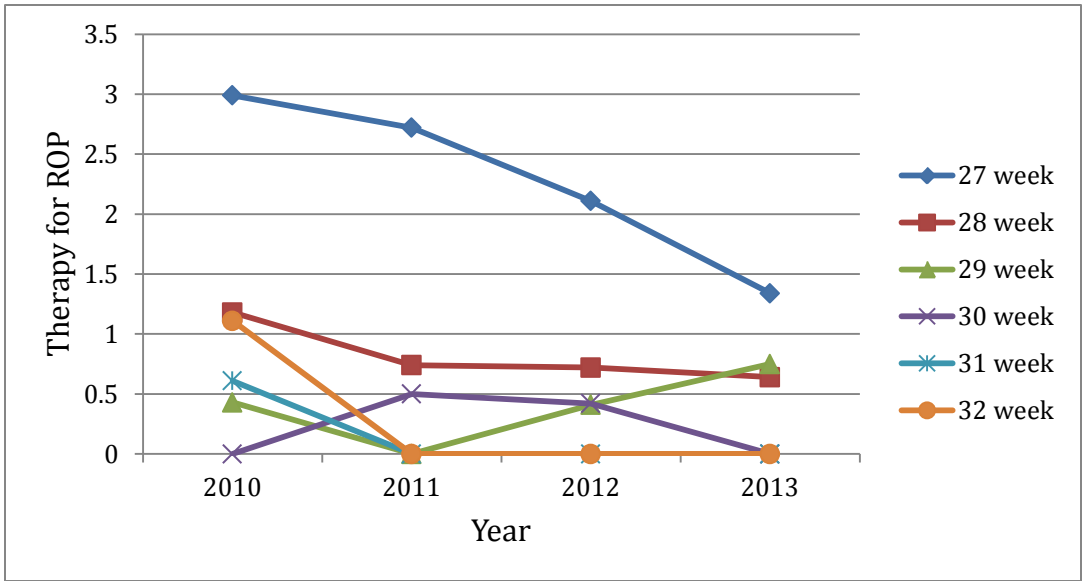


11. Therapy for ROP (among neonates who received eye exams)

a. 23-26 weeks:



b. 27-32 weeks:



I. Conclusions

The Canadian Neonatal Network™ was established in 1995. The number of sites participating in the national database has continued to increase. As of October 2014, all 31 NICUs are participating in data collection across the country.

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. 2013 CNN publications

Peer reviewed publications

1) Shah PS, Yoon W, Kalapesi Z, Bassil K, Dunn M, Lee SK. Seasonal variations in healthcare-associated infection in neonates in Canada. Arch Dis Child Fetal Neonatal Ed 2013:98(1):F65-9.
2) Eliason SH, Whyte H, Dow K, Cronin CM, Lee S; Canadian Neonatal Network. Variations in Transport Outcomes of Outborn Infants among Canadian Neonatal Intensive Care Units. Am J Perinatol 2013; 30:377-382.
3) Lee SK, Aziz K, Dunn M, Clarke M, Kovacs L, Ojah C, Ye XY, Canadian Neonatal Network. Transport Risk Index of Physiologic Stability, version II (TRIPS-II): a simple and practical neonatal illness severity score. Am J Perinatol 2013; 30(5):395-400.
4) Mirea L, Yang J, Paterson AD, Shah V, Bassil KL, Lee SK, Shah PS. Relationship of Mode of Conception and Sex Concordance with Mortality/Morbidity in Preterm Twins. Twin Research and Human Genetics 2013; 16(5):985-93.
5) Ge WJ, Mirea L, Yang J, Bassil K, Lee SK, Shah PS, Canadian Neonatal Network. Prediction of Neonatal Outcomes in Extremely Preterm Neonates. Pediatrics 2013; 132(4):e876-85.
6) Wong C, Mak M, Shivananda S, Yang J, Shah PS, Seidlitz W, Pemberton J, Fitzgerald PG, and Cameron BH, on behalf of the Canadian Neonatal Network. Outcomes of neonatal patient ductus arteriosus ligation in Canadian neonatal units with and without pediatric cardiac surgery programs. Journal of Pediatric Surgery 2013; 48(5):909-14.
7) Barbier A, Boivin A, Yoon W, Vallerand D, Platt RW, Audibert F, Barrington KJ, Shah PS, Nuyt AM; Canadian Neonatal Network. New reference curves for head circumference at birth, by gestational age. Pediatrics 2013; 131(4):e1158-67.
8) Lee SK, Ye XY, Singhal N, De La Rue S, Lodha A, Shah PS; Canadian Neonatal Network. Higher altitude and risk of bronchopulmonary dysplasia among preterm infants. Journal of Perinatology 2013; 30(7):601-6.
9) Ko G, Shah PS, Lee SK, Asztalos E. Impact of maternal education on cognitive and language scores at 18 to 24 months among extremely preterm neonates. Am J Perinnatol 2013; 30(9):723-30.
10) Janvier A and Shah PS. The premature lottery in the Canadian grey zones. Current Pediatric Reviews 2013;9:25-31.
11) Bassil KL, Collier S, Mirea L, Yang J, Seshia MM, Shah PS, Lee SK; the Canadian Neonatal Network. Association between Congenital Anomalies and Area-Level Deprivation among infants in Neonatal Intensive Care Units. Am J Perinatol 2013; 30(3):225-32.

Abstracts

1) Rolnitsky A, Lee SL, Piedbouf B, Harrison AM, Andrews W, Shah PS and the Canadian Neonatal Network. Prophylactic Interventions in Care of Preterm Infants: How do They Fare in Pragmatic Settings? E-PAS2013:2922.361.
2) Weisz DE, Shivananda S, Asztalos E, Yee W, Synnes A, Lee SK, Shah PS, Lee SK and the Canadian Neonatal Network. Antenatal Magnesium Sulphate and Need for Intensive Delivery Room Resuscitation. E-PAS2013:4501.56.

3) Aziz K, Singhal N, Shah V, Ye XY, Sorokan T, Lee SK and the Canadian Neonatal Network. Weight Change by 72 Hours of Age and Short-Term Outcomes of Babies Born <33 Weeks Gestational Age (GA). E-PAS2013:2922.280.

4) Lodha A, Toye J, Canning R, Kalapesi Z, Sorokan T, Aziz K and the Canadian Neonatal Network. Survival of Inborn Versus Outborn Preterm Infants Born <33 Weeks Gestational Age (GA) in Canada. E-PAS2013:2922.336.

5) Elkhateeb O, Sankaran K, Shah PS, Lee SK, Lee KS and the Canadian Neonatal Network. Outcomes of Infants <26 Weeks Gestation after Standard vs Extensive Delivery Room Resuscitation. E-PAS2013:3505.5.

6) Shah PS, Mirea L, Yang J, Ng E, Solimano A, Lee SK and the Canadian Neonatal Network. Impact of NICU Size and Admission Day Occupancy Rate on Neonatal Outcomes of Preterm Infants. E-PAS2013:3505.4.

7) Shah PS, Mirea L, Dow K, Kovacs L, Lee SK and the Canadian Neonatal Network. Impact of Individual-Level Sex or Pair-Wise Sex Concordance on Neonatal Outcomes of Very Preterm Twins. E-PAS2013:2924.498.

8) Kirtsman M, Yoon EW, Lee SK, Shah PS and the Canadian Neonatal Network. The Association of Nil-Per-Os Days and the Development of NEC in Infants Born between 23 and 28 Weeks of Gestation. E-PAS2013:2922.331.

9) Sgro MD, Campbell DM, Tenuta A, Sgro A, Bertelle V, Riley P, Shah PS and the Canadian Neonatal Network. Early Onset Neonatal Sepsis and Meningitis: Rate and Organism Pattern between 2003-2011. E-PAS2013:4506.151.

10) Hei M, Shah PS, Lee SK, Jain A and the Canadian Neonatal Network. Neonatal Outcomes of Asymmetrical and Symmetrical SGA Preterm Infants of <32 Weeks GA. E-PAS2013:2922.318.

11) Tighe MK, Shah PS, Lodha A, Lee SK, Moore AM and the Canadian Neonatal Network. Impact of Maternal Diabetes on Neonatal Outcomes of Infants Admitted to Canadian Neonatal Intensive Care Units. E-PAS2013:1523.322.

12) Loganathan P, Rouvinez Bouali, N, Barrowman N, Yoon EW, Lee SK, Shah PS and the Canadian Neonatal Network. Do Antenatal Steroids Decrease the Severity of Retinopathy of Prematurity? A Canadian Population-Based Study. E-PAS2013:3842.736.

13) Isayama T, Lee SK, Mirea L, Mori R, Kusuda S, Fujimura M, Shah PS and the Canadian Neonatal Network. PDA Management and Neonatal Mortality/morbidities in Japan and Canada: Comparison between Japanese Proactive Versus Canadian Reactive Management. E-PAS2013:2923.409.

14) Isayama T, Ye XY, Dunn M, DaSilva O, Alvaro R, Shah PS, Lee SK and the Canadian Neonatal Network. Adverse Impacts of Maternal Cigarette Smoking on Very Preterm Infants in Canada. E-PAS2013:4502.71.

15) Shah PS, Sjors G, Hakansson S, Ye XY, Lee SK and the Canadian Neonatal Network. Outcomes for VLBW Infants: A Comparison of National Data from Sweden and Canada. E-PAS2013:2924.497.

16) Lodha A, Seshia M, McMillan DD, Barrington K, Lee SK, Shah PS and the Canadian Neonatal Network. Early Caffeine Initiation and Neonatal Outcomes among Very Preterm Infants in Canada. E-PAS2013:2924.477.

K. Future Plans

Database Improvements: Major changes have taken place to improve data collection for the CNN database over last few years. Input from the abstractors and the database review committee are carefully considered. Minor modifications and enhancements to the database are implemented on a half-yearly or yearly basis.

Future objectives include:

- To continue to report on population-based information and follow-up of all infants in a standardized manner by capturing information from sites to which infants are transferred.
- To enhance the data management capabilities on both the data server and client applications to facilitate individual site analyses of their own data.
- To improve the functionalities of the CNN portal.
- To continue collaboration with Canadian Follow up Network so that outcomes at 18-24 months corrected age will be studied for various clinical conditions or situations.

L. Appendices

Major anomalies list

System	ICD10 No	Description	CAtype
Nervous System	Q00	Anencephaly	Major
Nervous System	Q01	Encephalocele	Major
Nervous System	Q02	Microcephaly	Minor
Nervous System	Q03	Congenital Hydrocephalus	Major
Nervous System	Q04	Other Congenital Malformations Of The Brain	Minor
Nervous System	Q05	Spina Bifida	Major
Nervous System	Q06	Spinal Cord Anomaly Other Than Spina Bifida	Minor
Nervous System	Q07	Other Congenital Malformations Of The Nervous System	Minor
Eye	Q10	Congenital Malformations Of Eyelid, Lacrimal Apparatus And Orbit	Minor
Eye	Q11	Anophthalmos, Microphthalmos And Macrophthalmos	Minor
Eye	Q12	Congenital Lens Malformations	Minor
Eye	Q13	Congenital Malformations Of The Anterior Segment Of The Eye	Minor
Eye	Q14	Congenital Malformations Of The Posterior Segment Of The Eye	Minor
Eye	Q15	Other Congenital Malformations Of The Eye	Minor
Ear	Q16	Congenital Malformations Of The Ear Causing Impairment Of Hearing	Minor
Ear	Q17	Other Congenital Malformations Of The Ear	Minor
Face And Neck	Q18	Congenital Anomalies Of Neck Region	Minor
Cardiac Chambers And Circulation	Q20.1	Double Outlet Right Ventricle	Major
Cardiac Chambers And Circulation	Q20.3	Transposition Of The Great Vessels (Tgv)	Major
Cardiac Chambers And Circulation	Q21	Ventricular Septal Defect	Minor
Cardiac Chambers And Circulation	Q21.1	Atrial Septal Defect	Minor
Cardiac Chambers And Circulation	Q21.2	Atrioventricular Septal Defect	Major
Cardiac Chambers And Circulation	Q21.3	Tetralogy Of Fallot	Major

Cardiac Chambers And Circulation	Q22.1	Pulmonary Valve Stenosis	Minor
Cardiac Chambers And Circulation	Q23.4	Hypoplastic Left Heart Syndrome	Major
Cardiac Chambers And Circulation	Q24	Other Congenital Malformations Of The Heart	Minor
Cardiac Chambers And Circulation	Q24.6	Congenital Heart Block	Minor
Cardiac Chambers And Circulation	Q26.2	Total Anomalous Pulmonary Venous Connection	Major
Cardiac Chambers And Circulation	Q25.1	Coarctation Of The Aorta	Major
Cardiac Chambers And Circulation	Q27.0	Congenital Absence And Hypoplasia Of The Umbilical Artery (Single Umbilical Artery)	Minor
Cardiac Chambers And Circulation	Q28	Other Congenital Malformations Of The Circulatory System	Minor
Respiratory System	Q30	Congenital Malformations Of The Nose	Minor
Respiratory System	Q31	Congenital Malformations Of The Larynx	Major
Respiratory System	Q32	Congenital Malformations Of The Trachea And Bronchus	Minor
Respiratory System	Q33	Congenital Malformations Of The Lung	Minor
Respiratory System	Q33.0	Congenital Cystic Lung	Major
Respiratory System	Q33.2	Sequestration of The Lung	Major
Respiratory System	Q35	Cleft Palate	Minor
Respiratory System	Q36	Cleft Lip	Minor
Respiratory System	Q37	Cleft Palate With Lip	Minor
Digestive System	Q38	Congenital Malformations Of The Tongue, Mouth, Pharynx	Minor
Digestive System	Q39	Congenital Malformations Of The Esophagus	Minor
Digestive System	Q39.0	Atresia Of Oesophagus Without Fistula	Major
Digestive System	Q39.1	Atresia Of Oesophagus With Tracheo-Oesophageal Fistula	Major
Digestive System	Q40.0	Congenital Hypertrophic Pyloric Stenosis	Minor
Digestive System	Q41	Congenital Absence, Atresia And Stenosis Of The Small Intestine	Major
Digestive System	Q41.0	Congenital Absence, Atresia And Stenosis Of The Duodenum	Major
Digestive System	Q41.1	Congenital Absence, Atresia And Stenosis Of The Jejunum	Major
Digestive System	Q42.3	Congenital Absence, Atresia and Stenosis of The Anus (Imperforate Anus)	Major
Digestive System	Q43	Other Congenital Malformations Of The Intestine	Minor

Digestive System	Q44	Congenital Malformations Of The Gallbladder, Bile Ducts And Liver	Minor
Digestive System	Q44.2	Atresis Of The Bile Ducts	Major
Digestive System	Q45	Other Congenital Malformations Of The Digestive System	Minor
Genital System	Q50	Congenital Malformations Of Ovaries, Fallopian Tubes And Broad Ligaments	Minor
Genital System	Q51	Congenital Malformations Of The Uterus And Cervix	Minor
Genital System	Q52	Other Congenital Malformations Of The Female Genitals	Minor
Genital System	Q53.1	Undescended Testicle, Unilateral	Minor
Genital System	Q53.2	Undescended Testicle, Bilateral	Minor
Genital System	Q54.0	Hypospadias	Minor
Genital System	Q55	Other Congenital Malformations Of The Male Organs	Minor
Genital System	Q56	Indeterminate Sex And Pseudohermaphroditism	Major
Urinary System	Q60	Renal Agenesis And Other Defects Of The Kidney	Major
Urinary System	Q61	Congenital Renal Cystic Diseases	Major
Urinary System	Q62.0	Congenital Hydronephrosis	Major
Urinary System	Q64	Other Congenital Malformations Of The Urinary System	Minor
Urinary System	Q64.2	Congenital Posterior Urethral Valves	Major
Musculoskeletal System	Q65	Congenital Deformities Of The Hip	Minor
Musculoskeletal System	Q66	Congenital Deformities Of The Feet	Minor
Musculoskeletal System	Q67	Congenital Musculoskeletal Deformities Of Head, Face, Spine And Chest	Minor
Musculoskeletal System	Q68	Congenital Musculoskeletal Deformities Of Arm, Leg, Long Bones	Minor
Musculoskeletal System	Q69	Polydactyly	Minor
Musculoskeletal System	Q70	Syndactyly	Minor
Musculoskeletal System	Q71	Reduction Defects Of The Upper Limb	Major
Musculoskeletal System	Q72	Reduction Defects Of The Lower Limb	Major
Musculoskeletal System	Q73	Reduction Defects Of Unspecified Limb	Minor
Musculoskeletal System	Q74	Other Congenital Malformations Of Limbs (Shoulder Girdle, Knee, Arthrogryposis)	Minor
Musculoskeletal System	Q75	Other Congenital Malformations Of The Skull And Face Bones	Minor
Musculoskeletal System	Q75.0	Craniosynostosis	Major
Musculoskeletal System	Q76	Congenital Malformations Of The Spine And Bony Thorax	Minor
Musculoskeletal System	Q79	Congenital Malformations Of The Musculoskeletal System, Not Elsewhere Classified	Minor
Musculoskeletal System	Q79.0	Congenital Diaphragmatic Hernia	Major

Musculoskeletal System	Q79.2	Exomphalos	Major
Musculoskeletal System	Q79.3	Gastroschisis	Major
Other Congenital Malformations	Q80	Congenital Ichthyosis	Minor
Other Congenital Malformations	Q81	Epidermolysis Bullosa	Major
Other Congenital Malformations	Q82	Other Congenital Malformations Of The Skin	Minor
Other Congenital Malformations	Q83	Congenital Malformations Of The Breast	Minor
Other Congenital Malformations	Q84	Other Congenital Malformations Of Skin Appendages Such As Nail, Hair	Minor
Other Congenital Malformations	Q85	Neurocutaneous Syndromes	Minor
Other Congenital Malformations	Q86.0	Fetal Alcohol Syndrome (Dysmorphic)	Major
Other Congenital Malformations	Q86	Congenital Malformations Syndromes Due To Known Exogenous Causes Not Elsewhere Classified	Minor
Other Congenital Malformations	Q87	Other Specified Congenital Malformation Syndromes Affecting Multiple Systems	Minor
Other Congenital Malformations	Q89	Other Congenital Malformations, Not Elsewhere Classified	Minor
Other Congenital Malformations	Q89.3	Situs Inversus	Minor
Chromosomal Abnormalities	Q90	Down's Syndrome	Major
Chromosomal Abnormalities	Q91.3	Edwards' Syndrome Or Trisomy 18	Major
Chromosomal Abnormalities	Q91.7	Patau Syndrome Or Trisomy 13	Major
Chromosomal Abnormalities	Q92	Other Trisomies And Parial Trisomies Of The Autosomes Not Elsewhere Classified	Major
Chromosomal Abnormalities	Q93	Monosomies And Deletions From The Autosomes Not Elsewhere classified	Major
Chromosomal Abnormalities	Q95	Balanced Rearrangements And Structural Markers Not Elsewhere Classified	Minor
Chromosomal Abnormalities	Q96	Turner's Syndrome	Major
Chromosomal Abnormalities	Q97	Other Sex Chromosome Abnormalities, Female Phenotype Not Elsewhere Classified	Minor

List of Abbreviations

BW	Birth Weight
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
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
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

Definitions

A list of the CNN definitions can be found in the CNN abstractors' manual. The manual can be accessed on the CNN website (www.canadianneonatalnetwork.org/portal) at the following link:

http://www.canadianneonatalnetwork.org/Portal/LinkClick.aspx?fileticket=GPsGZLMgQxQ%3d&tabid=69

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