The Canadian Neonatal Network™
Le Réseau Néonatal Canadien

Annual Report 2012 Rapport Annuel™

Acknowledgements

This report is based upon data collected from 30 Health Care Organizations from across Canada that were members of the Canadian Neonatal Network™ during the year 2012. 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.

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Coordinating Centre of the CNN

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

Network Chairman:	Dr. Shoo K. Lee, University of Toronto
Network Director:	Dr. Prakesh Shah, University of Toronto
Executive Committee:	Ms. Martine Claveau, McGill University
	Dr. Kimberly Dow, Queen's University
	Dr. Christoph Fusch, McMaster University
	Dr. Adele Harrison, University of British Columbia
	Dr. Abhay Lodha, University of Calgary
	Dr. Vibhuti Shah, University of Toronto
	Dr. Wendy Yee, University of Calgary
CNN Coordinator:	Ms. Vinthiya Param, Mount Sinai Hospital
Analyst:	Mr. Eugene W. Yoon, Mount Sinai Hospital

Report Review Committee: Dr. Alexander Allen, Dalhousie University
Dr. Keith Barrington, University of Montreal
Dr. Orlando Da Silva, University of Western Ontario
Dr. Michael Dunn, University of Toronto
Dr. Arne Ohlsson, University of Toronto
Dr. Nicole Rouvinez-Bouali, University of Ottawa
Ms. Wendy Seidlitz, Hamilton Health Sciences
Dr. Mary Seshia, University of Manitoba
Dr. Prakesh Shah, University of Toronto (Chair)
Dr. Nalini Singhal, University of Calgary

Participating CNN Sites and Site Investigators for the 2012 Report:

Victoria General Hospital, Victoria, British Columbia	Dr. Adele Harrison
BC Women's Hospital, Vancouver, British Columbia	Dr. Anne Synnes
Royal Columbian Hospital, New Westminster, British Columbia	Dr. Zenon Cieslak
Surrey Memorial Hospital, Surrey, British Columbia	Dr. Todd Sorokan
Foothills Medical Centre, Calgary, Alberta	Dr. Wendy Yee
Royal Alexandra Hospital, Edmonton, Alberta University of Alberta Hospital – Stollery Children's, Edmonton, Alberta	Dr. Khalid Aziz
Royal University Hospital, Saskatoon, Saskatchewan	Dr. Koravangattu Sankaran
Regina General Hospital, Regina, Saskatchewan	Dr. Zarin Kalapesi
Winnipeg Health Sciences Centre, Winnipeg, Manitoba	Dr. Mary Seshia
St. Boniface General Hospital, Winnipeg, Manitoba	Dr. Ruben Alvaro
Windsor Regional Hospital, Windsor, Ontario	Dr. Chuks Nwaesei
London Health Sciences Centre, London, Ontario	Dr. Orlando Da Silva
Hamilton Health Sciences, Hamilton, Ontario	Dr. Sandesh Shivananda
Mount Sinai Hospital, Toronto, Ontario	Dr. Prakesh Shah
Hospital for Sick Children, Toronto, Ontario	Dr. Kyong-Soon Lee
Sunnybrook Health Sciences Centre, Toronto, Ontario	Dr. Michael Dunn
Kingston General Hospital, Kingston, Ontario	Dr. Kimberly Dow
Children's Hospital of Eastern Ontario, Ottawa, Ontario Ottawa General Hospital, Ottawa, Ontario	Dr. Nicole Rouvinez-Bouali
Jewish General Hospital, Montréal, Québec	Dr. Lajos KovacsRoyal
Hôpital Sainte-Justine, Montréal, Québec	Dr. Keith Barrington
Montréal Children's Hospital, Montréal, Québec	Dr. Patricia Riley
Centre Hospitalier Universitaire de Québec, Sainte Foy, Québec	Dr. Bruno Piedboeuf
Victoria Hospital, Montréal, Québec	Dr. Daniel Faucher
Centre Hospitalier Universitaire de Sherbrooke, Sherbrooke, Québec	Dr. Valerie Bertelle
Dr. Everett Chalmers Hospital, Fredericton, New Brunswick	Dr. Barbara Bulleid
Saint John Regional Hospital, Saint John, New Brunswick	Dr. Cecil Ojah/ Dr. Luis Monterrosa
Moncton Hospital, Moncton, New Brunswick	Dr. Rody Canning

IWK Health Centre, Halifax, Nova Scotia	Dr. Douglas McMillan
Cape Breton Regional Hospital, Sydney, Nova Scotia	Dr. Andrzej Kajetanowicz
Janeway Children's Health and Rehabilitation Centre, St. John's, Newfoundland	Dr. Wayne Andrews

Written & Prepared By:

Dr. Prakesh Shah, Dr. Shoo Lee, Eugene W. Yoon, Vinthiya Param and Members of the Annual Report Review Committee

Cover page adapted by Vinthiya Param and Ruth Warre

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List of Abbreviations

BW	Birth Weight
CONS	Coagulase-Negative Staphylococcus
CPAP	Continuous Positive Airway Pressure
CVL	Central Venous Line
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
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=I3jnvN9fGfE%3d&tabid=69

A. Executive Summary

This report from the Canadian Neonatal Network™ (CNN) is based on data from 31 tertiary sites, which contributed data in the year 2012. 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 the Ministry of Health and Long-Term Care, 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, 2012 and December 31, 2012 who were discharged by March 31, 2013 are included.

Total number of eligible admissions to participating Canadian sites (See section D.1 for analyses)	15 230
Total number of eligible individual neonates (See section D.2. for analyses)	14 224
Total number of eligible very preterm (<33 weeks GA) neonates (See section D.3. for analyses)	4 370
Total number of eligible very low birth weight (VLBW) neonates (See section D.3. for analyses)	2 922
Total number of small for gestational age (SGA) neonates (See section D.4. for analysis)	2 313

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: Duration of Support and Length of Stay
Section H: Hypoxic Ischemic Encephalopathy
Section I: Trend Analyses over last 3 years

Five sites during 2012 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 [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 currently ongoing in sites across Canada. This project is targeting quality improvement in all five major morbidities of preterm infant and will also link it with neurodevelopmental outcome up at 2 years of age. Neonatal component of study is completed and follow up data collection is ongoing.

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.

[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

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 2012 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	All eligible admissions	n	n/a	n	n	y
Health Sciences Centre Winnipeg	All eligible admissions	y	y	y	y	y
St. Boniface General Hospital	All eligible admissions	n	n/a	y	y	y
Hamilton Health Sciences	All eligible admissions	y	n	y	y	y
London Health Sciences Centre	All eligible admissions	y	y	y	y	y
Windsor Regional Hospital	< 33 weeks GA and /or < 1500g	n	n/a	n	y	n
Hospital for Sick Children	All eligible admissions	n	n/a	n/a	y	y
Mount Sinai Hospital	All eligible admissions	y	y	y	n	n
Sunnybrook Health Sciences Centre	All eligible admissions	n	n/a	y	n	n
Children's Hospital of Eastern Ontario	< 33 weeks GA	y	y	y	y	y
Kingston General Hospital	All eligible admissions	y	y	y	y	y
Jewish General Hospital	All eligible admissions	y	y	y	y	n
Hôpital Sainte-Justine	All eligible admissions	y	n	y	y	y
Centre Hospitalier Universitaire de Quebec	< 29 weeks GA	y	n	y	y	y
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, 2012 and December 31, 2012, and were discharged by March 31, 2013. 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 14 224 patients accounted for 15 230 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 15 230 eligible admissions (including readmissions) to 30 sites. 25 of these sites submitted complete data (n=14 247) on all admissions and 5 sites submitted data on a selected admission cohort (n=983).

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

These include data from 14 224 eligible neonates admitted to 30 sites. 25 of these sites submitted complete data (n=13 375) on all eligible admitted neonates and 5 sites submitted data on selected eligible admitted neonates (n=849).

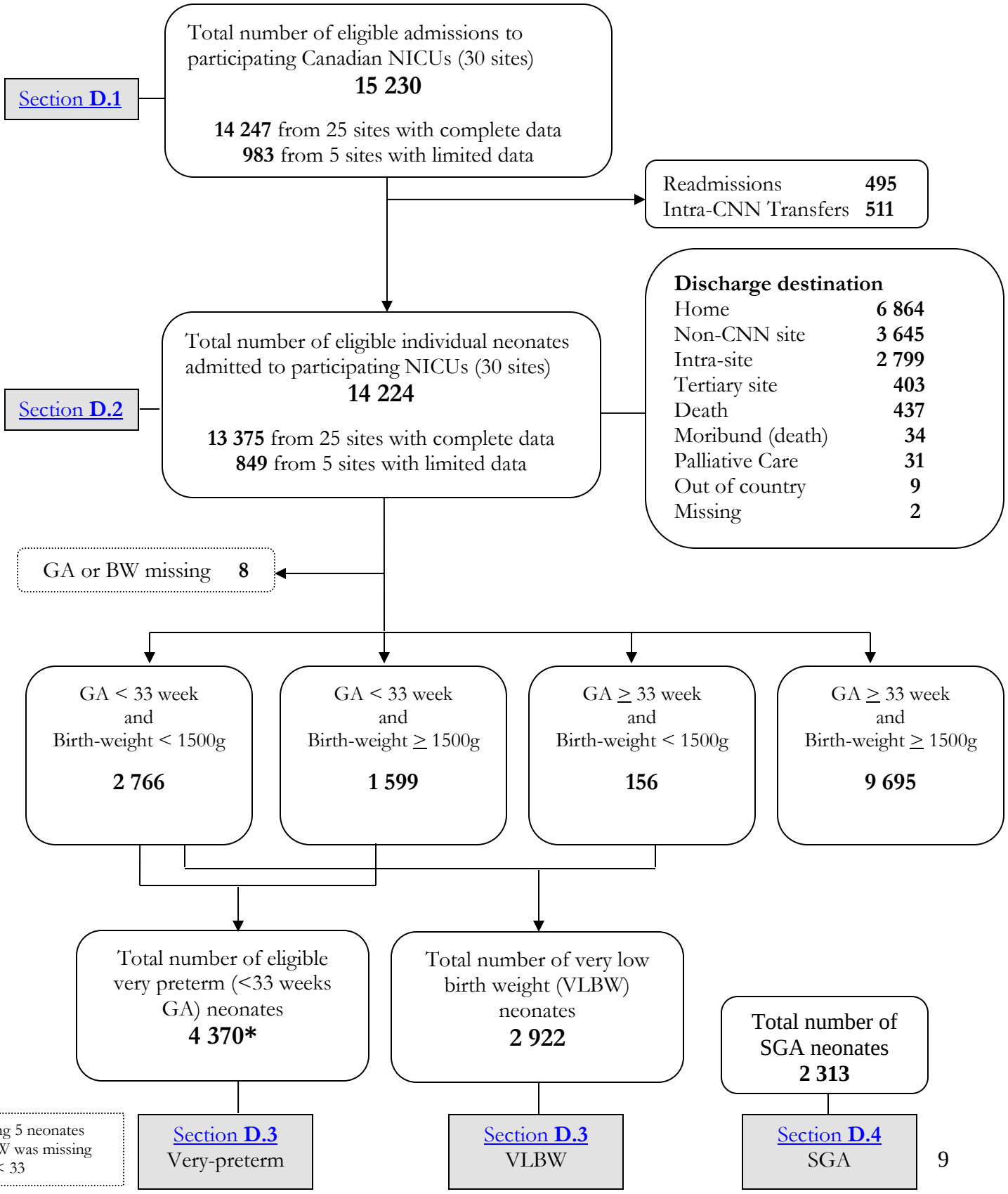
Section D.3. Analyses based on number of eligible very preterm (< 33 weeks GA) or very low BW (<1500g BW) neonates

These include data from 4 370 eligible very preterm neonates and 2 922 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 2 313 SGA neonates.

Canadian Neonatal Network™ Database: Admissions between January 1, 2012 and December 31, 2012 who were discharged by March 31, 2013. Readmissions from 2011 and delivery room deaths were excluded.

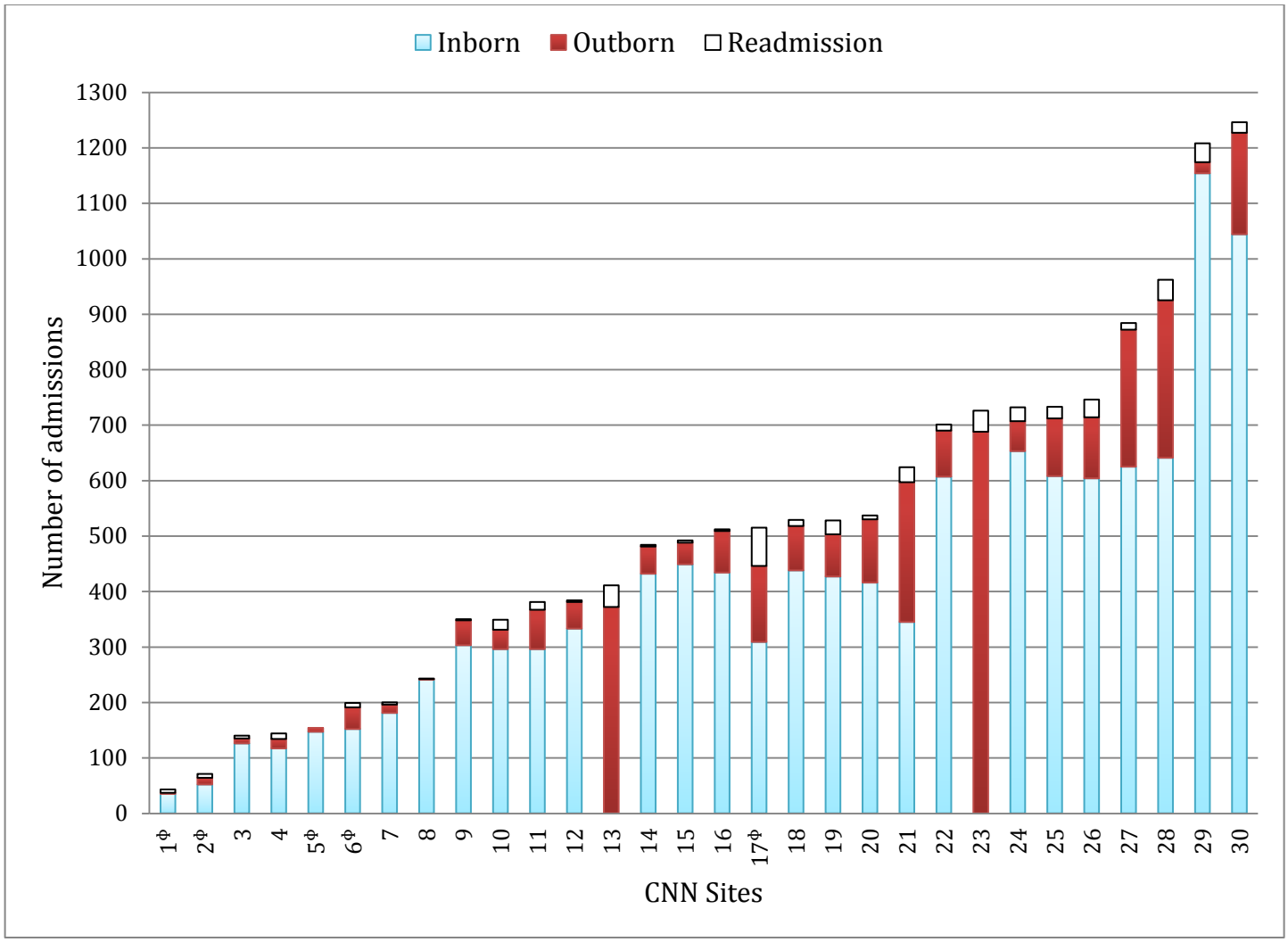


Section D.1

Analyses based on number of eligible admissions to participating sites

These include data from 15 230 eligible admissions (including readmissions) to 30 sites. 25 of these sites submitted complete data (n=14 247) on all admissions and 5 sites submitted data on a selected admission cohort (n=983).

Presentation #1
Admissions to Canadian Neonatal Network participating centers



Φ Data collected on selected cohort of eligible admissions only.

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

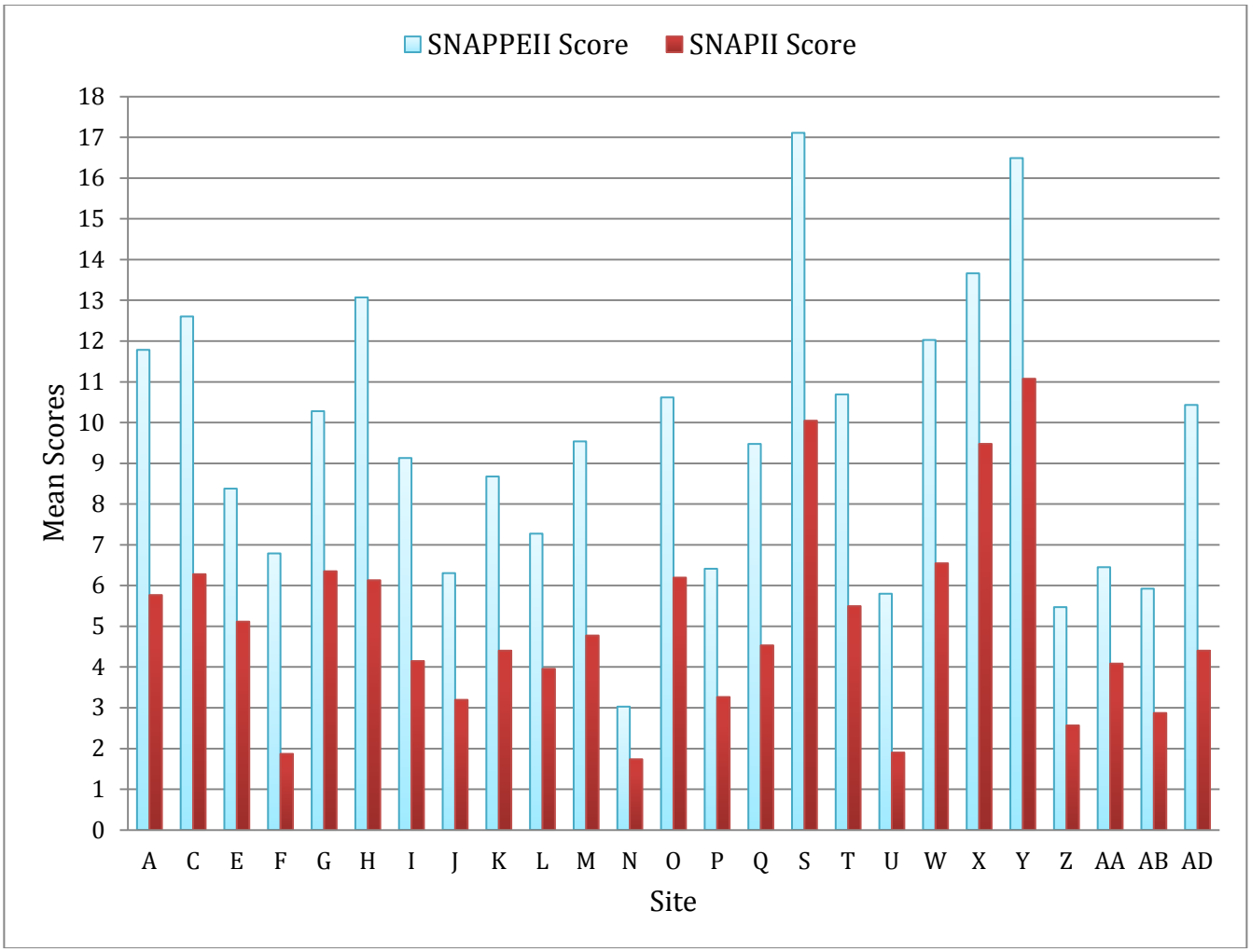
Sites		Admission Status			Total
		Inborn	Outborn	Readmission	
1ϕ	Count	35	2	6	43
	%	81.4	4.7	14.0	(100.0)
2ϕ	Count	52	12	7	71
	%	73.2	16.9	9.9	(100.0)
3	Count	126	9	5	140
	%	90.0	6.4	3.6	(100.0)
4	Count	117	17	10	144
	%	81.3	11.8	6.9	(100.0)
5ϕ	Count	147	7	0	154
	%	95.5	4.6	0.0	(100.0)
6ϕ	Count	152	39	8	199
	%	76.4	19.6	4.0	(100.0)
7	Count	181	15	4	200
	%	90.5	7.5	2.0	(100.0)
8	Count	241	1	1	243
	%	99.2	0.4	0.4	(100.0)
9	Count	303	45	2	350
	%	86.6	12.9	0.6	(100.0)
10	Count	296	35	18	349
	%	84.8	10.0	5.2	(100.0)
11	Count	296	71	14	381
	%	77.7	18.6	3.7	(100.0)
12	Count	333	48	3	384
	%	86.7	12.5	0.8	(100.0)
13	Count	0	372	39	411
	%	0.0	90.5	9.5	(100.0)
14	Count	432	49	3	484
	%	89.3	10.1	0.6	(100.0)
15	Count	449	39	4	492
	%	91.3	7.9	0.8	(100.0)

Sites		Admission status			Total
		Inborn	Outborn	Readmission	
16	Count	434	75	3	512
	%	84.8	14.7	0.6	(100.0)
17ϕ	Count	309	137	69	515
	%	60.0	26.6	13.4	(100.0)
18	Count	438	80	11	529
	%	82.8	15.1	2.1	(100.0)
19	Count	427	76	25	528
	%	80.9	14.4	4.7	(100.0)
20	Count	416	114	7	537
	%	77.5	21.2	1.3	(100.0)
21	Count	345	252	27	624
	%	55.3	40.4	4.3	(100.0)
22	Count	607	83	11	701
	%	86.6	11.8	1.6	(100.0)
23	Count	0	688	38	726
	%	0.0	94.8	5.2	(100.0)
24	Count	653	54	25	732
	%	89.2	7.4	3.4	(100.0)
25	Count	608	104	21	733
	%	83.0	14.2	2.9	(100.0)
26	Count	604	110	32	746
	%	81.0	14.8	4.3	(100.0)
27	Count	625	247	12	884
	%	70.7	27.9	1.4	(100.0)
28	Count	641	284	37	962
	%	66.6	29.5	3.9	(100.0)
29	Count	1154	20	34	1208
	%	95.5	1.7	2.8	(100.0)
30	Count	1044	183	19	1246
	%	83.8	14.7	1.5	(100.0)

Total number of admissions: 15 230
Inborn: 11 465 (75.3%)
Outborn: 3 268 (21.5%)
Readmission: 495 (3.3%)
Missing data on admission status: 2 (0.01%)

COMMENTS: These analyses include 15 230 admissions to participating sites across Canada during the period of January 1, 2012 to December 31, 2012. Adjusting for readmission, these represent 14 224 Neonates. **Twenty-five 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=25 sites, 14 247 admissions, 363 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
A	Mean	11.8	5.8	**P**	Mean	6.4	3.3
	SEM	0.6	0.3		SEM	0.5	0.3
Bϕ	Mean	20.6	11.9	**Q**	Mean	9.5	4.5
	SEM	1.4	0.9		SEM	1.2	0.7
C	Mean	12.6	6.3	**Rϕ**	Mean	24.4	11.8
	SEM	0.6	0.4		SEM	3.4	2.1
Dϕ	Mean	10.5	3.8	**S**	Mean	17.1	10.0
	SEM	1.6	0.7		SEM	0.8	0.5
E	Mean	8.4	5.1	**T**	Mean	10.7	5.5
	SEM	0.7	0.5		SEM	0.7	0.4
F	Mean	6.8	1.9	**U**	Mean	5.8	1.9
	SEM	0.5	0.2		SEM	1.1	0.6
G	Mean	10.3	6.3	**Vϕ**	Mean	20.1	9.2
	SEM	0.6	0.4		SEM	0.9	0.6
H	Mean	13.1	6.1	**W**	Mean	12.0	6.5
	SEM	0.9	0.5		SEM	0.6	0.3
I	Mean	9.1	4.1	**X**	Mean	13.7	9.5
	SEM	0.6	0.3		SEM	0.5	0.3
J	Mean	6.3	3.2	**Y**	Mean	16.5	11.1
	SEM	0.5	0.3		SEM	0.6	0.4
K	Mean	8.7	4.4	**Z**	Mean	5.5	2.6
	SEM	0.5	0.3		SEM	0.5	0.3
L	Mean	7.3	4.0	**AA**	Mean	6.4	4.1
	SEM	0.7	0.4		SEM	0.9	0.6
M	Mean	9.5	4.8	**AB**	Mean	5.9	2.9
	SEM	0.6	0.3		SEM	0.5	0.3
N	Mean	3.0	1.7	**ACϕ**	Mean	20.7	11.8
	SEM	0.6	0.4		SEM	2.3	1.5
O	Mean	10.6	6.2	**AD**	Mean	10.4	4.4
	SEM	0.5	0.3		SEM	0.8	0.5

All eligible admissions overall (25 sites) - Mean(SEM): SNAP-IIPE 10.5 (0.1), SNAP-II 5.8 (0.1) Selected admissions overall (5 sites) - Mean(SEM): SNAP-IIPE 19.8 (0.7), SNAP-II 9.8 (0.4)

COMMENTS: These analyses include 15 230 admissions (392 missing data on SNAP score) to participating sites across Canada during the year 2012. Adjusting for readmission, these analyses represent 14 224 Neonates. **Twenty-five sites collected data on all eligible admissions whereas five sites (marked by ϕ) collected data on a selected cohort of eligible admissions only.** These five sites have not been included in the previous bar graph but have been included in the above Table.

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

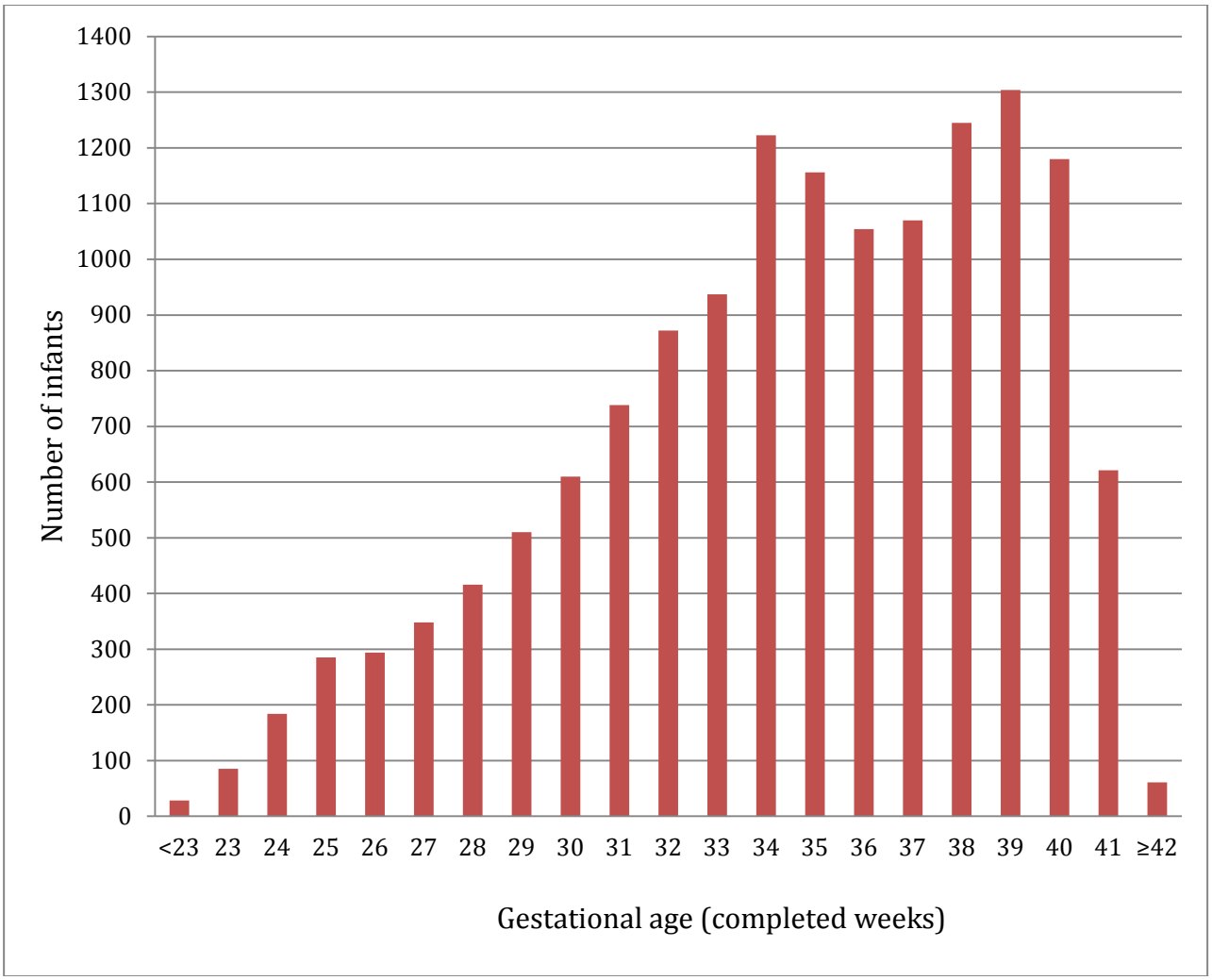
Section D.2

Analyses based on number of eligible neonates admitted to participating sites

These include data from 14 224 eligible neonates admitted to 30 sites. 25 of these sites submitted complete data (n=13 375) on all eligible admitted neonates and 5 sites submitted data on a selected cohort of eligible admitted neonates (n=849).

Presentation #3

Gestational age at birth

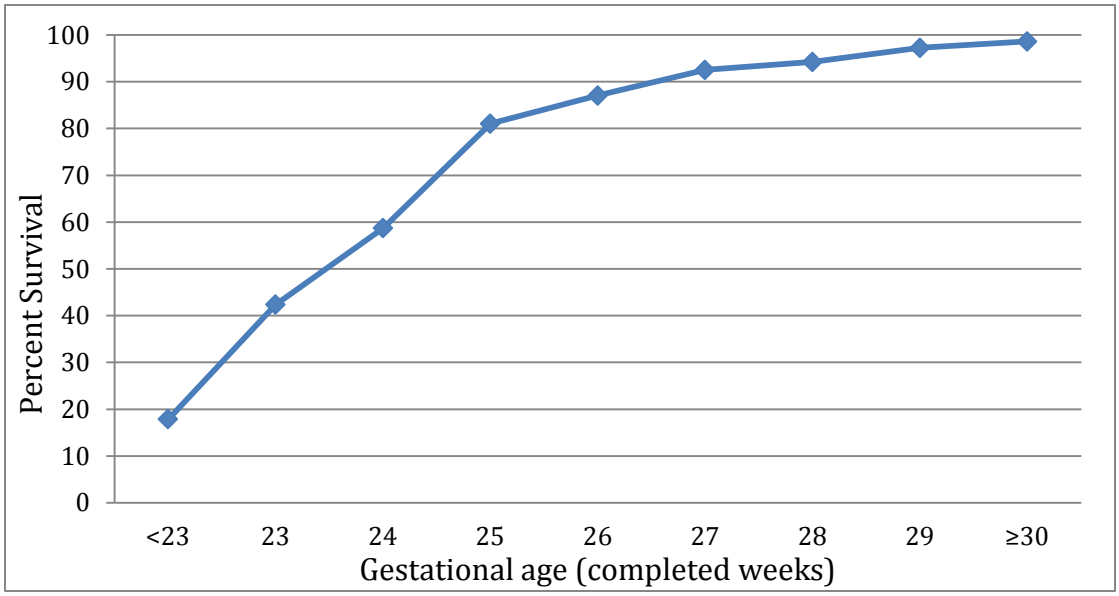


Presentation #3 (continued)
Gestational age at birth

GA in completed weeks at birth	Frequency	Percent	Cumulative percent
<23	28	0.2	0.2
23	85	0.6	0.8
24	184	1.3	2.1
25	285	2.0	4.1
26	294	2.1	6.2
27	348	2.5	8.6
28	416	2.9	11.5
29	510	3.6	15.1
30	610	4.3	19.4
31	738	5.2	24.6
32	872	6.1	30.7
33	937	6.6	37.3
34	1223	8.6	45.9
35	1156	8.1	54.1
36	1054	7.4	61.5
37	1070	7.5	69.0
38	1245	8.8	77.7
39	1304	9.2	86.9
40	1180	8.3	95.2
41	621	4.4	99.6
≥42	61	0.4	100.0
Total included	14 221	100.0	
Total # of missing (GA)	3		
Total # of infants	14 224		

COMMENTS: The GA distribution of neonates is shown here. Term babies (≥37 weeks) represent approximately 38.5% of the total number of neonates. Twenty-five sites collected data on all eligible admissions whereas five sites collected data on a selected cohort of eligible admissions.

Presentation #4
Gestational age at birth and survival to discharge from participating sites



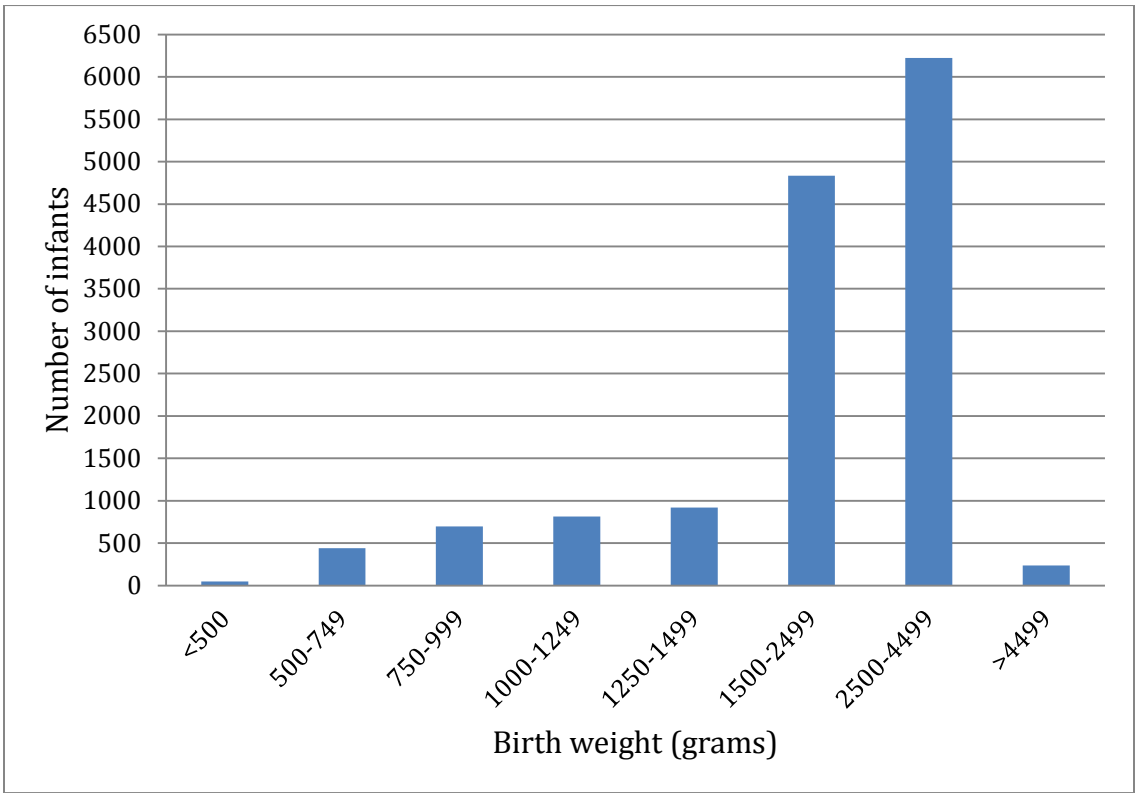
CNN Admissions not including DR deaths						Delivery room deaths*		Total CNN admissions + Delivery room deaths*			
GA (completed weeks)	**Number of infants**	**Number of survivors**	**Percent survival**	**Number of infants who received palliative care**		**Palliative care**	**Active care**	**Total**	**Number of infants who received palliative care**	**Number of infants who received active care**	**Percent survival among those who received active care**
	a	*b*	*b/a*	*c*		*d*	*e*	*a+d+e*	*c+d*	*(a-c) +e*	*b/ (a-c)+e*
<23	28	5	18	17		37	14	79	54	25	20
23	85	36	42	9		45	7	137	54	83	43
24	184	108	59	3		14	4	202	17	185	58
25	285	231	81	1		6	2	293	7	286	81
26	294	256	87	0		2	1	297	2	295	87
27	348	322	93	0		4	2	354	4	350	92
28	416	392	94	0		2	1	419	2	417	94
29	510	496	97	1		5	0	515	6	509	97
≥30	12 071	11 905	99	5		32	7	12 110	37	12 073	99
Total included	14 221	13 751	97	36		147	38	14 406	183	14 223	97
Total # of missing (GA)	3					2	0	5	2	3	
Total # of infants	**14 224**					**149**	**38**	**14 411**	**185**	**14 226**	

***Please note that delievery room deaths are not included in any other analyses**

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. Graph represents data from CNN admission **ONLY**.

Presentation #5

Birth weight distribution

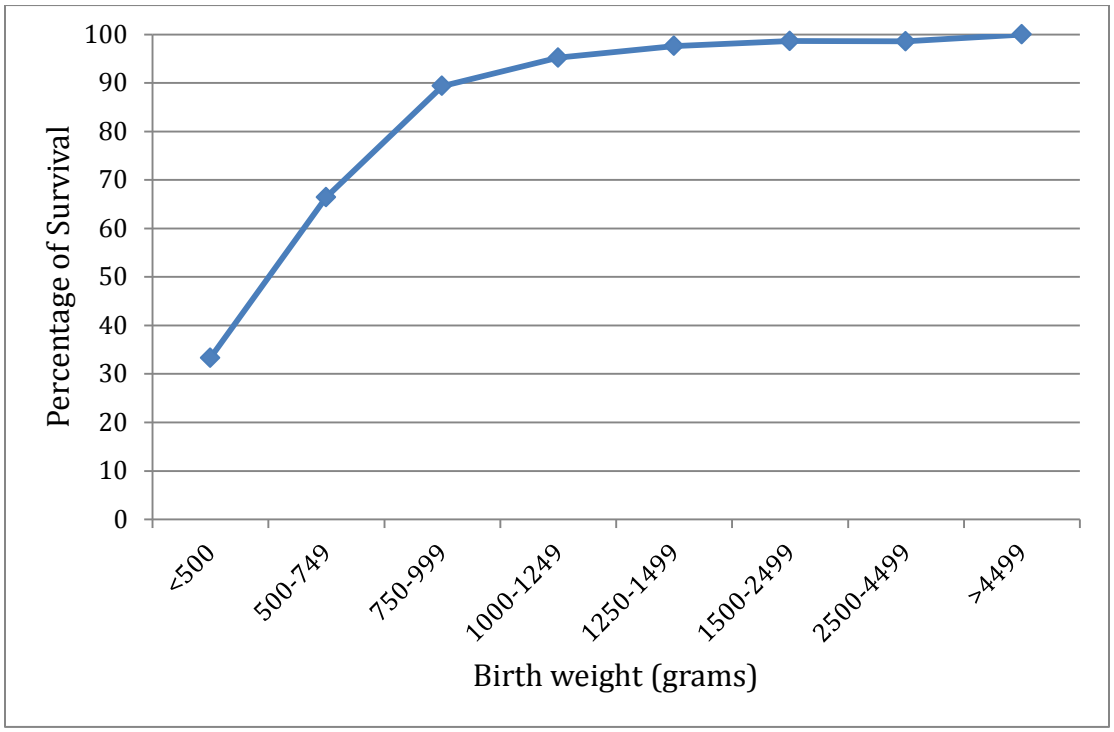


BW (grams)	Frequency	Percent from total number of neonates	Cumulative percent
<500	48	0.3	0.3
500-749	441	3.1	3.4
750-999	696	4.9	8.3
1000-1249	815	5.7	14.1
1250-1499	922	6.5	20.6
1500-2499	4835	34.0	54.6
2500-4499	6222	43.8	98.3
>4499	238	1.7	100.0
Total included	14 217	100.0	
Missing (BW)	7		
Total # of neonates	14 224		

COMMENTS: The BW distribution of neonates admitted to the sites. Seventy-nine percent weighed more than 1 500g at birth and 45% weighed more than 2 500g. Twenty-five sites collected data on all admissions whereas five sites collected data on a selected cohort of eligible admissions only.

Presentation #6

Birth weight and survival to discharge from participating sites



BW (grams)	Number of neonates	Number of survivors	% survival
<500	48	16	33
500-749	441	293	66
750-999	696	622	89
1000-1249	815	776	95
1250-1499	922	900	98
1500-2499	4835	4769	99
2500-4499	6222	6134	99
>4499	238	238	100
Total included	14 217	13 748	97
Missing (BW)	7		
Total # of neonates	14 224		

Note: The survival rates refer only to neonates admitted to the sites, and should be used cautiously for antenatal counseling.

COMMENTS: The survival rates are defined as survival to final discharge from the participating neonatal site. Note that these rates include only neonates admitted to sites and thus, are not reflective of the Canadian population. Numbers and rates do not represent neonates (especially those at very low GAs) who died prior to admission to participating sites. Graph represents data from CNN admissions **ONLY**.

Presentation #7
Maternal characteristics

Characteristics					**GA at birth (completed weeks)**			
		Missing	**Unknown**		**<33**	**33 - 36**	**≥37**	**Total**
Total		3			**4370**	**4370**	**5481**	**14221**
No prenatal care		79	679	N	60	44	51	155
				%	1.5	1.1	1.0	1.2
Illicit drug use		3		N	183	217	364	764
				%	4.2	5.0	6.6	5.4
Smoking		3		N	578	610	732	1920
				%	13.2	14.0	13.4	13.5
Maternal hypertension		83	353	N	752	793	493	2038
				%	18.0	18.5	9.2	14.8
Maternal diabetes		83	396	N	476	656	691	1823
				%	11.5	15.4	12.9	13.3
Assisted pregnancy		86	514	N	573	501	211	1285
				%	13.8	11.9	4.0	9.4
Multiples		4		N	1352	1255	183	2790
				%	31.0	28.7	3.3	19.6
$MgSO_4$ for neuroprotection		83	635	N	1587	281	48	1916
				%	38.7	6.7	0.9	14.2
Prenatal steroids	None	480		N	603	2725	5181	8509
				%	14.3	64.2	98.1	61.9
	Complete in last week			N	1563	536	20	2119
				%	37.1	12.6	0.4	15.4
	Complete before last week			N	1030	688	66	1784
				%	24.4	16.2	1.3	13.0
	Complete (timing unknown)			N	173	57	9	239
				%	4.1	1.3	0.2	1.7
	Partial <24h			N	765	199	6	970
				%	18.2	4.7	0.1	7.1
	Partial >24h			N	45	26	2	73
				%	1.1	0.6	0.0	0.5
	Partial (timing unknown)			N	37	13	0	50
				%	0.9	0.3	0.0	0.4

Presentation #7 (continued)
Maternal characteristics

Characteristics					**GA at birth (completed weeks)**			
		Missing	**Unknown**		**<33**	**33 - 36**	**≥37**	**Total**
Total		3			**4370**	**4370**	**5481**	**14221**
Mode of birth	Vaginal	28	46	N	1774	2142	3264	7180
				%	40.9	49.3	59.8	50.7
	C/S			N	2565	2207	2198	6970
				%	59.1	50.8	40.2	49.3
Presentation	Vertex	77	783	N	2633	3304	4793	10730
				%	65.1	79.9	92.4	80.3
	Breech			N	1171	707	303	2181
				%	29.0	17.1	5.8	16.3
	Other			N	239	124	90	453
				%	5.9	3.0	1.7	3.4
Rupture of membranes	<24 h	83	557	N	3266	3641	4875	11782
				%	79.2	86.5	92.8	86.7
	24h to 1wk			N	506	426	369	1301
				%	12.3	10.1	7.0	9.6
	>1 wk			N	350	143	8	501
				%	8.5	3.4	0.2	3.7
Chorioamnionitis*		4515		N	526	162	268	956
				%	17.9	5.2	7.4	9.8
Antenatal interventions**		83	344	N	76	62	39	177
				%	1.8	1.5	0.7	1.3
Delayed cord clamping	≤ 29 sec	2019	3881	N	90	16	3	109
				%	3.2	0.6	0.1	1.3
	30-44 sec			N	116	56	5	177
				%	4.1	2.3	0.2	2.1
	≥45 sec			N	680	300	83	1063
				%	24.0	12.0	2.8	12.8
	Yes, but timing unknown			N	85	48	39	172
				%	3.0	1.9	1.3	2.1
	No			N	1859	2072	2869	6800
				%	65.7	83.2	95.7	81.7

*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)

Characteristics			**GA at birth (completed weeks)**								
			≤23	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**Total**
Total			**113**	**184**	**285**	**294**	**348**	**416**	**510**	**610**	**2760**
Palliative		N	26	3	1	0	0	0	1	1	32
		%	23.0	1.6	0.4	0.0	0.0	0.0	0.2	0.2	1.2
No resuscitation needed/provided		N	1	2	5	4	6	16	23	51	108
		%	0.9	1.1	1.8	1.4	1.7	3.9	4.5	8.4	3.9
CPAP only		N	8	16	55	60	112	141	234	282	908
		%	7.1	8.7	19.4	20.4	32.2	33.9	45.9	46.2	32.9
PPV via mask		N	58	130	202	205	216	258	276	298	1643
		%	51.3	70.7	71.1	69.7	62.1	62.0	54.1	48.9	59.6
PPV via ETT		N	76	150	219	191	185	173	133	111	1238
		%	67.3	81.5	77.1	65.0	53.2	41.6	26.1	18.2	44.9
Chest compression		N	8	27	33	24	25	24	22	15	178
		%	7.1	14.7	11.6	8.2	7.2	5.8	4.3	2.5	6.5
Epinephrine		N	7	17	12	10	14	10	7	6	83
		%	6.2	9.2	4.2	3.4	4.0	2.4	1.4	1.0	3.0
Unknown		N	1	7	3	4	7	6	9	8	45
		%	0.9	3.8	1.1	1.4	2.0	1.4	1.8	1.3	1.6
Any resuscitation provided*		N	84	172	274	280	333	382	451	478	2454
		%	74.3	93.5	96.5	95.2	95.7	91.8	88.4	78.4	88.9
Initial gas	Air	N	11	36	53	58	76	82	155	153	624
		%	9.7	19.6	18.6	19.7	21.8	19.7	30.4	25.1	22.6
	Suppl. O_2	N	27	62	122	117	159	176	195	220	1078
		%	23.9	33.7	42.8	39.8	45.7	42.3	38.2	36.1	39.1
	100% O_2	N	30	48	59	73	49	65	48	50	422
		%	26.6	26.1	20.7	24.8	14.1	15.6	9.4	8.2	15.3
	Unknown	N	14	24	37	32	47	54	52	73	333
		%	12.4	13.0	13.0	10.9	13.5	13.0	10.2	12.0	12.1
	Missing	N	31	14	14	14	17	39	60	114	303
		%	27.4	7.6	4.9	4.8	4.9	9.4	11.8	18.7	11.0
Maximum O_2 conc. during resus.	21%	N	0	1	2	2	6	5	9	15	40
		%	0.0	0.5	0.7	0.7	1.7	1.2	1.8	2.5	1.4
	22-40%	N	6	25	45	41	82	102	163	144	608
		%	5.3	13.6	15.8	14.0	23.6	24.5	32.0	23.6	22.0
	41-70%	N	11	11	38	42	51	52	74	93	372
		%	9.7	6.0	13.3	14.3	14.7	12.5	14.5	15.3	14.3
	>70%	N	57	108	154	168	142	167	135	130	1061
		%	50.4	58.7	54.0	57.1	40.8	40.1	26.5	21.3	38.4
	Missing	N	39	39	46	41	67	90	129	228	679
		%	34.5	21.2	16.1	14.0	19.3	21.6	25.3	37.4	24.6

* 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)

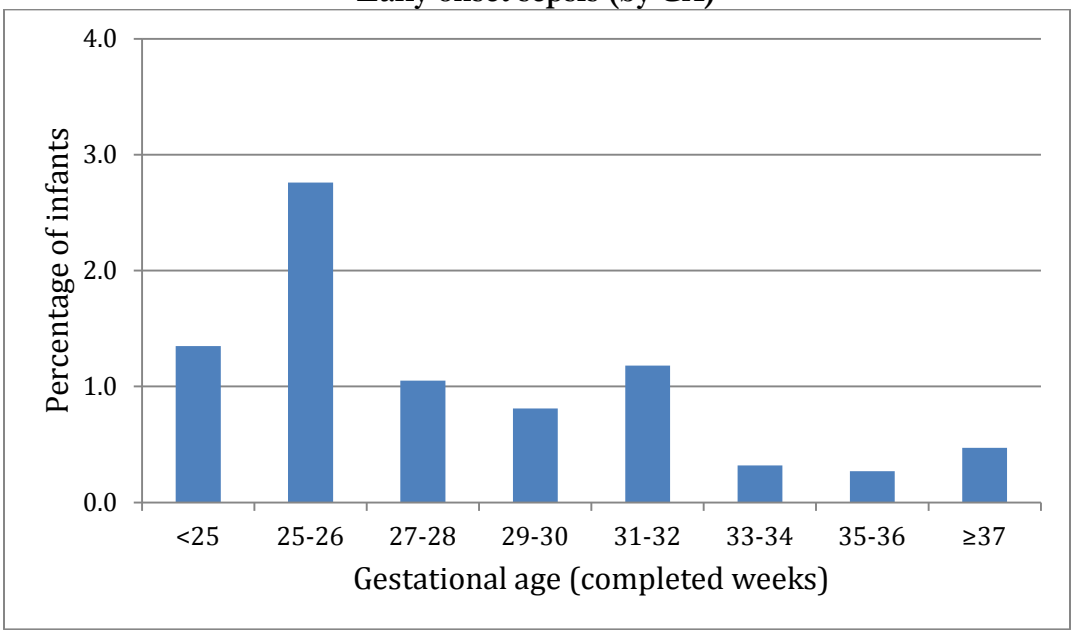
Characteristics			**GA at birth (completed weeks)**							
			31	**32**	**33**	**34**	**35**	**36**	**≥37**	**Total**
Total			**738**	**872**	**937**	**1223**	**1156**	**1054**	**5481**	**11461**
Palliative		N	0	0	0	1	0	1	2	4
		%	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0
No resuscitation needed / provided		N	84	173	270	398	400	392	1974	3691
		%	11.4	19.9	28.8	32.5	34.6	37.2	36.0	32.2
CPAP only		N	290	294	236	220	183	148	651	2022
		%	39.3	33.8	25.2	18.0	15.8	14.0	11.9	17.6
PPV via mask		N	332	335	282	290	253	242	1480	3214
		%	45.0	38.5	30.1	23.7	21.9	23.0	27.0	28.0
PPV via ETT		N	110	84	89	51	46	57	523	960
		%	14.9	9.6	9.5	4.2	4.0	5.4	9.5	8.4
Chest compression		N	16	16	16	12	14	20	168	262
		%	2.2	1.8	1.7	1.0	1.2	1.9	3.1	2.3
Epinephrine		N	6	4	4	7	5	9	67	102
		%	0.8	0.5	0.4	0.6	0.4	0.9	1.2	0.9
Unknown		N	6	9	10	22	27	20	126	220
		%	0.8	1.0	1.1	1.8	2.3	1.9	2.3	1.9
Any resuscitation provided*		N	525	552	460	457	402	361	2070	4827
		%	71.1	63.4	49.1	37.4	34.8	34.3	37.8	42.1
Initial gas	Air	N	200	235	197	228	226	208	980	2274
		%	27.1	27.0	21.0	18.6	19.6	19.7	17.9	19.8
	Suppl. O_2	N	229	220	176	204	140	126	701	1796
		%	31.0	25.2	18.8	16.7	12.1	12.0	12.8	15.7
	100% O_2	N	40	62	54	60	59	54	362	691
		%	5.4	7.1	5.8	4.9	5.1	5.1	6.6	6.0
	Unknown	N	84	108	111	141	140	128	761	1473
		%	11.4	12.4	11.9	11.5	12.1	12.1	13.9	12.9
	Missing	N	185	247	399	590	591	538	2677	5227
		%	25.1	28.3	42.6	48.2	51.1	51.0	48.8	45.6
Maximum O_2 conc. during resus	21%	N	25	52	43	86	86	63	365	720
		%	3.4	6.0	4.6	7.0	7.4	6.0	6.7	6.3
	22-40%	N	163	180	161	161	117	114	474	1370
		%	22.1	20.6	17.2	13.2	10.1	10.8	8.7	12.0
	41-70%	N	88	89	69	63	38	43	196	586
		%	11.9	10.2	7.4	5.2	3.3	4.1	3.6	5.1
	>70%	N	138	130	128	125	122	120	764	1527
		%	18.7	14.9	13.7	10.2	10.6	11.4	13.9	13.3
	Missing	N	324	421	536	788	793	714	3682	7258
		%	43.9	48.3	57.2	64.4	68.6	67.7	67.2	63.3

* 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

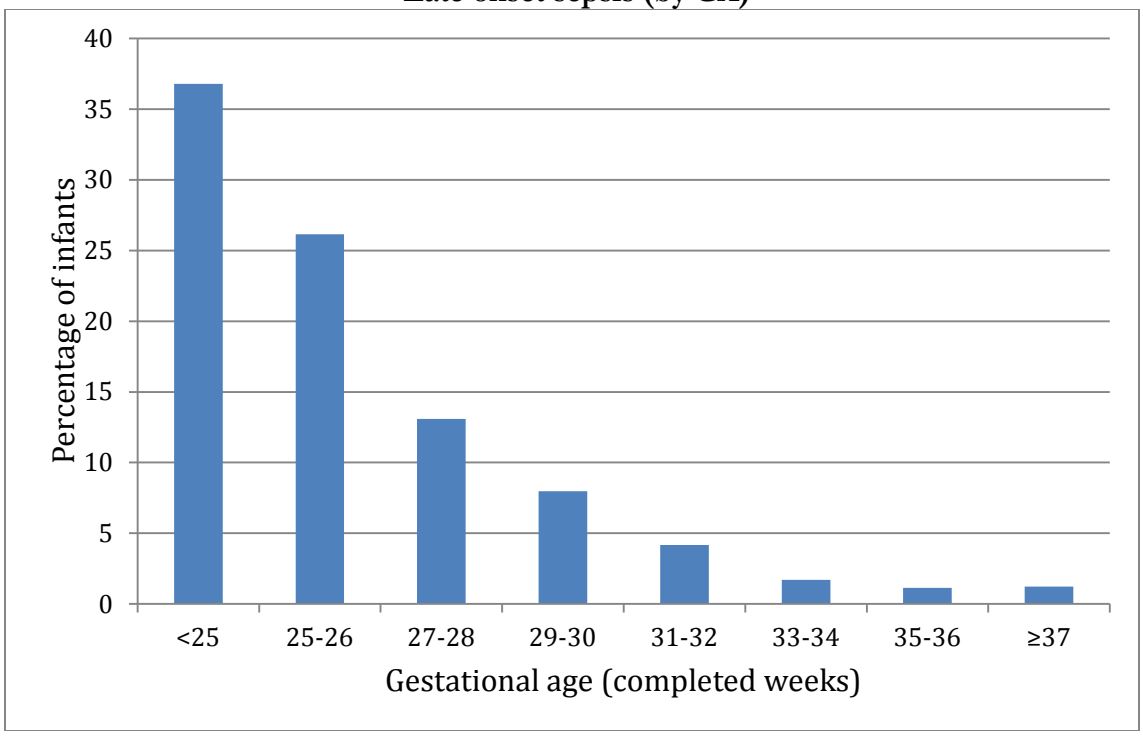
Early onset sepsis (by GA)



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	CONS	Others
<25	297	4	1.4	4	2	2	0	0
25-26	579	16	2.8	16	8	4	1	3
27-28	764	8	1.1	8	6	0	1	1
29-30	1 118	9	0.8	9	3	0	1	5
31-32	1 609	19	1.2	19	10	2	3	4
33-34	2 160	7	0.3	7	3	0	3	1
35-36	2 210	6	0.3	6	0	1	3	2
≥37	5 481	26	0.5	27	3	9	8	7
Total included	**14 218**	**95**	**0.7**	**96**	**35**	**18**	**20**	**23**
Missing	**6**							
Total # of neonates	**14 224**							

COMMENTS: Early onset sepsis is indicated by positive bacterial, viral or fungal culture in blood and/or cerebrospinal fluid, in the first two days after birth. One neonate had two organisms isolated. In other category, top five organisms were: Streptococci (n=5), Haemphuilus influenza (n=4), Cytomegalovirus (n=3), Staph aureus coag + (n=3), Strep pneumoniae (n=3).

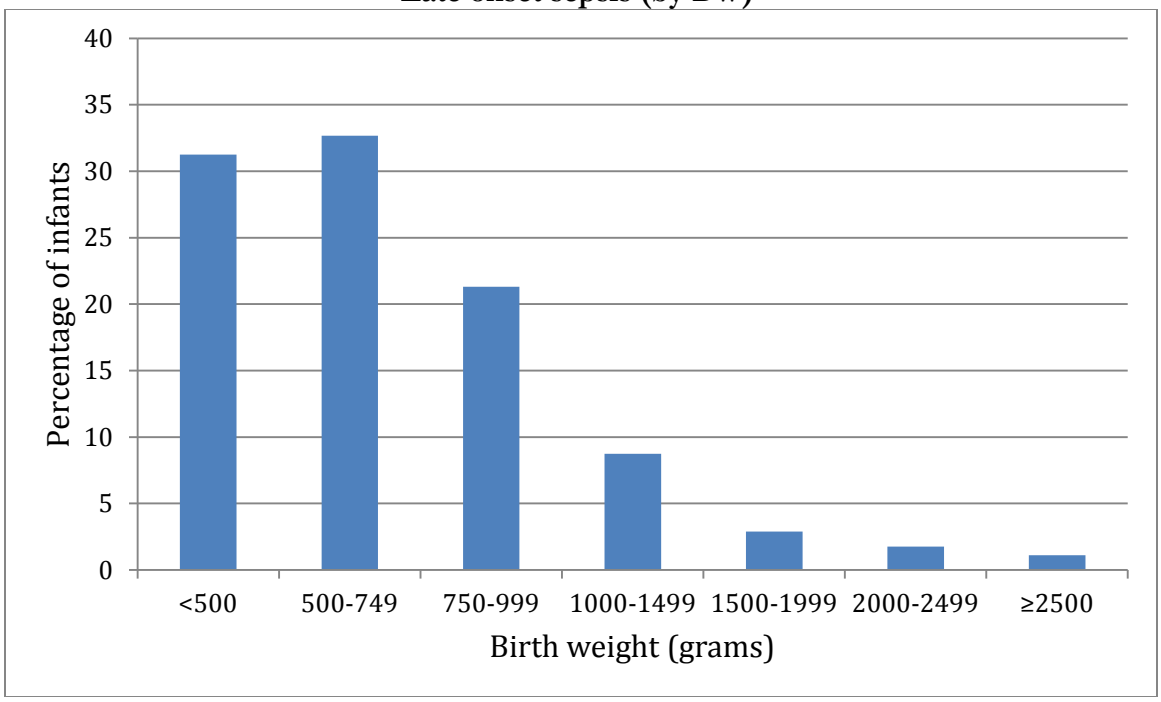
Presentation #10
Late onset sepsis (by GA)



GA at birth (completed weeks)	Total number of neonates	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	Staph Aureus Coag +	Fungal	Other
<25	297	55	242	89	13	37	111	61	13	7	4	26
25-26	579	13	566	148	24	26	187	89	28	12	4	54
27-28	764	8	756	99	20	13	131	77	12	10	5	27
29-30	1 120	4	1 116	89	6	8	98	53	6	9	3	27
31-32	1 610	7	1 603	67	1	4	71	37	10	5	0	19
33-34	2 160	4	2 156	37	2	2	40	24	4	3	0	9
35-36	2 210	8	2 202	25	2	1	27	16	1	1	0	9
≥37	5 481	21	5 460	67	4	1	74	41	8	4	0	21
Total included	14 221	120	14 101	621	72	4	739	398	82	51	16	192
Missing (GA)	3											
Total # of neonates	**14 224**											

COMMENTS: Late onset sepsis is defined as any positive blood and/or cerebrospinal fluid culture for bacteria, viral or fungi after 2 days of age (analysis is neonate-based). The numbers are adjusted for readmission. Among other category, top 5 organisms were: Klebsiella (n=42), GBS (n=33), Enterococci (n=30), Staphylococcus (n=28), Enterobacter (n-17).

Presentation #11
Late onset sepsis (by BW)



GA at birth (completed weeks)	Total number of neonates	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	Staph Aureus Coag +	Fungal	Other
<25	48	16	32	10	3	31	13	11	0	0	1	1
25-26	441	43	398	130	20	33	161	84	23	9	5	40
27-28	696	11	685	146	20	21	183	88	18	15	3	59
29-30	1 737	9	1 728	151	19	9	182	103	16	17	7	39
31-32	2 326	9	2 317	67	4	3	73	42	10	2	0	19
33-34	2 509	6	2 503	44	2	2	48	26	7	4	0	11
35-36	6 460	25	6 435	72	4	1	78	43	8	4	0	23
Total included	14 217	119	14 098	620	72	4	738	397	82	51	16	51
Missing (GA)	7											
Total # of neonates	**14 224**											

COMMENTS: Late onset sepsis is defined as any positive blood and/or cerebrospinal fluid culture for bacteria, viral or fungi after 2 days of age (analysis is neonate-based). The numbers are adjusted for readmission and transfer. Among other category, top 5 organisms were: Klebsiella (n=42), GBS (n=33), Enterococci (n=30), Staphylococcus (n=28), Enterobacter (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				582	1058	1120	1610	4370	5481	14221
		Missing**								
Prophylactic	Indomethacin	36	N	95	50	10	2	0	0	157
			%	17.2	4.7	0.9	0.1	0.0	0.0	1.1
	HFV	36	N	23	31	1	2	4	2	63
			%	4.2	2.9	0.1	0.1	0.1	0.0	0.4
	Vitamin A	36	N	0	1	0	0	0	0	1
			%	0.0	0.1	0.0	0.0	0.0	0.0	0.0
	Probiotics	36	N	15	67	60	87	17	2	248
			%	2.7	6.3	5.4	5.4	0.4	0.0	1.7
	Phototherapy	36	N	63	114	91	129	247	131	775
			%	11.4	10.8	8.1	8.0	5.7	2.4	5.5
	L-Arginine	36	N	13	37	3	0	1	0	54
			%	2.4	3.5	0.3	0.0	0.0	0.0	0.4
	Surfactant in first 30 min		N	212	233	66	39	16	3	569
			%	36.4	22.0	5.9	2.4	0.4	0.1	4.0
RDS	Unknown	106	N	4	6	3	5	23	37	78
			%	0.7	0.6	0.3	0.3	0.5	0.7	0.6
	Uncertain		N	7	41	58	70	62	47	285
			%	1.3	3.9	5.4	4.4	1.4	0.9	2.0
	None		N	32	198	387	979	3674	5123	10393
			%	5.8	18.8	36.0	61.8	84.1	93.5	73.6
	Definite		N	509	811	627	529	610	273	3359
			%	92.2	76.8	58.3	33.4	14.0	5.0	23.8
Surfactant at any time			N	485	711	430	335	317	189	2467
			%	83.3	67.2	38.4	20.8	7.3	3.5	17.3
Pneumothorax diagnosis		36	N	48	32	33	45	142	340	640
			%	8.7	3.0	3.0	2.8	3.3	6.2	4.5
Pneumothorax treatment* **	Observation	36	N	7	9	10	22	50	207	305
			%	1.3	0.9	0.9	1.4	1.1	3.8	2.2
	Needle drainage	36	N	23	7	9	13	29	47	128
			%	4.2	0.7	0.8	0.8	0.7	0.9	0.9
	Chest tube	36	N	33	25	24	16	70	93	261
			%	6.0	2.4	2.2	1.0	1.6	1.7	1.8
	100% O_2	36	N	8	4	1	2	14	47	76
			%	1.5	0.4	0.1	0.1	0.3	0.9	0.5
Seizures	Definite /suspected	109	N	45	29	13	14	64	362	527
			%	8.2	2.8	1.2	0.9	1.5	6.6	3.7

** Among the missing were 34 patients who were moribund on admission
*** 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				582	1058	1120	1610	4370	5481	14221
		Missing**								
Operations	Laparotomy	36	N	58	47	27	29	114	185	460
			%	10.5	4.5	2.4	1.8	2.6	3.4	3.2
	Thoracotomy	36	N	13	8	6	6	15	42	90
			%	2.4	0.8	0.5	0.4	0.3	0.8	0.6
	VP shunt	36	N	13	13	1	1	5	12	45
			%	2.4	1.2	0.1	0.1	0.1	0.2	0.3
Gastro-intestinal perforation	Spontaneous	130	N	26	15	5	3	15	14	78
			%	4.7	1.4	0.5	0.2	0.3	0.3	0.6
	NEC related		N	24	17	11	6	13	8	79
			%	4.4	1.6	1.0	0.4	0.3	0.2	0.6
Acquired stricture		36	N	11	7	1	4	1	0	24
			%	2.0	0.7	0.1	0.3	0.0	0.0	0.2
Acute bilirubin encephalopathy		36	N	0	1	0	0	1	3	5
			%	0.0	0.1	0.0	0.0	0.0	0.1	0.0
Exchange transfusion		36	N	1	0	2	0	4	12	19
			%	0.2	0.0	0.2	0.0	0.1	0.2	0.1
Congenital anomaly*	None		N	442	822	926	1368	3651	4101	11310
			%	76.0	77.7	82.7	85.0	83.6	74.8	79.5
	Minor		N	119	188	146	159	428	654	1694
			%	20.5	17.8	13.0	9.9	9.8	11.9	11.9
	Major		N	21	48	48	83	291	726	1217
			%	3.6	4.5	4.3	5.2	6.7	13.3	8.6

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

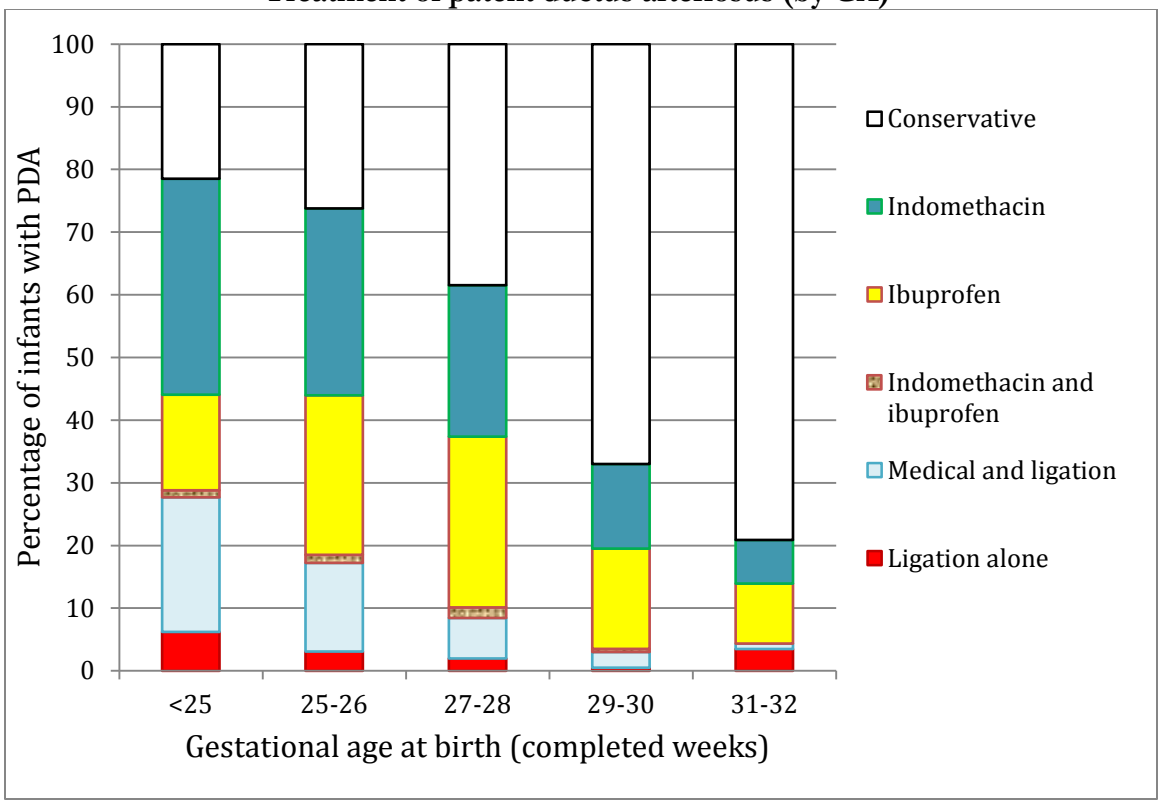
** Among the missing were 34 patients who were moribund on admission

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 4 370 eligible very preterm neonates and 2 922 eligible VLBW neonates.

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

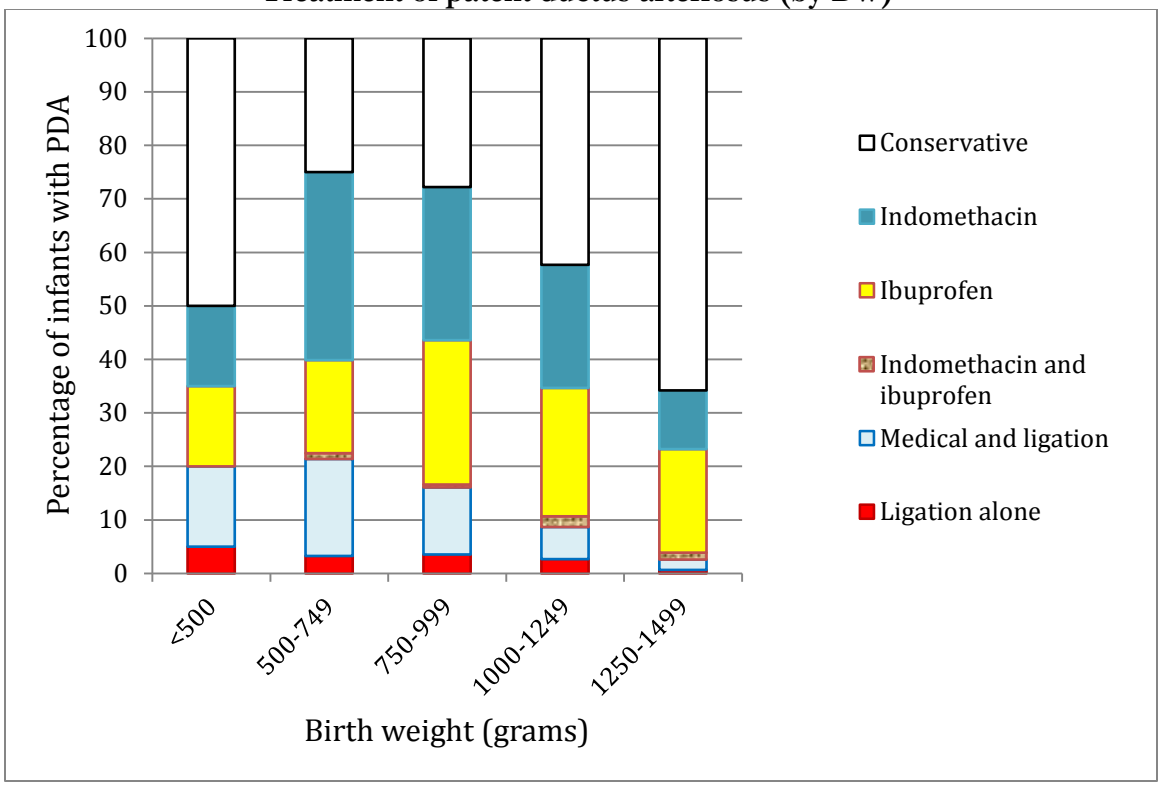


Birth GA (completed weeks)		Total	Missing data on PDA	PDA information unknown	No PDA	# with PDA	Treatment*					
							Conse-rvative	Indo	Ibu	Indo and Ibu	Medical and ligation#	Ligation alone
<25	**N**	297	28	14	78	177	38	61	27	2	38	11
	%						21%	34%	15%	1%	21%	6%
25-26	**N**	579	3	6	181	389	102	116	99	5	55	12
	%						26%	30%	25%	1%	14%	3%
27-28	**N**	764	1	8	399	356	137	86	97	6	23	7
	%						38%	24%	27%	2%	6%	2%
29-30	**N**	1120	4	5	911	200	134	27	32	1	5	1
	%						67%	14%	16%	1%	3%	1%
31-32	**N**	1610	2	4	1489	115	91	8	11	0	1	4
	%						79%	7%	10%	0%	1%	3%
Total included	**N**	4370	38	37	3058	1237	502	298	266	14	122	35
	%						41%	24%	22%	1%	10%	3%

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

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)

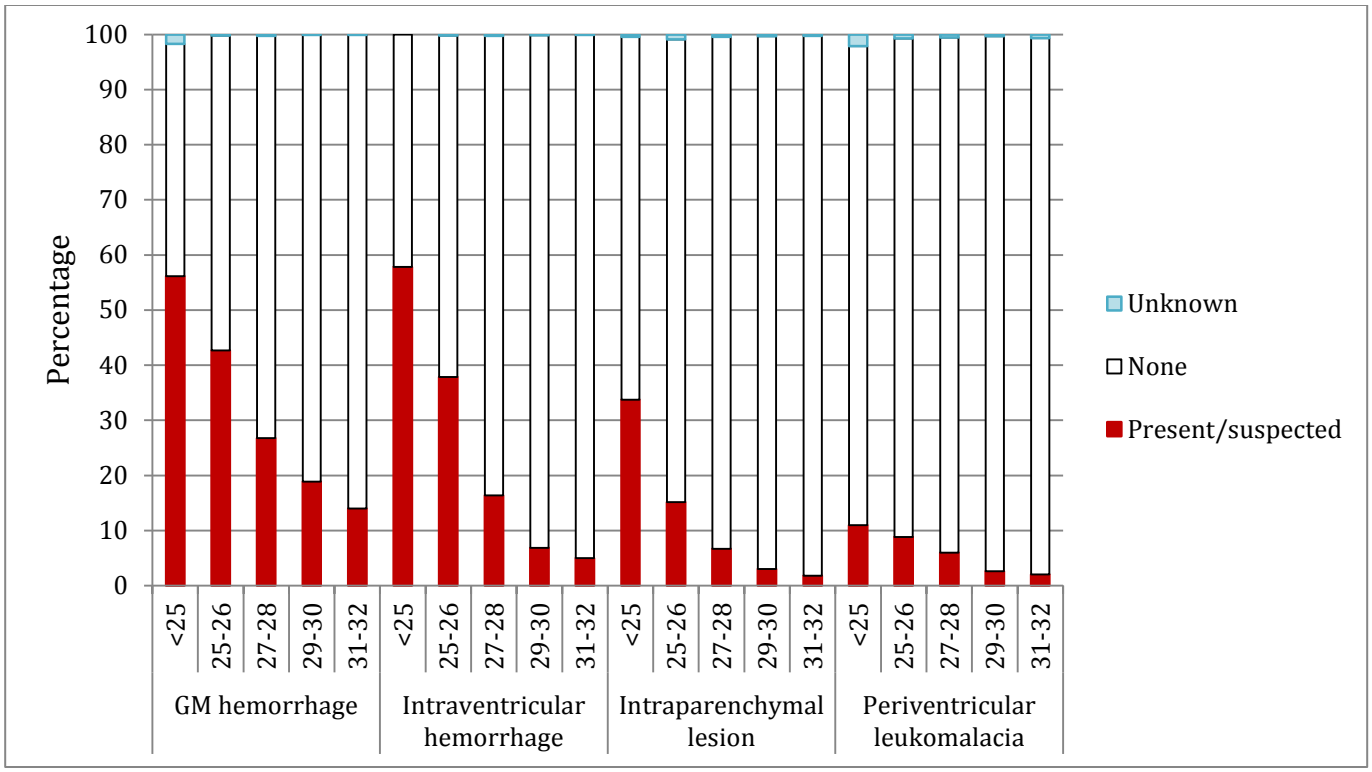


BW (grams)		Total	Missing data on PDA	PDA information unknown	No PDA	Neonates with PDA	Treatment*					
							Conse-rvative	Indo	Ibu	Indo and Ibu	Medical and ligation#	Ligation alone
<500	**N**	48	14	0	14	20	10	3	3	0	3	1
	%						50%	15%	15%	0%	15%	5%
500-749	**N**	441	12	17	136	276	69	97	48	3	50	9
	%						25%	35%	17%	1%	18%	3%
750-999	**N**	696	4	9	316	367	102	105	99	2	46	13
	%						28%	29%	27%	1%	13%	4%
1000-1249	**N**	815	1	4	510	300	127	69	72	6	18	8
	%						42%	23%	24%	2%	6%	3%
1250-1499	**N**	922	1	5	761	155	102	17	30	2	3	1
	%						66%	11%	19%	1%	2%	1%
Total included	**N**	2922	32	35	1737	1118	410	291	252	13	120	32
	%						37%	26%	23%	1%	11%	3%

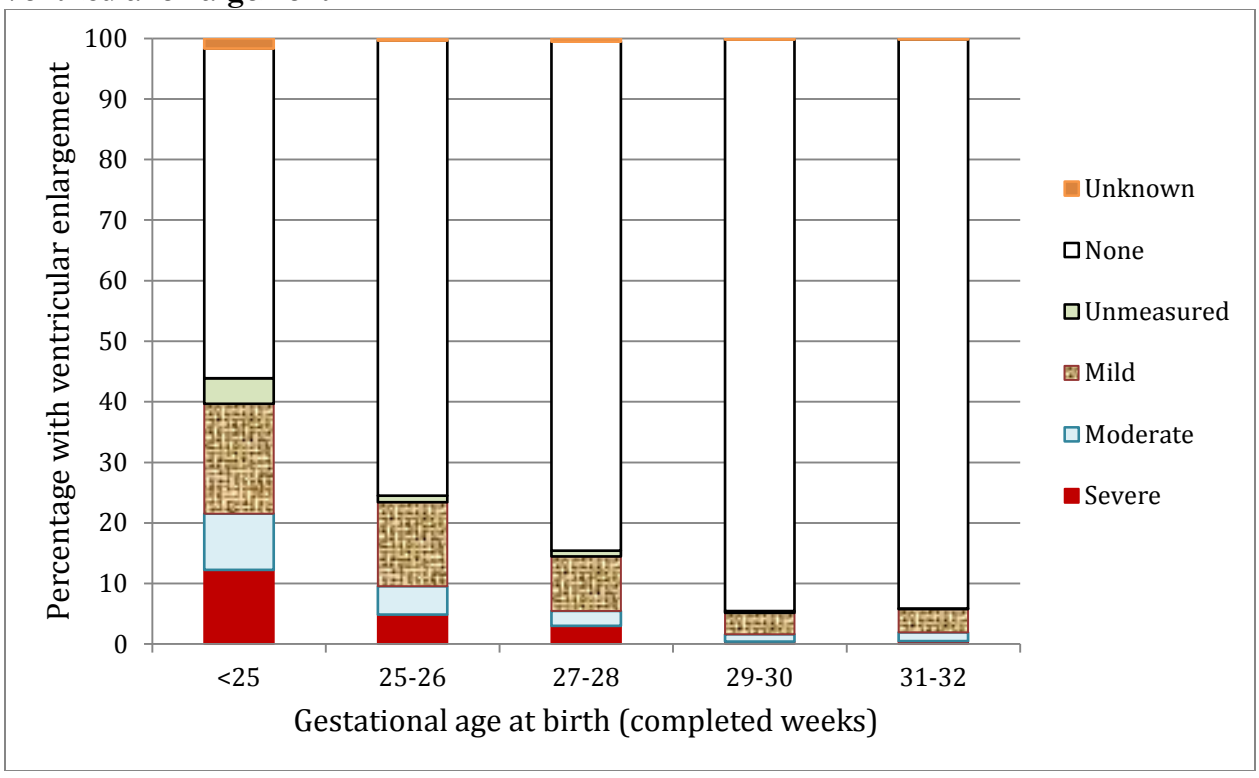
***The percentages of treatment of patent ductus arteriosus are calculated out of number of neonates with diagnosed PDA. #Medical and ligation = Ligation + at least one of (Indomethacin or Ibuprofen)**

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

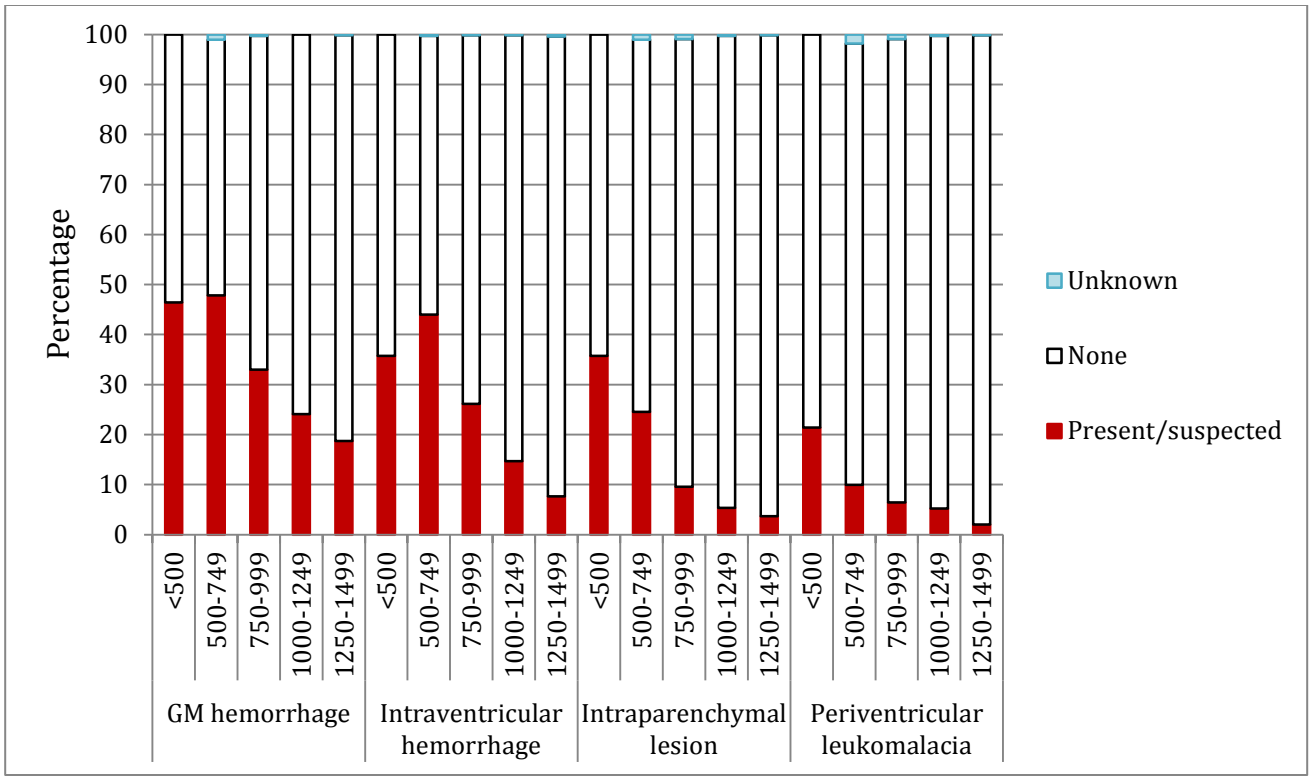


Presentation #15 (continued)
Neuroimaging findings (by GA)

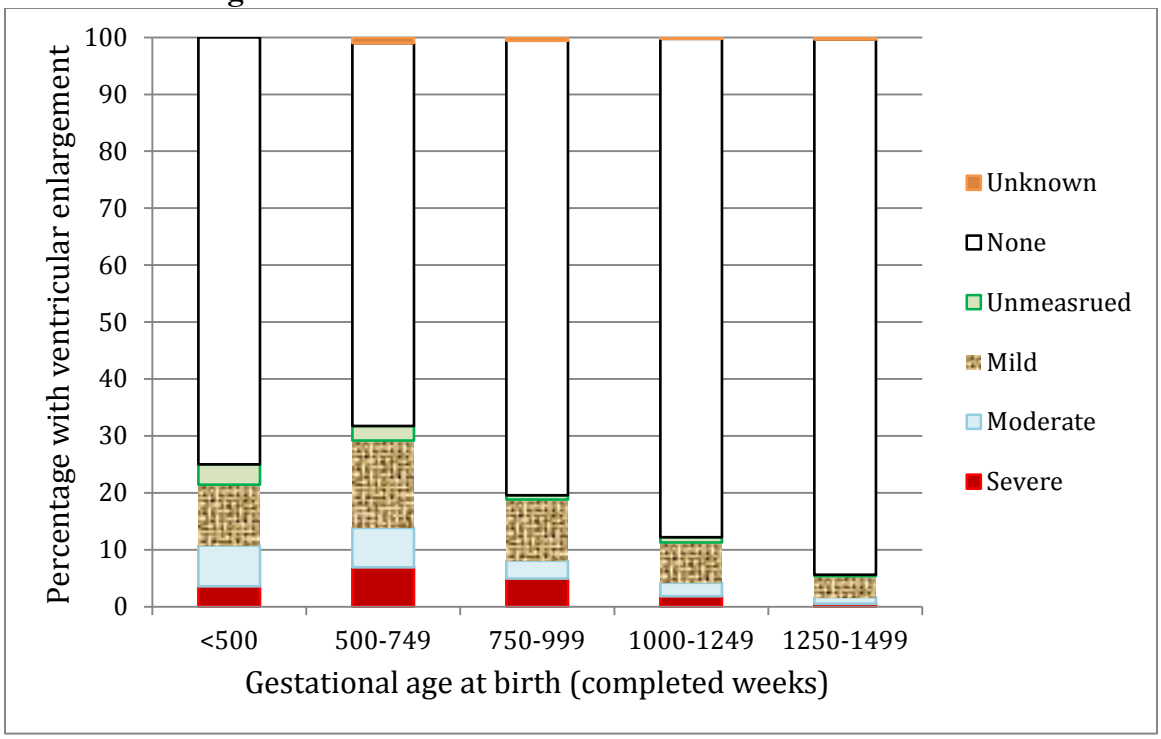
GA at birth (completed weeks)		Total number	Neuro-imaging available	Neuroimaging findings																	
				GM hemorrhage			Intraventricular hemorrhage			Ventricular enlargement						Intraparenchymal lesion			Periventricular leukomalacia		
				Present/suspected	None	Unknown	Present/suspected	None	Unknown	Mild	Moderate	Severe	Unmeasured	None	Unknown	Present/suspected	None	Unknown	Present/suspected	None	Unknown
<25	N	297	237	133	100	4	137	100	0	43	22	29	10	129	4	80	156	1	26	206	5
	%			56%	42%	2%	58%	42%	0%	18%	9%	12%	4%	54%	2%	34%	66%	0%	11%	87%	2%
25-26	N	579	555	237	317	1	210	344	1	77	26	27	6	417	2	84	466	5	49	502	4
	%			43%	57%	0%	38%	62%	0%	14%	5%	5%	1%	75%	0%	15%	84%	1%	9%	90%	1%
27-28	N	764	733	196	535	2	120	611	2	66	18	22	7	616	4	49	681	3	44	685	4
	%			27%	73%	0%	16%	83%	0%	9%	2%	3%	1%	84%	1%	7%	93%	0%	6%	93%	1%
29-30	N	1120	992	187	804	1	68	923	1	35	12	4	3	936	2	30	959	3	26	963	3
	%			19%	81%	0%	7%	93%	0%	4%	1%	0%	0%	94%	0%	3%	97%	0%	3%	97%	0%
31-32	N	1610	1041	146	894	1	52	988	1	40	15	5	1	978	2	19	1019	3	21	1013	7
	%			14%	86%	0%	5%	95%	0%	4%	1%	0%	0%	94%	0%	2%	98%	0%	2%	97%	1%
Total included	N	4370	3558	899	2650	9	587	2966	5	261	93	87	27	3076	14	262	3281	15	166	3369	23
	%			25%	74%	0%	16%	83%	0%	7%	3%	2%	1%	86v	0%	7%	92%	0%	5%	95%	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



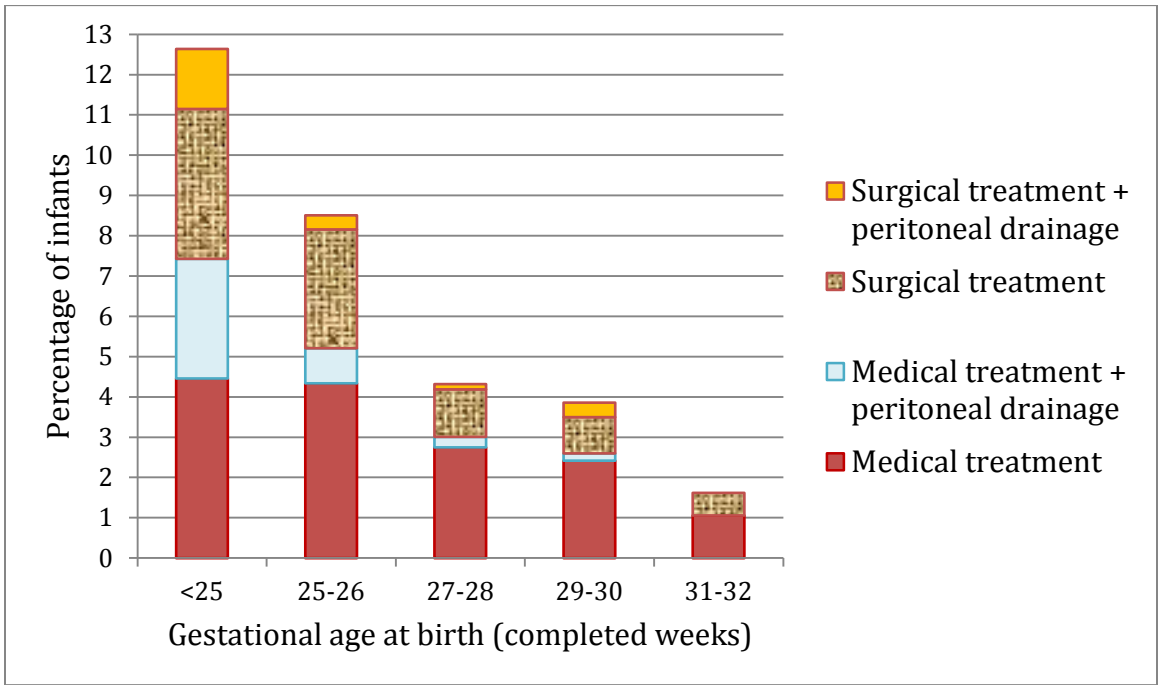
Presentation #16 (continued)
Neuroimaging findings (by BW)

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	48	28	13	15	0	10	18	0	3	2	1	1	21	0	10	18	0	6	22	0
	%			46%	54%	0%	36%	64%	0%	11%	7%	4%	4%	75%	0%	36%	64%	0%	21%	79%	0%
500-749	N	441	391	187	200	4	172	218	1	60	27	27	10	263	4	96	291	4	39	345	7
	%			48%	51%	1%	44%	56%	0%	15%	7%	7%	3%	67%	1%	25%	74%	1%	10%	88%	2%
750-999	N	696	670	221	447	2	175	494	1	72	21	33	5	535	4	64	600	6	43	621	6
	%			33%	67%	0%	26%	74%	0%	11%	3%	5%	1%	80%	1%	10%	90%	1%	6%	93%	1%
1000-1249	N	815	763	184	579	0	112	650	1	54	18	14	7	668	2	41	720	2	40	721	2
	%			24%	76%	0%	15%	85%	0%	7%	2%	2%	1%	88%	0%	5%	94%	0%	5%	95%	0%
1250-1499	N	922	786	147	638	1	60	723	3	29	9	4	2	739	3	29	756	1	16	769	1
	%			19%	81%	0%	8%	92%	0%	4%	1%	1%	0%	94%	0%	4%	96%	0%	2%	98%	0%
Total included	N	2922	2638	752	1879	7	529	2103	6	218	77	79	25	2226	13	240	2385	13	144	2478	16
	%			29%	71%	0%	20%	80%	0%	8%	3%	3%	1%	84%	0%	9%	90%	0%	5%	94%	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)



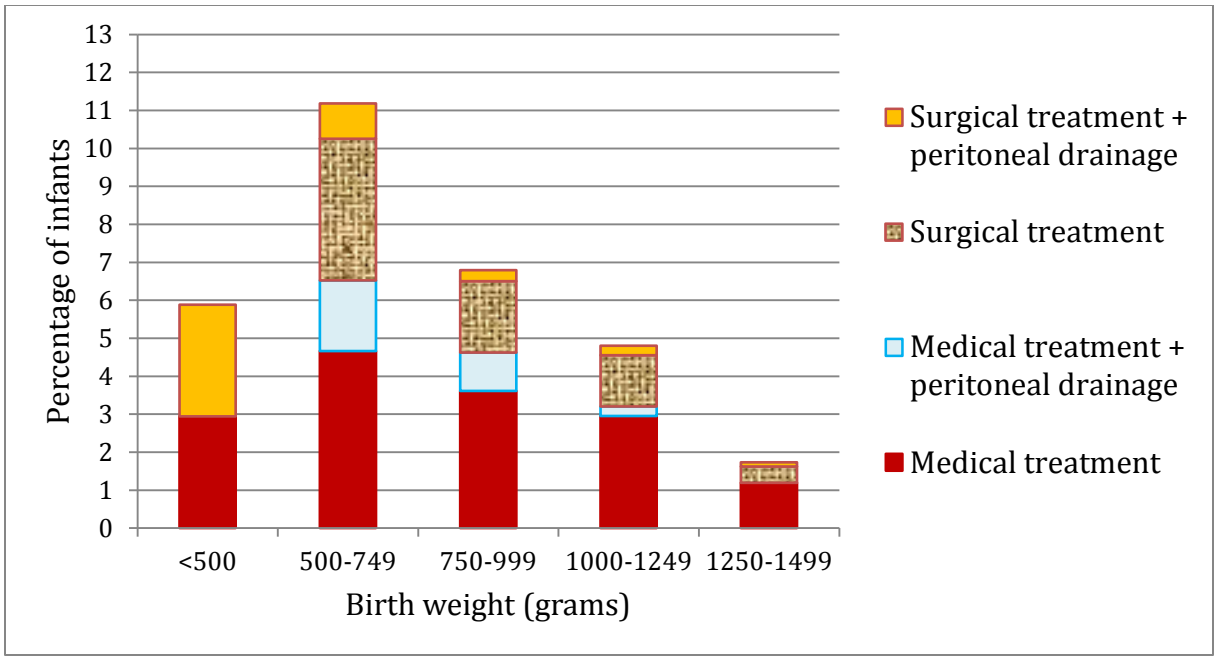
GA at birth (completed weeks)		Total number of neonates	Missing data on NEC	No NEC	NEC*	Neonates with necrotizing enterocolitis*			
						Medical treatment only	Medical + peritoneal drainage	Surgical treatment	Surgical + peritoneal drainage
<25	N	297	28	235	34	12	8	10	4
	%			87.4%	12.6%	4.5%	3.0%	3.7%	1.5%
25-26	N	579	3	527	49	25	5	17	2
	%			91.5%	8.5%	4.3%	0.9%	3.0%	0.4%
27-28	N	764	1	730	33	21	2	9	1
	%			95.7%	4.3%	2.8%	0.3%	1.2%	0.1%
29-30	N	1120	3	1074	43	27	2	10	4
	%			96.2%	3.8%	2.4%	0.2%	0.9%	0.4%
31-32	N	1610	1	1583	26	17	0	9	0
	%			98.4%	1.6%	1.1%	0.0%	0.6%	0.0%
Total	N	4370	36	4149	185	102	17	55	11
				95.7%	4.3%	2.4%	0.4%	1.3%	0.3%

***The percentages of necrotizing enterocolitis are calculated out of number of neonates with data available on 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 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: 26 (0.6%), GA $\geq$ 37: 9 (0.2%)

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



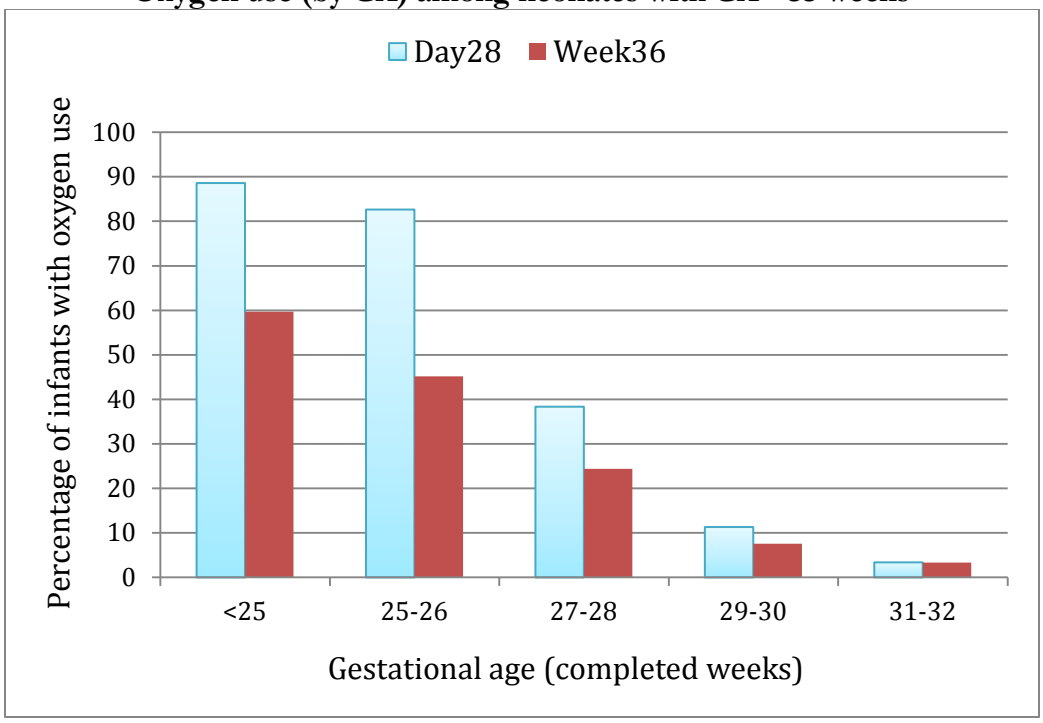
Birth weight (grams)		Total number of neonates	Missing data on NEC	No NEC	NEC*	Neonates with necrotizing enterocolitis*			
						Medical treatment only	Medical + peritoneal drainage	Surgical treatment	surgical + peritoneal drainage
<500	N	48	14	32	2	1	0	0	1
	%			94.1%	5.9%	2.9%	0.0%	0.0%	2.9%
500-749	N	441	12	381	48	20	8	16	4
	%			88.8%	11.2%	4.7%	1.9%	3.7%	0.9%
750-999	N	696	4	645	47	25	7	13	2
	%			93.2%	6.8%	3.6%	1.0%	1.9%	0.3%
1000-1249	N	815	1	775	39	24	2	11	2
	%			95.2%	4.8%	3.0%	0.3%	1.4%	0.3%
1250-1499	N	922	0	906	16	11	0	4	1
	%			98.3%	1.7%	1.2%	0.0%	0.4%	0.1%
Total	N	2922	31	2739	152	81	17	44	10
	%			94.7%	5.3%	2.8%	0.6%	1.5%	0.3%

***The percentages of necrotizing enterocolitis are calculated out of number of neonates with data available on 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 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: 57 (1.2%), BW $\geq$ 2500: 11 (0.2%)

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

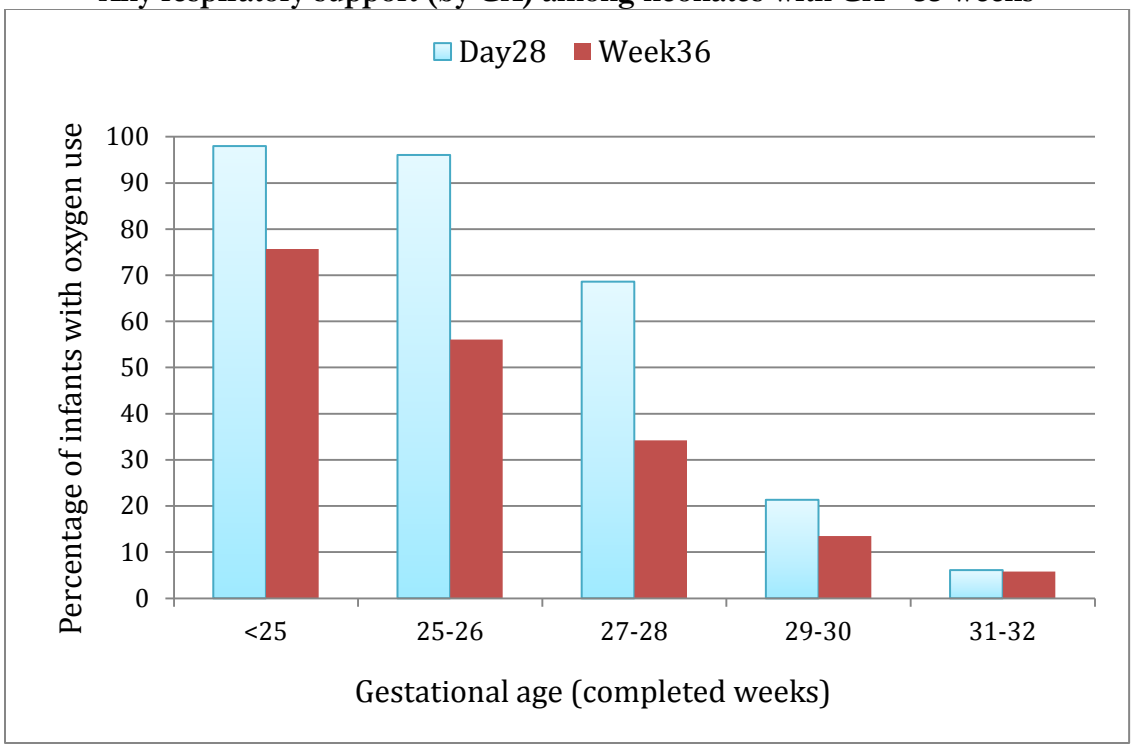


GA	Total number of neonates	Day 28				Week 36			
		Number of neonates whose oxygen use is unknown*	Number of neonates with known results	Number of neonates with oxygen use	% of neonates with oxygen use among neonates with known results	Number of neonates whose oxygen use is unknown**	Number of neonates with known results	Number of neonates with oxygen use	% of neonates with oxygen use among neonates with known results
<25	297	148	149	132	89	153	144	86	60
25-26	579	72	507	419	83	92	487	220	45
27-28	764	60	704	270	38	54	710	173	24
29-30	1 120	42	1 078	122	11	38	1 082	82	8
31-32	1 610	40	1 570	53	3	39	1 571	52	3
Total	**4 370**	**362**	**4 008**	**996**	**25**	**376**	**3 994**	**613**	**15**

COMMENTS: This presentation includes neonates who received supplemental oxygen on day 28 of age or week 36 postmenstrual age (PMA), and neonates who were discharged prior to day 28 of age or week 36 PMA and receiving **supplemental oxygen at discharge**. There were no requirements for chest radiographs at the time of diagnosis.

*unknown = death before day 28 or first admission after day 28
**unknown = death before week 36 or first admission after week 36

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

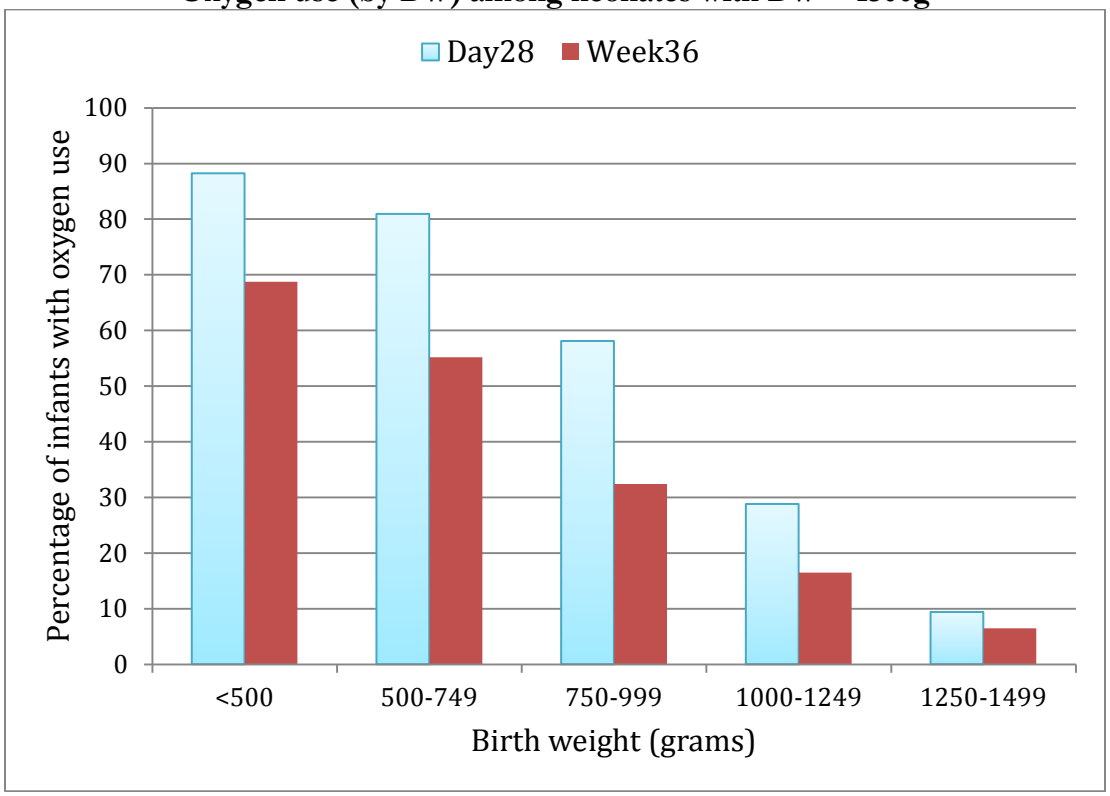


GA	Total number of neonates	Day 28				Week 36			
		Number of neonates whose respiratory support is unknown*	Number of neonates with known results	Number of neonates with any respiratory support	% of neonates with any respiratory support among neonates with known results	Number of neonates whose respiratory support is unknown**	Number of neonates with known results	Number of neonates with any respiratory support	% of neonates with any respiratory support among neonates with known results
<25	297	148	149	146	98	153	144	109	76
25-26	579	72	507	487	96	92	487	273	56
27-28	764	60	704	483	69	54	710	243	34
29-30	1 120	42	1 078	230	21	38	1 082	146	13
31-32	1 610	40	1 570	96	6	39	1 571	91	6
Total	**4 370**	**362**	**4 008**	**1 442**	**36**	**376**	**3 994**	**862**	**22**

COMMENTS: This presentation includes neonates who received supplemental oxygen or any respiratory support on day 28 of age or week 36 postmenstrual age (PMA), and neonates who were discharged prior to day 28 of age or week 36 PMA and receiving supplemental oxygen or any respiratory support at discharge. There were no requirements for chest radiographs at the time of diagnosis.

*unknown = death before day 28 or first admission after day 28
**unknown = death before week 36 or first admission after week 36

Presentation #20a
Oxygen use (by BW) among neonates with BW < 1500g



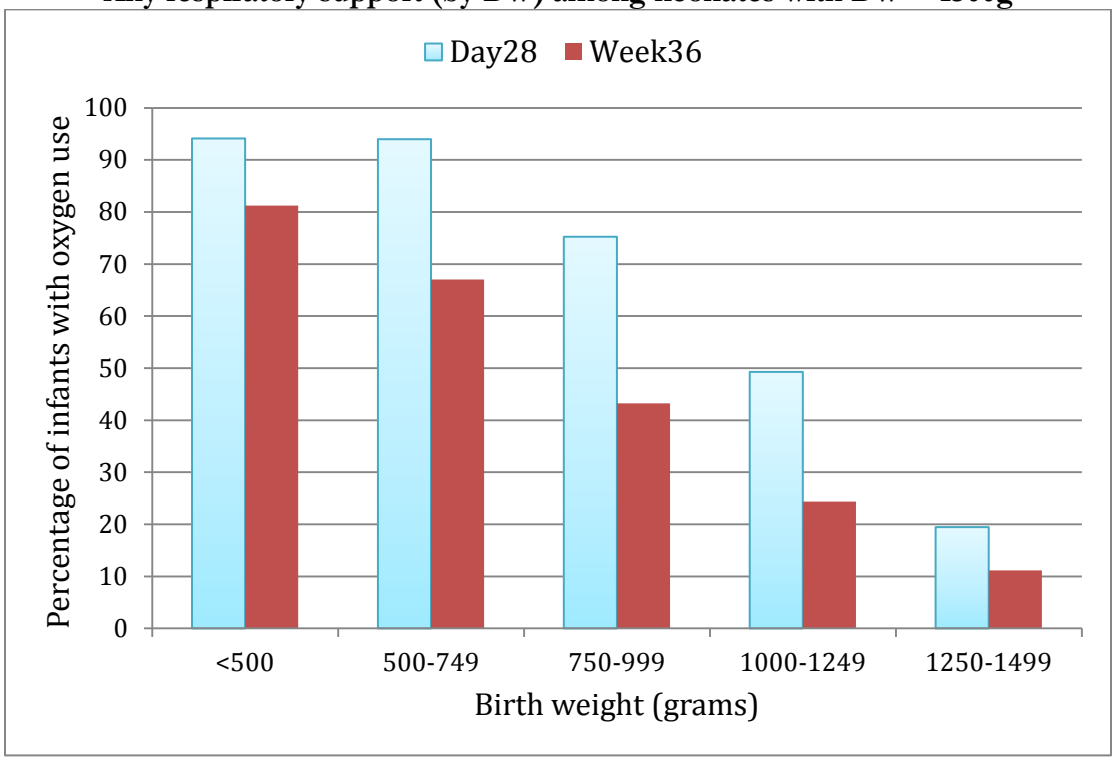
BW (grams)	Total number of neonates	Day 28				Week 36			
		Number of neonates whose oxygen use is unknown*	Number of neonates with known results	Number of neonates with oxygen use	% of neonates with oxygen use among neonates with known results	Number of neonates whose oxygen use is unknown**	Number of neonates with known results	Number of neonates with oxygen use	% of neonates with oxygen use among neonates with known results
<500	48	31	17	15	88	32	16	11	69
500-749	441	142	299	242	81	153	288	159	55
750-999	696	66	630	366	58	76	620	201	32
1000-1249	815	48	767	221	29	44	771	127	16
1250-1499	922	28	894	84	9	25	897	58	6
Total	**2 922**	**315**	**2 607**	**928**	**36**	**330**	**2 592**	**556**	**21**

COMMENTS: This presentation includes neonates who received supplemental oxygen on day 28 of age or week 36 postmenstrual age (PMA), and neonates who were discharged prior to day 28 of age or week 36 PMA and receiving **supplemental oxygen at discharge**. There were no requirements for chest radiographs at the time of diagnosis.

*unknown = death before day 28 or first admission after day 28
**unknown = death before week 36 or first admission after week 36

Presentation #20b

Any respiratory support (by BW) among neonates with BW < 1500g

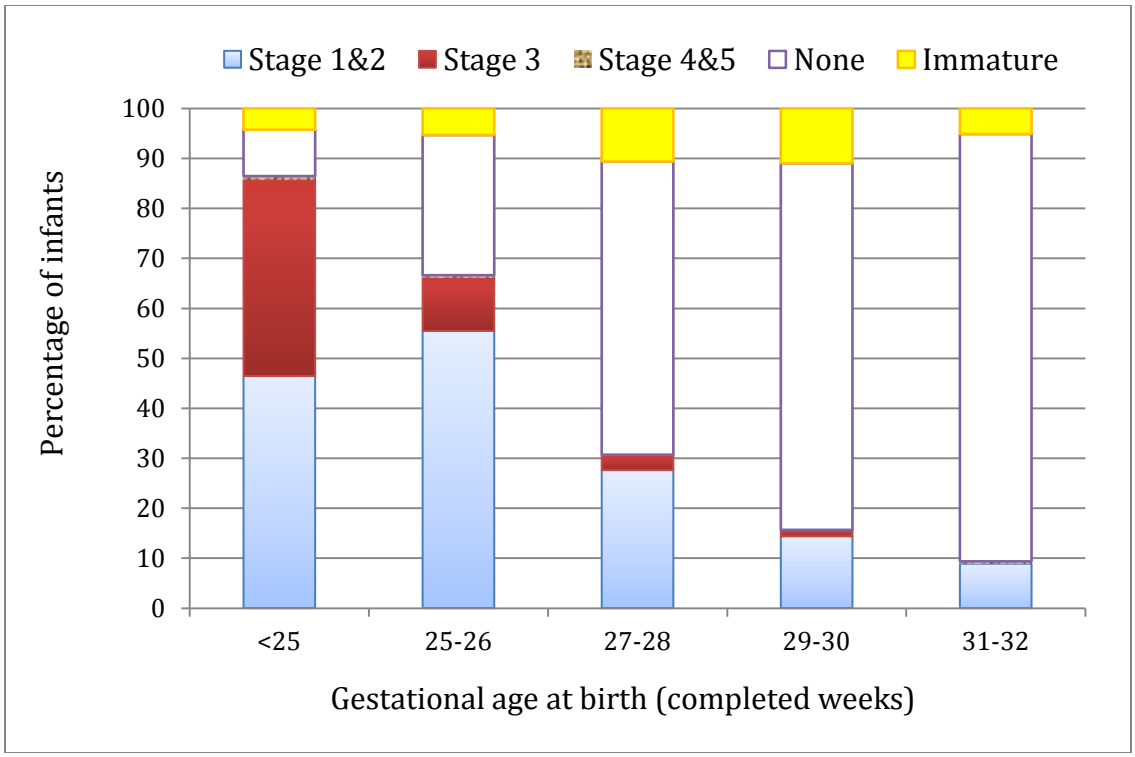


BW (grams)	Total number of neonates	Day 28				Week 36			
		Number of neonates whose respiratory support is unknown*	Number of neonates with known results	Number of neonates with any respirator y support	% of neonates with any respiratory support among neonates with known results	Number of neonates whose respiratory support is unknown**	Number of neonates with known results	Number of neonates with any respirator y support	% of neonates with any respiratory support among neonates with known results
<500	48	31	17	16	94	32	16	13	81
500-749	441	142	299	281	94	153	288	193	67
750-999	696	66	630	474	75	76	620	268	43
1000-1249	815	48	767	378	49	44	771	188	24
1250-1499	922	28	894	174	19	25	897	100	11
Total	**2 922**	**315**	**2 607**	**1 323**	**51**	**330**	**2 592**	**762**	**29**

COMMENTS: This presentation includes neonates who received supplemental oxygen or any respiratory support (CPAP, mechanical ventilation, low flow air/oxygen) on day 28 of age or week 36 postmenstrual age (PMA), and neonates who were discharged prior to day 28 of age or week 36 PMA and receiving supplemental oxygen or any respiratory support at discharge. There were no requirements for chest radiographs at the time of diagnosis.

*unknown = death before day 28 or first admission after day 28
**unknown = death before week 36 or first admission after week 36

Presentation #21
Retinopathy of prematurity (by GA)

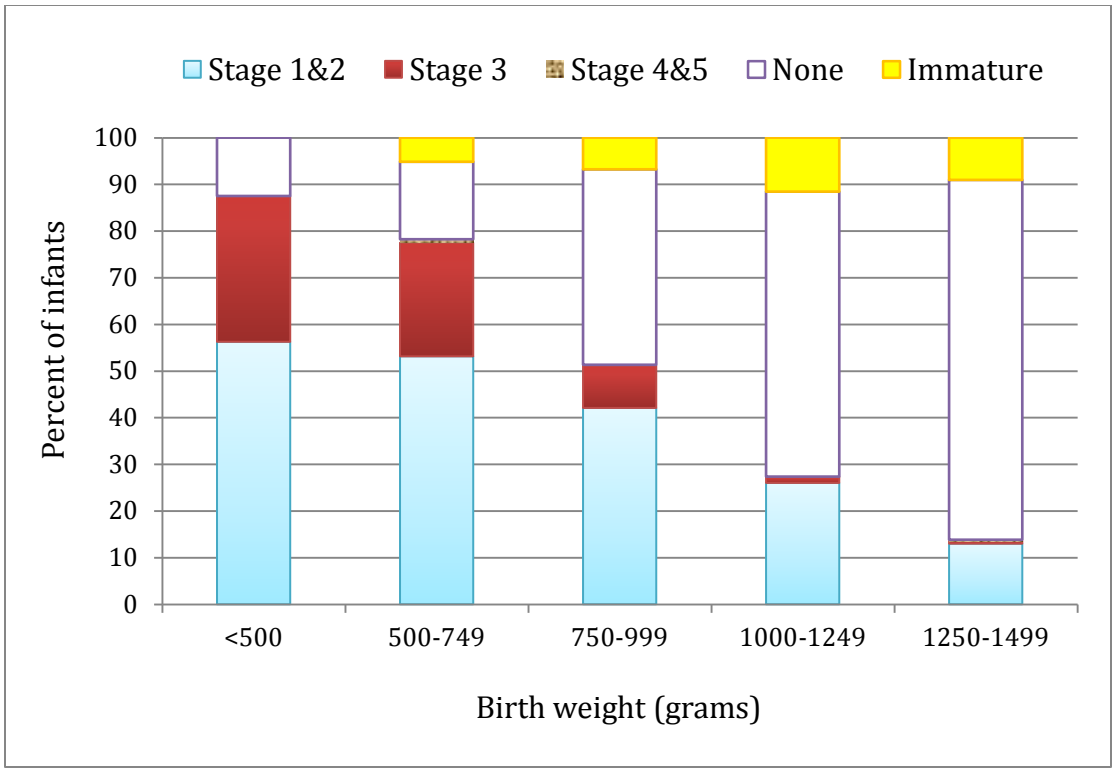


GA (completed weeks)		Total number of neonates	Number of neonates alive at 6 weeks	Number of neonates with known eye examination results	Retinopathy of prematurity*				
					Immature	None	Stages 1 & 2	Stage 3	Stage 4 & 5
<25	N	297	159	140	6	13	65	55	1
	%				4%	9%	46%	39%	1%
25-26	N	579	506	467	25	131	259	50	2
	%				5%	28%	55%	11%	0%
27-28	N	764	719	554	59	325	153	17	0
	%				11%	59%	28%	3%	0%
29-30	N	1120	1098	473	52	347	68	6	0
	%				11%	73%	14%	1%	0%
31-32	N	1610	1587	214	11	183	19	0	1
	%				5%	86%	9%	0%	0%
Total included	N	4370	4069	1848	153	999	564	128	4
	%				8%	54%	31%	7%	0%

***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)



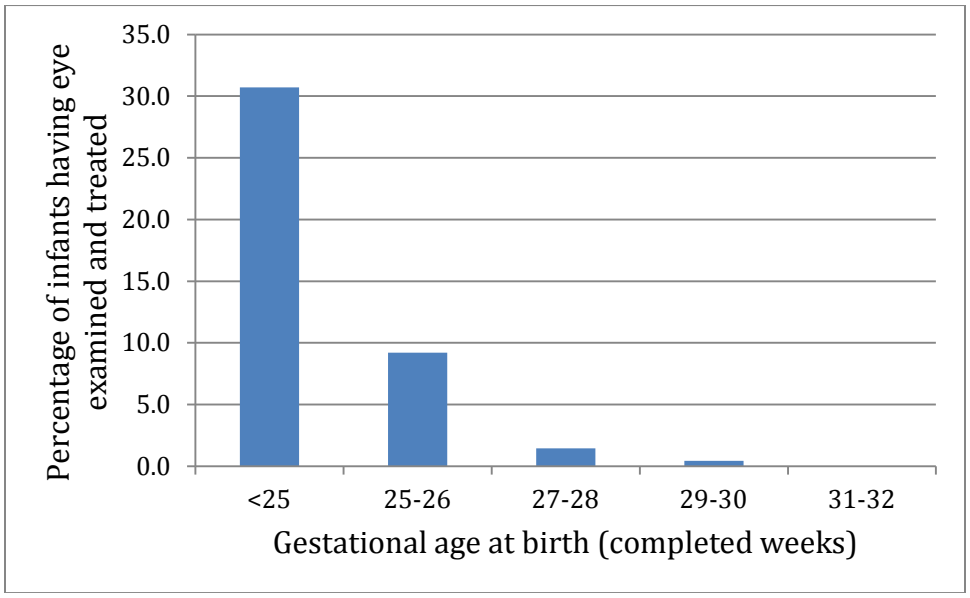
BW (grams)		Total number of neonates	Number of neonates alive at 6 weeks	Number of neonates with known eye examination results	Retinopathy of prematurity*				
					Immature	None	Stages 1 & 2	Stage 3	Stage 4 & 5
<500	N	48	18	16	0	2	9	5	0
	%				0%	13%	56%	31%	0%
500-749	N	441	309	271	14	45	144	66	2
	%				5%	17%	53%	24%	0.7%
750-999	N	696	634	530	36	222	223	48	1
	%				7%	42%	42%	9%	0%
1000-1249	N	815	781	519	60	317	135	7	0
	%				12%	61%	26%	1%	0%
1250-1499	N	922	902	354	32	273	46	2	1
	%				9%	77%	13%	1%	0.3%
Total included	N	2922	2644	1690	142	859	557	128	4
	%				8%	51%	33%	8%	0.2%

***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)

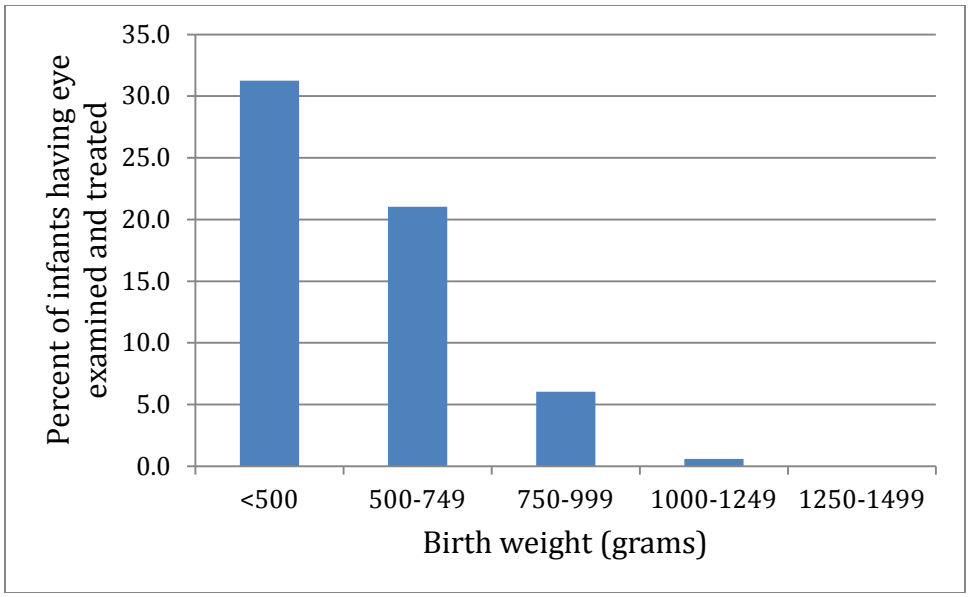


Birth GA (completed weeks)		Total number of neonates	Number of neonates with known eye examination results	Therapy for retinopathy of prematurity *	Therapy for retinopathy of prematurity **		
					Laser	Anti-VEGF	Other surgery
<25	**N**	297	140	43	21	23	1
	%			31%			
25-26	**N**	579	467	43	29	15	0
	%			9%			
27-28	**N**	764	554	8	5	3	0
	%			1%			
29-30	**N**	1120	473	2	2	0	0
	%			0.4%			
31-32	**N**	1610	214	0	0	0	0
	%			0%			
Total included	**N**	4370	1848	96	57	41	1
	%			5%			

***The percentages of patient who received therapy are calculated out of number of neonates with known eye examination results.**
****One neonate can have more than one type of therapy.**

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	Other surgery
<500	N	48	16	5	2	3	0
	%			31%			
500-749	N	441	271	57	37	21	1
	%			21%			
750-999	N	696	530	32	16	17	0
	%			6%			
1000-1249	N	815	519	3	2	1	0
	%			0.6%			
1250-1499	N	922	354	0	0	0	0
	%			0%			
Total included	N	2922	1690	97	57	42	1
	%			6%			

***The percentages of patient who received therapy are calculated out of number of neonates with known eye examination results.**
****One neonate can have more than one type of therapy.**

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 (%) 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	Number (%) without any of the six morbidities
<24	113	41 (36)	21	2 (10)	4 (19)	5 (24)	2 (10)	2 (10)	1 (5)	5 (24)
24	184	108 (59)	54	9 (17)	16 (30)	10 (19)	9 (17)	3 (6)	0	7 (13)
25	285	231 (81)	103	32 (31)	25 (24)	12 (12)	6 (6)	2 (2)	0	26 (25)
26	294	256 (87)	112	29 (26)	28 (25)	11 (10)	3 (3)	0	0	41 (37)
27	348	322 (93)	133	35 (26)	20 (15)	9 (7)	1 (1)	2 (2)	0	66 (50)
28	416	392 (94)	155	48 (31)	17 (11)	0	0	0	0	90 (58)
29	510	496 (97)	159	32 (20)	12 (8)	1 (1)	0	0	0	114 (72)
30	610	601 (99)	224	33 (15)	7 (3)	1 (0)	0	0	0	183 (82)
31	738	725 (98)	300	42 (14)	6 (2)	0	0	0	0	252 (84)
32	872	858 (98)	383	29 (8)	2 (1)	0	0	0	0	352 (92)
Total	**4370**	**4030 (92)**	**1644**	**291 (18)**	**137 (8)**	**49 (3)**	**21 (1)**	**9 (1)**	**1 (0)**	**1136 (69)**

Inclusion criteria for these analyses:

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

COMMENTS:

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

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

Presentation #25b
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 (%) with any one morbidity prior to discharge	Number (%) with any two morbidities prior to discharge	Number (%) with all three morbidities prior to discharge	Number (%) without any of the three morbidities
<24	113	41 (36)	21	6 (29)	4 (19)	6 (29)	5 (24)
24	184	108 (59)	54	17 (31)	14 (26)	7 (13)	16 (30)
25	285	231 (81)	103	40 (39)	21 (20)	5 (5)	37 (36)
26	294	256 (87)	112	42 (38)	17 (15)	1 (1)	52 (46)
27	348	322 (93)	133	42 (32)	10 (8)	2 (2)	79 (59)
28	416	392 (94)	155	49 (32)	3 (2)	0	103 (66)
29	510	496 (97)	159	24 (15)	2 (1)	0	133 (84)
30	610	601 (99)	224	22 (10)	2 (1)	0	200 (89)
31	738	725 (98)	300	27 (9)	1 (0)	0	272 (91)
32	872	858 (98)	383	12 (3)	0	0	371 (97)
Total	**4370**	**4030 (92)**	**1644**	**281 (17)**	**74 (5)**	**21 (1)**	**1268 (77)**

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 2 313 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
Characteristics and outcomes of SGA infants

Characteristics			**GA at birth (completed weeks)**						
	Missing		**≤27**	**28-29**	**30-31**	**32-33**	**34-36**	**≥37**	**Total**
Number			**104**	**85**	**153**	**202**	**726**	**1043**	**2313**
Characteristics									
Male sex		N	50	44	87	114	367	570	1232
		%	48.1	51.8	56.9	56.4	50.6	54.7	53.3
Any steroid	80	N	89	71	129	164	197	34	684
		%	88.1	91.0	93.5	82.4	27.9	3.4	30.6
Multiples		N	22	16	45	72	284	97	536
		%	21.2	18.8	29.4	35.6	39.1	9.3	23.2
SNAP score >20	61	N	44	10	16	16	25	79	190
		%	44.0	11.9	10.6	8.2	3.5	7.8	8.4
Cesarean birth	9	N	94	78	137	167	424	431	1331
		%	90.4	94.0	90.7	82.7	58.6	41.4	57.8
Outcomes									
Mortality		N	32	5	1	5	8	22	73
		%	30.8	5.9	0.7	2.5	1.1	2.1	3.2
Nosocomial infection	1	N	34	18	18	10	14	16	110
		%	32.7	21.4	11.8	5.0	1.9	1.5	4.8
Surgical ligation of PDA	2	N	7	1	0	0	0	1	9
		%	6.9	1.2	0.0	0.0	0.0	0.1	0.4
NEC	2	N	8	7	5	5	4	4	33
		%	7.8	8.2	3.3	2.5	0.6	0.4	1.4
Ventricular dilatation or PEC	1306	N	28	6	8	5	8	14	69
		%	30.4	7.2	5.6	3.3	3.6	4.4	6.9
Oxygen use at 36 weeks or at discharge if earlier	45	N	42	25	11	5	0	0	83
		%	57.5	32.1	7.4	2.5	0.0	0.0	3.7
ROP stage 3 or higher or treatment for ROP	2025	N	14	3	2	1	0	0	20
		%	20.0	5.2	3.2	1.6	0.0	0.0	6.9

E. Site Comparisons

E.1. Site Comparisons – Population

Presentation #27
Site-specific GA categories of neonates

Site		GA (completed weeks)								Total number of neonates	Criteria of data collection
		<25	25-26	27-28	29-30	31-32	33-34	35-36	≥37		
Neonates per site (%)	**1**	0.8	3.7	6.6	7.3	14.7	20.8	12.2	33.9	874	Complete
	2	1.8	2.6	1.4	3.5	9.2	14.3	21.4	45.8	509	Complete
	3	2.1	3.2	4.1	8.9	11.0	14.2	14.7	41.9	921	Complete
	4	0.0	2.4	2.4	5.9	8.2	15.4	24.5	41.2	376	Complete
	5	1.3	1.3	0.4	0.4	2.5	4.2	13.0	76.9	238	Complete
	6	3.1	0.0	0.8	2.3	4.7	8.6	20.3	60.2	128	Complete
	7	3.7	11.6	13.3	15.1	12.6	16.1	11.5	16.1	707	Complete
	8	2.2	2.9	2.7	4.0	6.7	16.9	14.1	50.5	697	Complete
	9	0.7	2.0	2.3	4.2	9.2	18.5	18.1	45.1	698	Complete
	10	1.2	3.1	7.7	7.7	11.9	23.6	15.6	29.4	327	Complete
	11	2.6	4.4	6.8	7.0	12.2	21.9	15.7	29.5	502	Complete
	12	0.0	0.0	0.0	3.3	2.5	12.5	21.2	60.6	241	Complete
	13	0.8	0.0	2.4	6.1	14.0	20.1	17.3	39.4	508	Complete
	14	3.2	3.2	5.5	6.2	10.4	19.3	15.9	36.3	691	Complete
	15	0.6	2.3	2.9	4.3	9.5	18.5	24.0	37.9	346	Complete
	16	2.8	6.4	5.9	9.4	13.7	10.3	9.4	42.1	575	Complete
	17	0.8	3.8	5.0	5.6	6.9	7.5	11.3	59.2	480	Complete
	18	1.6	1.6	2.6	2.6	7.9	15.7	27.8	40.3	191	Complete
	19	0.0	6.8	6.8	4.6	11.4	26.5	10.6	33.3	132	Complete
	20	1.2	2.3	4.3	4.9	7.6	14.0	24.7	41.0	486	Complete
	21	2.2	3.2	5.2	10.8	9.8	16.6	15.6	36.6	500	Complete
	22	3.0	5.6	5.6	7.5	9.9	13.3	15.7	39.5	1171	Complete
	23	1.3	3.5	4.3	6.4	9.3	16.0	19.2	40.1	1227	Complete
	24	0.8	1.1	3.5	3.5	9.8	15.5	15.5	50.1	367	Complete
	25	0.4	2.1	2.5	6.4	11.0	18.9	17.5	41.2	481	Complete
	26	15.7	13.1	20.9	30.7	19.6	0.0	0.0	0.0	153	Partial
	27	7.3	10.2	13.1	23.2	34.6	1.2	2.4	8.0	413	Partial
	28	5.6	1.9	7.4	33.3	48.2	3.7	0.0	0.0	54	Partial
	29	4.7	14.7	20.4	28.3	31.9	0.0	0.0	0.0	191	Partial
	30	5.4	21.6	29.7	37.8	5.4	0.0	0.0	0.0	37	Partial
Total		2.1	4.1	5.4	7.9	11.3	15.2	15.5	38.5	14221	

Number of neonates with missing GA = 3

COMMENTS: Proportion of the GA categories of neonates varied considerably among sites. Note some centers are only submitting a subset of the eligible population. Five sites have partial data.

Presentation #28
Site-specific BW categories of neonates

Site		BW (g) <500	500-749	750-999	1000-1249	1250-1499	1500-2499	≥2500	Total number of neonates	Criteria of data collecting
Neonates per site (%)	**1**	0.2	2.4	4.2	7.4	8.8	37.5	39.4	874	Complete
	2	0.2	2.0	3.1	1.8	4.3	35.8	52.9	509	Complete
	3	0.3	3.2	3.5	4.5	6.8	33.0	48.8	921	Complete
	4	0.0	1.1	2.1	3.5	4.3	37.0	52.1	376	Complete
	5	0.0	0.8	2.5	0.4	1.7	11.3	83.2	238	Complete
	6	0.8	3.1	0.8	2.3	1.6	21.1	70.3	128	Complete
	7	0.6	6.8	11.5	13.3	11.5	35.3	21.1	706	Complete
	8	0.1	3.0	2.9	3.2	3.3	31.4	56.1	697	Complete
	9	0.1	0.9	2.4	2.7	4.0	37.4	52.4	698	Complete
	10	0.6	2.5	5.8	5.8	5.8	41.6	37.9	327	Complete
	11	0.4	2.8	8.0	5.2	5.6	41.0	37.2	503	Complete
	12	0.0	0.0	0.8	2.1	1.7	24.5	71.0	241	Complete
	13	0.0	0.8	1.2	4.1	4.5	39.4	50.0	508	Complete
	14	1.0	3.0	4.2	5.1	5.1	39.0	42.6	690	Complete
	15	0.3	0.6	2.9	2.6	3.8	41.9	48.0	346	Complete
	16	0.5	4.9	6.6	6.6	9.7	26.1	45.6	575	Complete
	17	0.0	1.5	3.8	7.1	4.8	20.4	62.5	480	Complete
	18	0.0	2.1	1.6	2.6	3.1	37.7	52.9	191	Complete
	19	0.0	3.0	3.8	6.8	5.3	44.7	36.4	132	Complete
	20	0.2	1.0	3.3	4.7	4.5	29.2	57.0	486	Complete
	21	0.0	3.0	4.0	6.0	6.2	35.2	45.6	500	Complete
	22	0.2	4.6	7.3	5.6	6.9	31.1	44.3	1171	Complete
	23	0.2	2.3	4.5	5.7	5.1	36.8	45.4	1227	Complete
	24	0.3	1.4	2.2	2.2	2.2	28.6	63.2	367	Complete
	25	0.0	1.0	2.7	4.0	2.7	38.1	51.6	481	Complete
	26	4.7	15.3	18.7	19.3	17.3	24.7	0.0	150	Partial
	27	1.2	9.4	10.4	12.8	18.2	39.2	8.7	413	Partial
	28	0.0	5.6	5.6	7.4	35.2	44.4	1.9	54	Partial
	29	0.0	10.0	16.8	18.9	22.5	30.4	1.6	191	Partial
	30	2.7	21.6	13.5	24.3	29.7	8.1	0.0	37	Partial
Total		0.3	3.1	4.9	5.7	6.5	34.0	45.4	14217	

Number of neonates with missing BW = 7

*Please note that five centers are only submitting a subset of the eligible admissions.

E.2. Site Comparisons – Survival / Mortality

Presentation #29
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***
A	57.7	90.2	94.7	100.0	100.0	99.1	100.0	100.0	96.5
Bϕ	55.6	78.6	100.0	100.0	98.4	NA	NA	NA	94.2
C	25.0	94.4	95.8	96.3	100.0	94.4	94.4	96.1	95.4
Dϕ	66.7	100.0	100.0	100.0	100.0	100.0	NA	NA	98.1
E	0.0	100.0	84.6	100.0	100.0	100.0	98.2	99.5	98.1
F	55.6	92.3	100.0	100.0	100.0	100.0	100.0	99.1	98.6
G	63.6	93.8	96.2	100.0	98.0	98.8	100.0	99.5	98.2
H	66.7	100.0	100.0	100.0	100.0	90.0	93.5	96.2	95.4
I	27.3	81.8	86.8	95.3	98.6	100.0	98.2	98.8	95.2
J	60.0	85.7	100.0	96.6	96.9	98.4	100.0	99.4	98.4
K	86.7	90.0	100.0	96.4	95.7	99.2	98.0	99.7	98.4
L	50.0	50.0	66.7	93.5	98.1	98.9	98.8	100.0	96.9
M	69.2	68.2	94.1	97.1	100.0	99.1	97.5	98.0	96.0
N	NA	NA	NA	100.0	100.0	100.0	100.0	100.0	100.0
O	57.9	75.9	92.1	96.3	97.0	97.7	100.0	98.4	96.4
P	NA	88.9	100.0	95.5	100.0	100.0	100.0	99.4	99.2
Q	NA	55.6	88.9	100.0	100.0	100.0	100.0	100.0	96.2
Rϕ	0.0	75.0	81.8	92.9	100.0	NA	NA	NA	81.1
S	62.5	78.4	94.1	98.1	100.0	98.3	98.1	93.4	93.9
T	16.7	100.0	95.2	95.8	97.3	100.0	100.0	100.0	98.4
U	75.0	NA	100.0	100.0	83.3	100.0	100.0	100.0	98.4
Vϕ	63.3	92.9	96.3	99.0	95.1	100.0	80.0	87.9	92.7
W	42.9	53.1	91.4	95.3	97.7	97.8	96.3	97.3	94.7
X	37.5	100.0	96.2	97.4	98.2	97.4	98.7	100.0	98.0
Y	48.6	86.2	92.3	97.7	98.3	98.1	99.5	97.8	95.7
Z	75.0	NA	100.0	100.0	100.0	100.0	100.0	99.5	99.6
AA	0.0	66.7	80.0	100.0	100.0	100.0	100.0	100.0	97.4
AB	50.0	75.0	100.0	100.0	100.0	100.0	100.0	98.5	98.6
ACϕ	20.8	85.0	87.5	100.0	100.0	NA	NA	NA	83.0
AD	25.0	100.0	92.0	100.0	100.0	100.0	100.0	99.0	98.2
Overall survival rate for GA**	50.2	84.1	93.5	97.9	98.3	98.8	98.9	98.5	96.7

These analyses include 14 221 neonates from 30 sites (3 neonates had missing data for GA).
Twenty-five 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 #30
Site-specific survival rates by BW

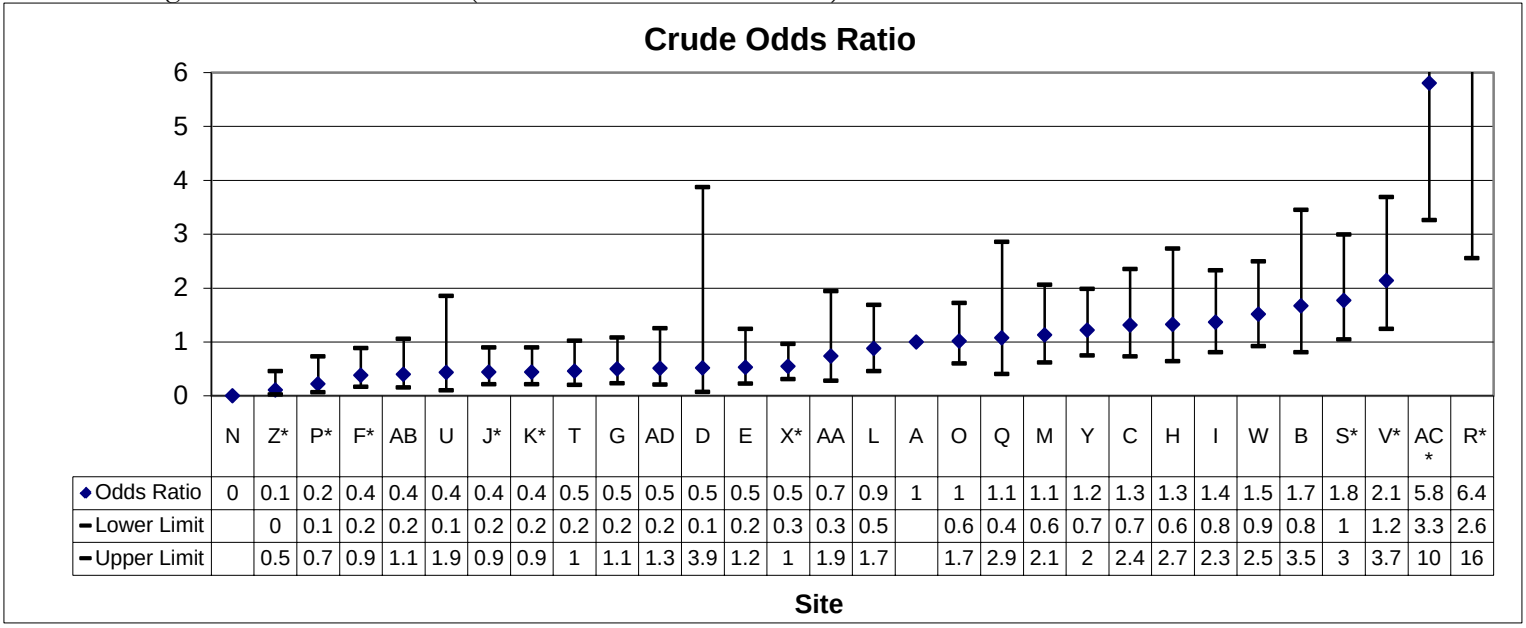
Site	Percentage survival for each BW (g) category							
	<500	**500-749**	**750-999**	**1000-1249**	**1250-1499**	**1500-2499**	**≥2500**	**Overall survival rate for sites***
A	25.0	79.2	92.6	94.7	100.0	99.6	100.0	96.5
Bϕ	NA	68.4	90.6	97.2	100.0	98.3	100.0	94.2
C	NA	57.1	94.4	97.1	91.3	98.0	95.7	95.4
Dϕ	NA	100.0	66.7	100.0	100.0	100.0	100.0	98.1
E	100.0	40.0	87.5	87.5	100.0	100.0	99.1	98.1
F	100.0	80.0	81.3	100.0	100.0	100.0	99.3	98.6
G	NA	73.3	95.0	96.7	100.0	99.4	99.1	98.2
H	NA	50.0	100.0	0.0	100.0	88.9	97.0	95.4
I	0.0	61.9	89.7	82.9	100.0	98.5	98.6	95.4
J	0.0	66.7	94.1	94.7	100.0	98.1	99.7	98.4
K	100.0	85.7	95.0	100.0	95.7	98.6	99.2	98.4
L	NA	60.0	53.8	78.9	100.0	98.9	99.6	96.9
M	100.0	57.1	87.5	92.3	100.0	97.6	98.9	96.0
N	NA	NA	100.0	100.0	100.0	100.0	100.0	100.0
O	33.3	69.0	81.3	97.6	98.4	97.0	98.9	96.4
P	NA	75.0	100.0	100.0	93.8	100.0	99.5	99.2
Q	NA	50.0	60.0	88.9	100.0	100.0	100.0	96.2
Rϕ	0.0	50.0	80.0	100.0	90.9	100.0	NA	81.1
S	33.3	78.6	84.2	94.7	100.0	97.3	94.3	93.9
T	0.0	60.0	87.5	95.7	95.5	99.3	100.0	98.4
U	0.0	100.0	100.0	100.0	100.0	96.3	100.0	98.4
Vϕ	60.0	74.4	95.3	100.0	94.7	95.1	88.9	92.7
W	0.0	38.1	81.1	93.8	96.1	98.2	96.8	94.7
X	100.0	67.9	96.4	95.7	95.2	99.3	99.3	98.0
Y	0.0	57.4	94.1	97.0	95.1	98.4	98.5	95.7
Z	NA	75.0	100.0	100.0	100.0	100.0	99.6	99.6
AA	NA	0.0	100.0	100.0	83.3	100.0	100.0	97.4
AB	0.0	50.0	90.0	100.0	100.0	100.0	98.8	98.6
ACϕ	0.0	52.2	82.1	93.1	100.0	97.3	NA	82.7
AD	100.0	75.0	84.2	100.0	100.0	100.0	99.2	98.2
Overall survival rate for BW**	33.3	66.4	89.4	95.2	97.6	98.6	98.6	96.7

These analyses include 14 217 neonates from 30 sites (7 neonates had missing data for BW).
Twenty-five 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

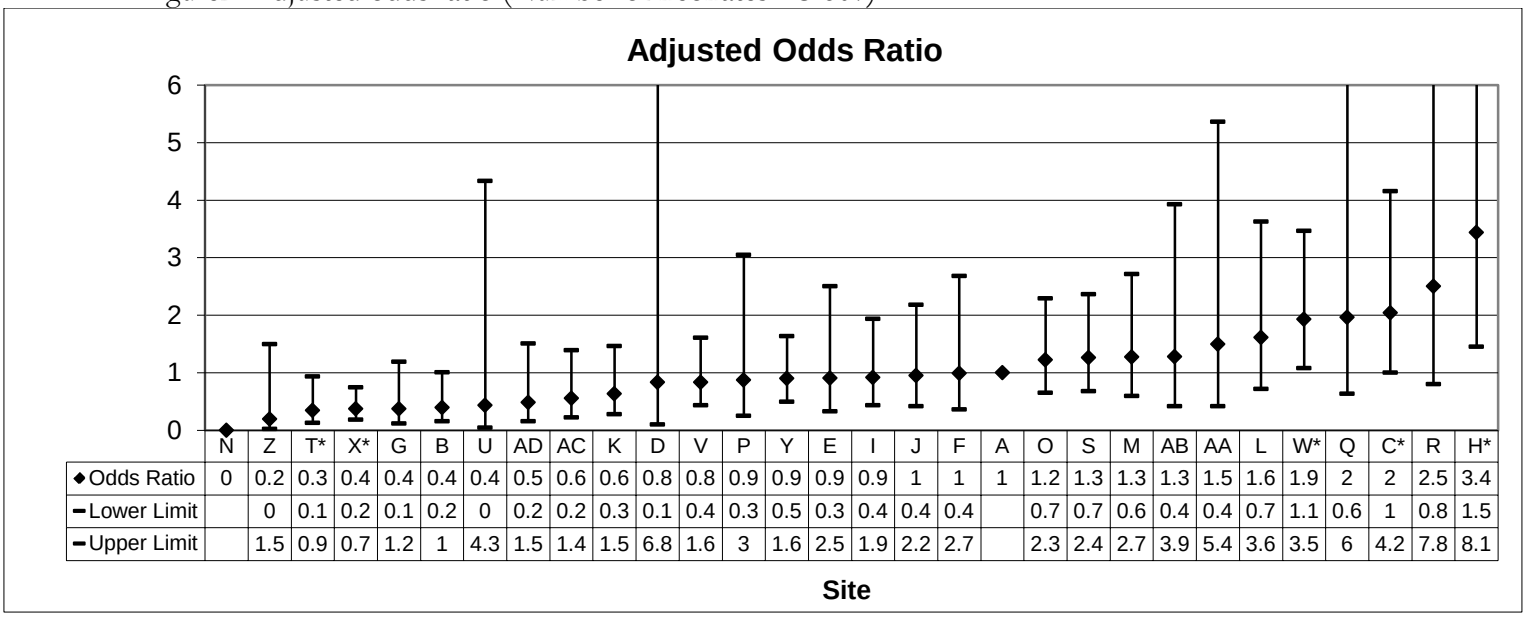
Presentation #31
Site comparison of mortality

Figure1: Crude odds ratio (Number of neonates: 14 224)



	N	Z*	P*	F*	AB	U	J*	K*	T	G	AD	D	E	X*	AA	L	A	O	Q	M	Y	C	H	I	W	B	S*	V*	AC*	R*
Odds Ratio	0	0.1	0.2	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.9	1	1	1.1	1.1	1.2	1.3	1.3	1.4	1.5	1.7	1.8	2.1	5.8	6.4
Lower Limit		0	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.3	0.3	0.5		0.6	0.4	0.6	0.7	0.7	0.6	0.8	0.9	0.8	1	1.2	3.3	2.6
Upper Limit		0.5	0.7	0.9	1.1	1.9	0.9	0.9	1	1.1	1.3	3.9	1.2	1	1.9	1.7		1.7	2.9	2.1	2	2.4	2.7	2.3	2.5	3.5	3	3.7	10	16

Figure2: Adjusted odds ratio (Number of neonates: 13 607)



	N	Z	T*	X*	G	B	U	AD	AC	K	D	V	P	Y	E	I	J	F	A	O	S	M	AB	AA	L	W*	Q	C*	R	H*
Odds Ratio	0	0.2	0.3	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.8	0.8	0.9	0.9	0.9	0.9	1	1	1	1.2	1.3	1.3	1.3	1.5	1.6	1.9	2	2	2.5	3.4
Lower Limit		0	0.1	0.2	0.1	0.2	0	0.2	0.2	0.3	0.1	0.4	0.3	0.5	0.3	0.4	0.4	0.4		0.7	0.7	0.6	0.4	0.4	0.7	1.1	0.6	1	0.8	1.5
Upper Limit		1.5	0.9	0.7	1.2	1	4.3	1.5	1.4	1.5	6.8	1.6	3	1.6	2.5	1.9	2.2	2.7		2.3	2.4	2.7	3.9	5.4	3.6	3.5	6	4.2	7.8	8.1

Reference site: A

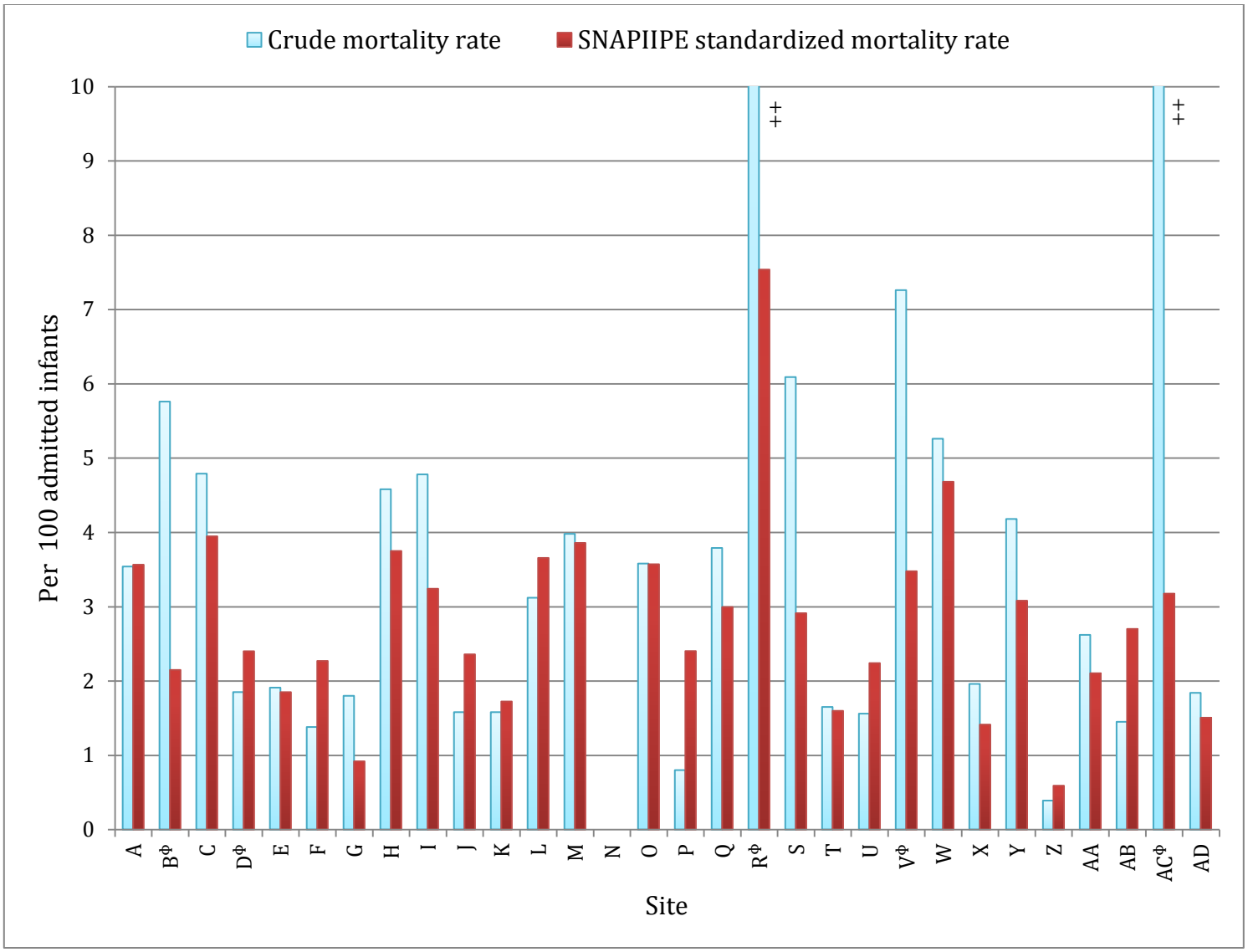
***Sites significantly different from reference site (P<0.05)**

Inclusion criteria:
All neonates included

Significant predictors identified by multivariate analysis and adjusted for:
Congenital anomalies
Apgar at 5 min
SGA (BW <10th centile for GA)
SNAP-II
GA

Mortality is attributed to the network site of first admission

Presentation #32
SNAP-II PE standardized site mortality rates



‡ Site R has a crude mortality rate of 18.9% and site AC has a crude mortality rate of 17.5%, but they are not shown completely in the graph. Please refer to the table for the actual percentages for sites R and AC.

Presentation #32 (continued)

SNAP-II PE standardized site mortality rates

Site	Mortality rate (%)	SNAP-II PE standardized rate (%)
A	3.5	3.6
Bϕ	5.8	2.1
C	4.8	3.9
Dϕ	1.9	2.4
E	1.9	1.8
F	1.4	2.3
G	1.8	0.9
H	4.6	3.7
I	4.8	3.2
J	1.6	2.4
K	1.6	1.7
L	3.1	3.7
M	4.0	3.9
N	0.0	0.0
O	3.6	3.6
P	0.8	2.4
Q	3.8	3.0
Rϕ	18.9	7.5
S	6.1	2.9
T	1.7	1.6
U	1.6	2.2
Vϕ	7.3	3.5
W	5.3	4.7
X	2.0	1.4
Y	4.2	3.1
Z	0.4	0.6
AA	2.6	2.1
AB	1.5	2.7
ACϕ	17.5	3.2
AD	1.8	1.5
Mean	3.3	3.3

COMMENTS: SNAP-II PE standardized mortality rates were calculated by adjusting mortality for illness severity. Mortality is attributed to the site of first admission. After adjusting for readmission and transfers, this analysis represents 14 224 neonates. **Twenty-five sites collected data on all eligible admissions whereas five sites (marked by ϕ) collected data on a selected cohort of eligible admissions only.**

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.

E3. Site Comparisons –

Morbidities
and
Risks Adjusted Analyses

Comments: Logistic regression is used for this section – Risk Adjusted Analysis. This technique is used to analyze interactions in which there are one or more independent variables that determine an outcome. The outcome is measured using a dichotomous variable.

The goal of logistic regression is to find the best fitting (yet biologically reasonable) model to describe the relationship between the dichotomous characteristic of interest (dependent variable = response or outcome variable) and a set of independent (predictor or explanatory) variables. Logistic regression generates the coefficients (and its standard errors and significance levels) of a formula to predict a logit transformation of the probability of presence of the characteristic of interest:

$$\text{logit}(p) = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + \ldots + b_k X_k$$

where p is the probability of presence of the characteristic of interest

Presentation #33
Site specific morbidities among GA <33 weeks

Site	Number	Mortality	Severe neurological injury	Severe ROP	BPD	NEC stage 2 or 3	Late onset sepsis	Mortality or severe morbidity
	N	%	%	%	%	%	%	%
N	<50	0.0	0.0	9.1	0.0	0.0	0.0	7.1
R		18.9	32.4	8.3	20.0	8.1	5.4	46.0
U		14.3	40.0	0.0	10.0	0.0	7.1	35.7
H		7.1	22.2	0.0	11.1	0.0	7.1	21.4
AA		16.1	26.1	0.0	11.5	0.0	9.7	41.9
Q		12.8	15.8	8.3	11.8	2.6	15.4	35.9
E	51-100	7.3	16.1	9.5	9.2	5.8	13.0	31.9
D		1.9	4.0	0.0	2.0	5.8	7.7	17.3
P		2.8	5.9	4.7	10.1	1.4	1.4	16.9
F		5.3	9.8	2.9	1.1	0.0	8.5	14.9
AB		4.4	17.8	8.3	6.0	4.4	10.3	23.5
T		8.1	6.5	1.6	25.3	1.0	5.1	32.3
I	101-200	14.2	9.6	3.6	19.1	4.3	7.6	38.6
AD		4.9	12.8	3.5	11.2	6.8	18.5	36.9
K		5.4	17.8	20.6	24.4	3.9	12.4	35.7
C		5.7	16.2	11.8	18.4	6.6	19.8	43.4
B		5.8	12.9	1.3	20.0	6.9	14.7	36.1
L		12.0	14.8	10.2	13.7	9.3	12.0	38.9
J		5.5	9.5	7.3	8.1	2.3	8.6	25.0
AC		17.0	6.8	7.1	17.9	4.4	22.0	51.0
G		4.5	5.6	11.1	4.8	1.3	9.6	20.5
M		8.5	5.3	1.8	7.3	3.7	10.9	27.3
Z		0.9	2.7	25.0	4.4	0.0	2.5	9.3
V	>200	6.6	14.1	30.5	18.5	6.3	9.0	33.4
S		7.7	16.5	13.9	10.9	3.6	12.3	35.0
O		8.9	9.1	14.3	11.7	7.4	12.3	30.9
W		10.4	8.7	2.7	19.3	5.5	14.2	34.3
Y		9.8	19.2	12.1	25.9	4.3	13.0	42.8
X		5.3	18.3	8.4	21.8	3.0	7.6	33.9
A		6.0	17.8	5.1	14.1	2.5	12.1	29.9
Total CNN		7.8	13.0	7.8	15.4	4.3	11.3	32.8

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

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

Presentation #34
Site specific morbidities among GA <29 weeks

Site	Number range	Mortality	Severe neurological injury	Severe ROP	BPD	NEC stage 2 or 3	Late onset sepsis	Mortality or severe morbidity
	N	%	%	%	%	%	%	%
H	<20	14.3	40.0	0.0	33.3	0.0	14.3	42.9
P		5.6	16.7	11.8	29.4	5.6	5.6	50.0
D		12.5	0.0	0.0	0.0	25.0	12.5	37.5
AA		45.5	33.3	0.0	33.3	0.0	27.3	81.8
Z		6.3	8.3	66.7	14.3	0.0	0.0	37.5
Q		27.8	23.5	9.1	23.1	5.6	22.2	61.1
U		20.0	60.0	0.0	50.0	0.0	20.0	80.0
AB	20-40	15.0	36.8	14.3	15.8	15.0	5.0	45.0
E		25.0	31.6	14.3	31.3	5.0	35.0	70.0
R		28.6	47.6	16.7	26.7	4.8	4.8	61.9
L		41.7	43.5	28.6	35.7	16.7	16.7	83.3
F		17.2	18.2	0.0	4.2	0.0	24.1	41.4
J		11.4	17.7	13.3	19.4	0.0	22.9	57.1
T		15.8	13.5	3.2	62.5	2.7	7.9	68.4
AD		12.8	25.6	6.1	26.5	7.7	23.1	64.1
B	41-90	13.2	27.8	1.9	45.5	15.1	26.3	68.4
C		10.9	27.3	16.0	37.5	4.4	30.4	60.9
K		7.4	29.6	32.6	54.0	5.6	22.2	66.7
M		18.8	6.5	3.5	17.9	7.7	14.5	49.3
AC		34.2	10.5	9.6	40.0	3.3	26.3	77.6
G		11.3	10.6	10.7	13.3	3.8	20.8	45.3
I		30.5	12.7	6.0	49.1	5.5	9.8	68.3
O		20.9	20.0	18.3	32.9	12.8	20.9	62.8
S		18.4	25.0	17.2	25.7	6.9	20.7	66.7
A	> 90	11.9	27.2	5.6	24.9	4.5	20.8	51.5
W		24.7	15.8	5.2	42.5	12.4	30.9	63.9
X		10.7	28.3	10.1	43.0	4.5	17.0	63.4
V		12.7	25.0	33.3	43.1	12.7	18.3	61.9
Y		19.4	31.7	15.8	53.3	6.7	24.2	75.2
Total CNN		17.7	23.5	11.7	35.7	7.2	20.5	62.4

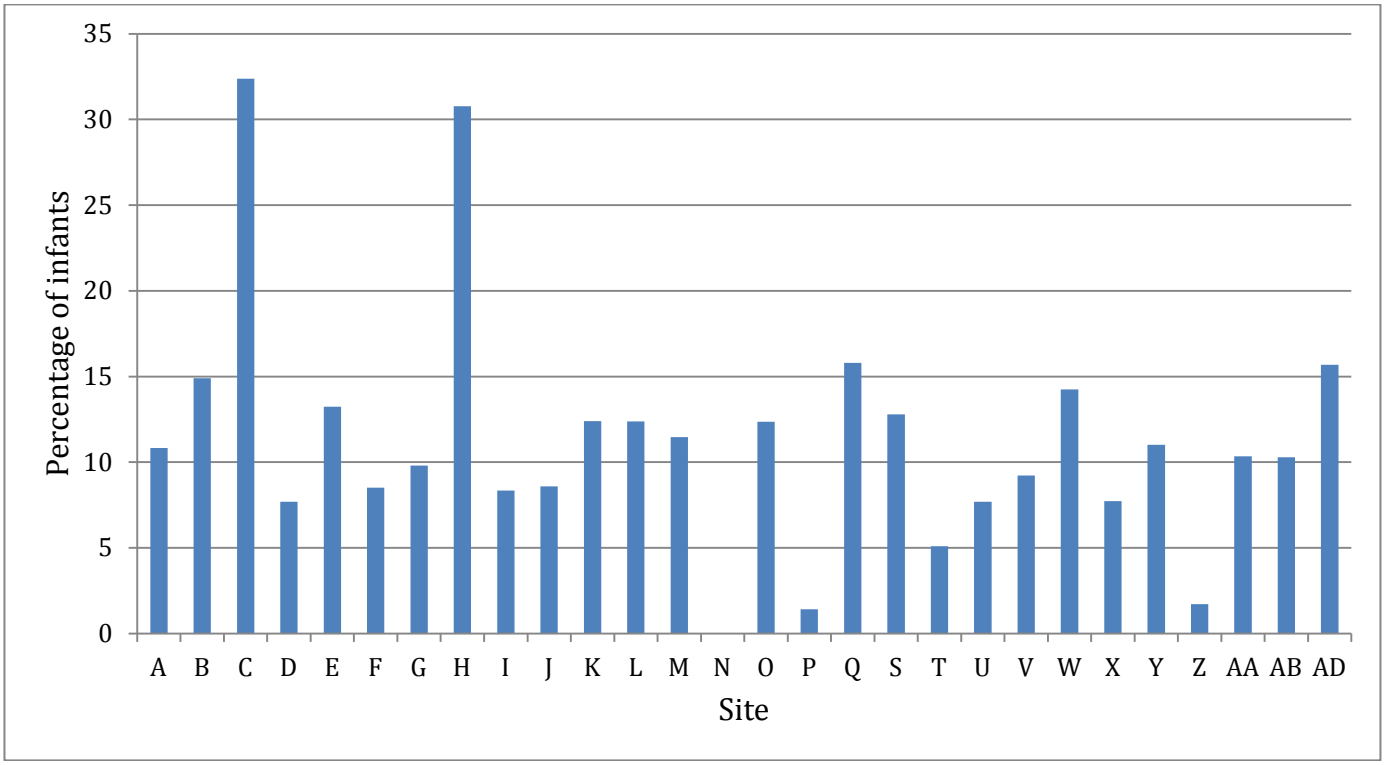
Mortality or morbidity = Mortality prior to discharge or any of the five morbidities

*Site N does not have any infants with GA < 29, thus was not included in this presentation.

Presentation #35

Late onset sepsis* for neonates with GA < 33 weeks (site rates)

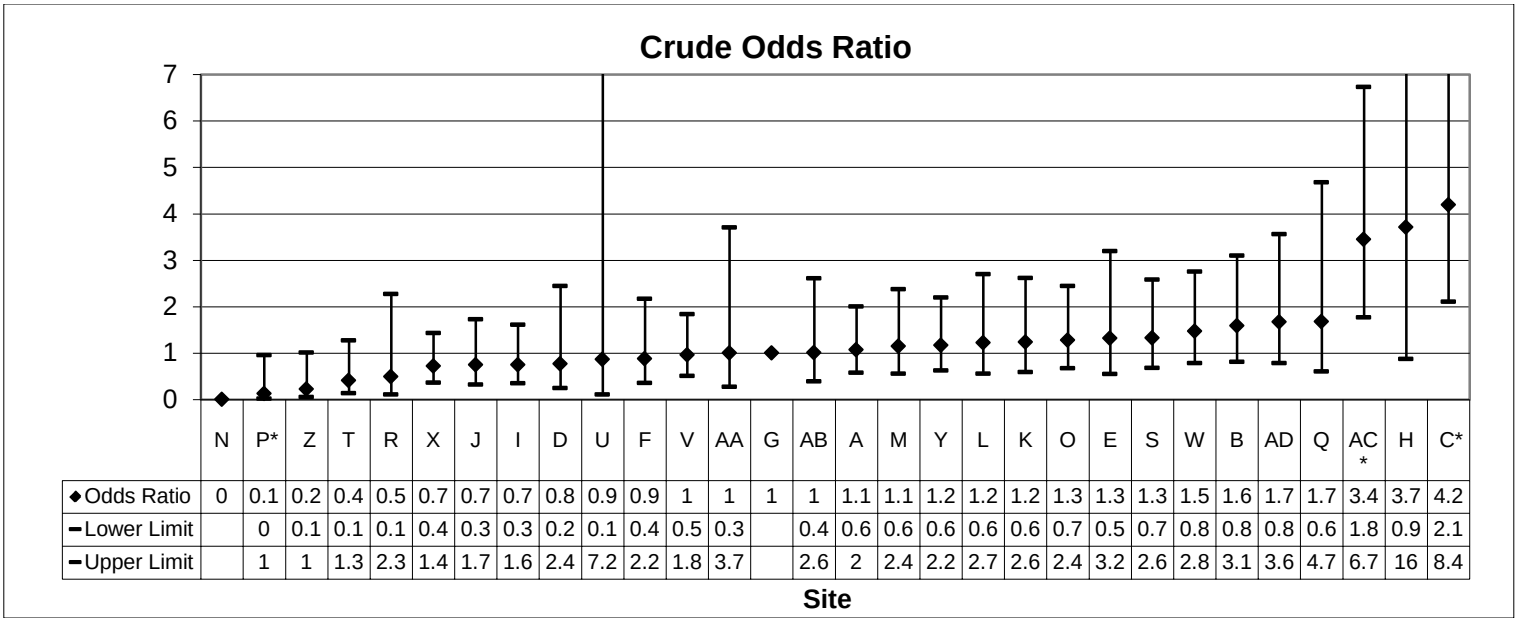
Sites that contributed data on all eligible admissions for neonates with GA **< 33** (n=28 sites, 4 112 neonates, 68 excluded due to death before 3 days of age)



Site	A	B	C	D	E	F	G	H	I	J
%	10.8	14.9	32.4	7.7	13.2	8.5	9.8	30.8	8.3	8.6
Site	**K**	**L**	**M**	**N**	**O**	**P**	**Q**	**S**	**T**	**U**
%	12.4	12.4	11.5	0.0	12.4	1.4	15.8	12.8	5.1	7.7
Site	**V**	**W**	**X**	**Y**	**Z**	**AA**	**AB**	**AD**	**Mean**	
%	9.2	14.2	7.7	11.0	1.7	10.3	10.3	15.7	11.1	

**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).

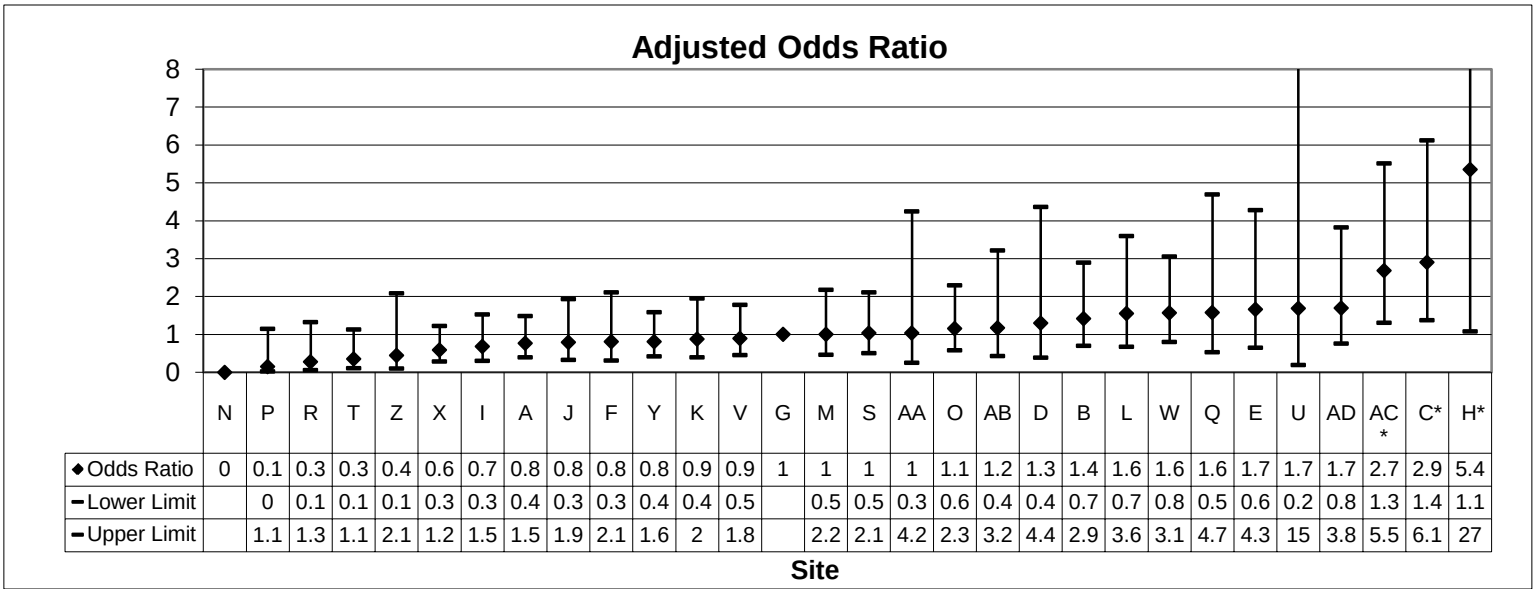
Presentation #36
Late onset sepsis among neonates with GA < 33 weeks (site comparison)



	N	P*	Z	T	R	X	J	I	D	U	F	V	AA	G	AB	A	M	Y	L	K	O	E	S	W	B	AD	Q	AC*	H	C*
◆Odds Ratio	0	0.1	0.2	0.4	0.5	0.7	0.7	0.7	0.8	0.9	0.9	1	1	1	1	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.5	1.6	1.7	1.7	3.4	3.7	4.2
━Lower Limit		0	0.1	0.1	0.1	0.4	0.3	0.3	0.2	0.1	0.4	0.5	0.3		0.4	0.6	0.6	0.6	0.6	0.6	0.7	0.5	0.7	0.8	0.8	0.8	0.6	1.8	0.9	2.1
━Upper Limit		1	1	1.3	2.3	1.4	1.7	1.6	2.4	7.2	2.2	1.8	3.7		2.6	2	2.4	2.2	2.7	2.6	2.4	3.2	2.6	2.8	3.1	3.6	4.7	6.7	16	8.4

Site

Number of neonates: 4 056



	N	P	R	T	Z	X	I	A	J	F	Y	K	V	G	M	S	AA	O	AB	D	B	L	W	Q	E	U	AD	AC*	C*	H*
◆Odds Ratio	0	0.1	0.3	0.3	0.4	0.6	0.7	0.8	0.8	0.8	0.8	0.9	0.9	1	1	1	1	1.1	1.2	1.3	1.4	1.6	1.6	1.6	1.7	1.7	1.7	2.7	2.9	5.4
━Lower Limit		0	0.1	0.1	0.1	0.3	0.3	0.4	0.3	0.3	0.4	0.4	0.5		0.5	0.5	0.3	0.6	0.4	0.4	0.7	0.7	0.8	0.5	0.6	0.2	0.8	1.3	1.4	1.1
━Upper Limit		1.1	1.3	1.1	2.1	1.2	1.5	1.5	1.9	2.1	1.6	2	1.8		2.2	2.1	4.2	2.3	3.2	4.4	2.9	3.6	3.1	4.7	4.3	15	3.8	5.5	6.1	27

Site

Number of neonates: 4 035

Reference site: G

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

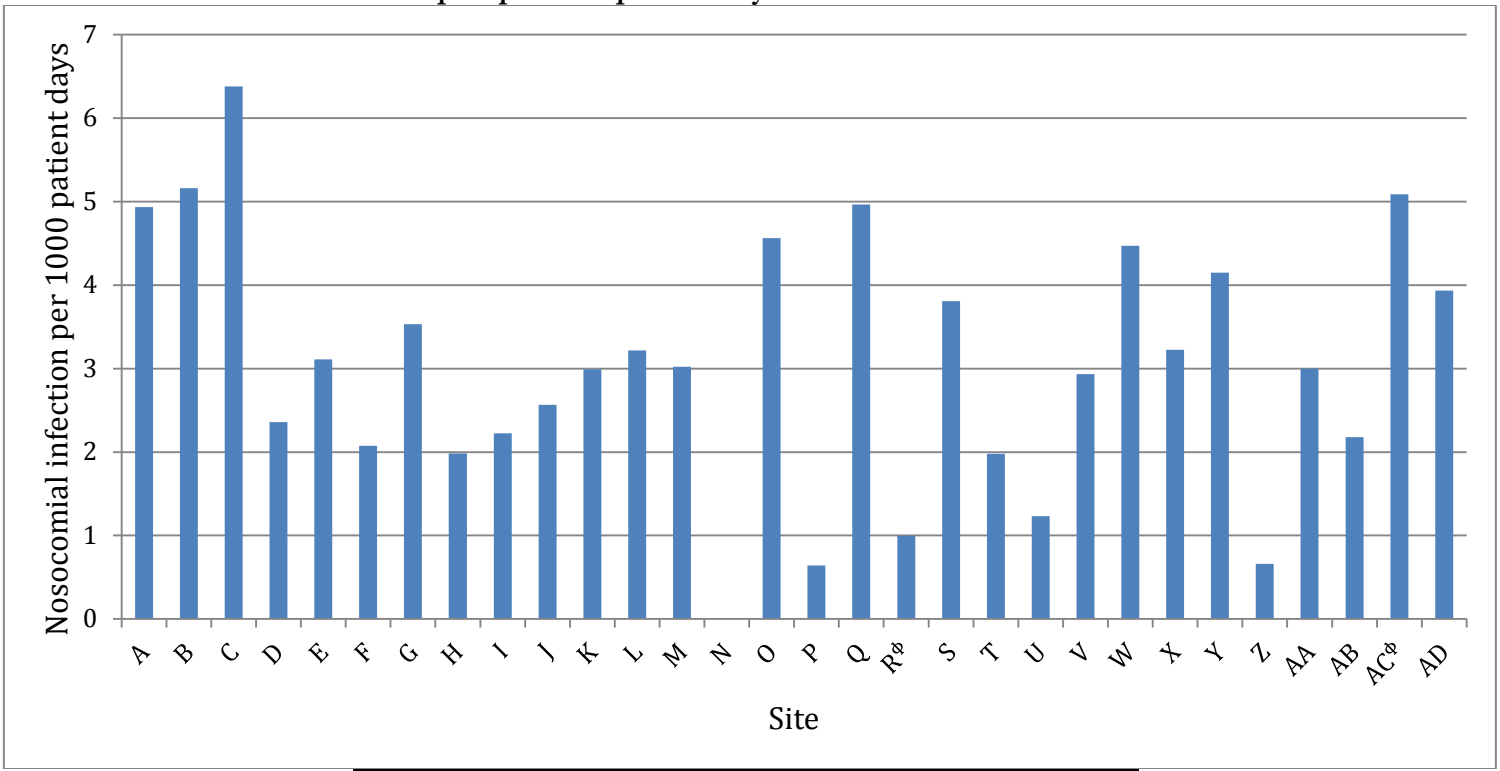
Sites R and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites.

Significant predictors identified by multivariate analysis and adjusted for:
GA Male SNAP-II
SGA (BW <10th centile 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 #37
Late onset sepsis per 1000 patient days for neonates with GA < 33 weeks



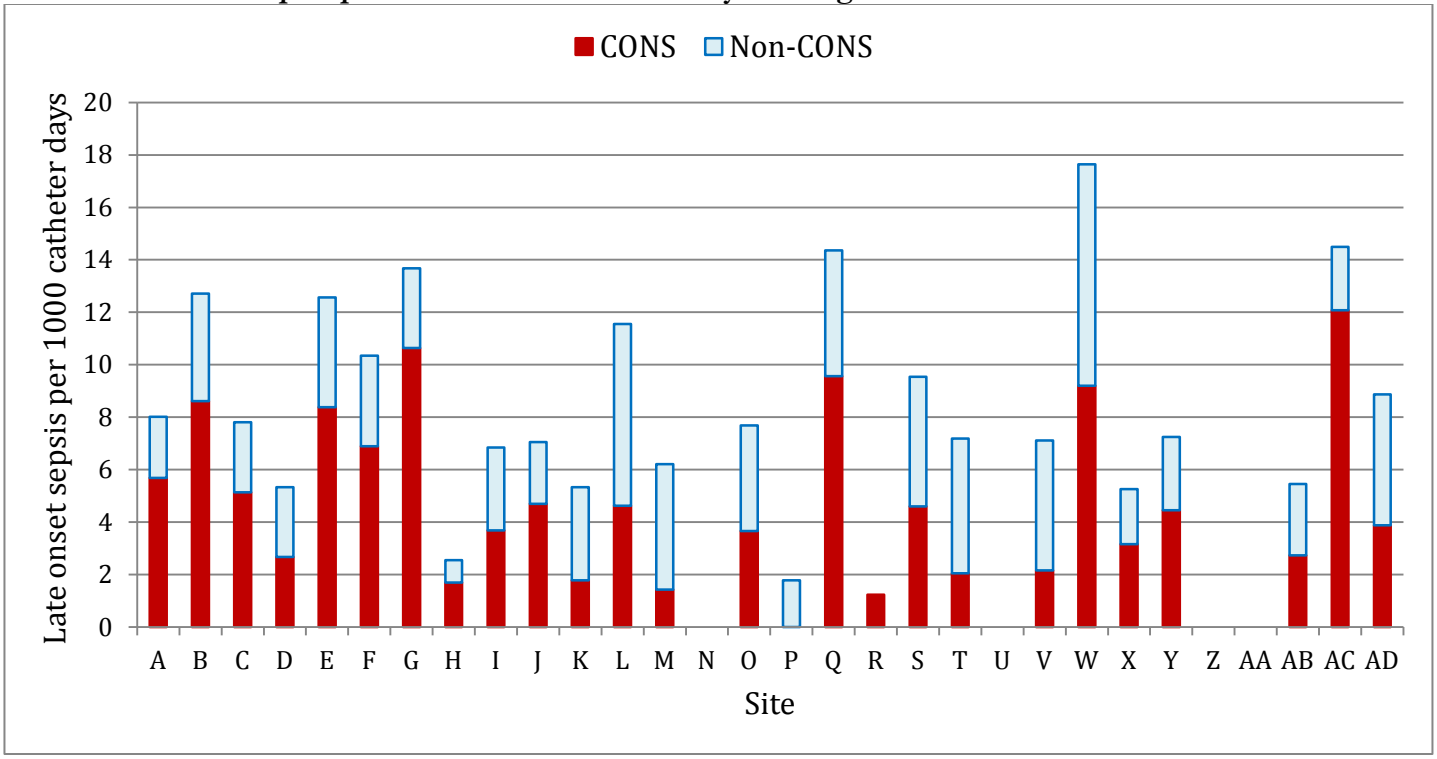
Site	Infections per 1000 patient days	Site	Infections per 1000 patient days	Site	Infections per 1000 patient days
A	4.9	**K**	3.0	**U**	1.2
B	5.2	**L**	3.2	**V**	2.9
C	6.4	**M**	3.0	**W**	4.5
D	2.4	**N**	0.0	**X**	3.2
E	3.1	**O**	4.6	**Y**	4.1
F	2.1	**P**	0.6	**Z**	0.7
G	3.5	**Q**	5.0	**AA**	3.0
H	2.0	**Rϕ**	1.0	**AB**	2.2
I	2.2	**S**	3.8	**ACϕ**	5.1
J	2.6	**T**	2.0	**AD**	3.9
				Total	3.5

Total number of neonates = 4 370

***Note that the criteria for entering neonates with GA <33 in the CNN dataset are not the same for sites R 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 #38
Late onset sepsis per 1000 central catheter* days among neonates with GA < 33 weeks

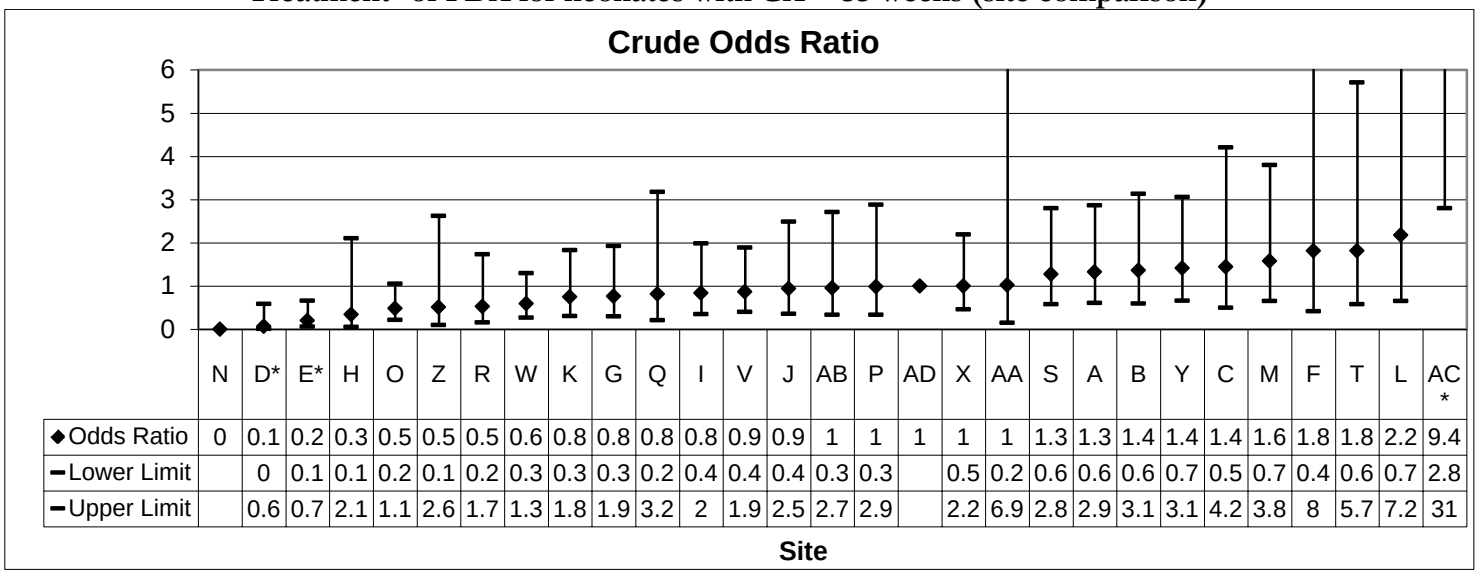


Site	Catheter associated late onset sepsis**		Catheter days	Late onset sepsis per 1000 catheter days		Site	Catheter associated late onset sepsis**		Catheter days	Late onset sepsis per 1000 catheter days	
	CONS	Non-CONS		CONS	Non-CONS		CONS	Non-CONS		CONS	Non-CONS
A	22	9	3870	5.7	2.3	**P**	0	1	563	0.0	1.8
B	21	10	2439	8.6	4.1	**Q**	2	1	209	9.6	4.8
C	23	12	4483	5.1	2.7	**R**	1	0	810	1.2	0.0
D	1	1	375	2.7	2.7	**S**	13	14	2829	4.6	4.9
E	6	3	716	8.4	4.2	**T**	2	5	975	2.1	5.1
F	2	1	290	6.9	3.4	**U**	0	0	34	0.0	0.0
G	7	2	658	10.6	3.0	**V**	10	23	4639	2.2	5.0
H	2	1	1176	1.7	0.9	**W**	24	22	2608	9.2	8.4
I	7	6	1899	3.7	3.2	**X**	12	8	3801	3.2	2.1
J	4	2	851	4.7	2.4	**Y**	16	10	3590	4.5	2.8
K	5	10	2811	1.8	3.6	**Z**	0	0	289	0.0	0.0
L	2	3	433	4.6	6.9	**AA**	0	0	41	0.0	0.0
M	3	10	2095	1.4	4.8	**AB**	2	2	733	2.7	2.7
N	0	0	98	0.0	0.0	**AC**	10	2	828	12.1	2.4
O	10	11	2732	3.7	4.0	**AD**	7	9	1805	3.9	5.0
						Total	**214**	**178**	**48680**	**4.4**	**3.7**

*Catheter = Any of UV, surgical CVL, or PICC
**Late onset sepsis was defined as catheter associated if a catheter was in place within 2 days before the onset of the sepsis.

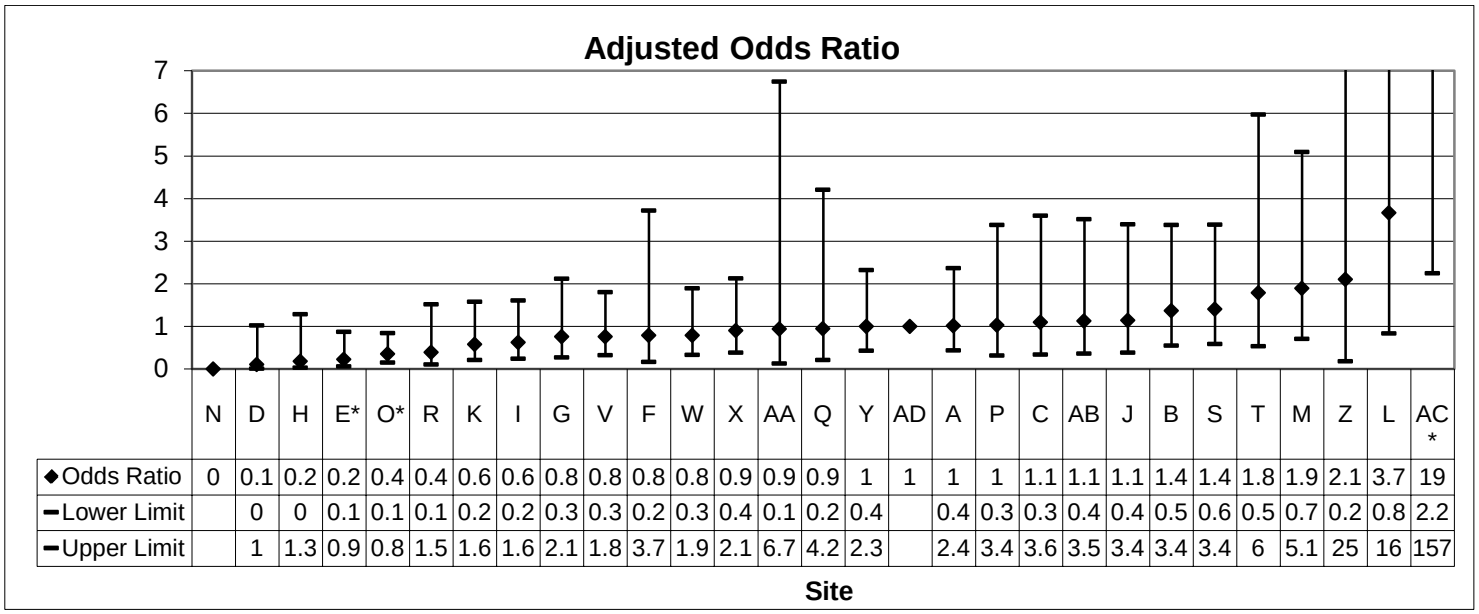
Presentation #39

Treatment[#] of PDA for neonates with GA < 33 weeks (site comparison)



	N	D*	E*	H	O	Z	R	W	K	G	Q	I	V	J	AB	P	AD	X	AA	S	A	B	Y	C	M	F	T	L	AC *
◆Odds Ratio	0	0.1	0.2	0.3	0.5	0.5	0.5	0.6	0.8	0.8	0.8	0.8	0.9	0.9	1	1	1	1	1	1.3	1.3	1.4	1.4	1.4	1.6	1.8	1.8	2.2	9.4
–Lower Limit		0	0.1	0.1	0.2	0.1	0.2	0.3	0.3	0.3	0.2	0.4	0.4	0.4	0.3	0.3		0.5	0.2	0.6	0.6	0.6	0.7	0.5	0.7	0.4	0.6	0.7	2.8
–Upper Limit		0.6	0.7	2.1	1.1	2.6	1.7	1.3	1.8	1.9	3.2	2	1.9	2.5	2.7	2.9		2.2	6.9	2.8	2.9	3.1	3.1	4.2	3.8	8	5.7	7.2	31

Number of neonates: 1 237



	N	D	H	E*	O*	R	K	I	G	V	F	W	X	AA	Q	Y	AD	A	P	C	AB	J	B	S	T	M	Z	L	AC *
◆Odds Ratio	0	0.1	0.2	0.2	0.4	0.4	0.6	0.6	0.8	0.8	0.8	0.8	0.9	0.9	0.9	1	1	1	1	1.1	1.1	1.1	1.4	1.4	1.8	1.9	2.1	3.7	19
–Lower Limit		0	0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.2	0.3	0.4	0.1	0.2	0.4		0.4	0.3	0.3	0.4	0.4	0.5	0.6	0.5	0.7	0.2	0.8	2.2
–Upper Limit		1	1.3	0.9	0.8	1.5	1.6	1.6	2.1	1.8	3.7	1.9	2.1	6.7	4.2	2.3		2.4	3.4	3.6	3.5	3.4	3.4	3.4	6	5.1	25	16	157

Number of neonates: 1 179

Reference site: AD

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

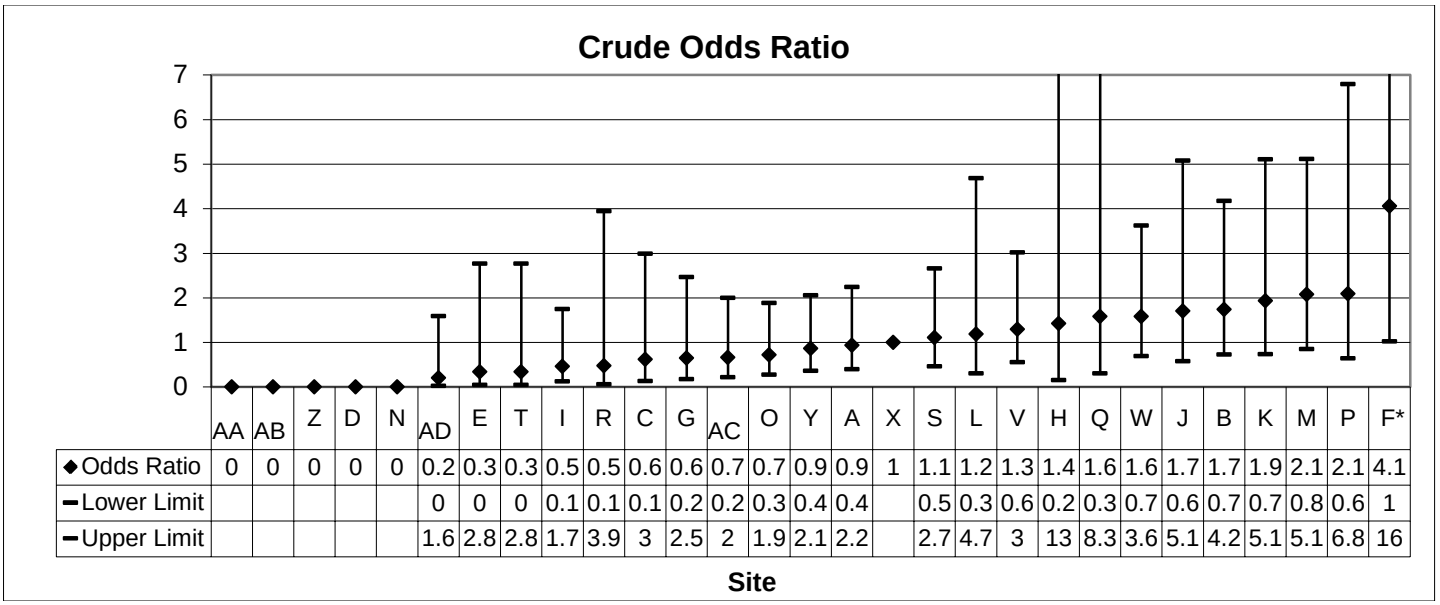
Significant predictors identified by multivariate analysis and adjusted for:
GA Maternal diabetes

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

There were no infants in site U who had PDA, so site U was not included in this analysis

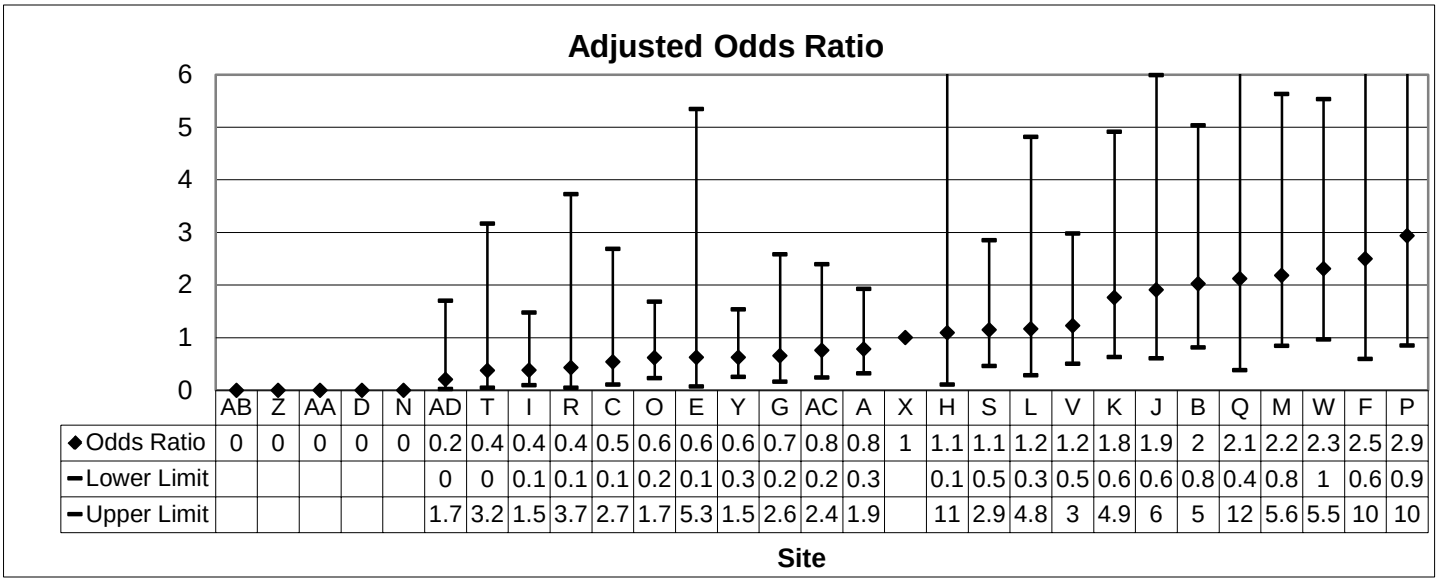
Sites R and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites.

Presentation #40
Surgical ligation of PDA for neonates with GA < 33 weeks (site comparison)



	AA	AB	Z	D	N	AD	E	T	I	R	C	G	AC	O	Y	A	X	S	L	V	H	Q	W	J	B	K	M	P	F*
◆Odds Ratio	0	0	0	0	0	0.2	0.3	0.3	0.5	0.5	0.6	0.6	0.7	0.7	0.9	0.9	1	1.1	1.2	1.3	1.4	1.6	1.6	1.7	1.7	1.9	2.1	2.1	4.1
━Lower Limit						0	0	0	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.4		0.5	0.3	0.6	0.2	0.3	0.7	0.6	0.7	0.7	0.8	0.6	1
━Upper Limit						1.6	2.8	2.8	1.7	3.9	3	2.5	2	1.9	2.1	2.2		2.7	4.7	3	13	8.3	3.6	5.1	4.2	5.1	5.1	6.8	16

Number of neonates: 1 223



	AB	Z	AA	D	N	AD	T	I	R	C	O	E	Y	G	AC	A	X	H	S	L	V	K	J	B	Q	M	W	F	P
◆Odds Ratio	0	0	0	0	0	0.2	0.4	0.4	0.4	0.5	0.6	0.6	0.6	0.7	0.8	0.8	1	1.1	1.1	1.2	1.2	1.8	1.9	2	2.1	2.2	2.3	2.5	2.9
━Lower Limit						0	0	0.1	0.1	0.1	0.2	0.1	0.3	0.2	0.2	0.3		0.1	0.5	0.3	0.5	0.6	0.6	0.8	0.4	0.8	1	0.6	0.9
━Upper Limit						1.7	3.2	1.5	3.7	2.7	1.7	5.3	1.5	2.6	2.4	1.9		11	2.9	4.8	3	4.9	6	5	12	5.6	5.5	10	10

Number of neonates: 1 218

Reference site: X

Inclusion criteria:
GA <33 weeks
Neonates who had PDA

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

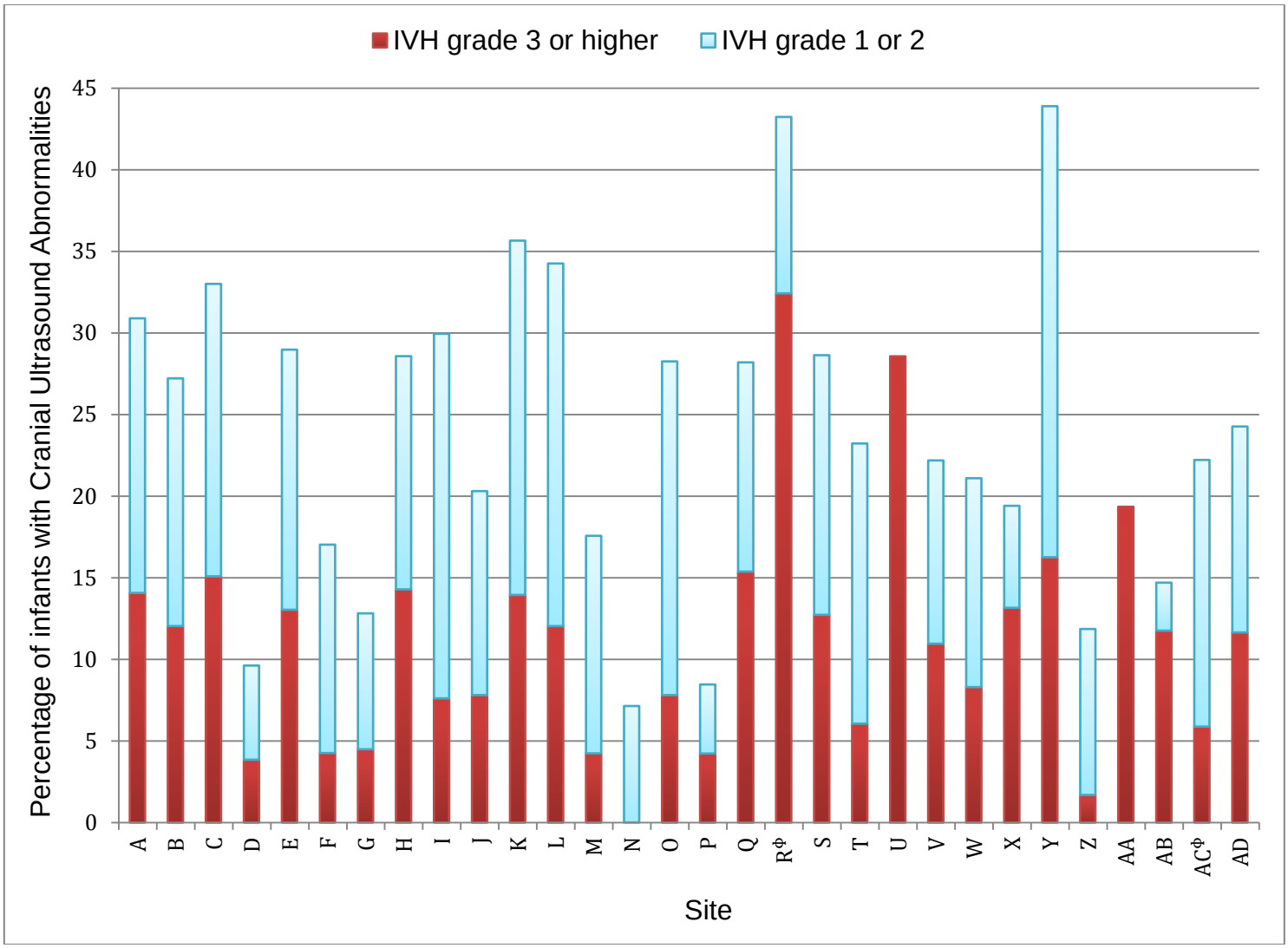
Outcome is attributed to the network site of first admission

Significant predictors identified by multivariate analysis and adjusted for:
GA

There were no neonates in site U who had PDA, so site U was not included in this analysis

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

Presentation #41
Neuroimaging abnormalities among neonates <33 weeks of GA



IVH grade 1 or 2 = Germinal matrix hemorrhage or intraventricular hemorrhage without ventricular enlargement

IVH grade 3 or 4 = Intraventricular hemorrhage with ventricular enlargement or persistent parenchymal echogenicity or periventricular leukomalacia

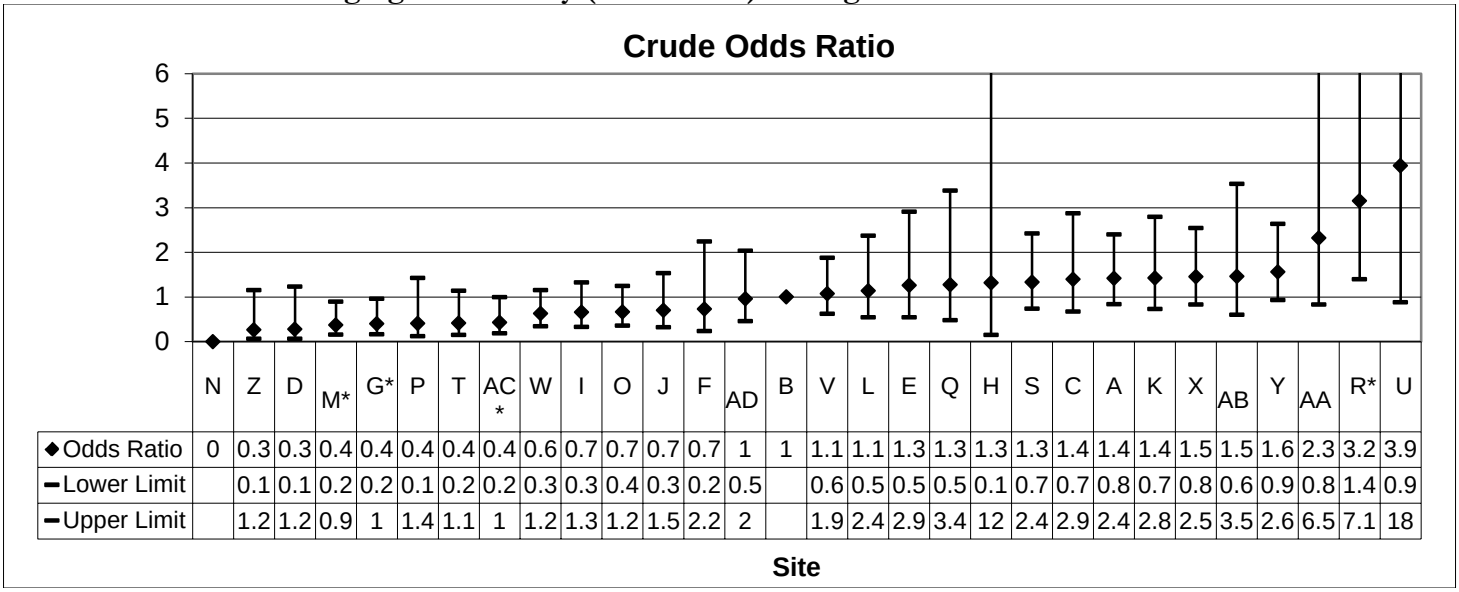
Presentation #41 (continued)
IVH with VE or persistent PEC (IVH grade 3 or 4) among neonates <33 weeks of GA

Site	<25	25-26	27-28	29-30	31-32	Overall rate* per sites %
A	53.9	34.2	10.6	3.7	0.0	14.1
B	11.1	53.6	10.3	5.6	0.0	12.0
C	75.0	27.8	16.7	3.7	9.1	15.1
D	0.0	0.0	0.0	11.1	0.0	3.9
E	33.3	25.0	30.8	15.4	2.8	13.0
F	33.3	7.7	0.0	0.0	0.0	4.3
G	18.2	18.8	0.0	3.7	0.0	4.5
H	33.3	33.3	0.0	0.0	0.0	14.3
I	18.2	13.6	5.3	7.0	4.2	7.6
J	0.0	14.3	25.0	3.5	4.7	7.8
K	60.0	20.0	15.8	3.6	2.1	14.0
L	100.0	50.0	25.0	6.5	1.9	12.0
M	0.0	9.1	5.9	2.9	3.3	4.2
N	NA	NA	NA	0.0	0.0	0.0
O	36.8	20.7	10.5	2.4	2.0	7.8
P	NA	22.2	11.1	0.0	0.0	4.2
Q	NA	22.2	22.2	16.7	6.7	15.4
R$^{\phi}$	100.0	62.5	27.3	14.3	0.0	32.4
S	25.0	29.7	17.7	7.4	3.8	12.7
T	33.3	9.1	9.5	4.2	0.0	6.1
U	75.0	NA	0.0	0.0	16.7	28.6
V	36.7	19.1	16.7	5.2	4.9	11.0
W	28.6	25.0	8.6	6.3	3.9	8.3
X	56.3	20.9	22.6	6.4	4.4	13.2
Y	54.3	36.9	10.8	10.2	0.9	16.3
Z	25.0	NA	0.0	3.2	0.0	1.7
AA	33.3	33.3	20.0	0.0	20.0	19.4
AB	100.0	37.5	20.0	0.0	3.0	11.8
AC$^{\phi}$	4.2	5.0	12.5	4.3	3.3	5.9
AD	25.0	40.0	20.0	4.0	2.6	11.7
Overall rate per GA group %**	35.4	26.8	13.0	5.3	2.8	10.6

Total number of neonates = 4 370
VE=ventricular enlargement, PEC=parenchymal echogenecity
$^{\phi}$ Note that the criteria for entering neonates with GA <33 in the CNN dataset are not same for sites R and AC and thus, the rates may not be comparable with other sites.

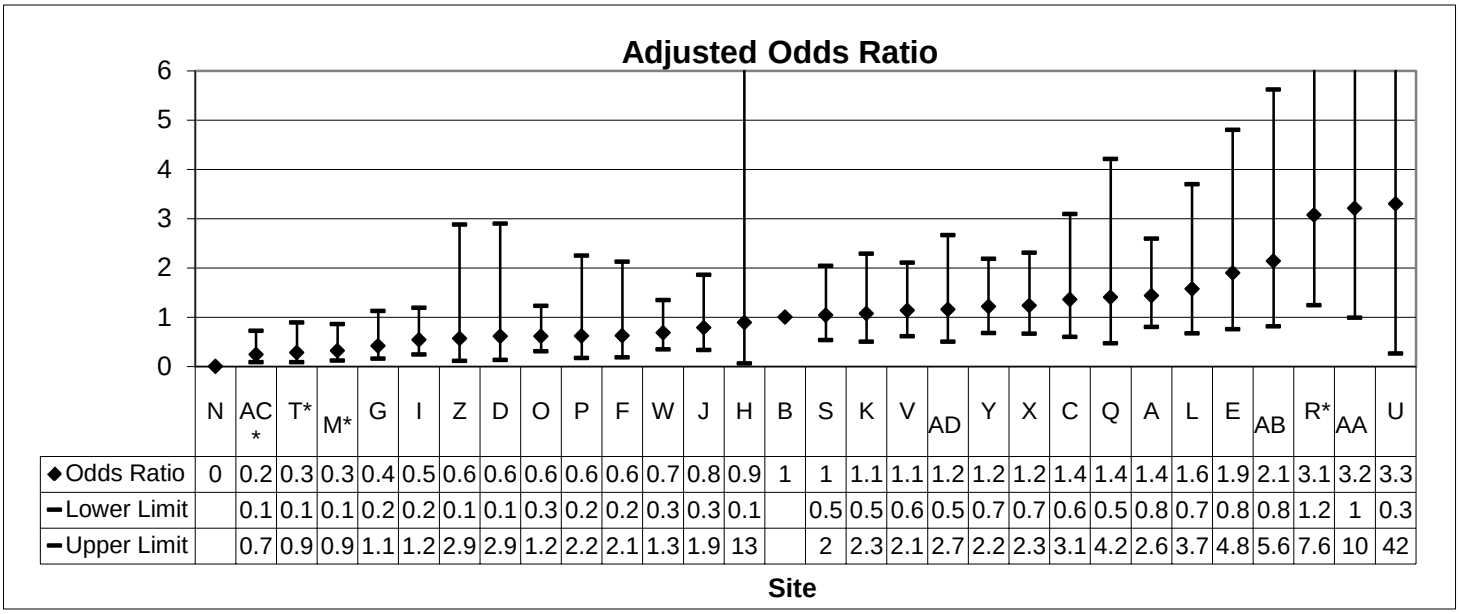
Overall %* = (number of neonates with cranial ultrasound abnormalities for site / total number of neonates for site)*100
Overall %** = (number of neonates with cranial ultrasound abnormalities for GA category / total number of neonates in gestational category)*100
NA = no data available

Presentation #42
Neuroimaging abnormality (VE or PEC) among neonates <33 weeks GA



	N	Z	D	M*	G*	P	T	AC*	W	I	O	J	F	AD	B	V	L	E	Q	H	S	C	A	K	X	AB	Y	AA	R*	U
◆Odds Ratio	0	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.6	0.7	0.7	0.7	0.7	1	1	1.1	1.1	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.6	2.3	3.2	3.9
━Lower Limit		0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.3	0.3	0.4	0.3	0.2	0.5		0.6	0.5	0.5	0.5	0.1	0.7	0.7	0.8	0.7	0.8	0.6	0.9	0.8	1.4	0.9
━Upper Limit		1.2	1.2	0.9	1	1.4	1.1	1	1.2	1.3	1.2	1.5	2.2	2		1.9	2.4	2.9	3.4	12	2.4	2.9	2.4	2.8	2.5	3.5	2.6	6.5	7.1	18

Number of neonates: 3 462



	N	AC*	T*	M*	G	I	Z	D	O	P	F	W	J	H	B	S	K	V	AD	Y	X	C	Q	A	L	E	AB	R*	AA	U
◆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	0.8	0.9	1	1	1.1	1.1	1.2	1.2	1.2	1.4	1.4	1.4	1.6	1.9	2.1	3.1	3.2	3.3
━Lower Limit		0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.3	0.2	0.2	0.3	0.3	0.1		0.5	0.5	0.6	0.5	0.7	0.7	0.6	0.5	0.8	0.7	0.8	0.8	1.2	1	0.3
━Upper Limit		0.7	0.9	0.9	1.1	1.2	2.9	2.9	1.2	2.2	2.1	1.3	1.9	13		2	2.3	2.1	2.7	2.2	2.3	3.1	4.2	2.6	3.7	4.8	5.6	7.6	10	42

Number of neonates: 3 304

Reference site: B

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

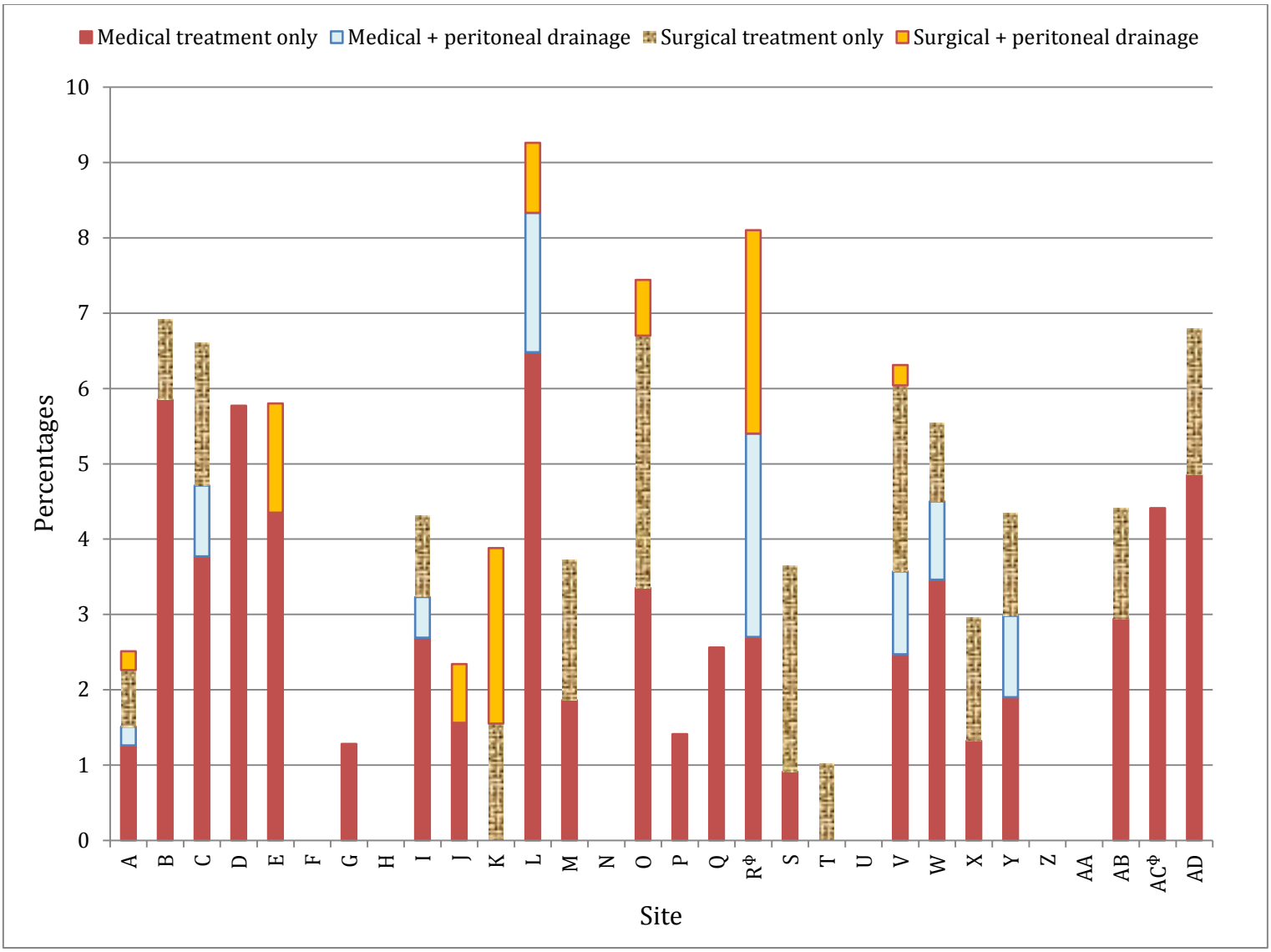
***Sites significantly different from reference site (P<0.05)**

Significant predictors identified by multivariate analysis and adjusted for:
GA
Antenatal corticosteroid
Apgar at 5 minutes
SNAP-II Score

Sites R 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 #43
Necrotizing enterocolitis (≥stage 2) for neonates with GA < 33 weeks (site rates)



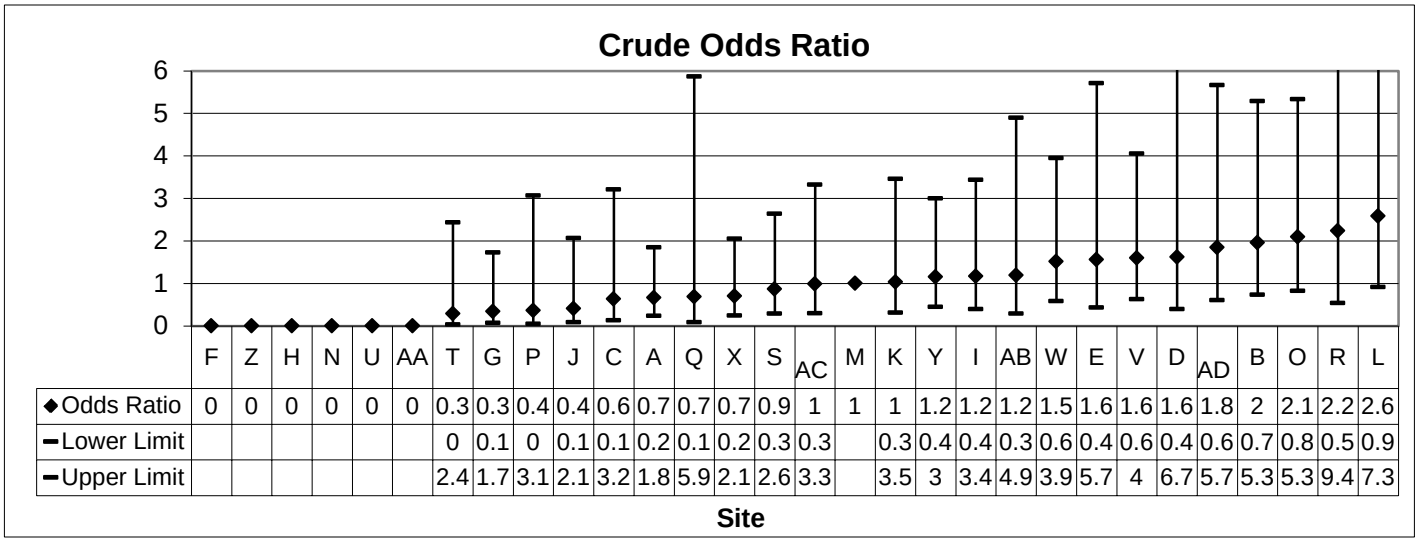
Presentation #43 (continued)
Necrotizing enterocolitis for neonates with GA < 33 weeks

Site	Treatment (%)				
	Medical treatment only	Medical + peritoneal drainage	Surgical treatment only	Surgical + peritoneal drainage	Any
A	1.3	0.3	0.8	0.3	2.5
B	5.9	0.0	1.1	0.0	6.9
C	3.8	0.9	1.9	0.0	6.6
D	5.8	0.0	0.0	0.0	5.8
E	4.4	0.0	0.0	1.5	5.8
F	0.0	0.0	0.0	0.0	0.0
G	1.3	0.0	0.0	0.0	1.3
H	0.0	0.0	0.0	0.0	0.0
I	2.7	0.5	1.1	0.0	4.3
J	1.6	0.0	0.0	0.8	2.3
K	0.0	0.0	1.6	2.3	3.9
L	6.5	1.9	0.0	0.9	9.3
M	1.9	0.0	1.9	0.0	3.7
N	0.0	0.0	0.0	0.0	0.0
O	3.4	0.0	3.4	0.7	7.4
P	1.4	0.0	0.0	0.0	1.4
Q	2.6	0.0	0.0	0.0	2.6
R$^{\phi}$	2.7	2.7	0.0	2.7	8.1
S	0.9	0.0	2.7	0.0	3.6
T	0.0	0.0	1.0	0.0	1.0
U	0.0	0.0	0.0	0.0	0.0
V	2.5	1.1	2.5	0.3	6.3
W	3.5	1.0	1.0	0.0	5.5
X	1.3	0.0	1.6	0.0	3.0
Y	1.9	1.1	1.4	0.0	4.3
Z	0.0	0.0	0.0	0.0	0.0
AA	0.0	0.0	0.0	0.0	0.0
AB	2.9	0.0	1.5	0.0	4.4
AC$^{\phi}$	4.4	0.0	0.0	0.0	4.4
AD	4.9	0.0	1.9	0.0	6.8
Total	2.4	0.4	1.3	0.3	4.3

COMMENTS: These analyses include 4 334 neonates from 30 sites. Thirty-six (36) neonates were missing data on NEC. **Twenty-eight sites collected data on all eligible admissions for neonates with GA < 33 weeks whereas two sites (marked by $^{\phi}$) collected data on selected eligible admissions only.**

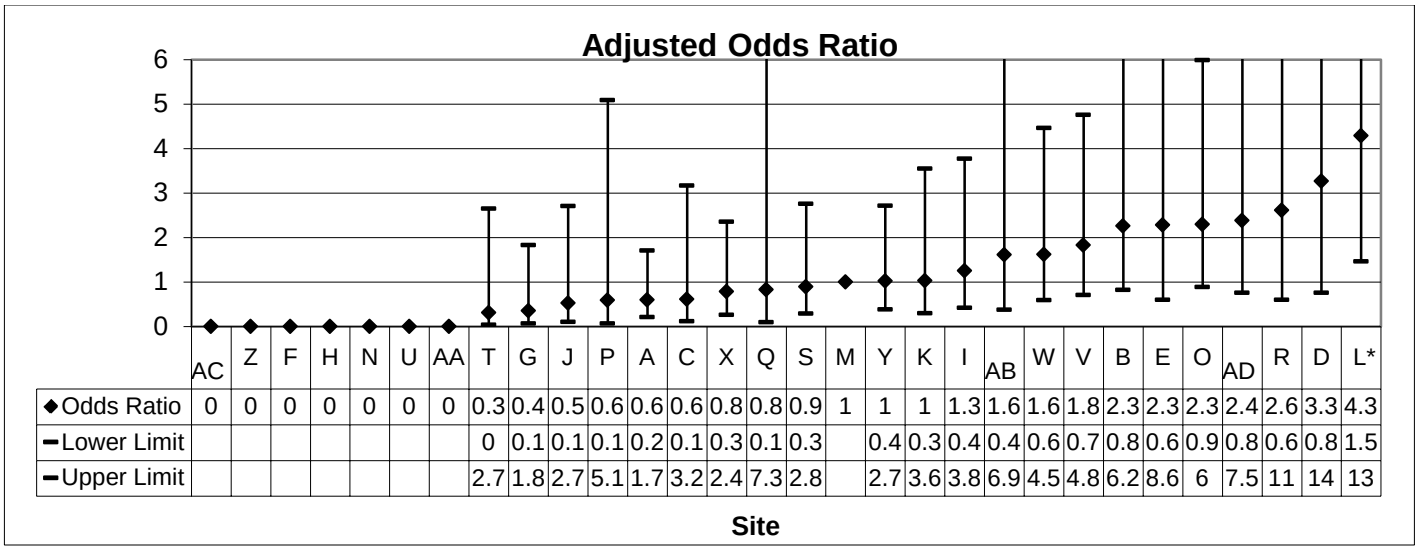
$^{\phi}$Note that the criteria for entering neonates with GA **<33 weeks** in the CNN dataset are not same for sites R and AC and thus, the rates may not be comparable with other sites.

Presentation #44
Necrotizing enterocolitis (≥ stage 2) among neonates with GA <33 weeks (site comparison)



	F	Z	H	N	U	AA	T	G	P	J	C	A	Q	X	S	AC	M	K	Y	I	AB	W	E	V	D	AD	B	O	R	L
◆Odds Ratio	0	0	0	0	0	0	0.3	0.3	0.4	0.4	0.6	0.7	0.7	0.7	0.9	1	1	1	1.2	1.2	1.2	1.5	1.6	1.6	1.6	1.8	2	2.1	2.2	2.6
━Lower Limit							0	0.1	0	0.1	0.1	0.2	0.1	0.2	0.3	0.3		0.3	0.4	0.4	0.3	0.6	0.4	0.6	0.4	0.6	0.7	0.8	0.5	0.9
━Upper Limit							2.4	1.7	3.1	2.1	3.2	1.8	5.9	2.1	2.6	3.3		3.5	3	3.4	4.9	3.9	5.7	4	6.7	5.7	5.3	5.3	9.4	7.3

Number of neonates: 4 099



	AC	Z	F	H	N	U	AA	T	G	J	P	A	C	X	Q	S	M	Y	K	I	AB	W	V	B	E	O	AD	R	D	L*
◆Odds Ratio	0	0	0	0	0	0	0	0.3	0.4	0.5	0.6	0.6	0.6	0.8	0.8	0.9	1	1	1	1.3	1.6	1.6	1.8	2.3	2.3	2.3	2.4	2.6	3.3	4.3
━Lower Limit								0	0.1	0.1	0.1	0.2	0.1	0.3	0.1	0.3		0.4	0.3	0.4	0.4	0.6	0.7	0.8	0.6	0.9	0.8	0.6	0.8	1.5
━Upper Limit								2.7	1.8	2.7	5.1	1.7	3.2	2.4	7.3	2.8		2.7	3.6	3.8	6.9	4.5	4.8	6.2	8.6	6	7.5	11	14	13

Number of neonates: 3 846

Reference site: M

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 F, H, N, U, Z, and AA did not have NEC stage 2 or higher (Odds Ratio: 0)

Significant predictors identified by multivariate analysis and adjusted for:
GA Maternal diabetes

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

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

Presentation #45
Oxygen use at 28 days in neonates with GA <33 weeks at birth

GA at birth						
Site	**<25**	**25-26**	**27-28**	**29-30**	**31-32**	**Overall rate for sites**
A	93.8	71.4	18.7	4.7	1.1	24.5
B	100.0	88.0	43.2	13.0	0.0	28.0
C	100.0	93.3	17.4	3.9	6.3	23.5
D	NA	100.0	0.0	5.6	0.0	4.1
E	NA	100.0	66.7	23.1	8.3	27.7
F	0.0	0.0	0.0	0.0	0.0	0.0
G	42.9	53.3	13.0	1.9	0.0	10.3
H	100.0	100.0	NA	0.0	0.0	33.3
I	100.0	94.4	58.8	25.0	4.2	33.1
J	100.0	75.0	31.3	6.9	1.6	16.3
K	100.0	94.4	63.2	18.5	2.2	39.0
L	100.0	100.0	50.0	10.3	5.8	18.6
M	90.0	73.3	34.4	5.9	0.0	21.7
N	NA	NA	NA	25.0	0.0	14.3
O	100.0	87.5	40.0	12.7	3.1	24.8
P	NA	88.9	22.2	4.8	0.0	15.7
Q	NA	80.0	25.0	16.7	0.0	20.6
R[ϕ]	NA	66.7	44.4	21.4	50.0	38.7
S	100.0	87.5	40.6	7.7	0.0	26.1
T	NA	100.0	70.0	26.1	2.8	35.6
U	100.0	NA	0.0	0.0	0.0	10.0
V	94.1	97.3	45.7	13.6	8.3	29.9
W	100.0	95.5	44.4	26.2	5.6	26.5
X	85.7	90.7	39.2	9.6	9.0	28.8
Y	100.0	91.5	34.4	18.6	3.5	33.5
Z	50.0	NA	57.1	0.0	1.4	5.6
AA	NA	50.0	100.0	20.0	0.0	23.1
AB	50.0	28.6	10.0	6.7	0.0	7.5
AC[ϕ]	100.0	73.7	44.4	2.4	0.0	28.3
AD	0.0	90.0	58.3	4.0	2.6	25.3
Overall rate for GA group	88.6	82.6	38.4	11.3	3.4	24.9

Total number of neonates = 4 008; 362 neonates were excluded due to death prior to day 28 of age or first admission after day 28. NA = no data available.

ϕNote that the criteria for entering neonates with GA <33 weeks in the CNN dataset are not the same for sites R 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 28 days as follows: a) receiving supplemental oxygen on day 28 of age or b) discharged prior to day 28 of age and receiving supplemental oxygen at discharge. Neonates were excluded from analysis if they died prior to day 28 after birth or the first admission was after day 28. There were no requirements for chest radiographs at the time of diagnosis.

Presentation #46
Oxygen use at 36 weeks in neonates with GA <33 weeks at birth

GA at birth						
Site	**<25**	**25-26**	**27-28**	**29-30**	**31-32**	**Overall rate for sites**
A	68.8	28.4	14.3	6.5	1.1	14.1
B	80.0	68.2	28.2	11.1	0.0	20.0
C	0.0	75.0	13.0	3.9	6.3	18.4
D	0.0	0.0	0.0	5.6	0.0	2.0
E	NA	25.0	33.3	0.0	2.8	9.2
F	20.0	0.0	0.0	0.0	0.0	1.1
G	42.9	21.4	0.0	1.9	0.0	4.8
H	100.0	0.0	NA	0.0	0.0	11.1
I	83.3	55.6	39.4	7.5	1.4	19.1
J	33.3	25.0	12.5	3.5	4.8	8.1
K	92.3	61.1	21.1	7.4	2.2	24.4
L	0.0	20.0	50.0	13.8	7.7	13.7
M	11.1	20.0	18.8	0.0	1.6	7.3
N	NA	NA	NA	0.0	0.0	0.0
O	50.0	52.2	14.3	5.1	2.0	11.7
P	NA	50.0	11.1	9.5	0.0	10.1
Q	NA	40.0	12.5	16.7	0.0	11.8
R$^{\phi}$	NA	33.3	22.2	15.4	0.0	20.0
S	22.2	34.5	18.8	7.6	0.0	10.9
T	100.0	72.7	55.0	8.7	2.8	25.3
U	100.0	NA	0.0	0.0	0.0	10.0
V	68.8	54.1	26.5	6.7	7.5	18.5
W	100.0	61.1	34.0	16.4	7.2	19.3
X	66.7	55.8	29.4	12.3	8.9	21.8
Y	83.3	59.7	38.3	12.8	3.5	25.9
Z	33.3	NA	9.1	6.5	1.4	4.4
AA	NA	0.0	50.0	20.0	0.0	11.5
AB	50.0	28.6	0.0	6.7	0.0	6.0
AC$^{\phi}$	60.0	50.0	29.6	0.0	0.0	17.9
AD	0.0	20.0	30.4	4.0	2.6	11.2
Overall rate for GA group	59.7	45.2	24.4	7.6	3.3	15.4

Total number of neonates = 3 994. 376 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 R 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 #47

Oxygen use at 28 days or death at any time in neonates with GA <33 weeks at birth

GA at birth						
Site	**<25**	**25-26**	**27-28**	**29-30**	**31-32**	**Overall rate for sites**
A	96.2	73.2	21.3	4.7	1.1	27.9
B	100.0	89.3	43.2	13.0	1.6	30.7
C	100.0	93.8	20.8	7.4	6.3	27.2
D	100.0	100.0	0.0	5.6	0.0	6.0
E	100.0	100.0	69.2	23.1	8.3	31.9
F	33.3	0.0	0.0	0.0	0.0	3.2
G	63.6	53.3	16.7	1.9	2.0	13.8
H	100.0	100.0	NA	0.0	0.0	40.0
I	100.0	95.5	63.2	28.6	5.6	42.4
J	100.0	78.6	31.3	6.9	3.1	19.5
K	100.0	95.0	63.2	21.4	4.3	41.9
L	100.0	100.0	66.7	16.1	7.6	26.9
M	92.3	81.8	38.2	8.6	0.0	27.9
N	NA	NA	NA	25.0	0.0	14.3
O	100.0	89.7	44.7	15.9	5.9	30.1
P	NA	88.9	22.2	9.1	0.0	16.9
Q	NA	88.9	33.3	16.7	0.0	30.8
R[ϕ]	100.0	75.0	54.6	21.4	50.0	48.7
S	100.0	89.2	44.1	7.7	0.0	30.6
T	100.0	100.0	71.4	29.2	5.4	40.8
U	100.0	NA	0.0	0.0	16.7	25.0
V	96.2	97.4	47.9	14.6	12.2	34.0
W	100.0	96.9	47.4	29.7	7.1	32.2
X	93.8	90.7	41.5	12.0	10.6	32.3
Y	100.0	92.3	38.5	20.5	4.3	38.8
Z	66.7	NA	57.1	0.0	1.4	6.4
AA	100.0	66.7	100.0	20.0	0.0	35.5
AB	50.0	37.5	10.0	6.7	0.0	8.8
AC[ϕ]	100.0	75.0	51.6	2.4	0.0	40.9
AD	75.0	90.0	60.0	4.0	2.6	28.2
Overall rate for GA group	94.0	84.6	41.8	12.9	4.7	29.8

Total number of neonates = 4 290; 80 neonates were excluded due to first admission after day 28. 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 R 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 28 days as follows: a) receiving supplemental oxygen on day 28 of age or b) discharged prior to day 28 of age and receiving supplemental oxygen at discharge. Neonates were excluded from analysis if the first admission was after day 28. There were no requirements for chest radiographs at the time of diagnosis. Deaths prior to day 28 of age are also included.

Presentation #48

Oxygen use at 36 weeks or death at any time in neonates with GA <33 weeks at birth

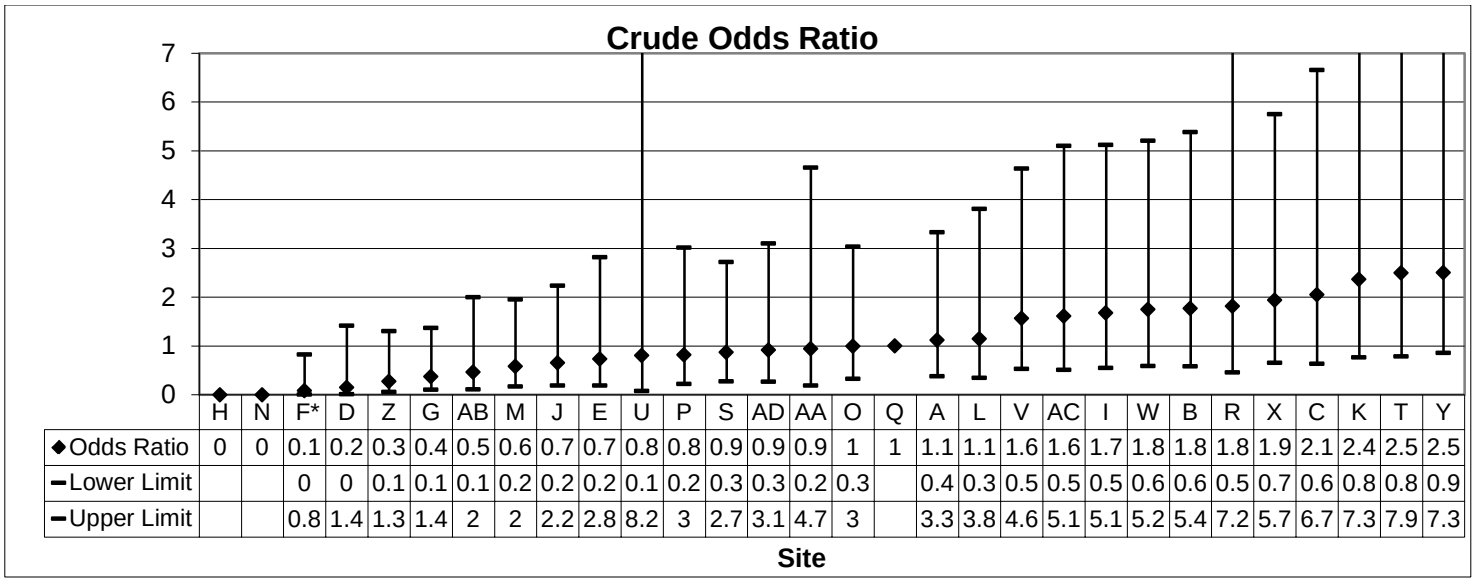
GA at birth						
Site	**<25**	**25-26**	**27-28**	**29-30**	**31-32**	**Overall rate for sites**
A	80.8	34.6	17.0	6.5	1.1	18.4
B	88.9	75.0	28.2	11.1	1.6	24.6
C	75.0	76.5	16.7	7.4	6.3	23.1
D	50.0	0.0	0.0	5.6	0.0	3.9
E	100.0	25.0	38.5	0.0	2.8	14.5
F	55.6	7.7	0.0	0.0	0.0	6.4
G	63.6	26.7	4.0	1.9	2.0	9.1
H	100.0	0.0	NA	0.0	0.0	20.0
I	95.5	63.6	47.4	11.9	2.8	30.6
J	60.0	35.7	12.5	3.5	6.3	11.7
K	93.3	65.0	21.1	10.7	4.3	27.9
L	50.0	60.0	66.7	19.4	9.4	24.1
M	38.5	45.5	23.5	2.9	1.6	15.2
N	NA	NA	NA	0.0	0.0	0.0
O	68.4	62.1	21.1	8.5	5.0	19.0
P	NA	55.6	11.1	13.6	0.0	12.7
Q	NA	66.7	22.2	16.7	0.0	23.1
R$^{\phi}$	100.0	50.0	36.4	21.4	0.0	35.1
S	53.3	48.7	23.5	7.6	0.0	17.4
T	100.0	72.7	57.1	12.5	5.4	31.3
U	100.0	NA	0.0	0.0	16.7	25.0
V	81.5	57.5	29.4	7.8	11.5	23.9
W	100.0	78.1	38.6	20.3	8.7	26.9
X	87.5	55.8	32.1	14.7	10.5	25.9
Y	91.4	64.6	43.1	14.8	4.3	32.5
Z	50.0	NA	9.1	6.5	1.4	5.2
AA	100.0	33.3	60.0	20.0	0.0	25.8
AB	50.0	37.5	0.0	6.7	0.0	7.4
AC$^{\phi}$	91.7	55.0	38.7	0.0	0.0	32.9
AD	75.0	20.0	36.0	4.0	2.6	15.5
Overall rate for GA group	79.9	53.4	29.0	9.3	4.7	21.6

Total number of neonates = 4 313. 57 neonates were excluded due to first admission after week 36. NA = no data available.

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

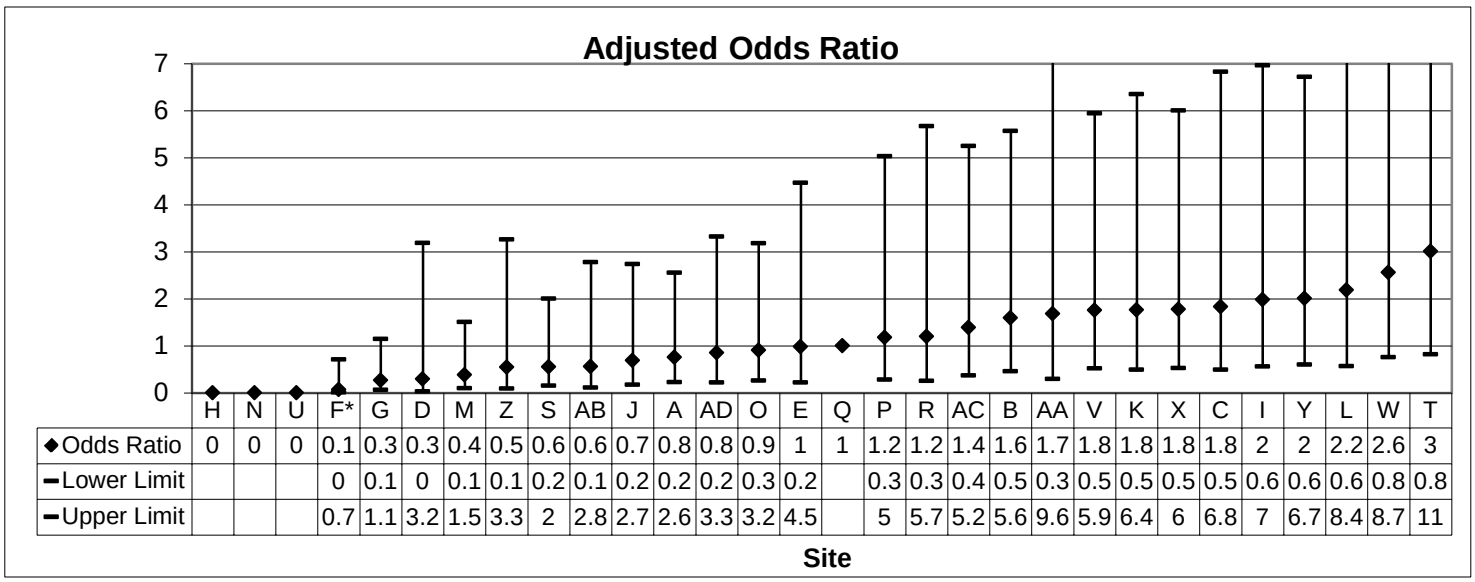
Comments: Neonates were classified as having oxygen use at 36 weeks as follows: a) receiving supplemental oxygen at week 36 postmenstrual age (PMA) or b) discharged prior to week 36 PMA and receiving supplemental oxygen at discharge. Neonates were excluded from analysis if the first admission was after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

Presentation #49a
Oxygen use at 36 weeks post-menstrual age in neonates with GA <33 weeks at birth (site comparison)



	H	N	F*	D	Z	G	AB	M	J	E	U	P	S	AD	AA	O	Q	A	L	V	AC	I	W	B	R	X	C	K	T	Y
◆Odds Ratio	0	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.7	0.8	0.8	0.9	0.9	0.9	1	1	1.1	1.1	1.6	1.6	1.7	1.8	1.8	1.8	1.9	2.1	2.4	2.5	2.5
━Lower Limit			0	0	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.3	0.3	0.2	0.3		0.4	0.3	0.5	0.5	0.5	0.6	0.6	0.5	0.7	0.6	0.8	0.8	0.9
━Upper Limit			0.8	1.4	1.3	1.4	2	2	2.2	2.8	8.2	3	2.7	3.1	4.7	3		3.3	3.8	4.6	5.1	5.1	5.2	5.4	7.2	5.7	6.7	7.3	7.9	7.3

Number of neonates: 3 862



	H	N	U	F*	G	D	M	Z	S	AB	J	A	AD	O	E	Q	P	R	AC	B	AA	V	K	X	C	I	Y	L	W	T
◆Odds Ratio	0	0	0	0.1	0.3	0.3	0.4	0.5	0.6	0.6	0.7	0.8	0.8	0.9	1	1	1.2	1.2	1.4	1.6	1.7	1.8	1.8	1.8	1.8	2	2	2.2	2.6	3
━Lower Limit				0	0.1	0	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.3	0.2		0.3	0.3	0.4	0.5	0.3	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.8	0.8
━Upper Limit				0.7	1.1	3.2	1.5	3.3	2	2.8	2.7	2.6	3.3	3.2	4.5		5	5.7	5.2	5.6	9.6	5.9	6.4	6	6.8	7	6.7	8.4	8.7	11

Number of neonates: 3 742

Reference site: Q

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

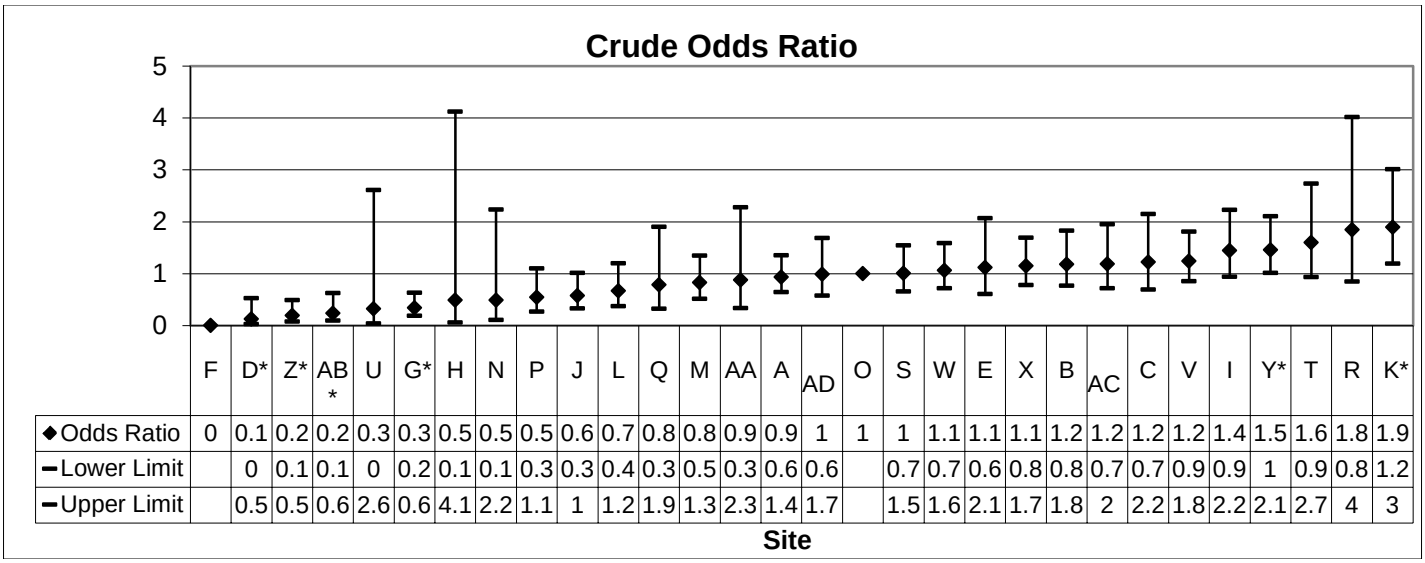
Outcome is attributed to the network site of first admission

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

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

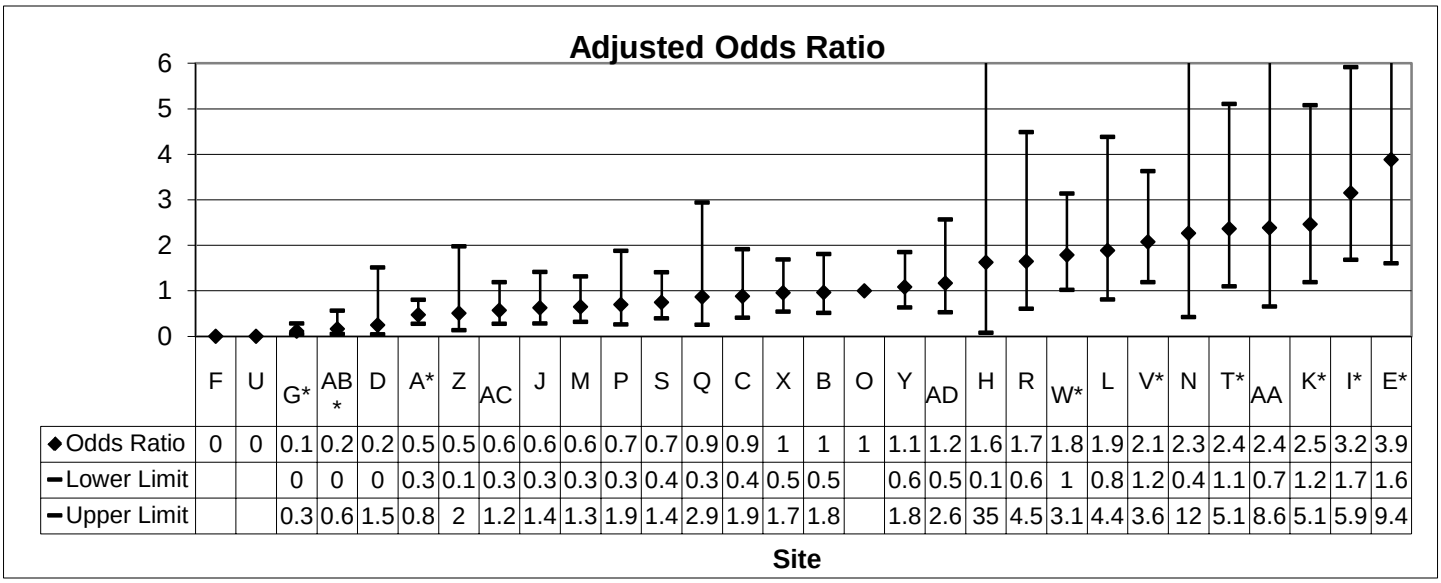
Site R and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites.

Presentation #49b
Oxygen use at 28 days after birth in neonates with GA <33 weeks at birth (site comparison)



	F	D*	Z*	AB*	U	G*	H	N	P	J	L	Q	M	AA	A	AD	O	S	W	E	X	B	AC	C	V	I	Y*	T	R	K*
◆Odds Ratio	0	0.1	0.2	0.2	0.3	0.3	0.5	0.5	0.5	0.6	0.7	0.8	0.8	0.9	0.9	1	1	1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.4	1.5	1.6	1.8	1.9
━Lower Limit		0	0.1	0.1	0	0.2	0.1	0.1	0.3	0.3	0.4	0.3	0.5	0.3	0.6	0.6		0.7	0.7	0.6	0.8	0.8	0.7	0.7	0.9	0.9	1	0.9	0.8	1.2
━Upper Limit		0.5	0.5	0.6	2.6	0.6	4.1	2.2	1.1	1	1.2	1.9	1.3	2.3	1.4	1.7		1.5	1.6	2.1	1.7	1.8	2	2.2	1.8	2.2	2.1	2.7	4	3

Number of neonates: 3 900



	F	U	G*	AB*	D	A*	Z	AC	J	M	P	S	Q	C	X	B	O	Y	AD	H	R	W*	L	V*	N	T*	AA	K*	I*	E*
◆Odds Ratio	0	0	0.1	0.2	0.2	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.9	0.9	1	1	1	1.1	1.2	1.6	1.7	1.8	1.9	2.1	2.3	2.4	2.4	2.5	3.2	3.9
━Lower Limit			0	0	0	0.3	0.1	0.3	0.3	0.3	0.3	0.4	0.3	0.4	0.5	0.5		0.6	0.5	0.1	0.6	1	0.8	1.2	0.4	1.1	0.7	1.2	1.7	1.6
━Upper Limit			0.3	0.6	1.5	0.8	2	1.2	1.4	1.3	1.9	1.4	2.9	1.9	1.7	1.8		1.8	2.6	35	4.5	3.1	4.4	3.6	12	5.1	8.6	5.1	5.9	9.4

Number of neonates: 3 865

Reference site: O

Inclusion criteria:
GA <33 weeks
Age at admission less than 4 days
Survival to 28 days after birth or discharge

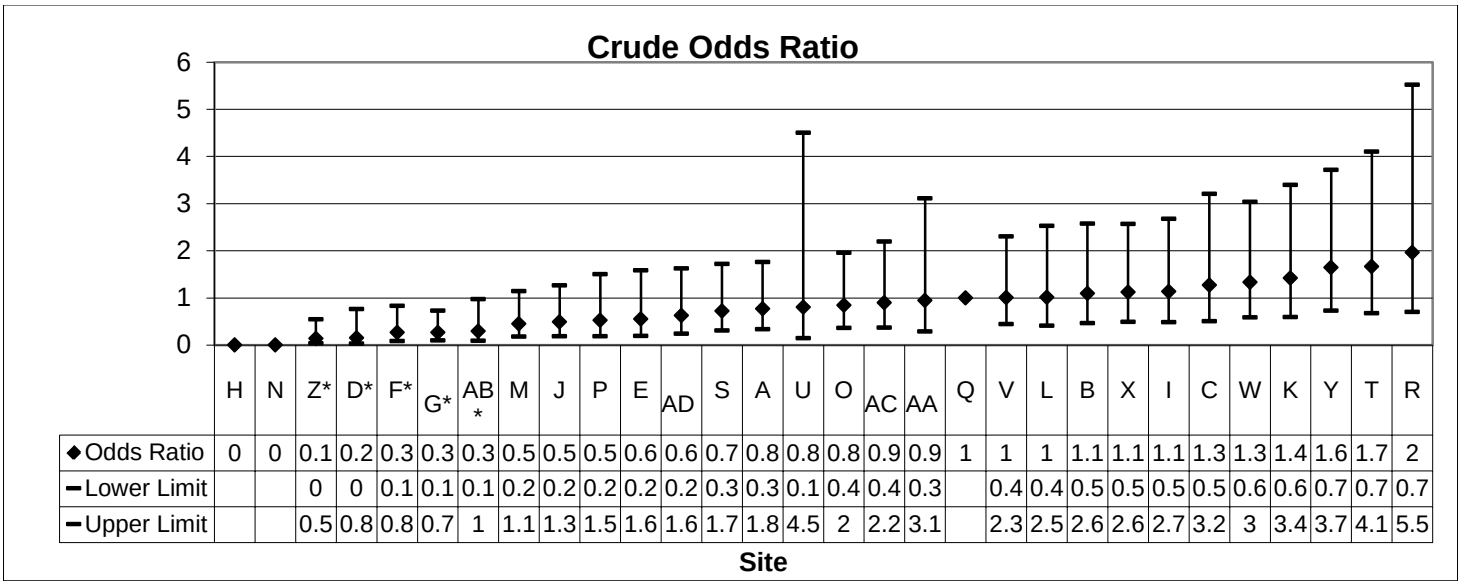
***Sites significantly different from reference site (P<0.05)**

Outcome is attributed to the network site of first admission

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

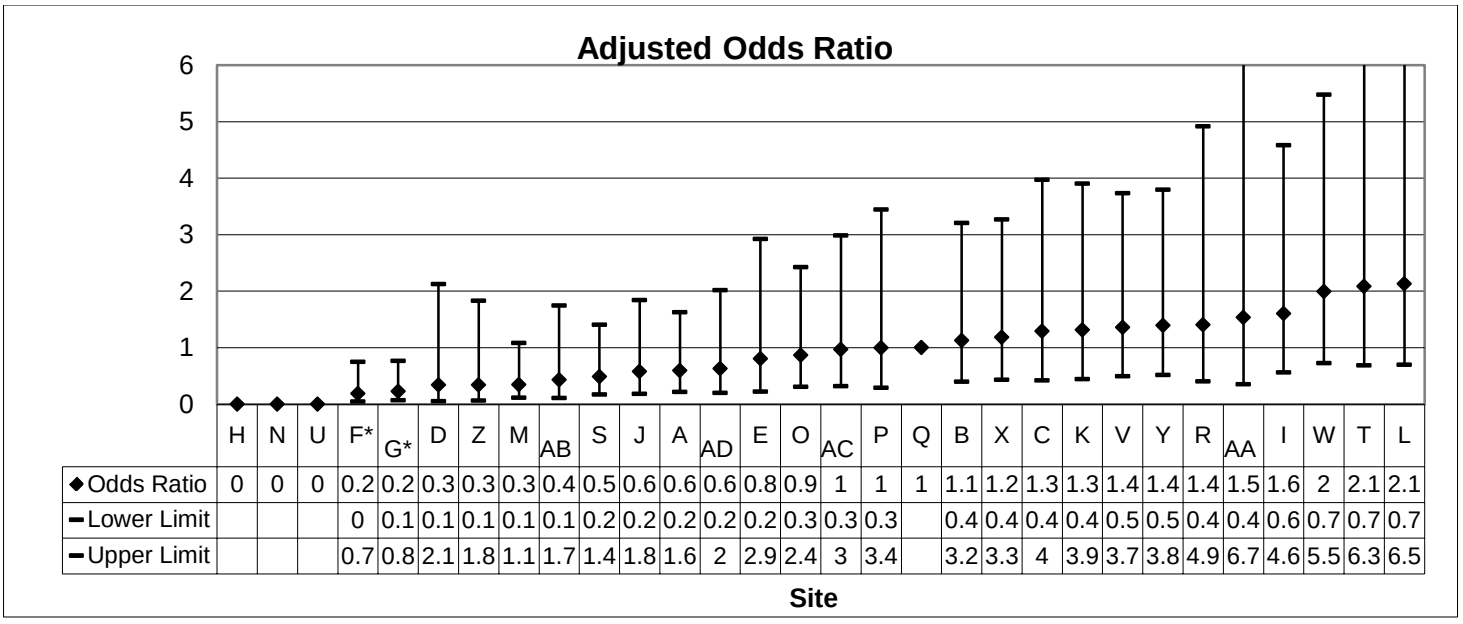
Sites R and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites.

Presentation #50a
Oxygen use at 36 weeks post-menstrual age or death at any time in neonates with GA <33 weeks at birth (site comparison)



	H	N	Z*	D*	F*	G*	AB*	M	J	P	E	AD	S	A	U	O	AC	AA	Q	V	L	B	X	I	C	W	K	Y	T	R
◆Odds Ratio	0	0	0.1	0.2	0.3	0.3	0.3	0.5	0.5	0.5	0.6	0.6	0.7	0.8	0.8	0.8	0.9	0.9	1	1	1	1.1	1.1	1.1	1.3	1.3	1.4	1.6	1.7	2
━Lower Limit			0	0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.1	0.4	0.4	0.3		0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.7	
━Upper Limit			0.5	0.8	0.8	0.7	1	1.1	1.3	1.5	1.6	1.6	1.7	1.8	4.5	2	2.2	3.1		2.3	2.5	2.6	2.6	2.7	3.2	3	3.4	3.7	4.1	5.5	

Number of neonates: 4 113



	H	N	U	F*	G*	D	Z	M	AB	S	J	A	AD	E	O	AC	P	Q	B	X	C	K	V	Y	R	AA	I	W	T	L
◆Odds Ratio	0	0	0	0.2	0.2	0.3	0.3	0.3	0.4	0.5	0.6	0.6	0.6	0.8	0.9	1	1	1	1.1	1.2	1.3	1.3	1.4	1.4	1.4	1.5	1.6	2	2.1	2.1
━Lower Limit				0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3		0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.6	0.7	0.7	0.7
━Upper Limit				0.7	0.8	2.1	1.8	1.1	1.7	1.4	1.8	1.6	2	2.9	2.4	3	3.4		3.2	3.3	4	3.9	3.7	3.8	4.9	6.7	4.6	5.5	6.3	6.5	

Number of neonates: 3 965

Reference site: Q

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

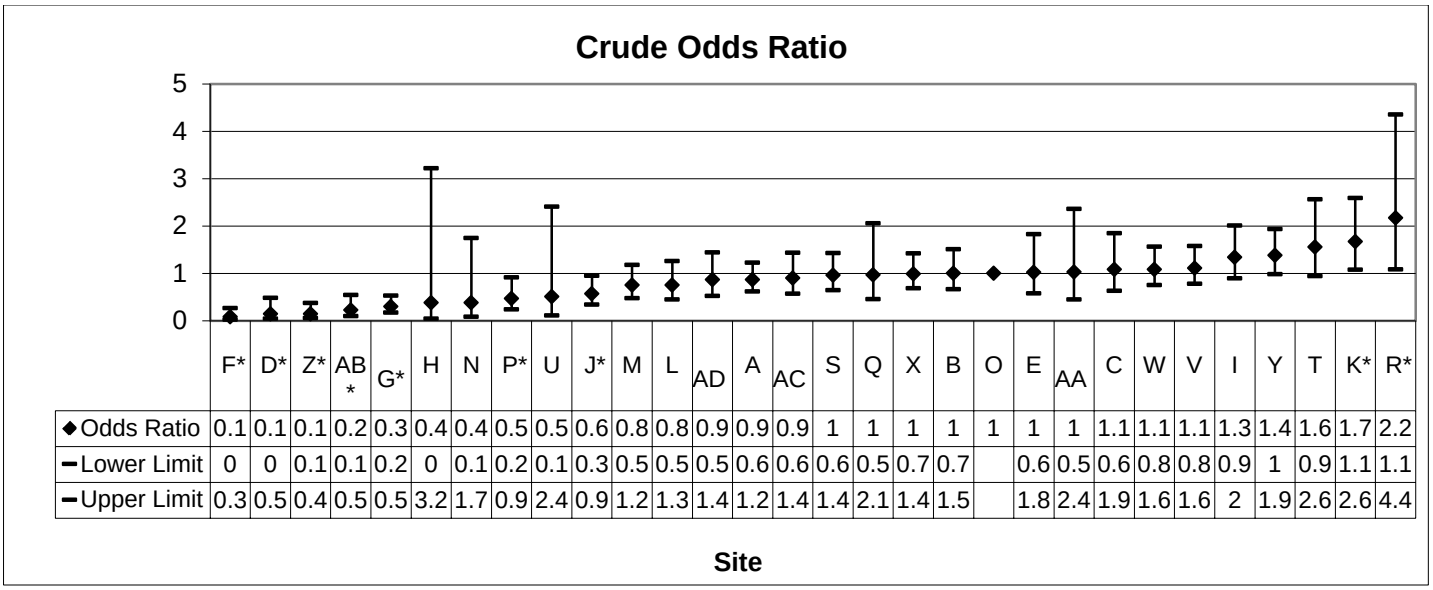
Sites R and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites.

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

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

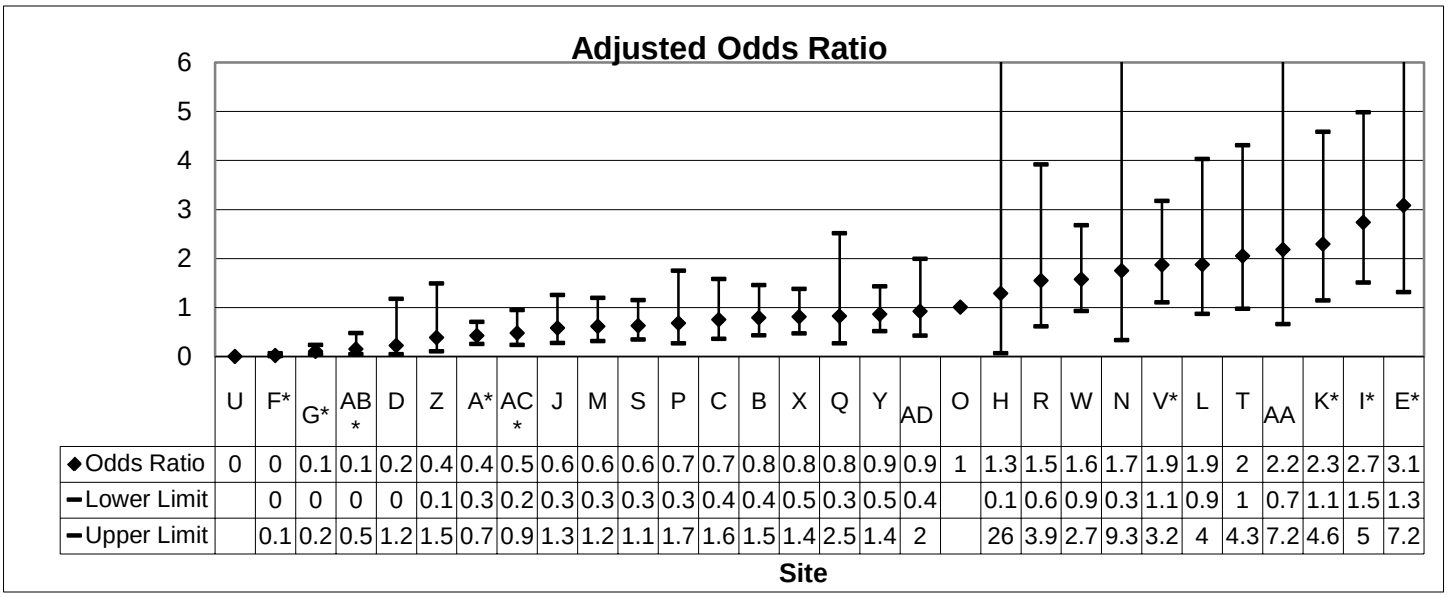
Outcome is attributed to the network site of first admission

Presentation #50b
Oxygen use at 28 days after birth or death at any time in neonates with GA <33 weeks at birth (site comparison)



	F*	D*	Z*	AB*	G*	H	N	P*	U	J*	M	L	AD	A	AC	S	Q	X	B	O	E	AA	C	W	V	I	Y	T	K*	R*
◆Odds Ratio	0.1	0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.8	0.8	0.9	0.9	0.9	1	1	1	1	1	1	1	1.1	1.1	1.1	1.3	1.4	1.6	1.7	2.2
━Lower Limit	0	0	0.1	0.1	0.2	0	0.1	0.2	0.1	0.3	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.7	0.7		0.6	0.5	0.6	0.8	0.8	0.9	1	0.9	1.1	1.1
━Upper Limit	0.3	0.5	0.4	0.5	0.5	3.2	1.7	0.9	2.4	0.9	1.2	1.3	1.4	1.2	1.4	1.4	2.1	1.4	1.5		1.8	2.4	1.9	1.6	1.6	2	1.9	2.6	2.6	4.4

Number of neonates: 4 113



	U	F*	G*	AB*	D	Z	A*	AC*	J	M	S	P	C	B	X	Q	Y	AD	O	H	R	W	N	V*	L	T	AA	K*	I*	E*
◆Odds Ratio	0	0	0.1	0.1	0.2	0.4	0.4	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	0.9	1	1.3	1.5	1.6	1.7	1.9	1.9	2	2.2	2.3	2.7	3.1
━Lower Limit		0	0	0	0	0.1	0.3	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.3	0.5	0.4		0.1	0.6	0.9	0.3	1.1	0.9	1	0.7	1.1	1.5	1.3
━Upper Limit		0.1	0.2	0.5	1.2	1.5	0.7	0.9	1.3	1.2	1.1	1.7	1.6	1.5	1.4	2.5	1.4	2		26	3.9	2.7	9.3	3.2	4	4.3	7.2	4.6	5	7.2

Number of neonates: 4 072

Reference site: O

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

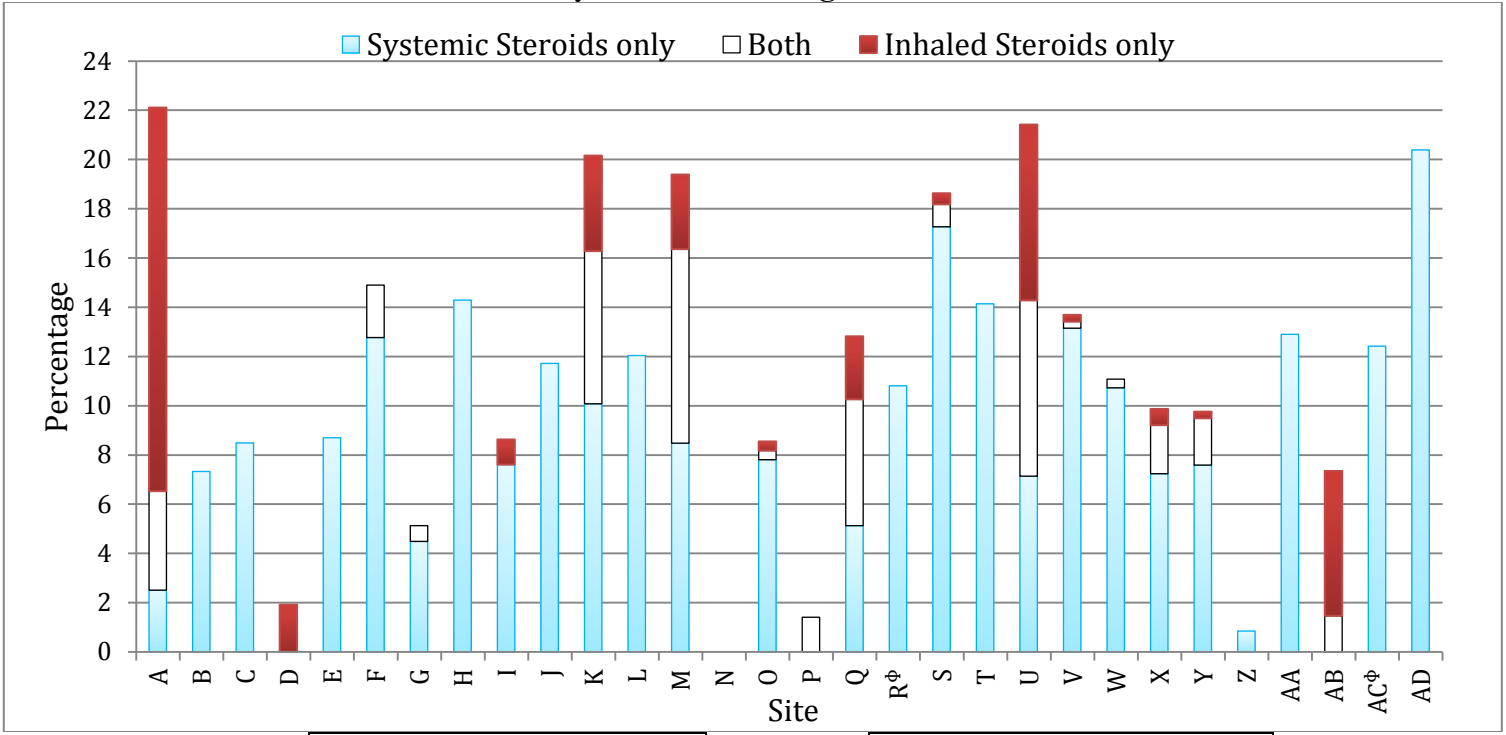
Outcome is attributed to the network site of first admission

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

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

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

Presentation #51
Postnatal use of steroids for any indication among neonates with GA <33 weeks at birth†



Site	Postnatal steroid use (%)		
	Systemic Steroids only	Both	Inhaled Steroids only
A	2.5	4.0	15.6
B	7.3	0.0	0.0
C	8.5	0.0	0.0
D	0.0	0.0	1.9
E	8.7	0.0	0.0
F	12.8	2.1	0.0
G	4.5	0.6	0.0
H	14.3	0.0	0.0
I	7.6	0.0	1.0
J	11.7	0.0	0.0
K	10.1	6.2	3.9
L	12.0	0.0	0.0
M	8.5	7.9	3.0
N	0.0	0.0	0.0
O	7.8	0.4	0.4

Site	Postnatal steroid use (%)		
	Systemic Steroids only	Both	Inhaled Steroids only
P	0.0	1.4	0.0
Q	5.1	5.1	2.6
RΦ	10.8	0.0	0.0
S	17.3	0.9	0.5
T	14.1	0.0	0.0
U	7.1	7.1	7.1
V	13.2	0.3	0.3
W	10.7	0.4	0.0
X	7.2	2.0	0.7
Y	7.6	1.9	0.3
Z	0.9	0.0	0.0
AA	12.9	0.0	0.0
AB	0.0	1.5	5.9
ACΦ	12.4	0.0	0.0
AD	20.4	0.0	0.0
Total	8.8	1.4	2.0

Total number of neonates = 4 370

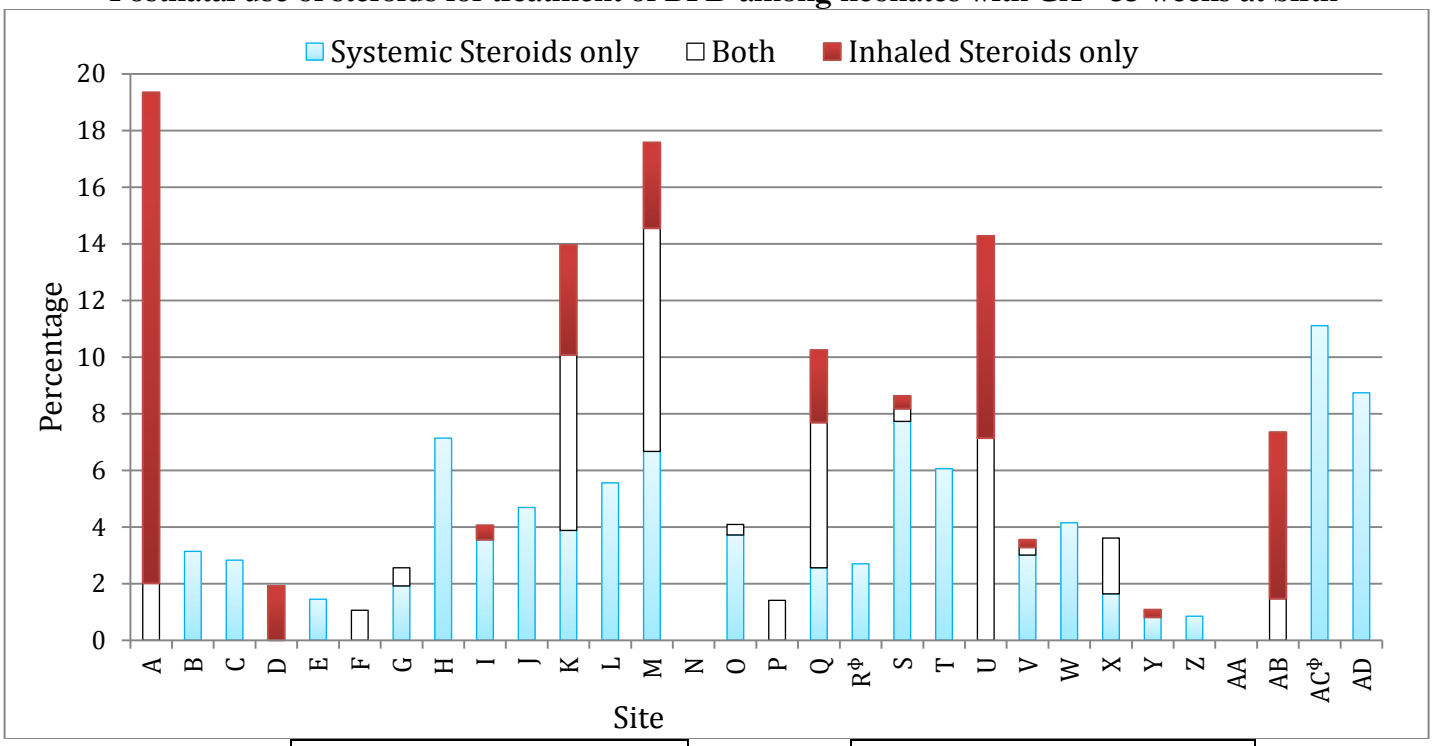
† Percentage of neonates to each network NICU and results are attributed to the original site.

Φ Note that the criteria for entering neonates with GA <33 in the CNN dataset are not the same for sites R 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 #51a

Postnatal use of steroids for treatment of BPD among neonates with GA <33 weeks at birth†



Site	Postnatal steroid use (%)		
	Systemic Steroids only	Both	Inhaled Steroids only
A	0.0	2.0	17.3
B	3.1	0.0	0.0
C	2.8	0.0	0.0
D	0.0	0.0	1.9
E	1.5	0.0	0.0
F	0.0	1.1	0.0
G	1.9	0.6	0.0
H	7.1	0.0	0.0
I	3.6	0.0	0.5
J	4.7	0.0	0.0
K	3.9	6.2	3.9
L	5.6	0.0	0.0
M	6.7	7.9	3.0
N	0.0	0.0	0.0
O	3.7	0.4	0.0

Site	Postnatal steroid use (%)		
	Systemic Steroids only	Both	Inhaled Steroids only
P	0.0	1.4	0.0
Q	2.6	5.1	2.6
RΦ	2.7	0.0	0.0
S	7.7	0.5	0.5
T	6.1	0.0	0.0
U	0.0	7.1	7.1
V	3.0	0.3	0.3
W	4.2	0.0	0.0
X	1.6	2.0	0.0
Y	0.8	0.0	0.3
Z	0.9	0.0	0.0
AA	0.0	0.0	0.0
AB	0.0	1.5	5.9
ACΦ	11.1	0.0	0.0
AD	8.7	0.0	0.0
Total	3.2	1.0	2.1

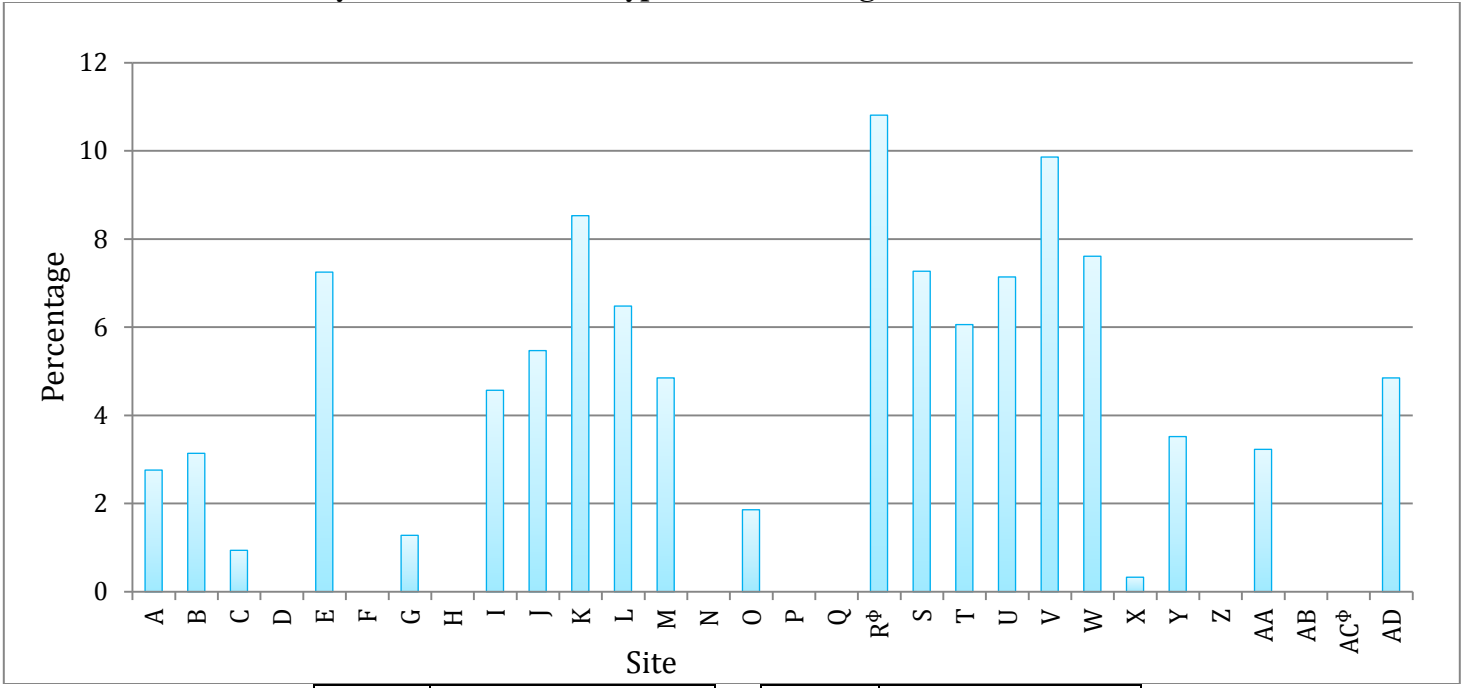
Total number of neonates = 4 370

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

Φ Note that the criteria for entering neonates with GA <33 in the CNN dataset are not the same for sites R 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 #51b
Postnatal use of systemic steroids for hypotension among neonates with GA <33 weeks at birth†



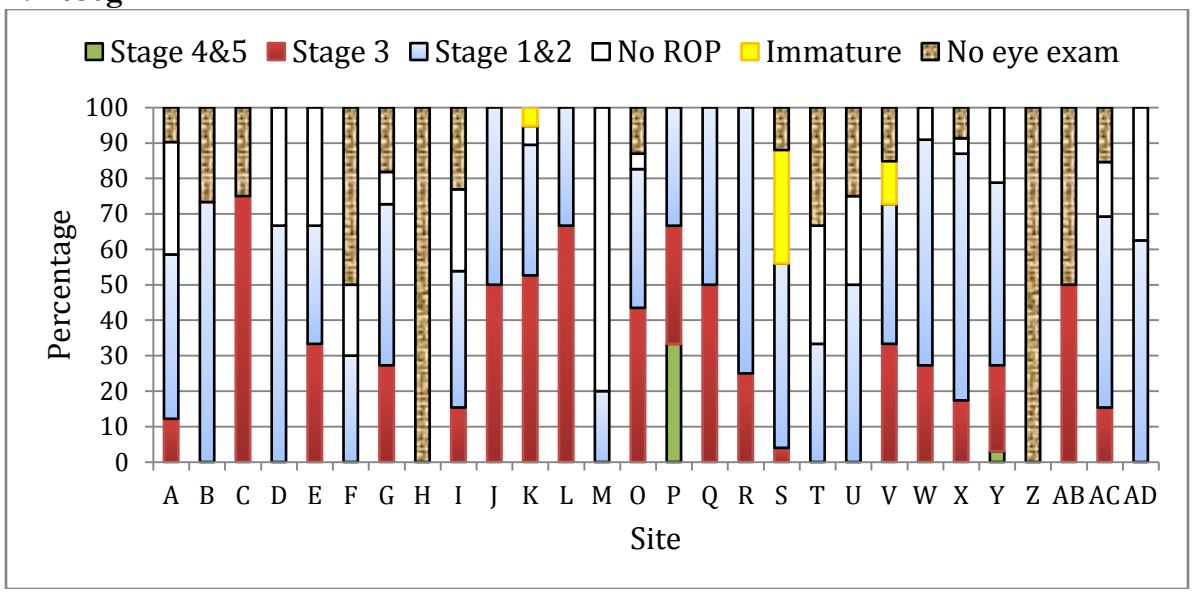
Site	Postnatal systemic steroids use (%)
A	2.8
B	3.1
C	0.9
D	0.0
E	7.3
F	0.0
G	1.3
H	0.0
I	4.6
J	5.5
K	8.5
L	6.5
M	4.9
N	0.0
O	1.9

Site	Postnatal systemic steroids use (%)
P	0.0
Q	0.0
RΦ	10.8
S	7.3
T	6.1
U	7.1
V	9.9
W	7.6
X	0.3
Y	3.5
Z	0.0
AA	3.2
AB	0.0
ACΦ	0.0
AD	4.9
Total	4.1

Total number of neonates = 4 370
† Percentage of neonates to each network site and results are attributed to the original site.
ΦNote that the criteria for entering neonates with GA <33 in the CNN dataset are not the same for sites R 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.

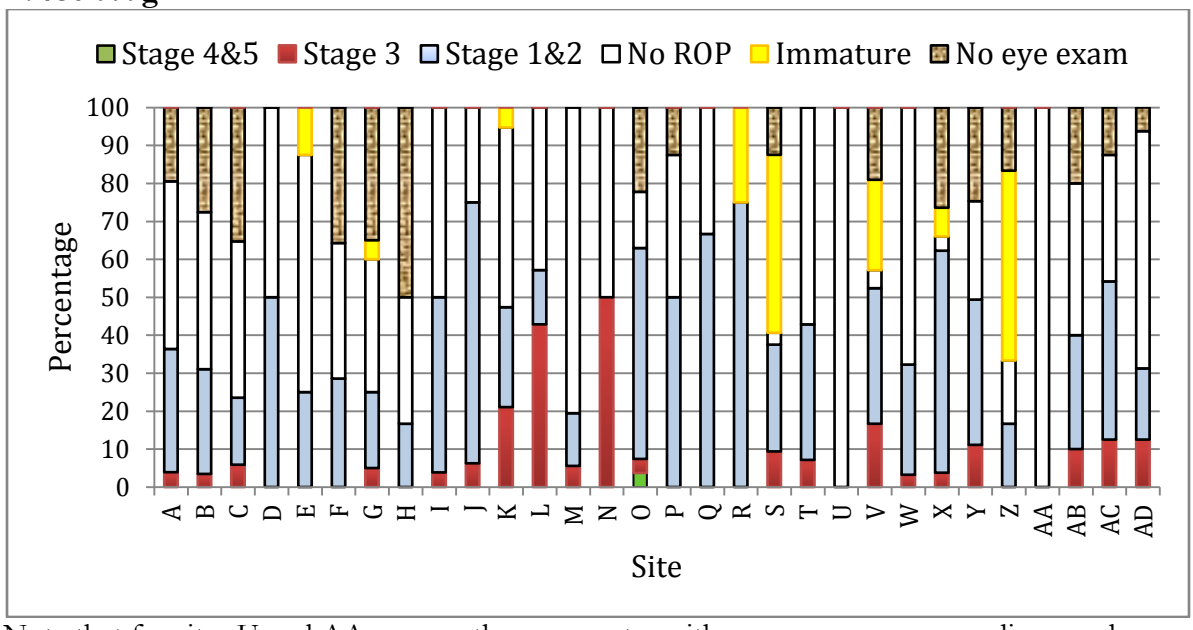
Presentation #52a
Retinopathy of prematurity among neonates with BW <1000g who survived beyond 6 weeks

A. <750g



There were no neonates in sites N and AA in this BW category.

B. 750-999g

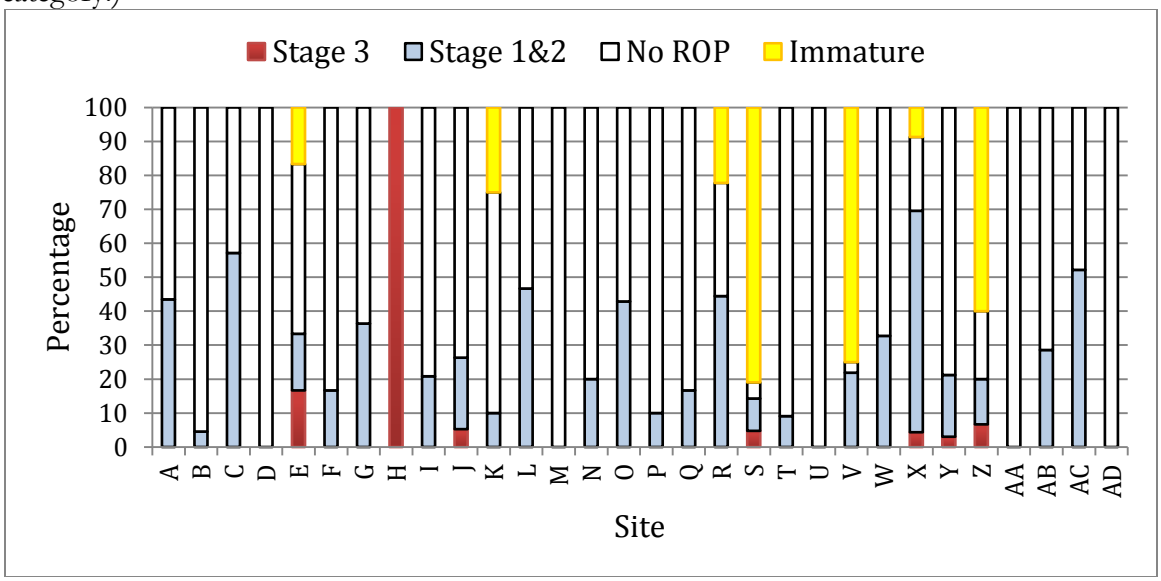


Note that for sites U and AA, among those neonates with eye exams, none was diagnosed with ROP, so the incidence is zero.

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

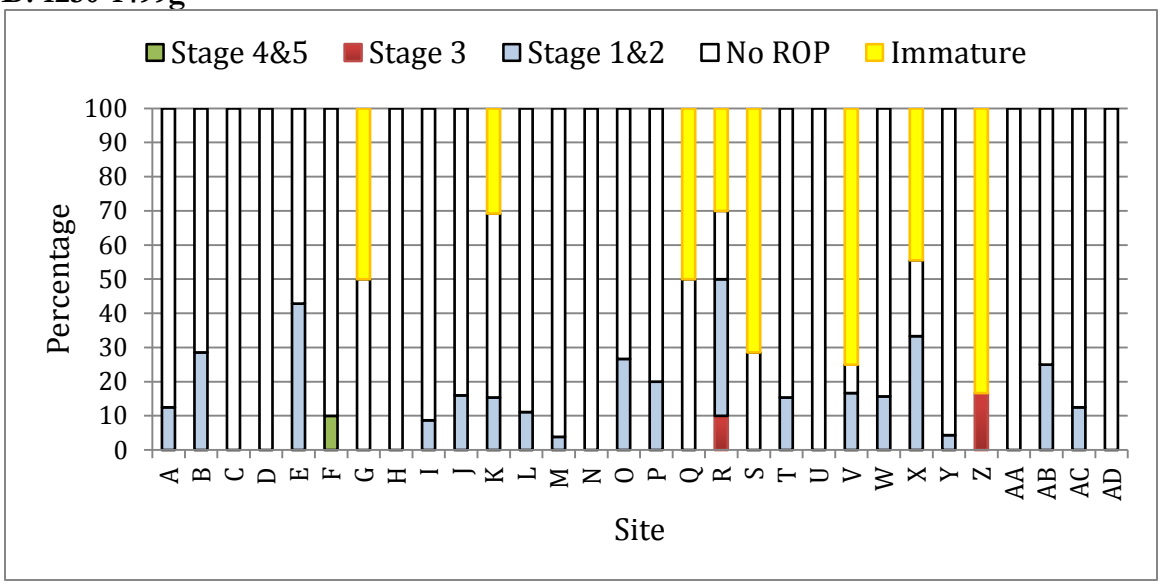
Presentation #52b
Retinopathy of prematurity among neonates with BW <1500g and who had eye exams*

C. 1000-1249g (Note that no sites had neonates diagnosed with Stage 4/5 ROP in this BW category.)



Note that for sites D, M, U, AA and AD, among those neonates with eye exams, none was diagnosed with ROP, so the incidence is zero.

D. 1250-1499g

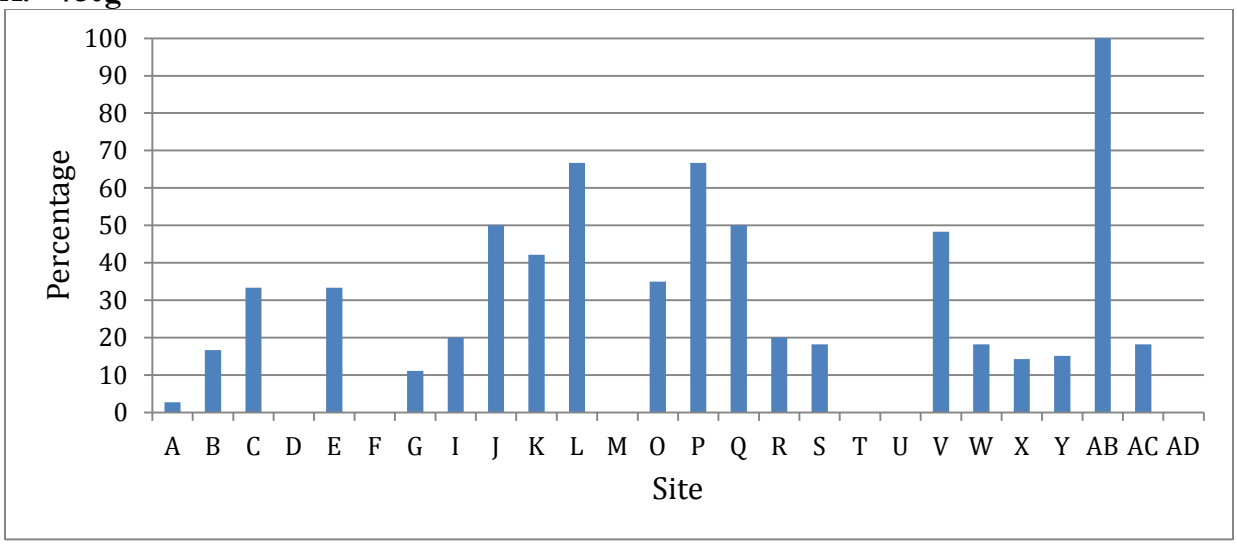


Note that for site C, D, H, N, U, AA and AD, among those neonates with eye exams, none were diagnosed with ROP, so the incidence is zero.

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.**

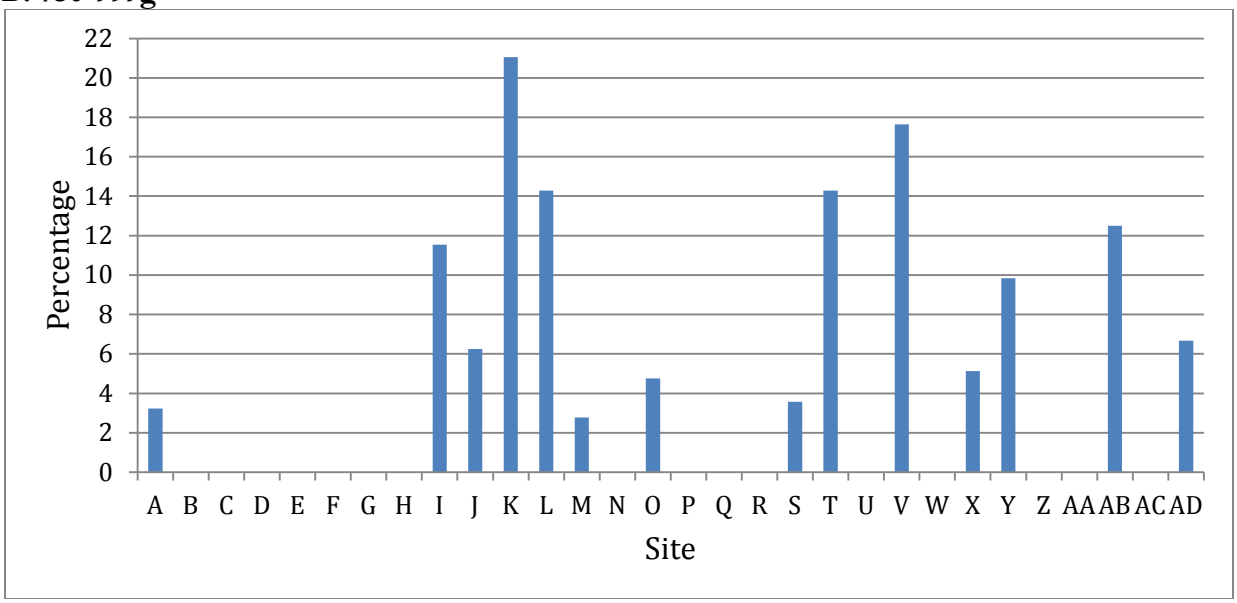
Presentation #53
Treatment for retinopathy of prematurity among neonates with BW <1000g (who had eye exams)

A. <750g



For sites D, F, M, T, U, and AD, none of the neonates received treatment. There were no neonates in sites N and AA in this BW category.

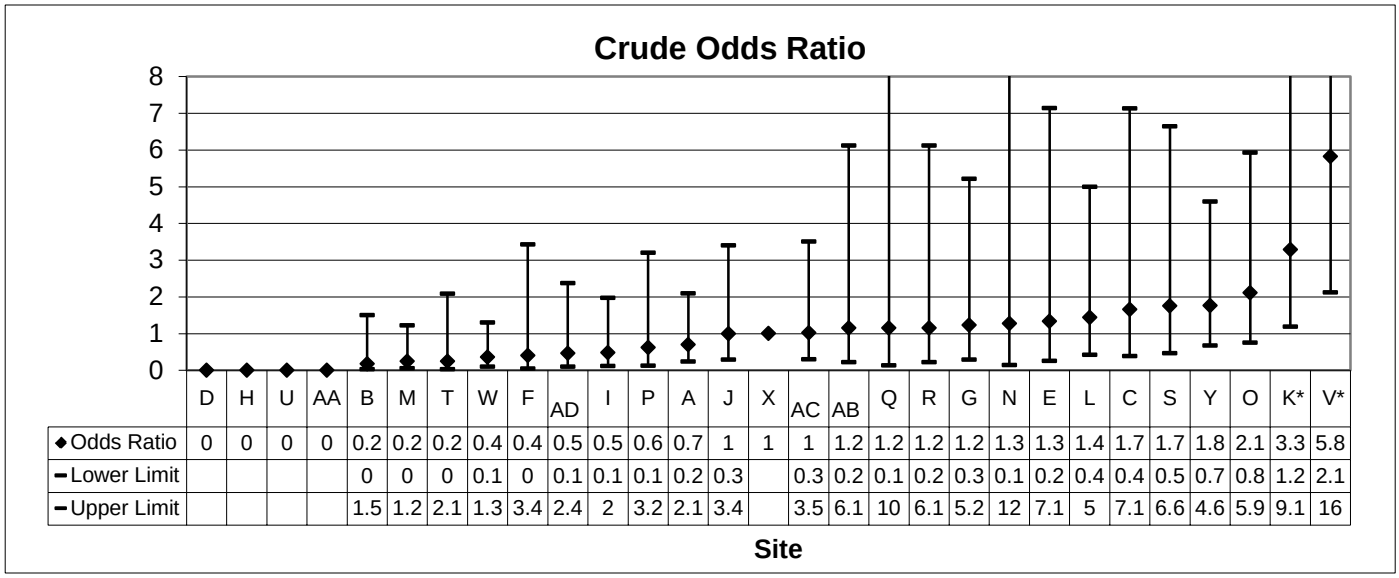
B. 750-999g



For sites B, C, D, E, F, G, H, N, P, Q, R, W, Z, and AC, none of the neonates received treatment. For sites U and AA, no neonates were diagnosed with ROP for this BW subgroup.

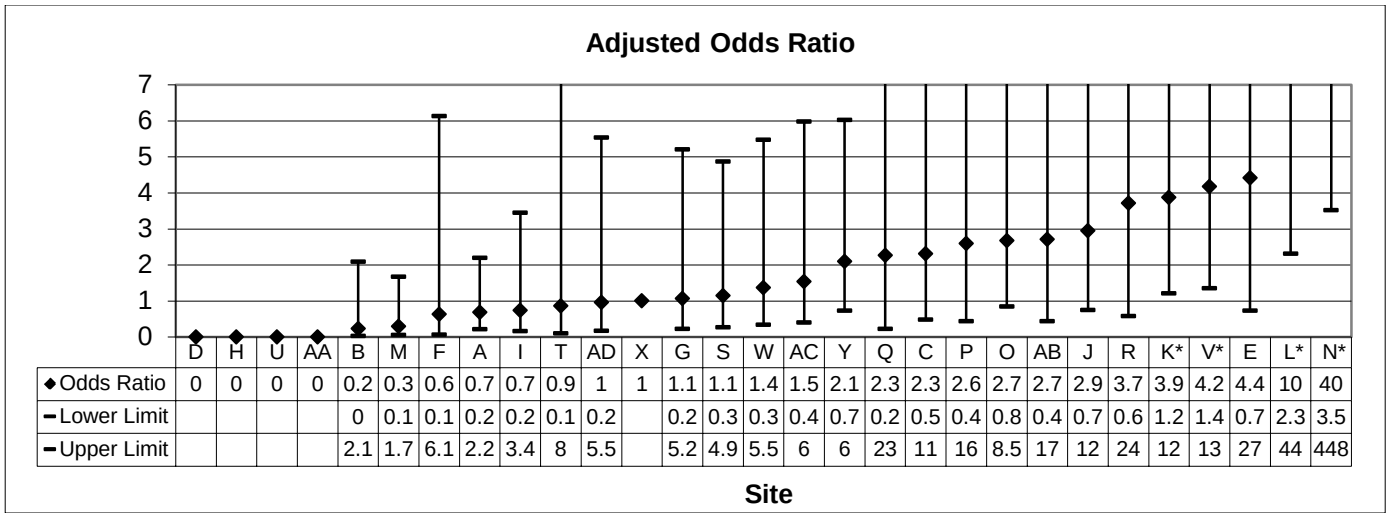
COMMENTS: Not all centers have data on neonates in each BW category. Treatment includes Anti-VEGF therapy, surgery or both.

Presentation #54
Retinopathy of prematurity stage 3 and higher (site comparison)



	D	H	U	AA	B	M	T	W	F	AD	I	P	A	J	X	AC	AB	Q	R	G	N	E	L	C	S	Y	O	K*	V*
◆Odds Ratio	0	0	0	0	0.2	0.2	0.2	0.4	0.4	0.5	0.5	0.6	0.7	1	1	1	1.2	1.2	1.2	1.2	1.3	1.3	1.4	1.7	1.7	1.8	2.1	3.3	5.8
━Lower Limit					0	0	0	0.1	0	0.1	0.1	0.1	0.2	0.3		0.3	0.2	0.1	0.2	0.3	0.1	0.2	0.4	0.4	0.5	0.7	0.8	1.2	2.1
━Upper Limit					1.5	1.2	2.1	1.3	3.4	2.4	2	3.2	2.1	3.4		3.5	6.1	10	6.1	5.2	12	7.1	5	7.1	6.6	4.6	5.9	9.1	16

Number of neonates: 1 611



	D	H	U	AA	B	M	F	A	I	T	AD	X	G	S	W	AC	Y	Q	C	P	O	AB	J	R	K*	V*	E	L*	N*
◆Odds Ratio	0	0	0	0	0.2	0.3	0.6	0.7	0.7	0.9	1	1	1.1	1.1	1.4	1.5	2.1	2.3	2.3	2.6	2.7	2.7	2.9	3.7	3.9	4.2	4.4	10	40
━Lower Limit					0	0.1	0.1	0.2	0.2	0.1	0.2		0.2	0.3	0.3	0.4	0.7	0.2	0.5	0.4	0.8	0.4	0.7	0.6	1.2	1.4	0.7	2.3	3.5
━Upper Limit					2.1	1.7	6.1	2.2	3.4	8	5.5		5.2	4.9	5.5	6	6	23	11	16	8.5	17	12	24	12	13	27	44	448

Number of neonates: 1 562

Reference site: X

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

Site Z was not included in this analysis due to the small number of neonates who meet the inclusion criteria

All the neonates who meet the criteria in sites D, H, U, and A did not have retinopathy of prematurity stage 3 and higher (Odds Ratio: 0)

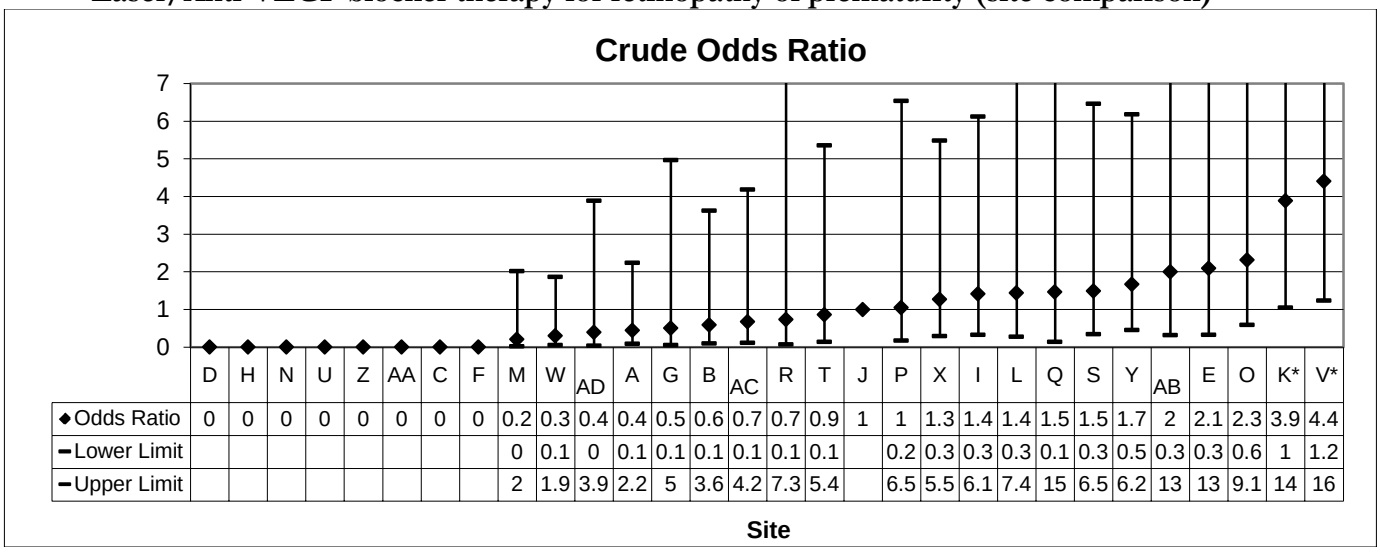
Significant predictors identified by multivariate analysis and adjusted for:
GA SGA (BW <10th centile for GA)

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

Outcome is attributed to the network site of first admission

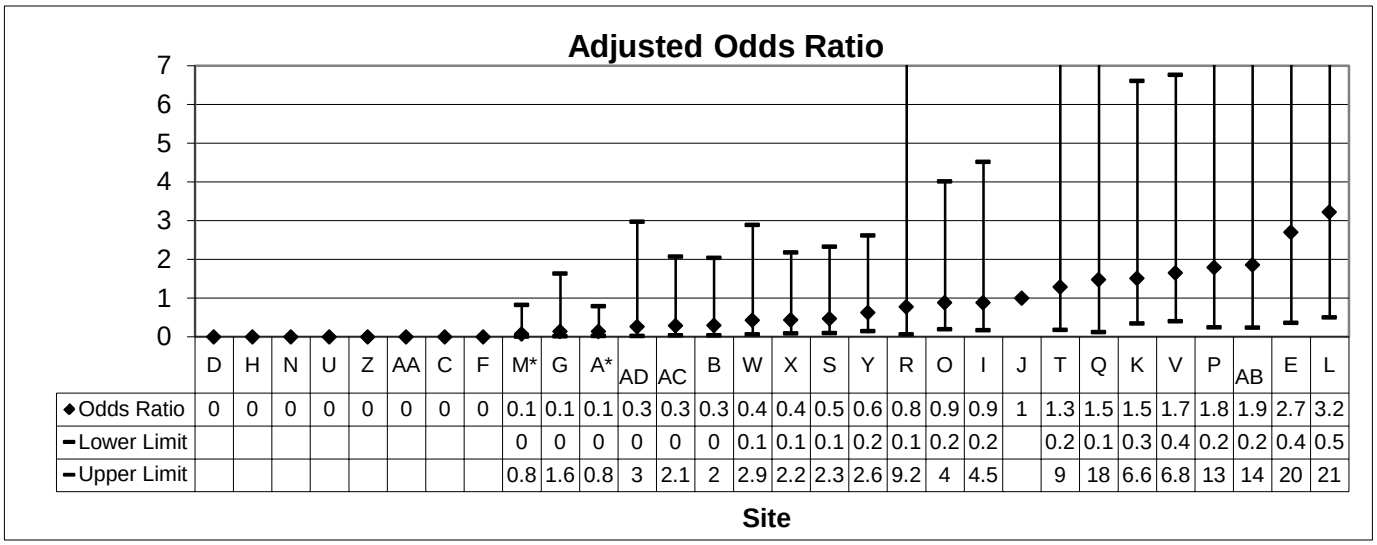
Sites R and AC have different criteria for entering neonates in the CNN dataset, and may not be comparable with other sites.

Presentation #55
Laser/Anti-VEGF blocker therapy for retinopathy of prematurity (site comparison)



	D	H	N	U	Z	AA	C	F	M	W	AD	A	G	B	AC	R	T	J	P	X	I	L	Q	S	Y	AB	E	O	K*	V*
◆Odds Ratio	0	0	0	0	0	0	0	0	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.7	0.9	1	1	1.3	1.4	1.4	1.5	1.5	1.7	2	2.1	2.3	3.9	4.4
━Lower Limit									0	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1		0.2	0.3	0.3	0.3	0.1	0.3	0.5	0.3	0.3	0.6	1	1.2
━Upper Limit									2	1.9	3.9	2.2	5	3.6	4.2	7.3	5.4		6.5	5.5	6.1	7.4	15	6.5	6.2	13	13	9.1	14	16

Number of neonates: 1 686



	D	H	N	U	Z	AA	C	F	M*	G	A*	AD	AC	B	W	X	S	Y	R	O	I	J	T	Q	K	V	P	AB	E	L
◆Odds Ratio	0	0	0	0	0	0	0	0	0.1	0.1	0.1	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.8	0.9	0.9	1	1.3	1.5	1.5	1.7	1.8	1.9	2.7	3.2
━Lower Limit									0	0	0	0	0	0	0.1	0.1	0.1	0.2	0.1	0.2	0.2		0.2	0.1	0.3	0.4	0.2	0.2	0.4	0.5
━Upper Limit									0.8	1.6	0.8	3	2.1	2	2.9	2.2	2.3	2.6	9.2	4	4.5		9	18	6.6	6.8	13	14	20	21

Number of neonates: 1 685

Reference site: J

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 C, D, F, H, N, U, Z, and AA were not treated (Odds Ratio: 0) [No neonates had ROP grade 3 or higher in sites D, H, U, A]

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

Presentation 56a
Benchmarking for sites which contributed all eligible admission with GA < 33 weeks

Parameter / Site rank	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Lowest													Median
According to total number of neonates														
SNAP-II-PE adjusted mortality rates (%)	N	Z	G	X	AD	T	K	E	AA	B	U	F	J	D
Early onset sepsis rate (%)	AA	AB	H	N	Q	Z	C	L	I	AD	S	G	O	W
Late onset sepsis rate (SNAP-II-PE adjusted) (%)	N	P	T	Z	X	U	AA	AB	J	H	G	I	E	F
Late onset sepsis /1000 patient days	N	Z	P	AB	U	AA	T	I	F	J	H	L	M	E
Death or at least one of major morbidities (%)	N	Z	F	P	U	AB	J	AA	G	T	X	E	M	K
Among neonates <33 weeks														
Non-receipt of antenatal steroid (%)	W	AD	X	T	M	Y	Z	L	S	O	B	A	V	K
Surgical ligation of PDA for neonates with PDA (%)	U†	AA	AB	D	N	Z	AD	E	T	I	C	G	O	Y
Stage 2 or 3 NEC (adjusted odds ratio)[1]	Z	F	H	N	U	AA	T	G	J	P	A	C	X	Q
Stage 3-5 ROP (adjusted odds ratio)[2]	D	H	U	AA	B	M	F	A	I	T	AD	X	G	S
Oxygen use at 36 wks (adjusted odds ratio)[3]	H	N	U	F	G	D	Z	M	AB	S	J	A	AD	E
VE or PEC (adjusted odds ratio)[4]	N	T	M	G	I	Z	D	O	P	F	W	J	H	B
Use of systemic steroids (%)	D	N	Z	P	AB	G	A	B	I	O	C	E	X	Y
SNAP-II-PE adjusted mortality for < 33 wks GA (%)	N	Z	H	G	P	X	B	AD	D	A	F	M	T	S
Death or at least one of major morbidities (%)	N	Z	F	P	D	G	H	AB	J	M	A	O	E	T
Among neonates < 1500g														
Non-receipt of antenatal steroid (%)	M	Z	S	AD	K	V	W	Y	T	X	A	P	L	G
Surgical ligation of PDA for neonates with PDA (%)	U†	AA	AB	D	N	Z	AD	T	I	E	C	G	O	Y
Stage 2 or 3 NEC (adjusted odds ratio)[1]	Z	H	N	U	AA	F	J	T	G	X	C	A	S	P
Stage 3-5 ROP (adjusted odds ratio)[2]	H	U	AA	D	B	M	F	A	I	T	AD	X	G	S
Oxygen use at 36 wks (adjusted odds ratio)[3]	H	N	U	F	G	M	D	Z	J	AB	S	A	AD	O
VE or PEC (adjusted odds ratio)[4]	N	U	M	T	I	G	O	J	F	P	W	Z	D	K
Use of systemic steroids (%)	D	N	P	AB	Z	G	A	B	O	Y	I	C	X	W
SNAP-II-PE adjusted mortality for <1500g (%)	N	Z	G	B	P	D	U	X	K	AD	T	F	H	M
Death or at least one of major morbidities (%)	N	Z	D	F	G	P	J	M	U	A	AB	O	X	S

† None of the infants in Site U had PDA.

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

Presentation #56a (continued)

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

15	16	17	18	19	20	21	22	23	24	25	26	27	28	**Parameter / Site rank**
Median													Highest	
														According to total number of neonates
P	AB	S	Q	Y	I	V	A	O	L	H	M	C	W	SNAP-II-PE adjusted mortality rates (%)
K	F	V	X	Y	U	M	P	T	J	E	B	A	D	Early onset sepsis rate (%)
L	K	Y	M	S	O	W	Q	C	V	A	AD	B	D	Late onset sepsis rate (SNAP-II-PE adjusted) (%)
D	G	K	V	X	Y	W	S	AD	Q	O	A	C	B	Late onset sepsis /1000 patient days
L	I	O	Q	H	AD	W	Y	A	D	C	S	V	B	Death or at least one of major morbidities (%)
														Among neonates <33 weeks
AA	P	G	N	J	I	E	AB	D	F	Q	C	H	U	Non-receipt of antenatal steroid (%)
A	X	S	L	V	H	Q	W	J	B	K	M	P	F	Surgical ligation of PDA for neonates with PDA (%)
S	M	Y	K	I	AB	W	V	B	E	O	AD	D	L	Stage 2 or 3 NEC (adjusted odds ratio)[1]
W	Y	Q	C	P	O	AB	J	K	V	E	L	N	Z	Stage 3-5 ROP (adjusted odds ratio)[2]
O	P	Q	B	X	C	K	V	Y	AA	I	W	T	L	Oxygen use at 36 wks (adjusted odds ratio)[3]
S	K	V	AD	Y	X	C	Q	A	L	E	AB	AA	U	VE or PEC (adjusted odds ratio)[4]
Q	W	J	L	AA	V	T	H	U	F	K	M	S	AD	Use of systemic steroids (%)
Y	K	V	J	E	AA	C	AB	I	O	Q	W	L	U	SNAP-II-PE adjusted mortality for < 33 wks GA (%)
V	X	W	S	K	U	Q	B	AD	I	L	AA	Y	C	Death or at least one of major morbidities (%)
														Among neonates < 1500g
B	O	AA	E	N	J	I	D	AB	Q	F	C	U	H	Non-receipt of antenatal steroid (%)
A	V	X	S	H	L	W	B	Q	J	K	P	M	F	Surgical ligation of PDA for neonates with PDA (%)
I	K	Q	M	Y	AD	O	W	AB	V	B	E	D	L	Stage 2 or 3 NEC (adjusted odds ratio)[1]
W	Y	J	Q	C	P	O	AB	K	V	E	L	N	Z	Stage 3-5 ROP (adjusted odds ratio)[2]
E	Q	L	P	V	X	C	B	K	Y	AA	I	W	T	Oxygen use at 36 wks (adjusted odds ratio)[3]
S	V	AD	X	B	Q	Y	C	A	E	L	AA	AB	H	VE or PEC (adjusted odds ratio)[4]
Q	E	V	U	J	T	AA	S	K	M	L	F	H	AD	Use of systemic steroids (%)
V	J	S	Y	O	A	I	C	Q	AB	AA	W	E	L	SNAP-II-PE adjusted mortality for <1500g (%)
W	V	T	K	AD	H	Q	I	B	Y	C	E	L	AA	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, SGA (BW <10th centile for GA)

[2] Stage 3-5 ROP – GA, SNAP II Score

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

[4] VE or PEC – GA, Gender, Apgar at 5 minutes, SNAP-II Score, Outborn

Presentation #56b
Benchmarking for sites which contributed all eligible admission with GA < 29 weeks

Parameter / Site rank	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Lowest														Median
According to total number of neonates															
Non-receipt of antenatal steroid (%)	U	R	P	M	AD	S	W	V	Y	G	A	K	X	Z	E
Surgical ligation of PDA for neonates with PDA (%)	U	AA	AB	D	T	Z	AD	I	AC	R	E	C	G	Q	Y
Stage 2 or 3 NEC (adjusted odds ratio)[1]	AC	J	Z	H	U	AA	F	T	G	X	A	K	C	I	S
Stage 3-5 ROP (adjusted odds ratio)[2]	F	Z	H	U	AA	D	B	M	A	I	T	AD	X	G	S
Oxygen use at 36 wks (adjusted odds ratio)[3]	D	H	U	F	Z	G	M	AB	J	S	A	AD	Q	R	O
VE or PEC (adjusted odds ratio)[4]	D	U	M	AC	G	T	I	W	Z	J	O	F	S	P	Q
Use of systemic steroids (%)	D	AB	P	Z	A	R	B	G	Q	C	Y	I	O	X	AC
SNAP-II-PE adjusted mortality (%)	Z	H	P	G	K	X	B	D	AD	T	J	AC	F	M	V
Death or at least one of major morbidities (%)	D	Z	F	H	AB	G	M	P	A	J	C	Q	R	V	O

[†] None of the infants in Site U had PDA.

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

Presentation 56b (continued)
Benchmarking for sites which contributed all eligible admission with GA <29 weeks

16	17	18	19	20	21	22	23	24	25	26	27	28	29	**Parameter / Site rank**
Median													Highest	
														According to total number of neonates
T	B	O	L	J	AA	AC	I	Q	D	AB	C	F	H	Non-receipt of antenatal steroid (%)
O	A	V	X	L	S	H	B	M	J	K	W	P	F	Surgical ligation of PDA for neonates with PDA (%)
Y	E	R	Q	P	M	AD	O	W	V	AB	B	L	D	Stage 2 or 3 NEC (adjusted odds ratio)[1]
AC	W	Y	O	J	C	Q	AB	P	K	V	R	E	L	Stage 3-5 ROP (adjusted odds ratio)[2]
E	P	L	AC	X	V	C	AA	B	K	W	Y	I	T	Oxygen use at 36 wks (adjusted odds ratio)[3]
V	K	X	B	AD	Y	H	C	A	AA	E	L	AB	R	VE or PEC (adjusted odds ratio)[4]
E	W	V	T	H	J	AA	S	K	M	U	AD	F	L	Use of systemic steroids (%)
C	S	U	Y	AB	A	Q	O	I	E	AA	W	R	L	SNAP-II-PE adjusted mortality (%)
X	W	AD	K	S	I	B	T	E	Y	AC	U	AA	L	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
[2] Stage 3-5 ROP – GA, SNAP II Score, 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: Cesarean section, Apgar at 5 minutes, SNAP-II Score, Outborn

F. Discharge Disposition and Status

Presentation #57

Discharge destination

		GA (completed weeks)								
		< 25	**25-26**	**27-28**	**29-30**	**31-32**	**33-34**	**35-36**	**≥37**	**Total**
Home	N	75	215	288	383	683	1127	1226	2865	6862
	%	27.9	37.3	37.8	34.3	42.4	52.2	55.5	52.3	48.4
Community hospital	N	32	212	354	621	805	795	400	426	3645
	%	11.9	36.8	46.4	55.6	50.0	36.8	18.1	7.8	25.7
Tertiary hospital	N	11	18	30	39	25	30	48	202	403
	%	4.1	3.1	3.9	3.5	1.6	1.4	2.2	3.7	2.8
Died	N	120	90	49	21	27	26	24	79	436
	%	44.6	15.6	6.4	1.9	1.7	1.2	1.1	1.4	3.1
Palliative care (home/other institute)	N	0	1	1	1	0	1	7	20	31
	%	0.0	0.2	0.1	0.1	0.0	0.1	0.3	0.4	0.2
Another inpatient area in site	N	28	40	39	53	69	180	503	1887	2799
	%	10.4	6.9	5.1	4.7	4.3	8.3	22.8	34.4	19.7
Out of country discharge	N	3	0	2	0	1	1	2	0	9
	%	1.1	0.0	0.3	0.0	0.1	0.1	0.1	0.0	0.1
Total included	N	269	576	763	1118	1610	2160	2210	5479	14185
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Moribund (Death)	N	Data on GA are not available in detail for these infants								34
Discharge destination missing	N									2
GA missing	N									3
Total	N									14 224

Presentation #58

Support at discharge

		GA (completed weeks)								
		< 25	**25-26**	**27-28**	**29-30**	**31-32**	**33-34**	**35-36**	**≥37**	**Total**
Total available	N	269	576	763	1118	1610	2160	2210	5479	14185
Oxygen	N	63	121	132	98	105	84	74	210	887
	%	23.4	21.0	17.3	8.8	6.5	3.9	3.4	3.8	6.3
Monitor	N	60	231	378	562	670	678	458	1006	4043
	%	22.3	40.1	49.5	50.3	41.6	31.4	20.7	18.4	28.5
Enterostomy	N	5	3	5	7	10	9	7	29	75
	%	1.9	0.5	0.7	0.6	0.6	0.4	0.3	0.5	0.5
Gavage	N	47	224	369	588	717	718	379	516	3558
	%	17.5	38.9	48.4	52.6	44.5	33.2	17.2	9.4	25.1
Tracheostomy	N	3	1	0	2	0	2	2	7	17
	%	1.1	0.2	0.0	0.2	0.0	0.1	0.1	0.1	0.1
Gastrostomy	N	8	5	4	7	8	8	11	37	88
	%	3.0	0.9	0.5	0.6	0.5	0.4	0.5	0.7	0.6
Ventilation	N	8	11	9	9	7	4	16	71	135
	%	3.0	1.9	1.2	0.8	0.4	0.2	0.7	1.3	1.0
CPAP	N	3	12	27	31	16	12	10	17	128
	%	1.1	2.1	3.5	2.8	1.0	0.6	0.5	0.3	0.9
Breast milk only	N	44	175	258	473	596	648	640	1821	4655
	%	16.4	30.4	33.8	42.3	37.0	30.0	29.0	33.2	32.8
Formula only	N	48	122	168	209	335	498	531	1163	3074
	%	17.8	21.2	22.0	18.7	20.8	23.1	24.0	21.2	21.7
Both breast milk and formula	N	45	174	263	344	577	928	940	2083	5354
	%	16.7	30.2	34.5	30.8	35.8	43.0	42.5	38.0	37.7
Total available	N	269	576	763	1118	1610	2160	2210	5479	14185
Missing	N									39
Total	N									14224

G. Duration of Support & Length of Stay

Analyses based on number of neonates with GA < 33 weeks who were admitted within 4 days of birth and discharged home from network sites (excluding major congenital anomalies). 1 499 neonates were included in the analysis.

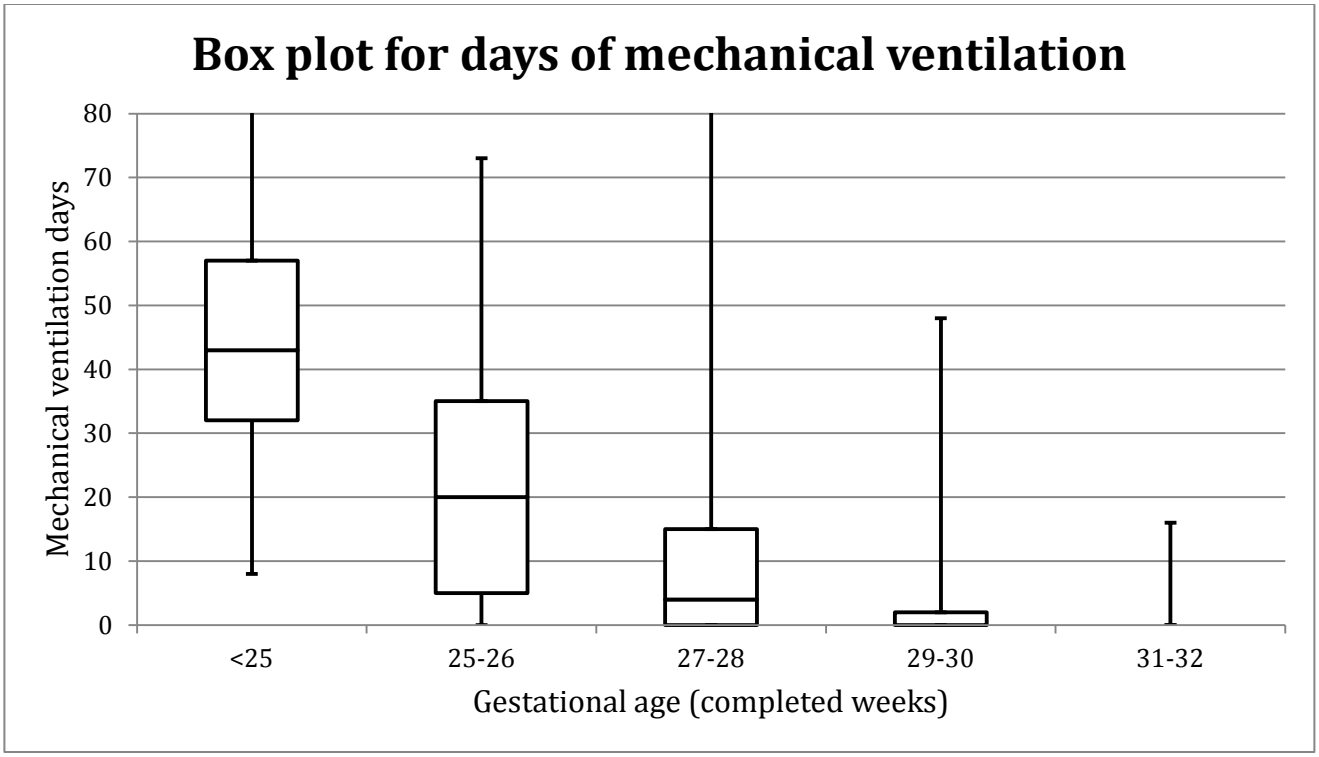
Out of total 4 370 neonates whose GA < 33, 1 644 neonates were discharged home. Out of those 1 644 neonates who were discharged home, 1 499 neonates were admitted within 4 days of birth and did not have any major congenital anomalies.

For presentations #60, #65 and #67, analyses are based on the number of neonates whose GA were < 29 weeks and admitted within 4 days of birth (including all discharge destinations and excluding major congenital anomalies and death). 1 264 neonates were included in the analysis.

Presentation #59

Days of invasive mechanical ventilation* (GA <33 weeks)

Inclusion:
1. GA < 33 weeks
2. Admission within 4 days of birth to CNN site
3. Discharged home from network sites**
4. No major congenital anomalies



GA at birth (completed weeks)	# of neonates	Mean	Std Error	Min	1st Quartile	Median	3rd Quartile	Max
<25	68	48.5	3.0	8	32	43	57	128
25-26	199	22.5	1.3	0	5	20	35	72
27-28	265	10.4	0.9	0	0	4	15	101
29-30	345	1.8	0.2	0	0	0	2	47
31-32	622	0.6	0.1	0	0	0	0	15
Total included	1499	7.7	0.4	0	0	0	5	128

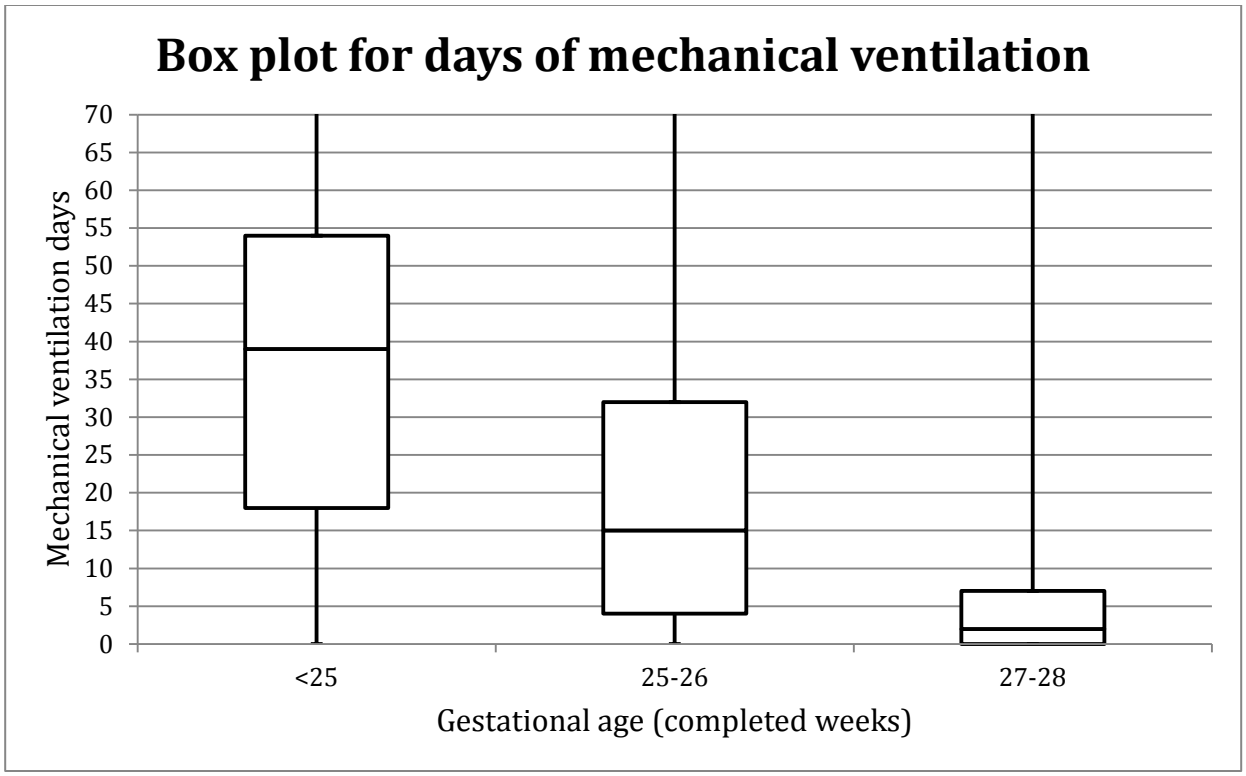
*Invasive mechanical ventilation = any of high frequency ventilation or intermittent positive pressure ventilation
**Data shown apply to neonates discharged home from network sites (data for neonates transferred to other sites are presently unavailable)

Presentation #60

Days of invasive mechanical ventilation* (GA < 29 weeks)

Inclusion:

1. GA <29 weeks
2. Admitted within 4 days of birth to CNN site
3. No major congenital anomalies
4. Discharge destination – ALL excluding death



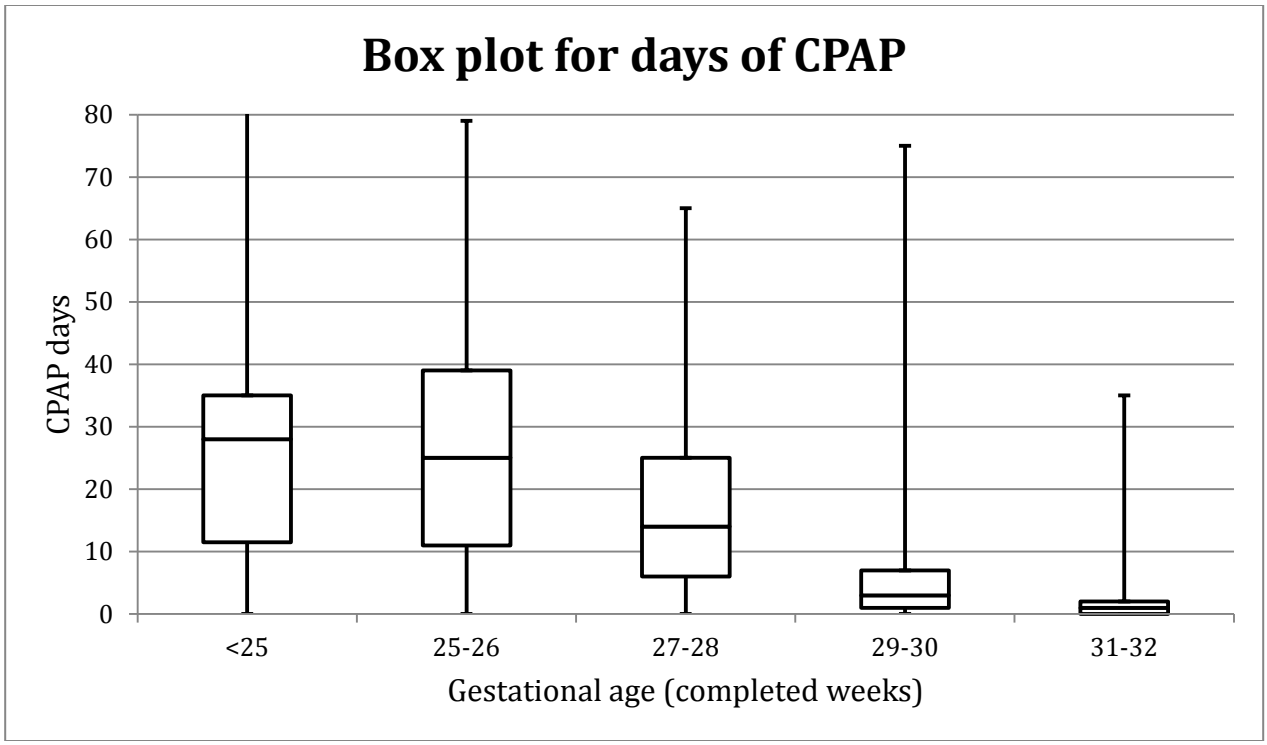
GA at birth (completed weeks)	# of neonates	Mean	Std Error	Min	1st Quartile	Median	3rd Quartile	Max
<25	151	39.8	2.5	0	18	39	54	165
25-26	451	20.0	0.9	0	4	15	32	87
27-28	662	6.9	0.5	0	0	2	7	101
Total included	1264	15.5	0.6	0	1	6	25	165

*Invasive mechanical ventilation = any of high frequency ventilation or intermittent positive pressure ventilation

Presentation #61

Days of CPAP (GA < 33 weeks)

Inclusion:
1. GA < 33 weeks
2. Admission within 4 days of birth to CNN site
3. Discharged home from network sites*
4. No major congenital anomalies



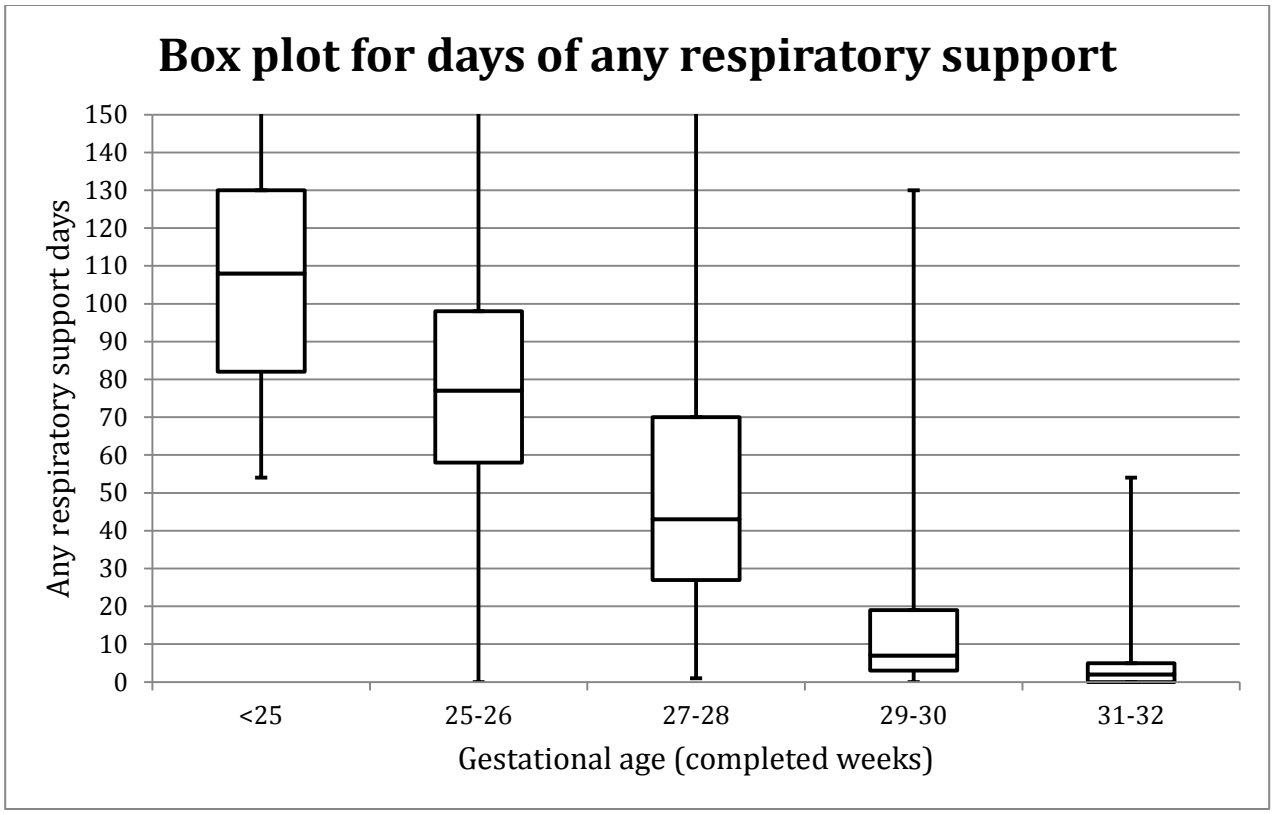
GA at birth (completed weeks)	# of neonates	Mean	Std Error	Min	1st Quartile	Median	3rd Quartile	Max
<25	68	26.4	2.4	0	11.5	28	35	94
25-26	199	26.4	1.3	0	11	25	39	78
27-28	265	17.4	0.9	0	6	14	25	64
29-30	345	6.6	0.6	0	1	3	7	74
31-32	622	1.9	0.1	0	0	1	2	34
Total included	1499	10.1	0.4	0	1	3	14	94

*Data shown apply to neonates discharged home from network sites (data for neonates transferred to other sites are presently unavailable)

Presentation #62

Days of any respiratory support* (GA < 33 weeks)

Inclusion:
1. GA < 33 weeks
2. Admission within 4 days of birth to CNN site
3. Discharged home from network sites**
4. No major congenital anomalies



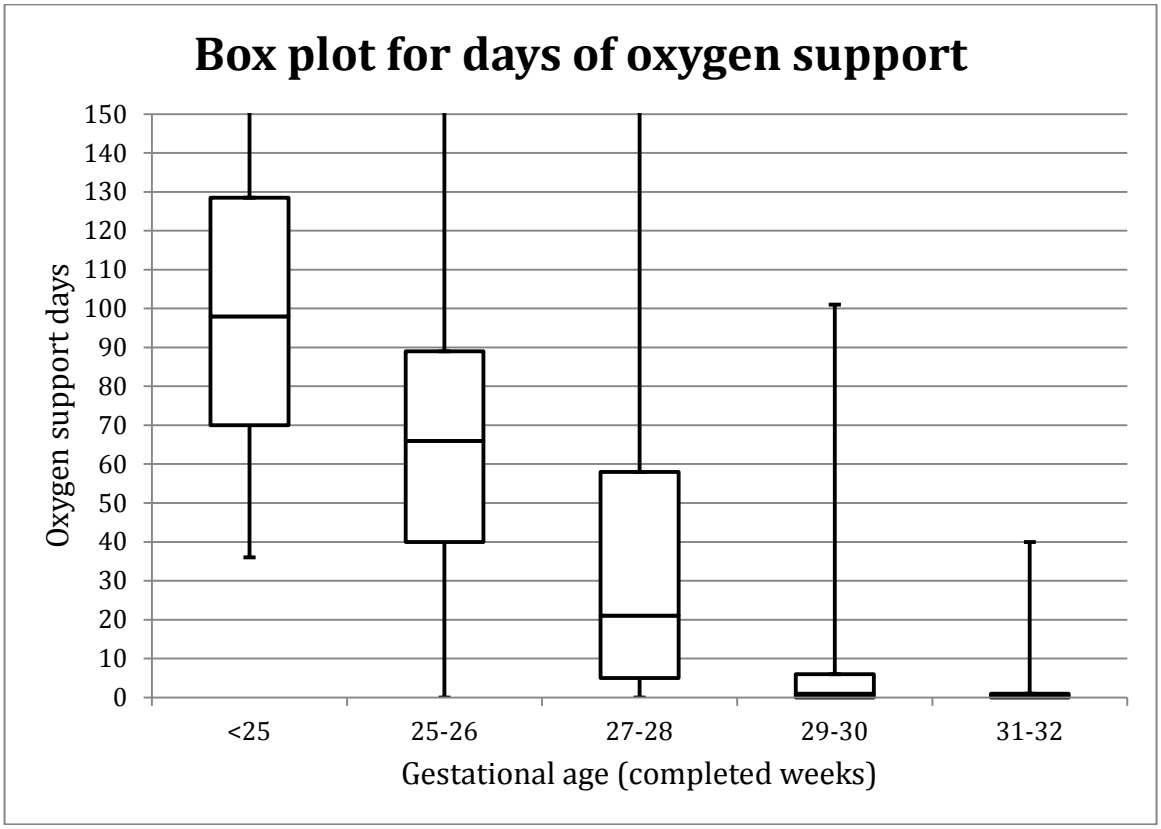
GA at birth (completed weeks)	# of neonates	Mean	Std Error	Min	1st Quartile	Median	3rd Quartile	Max
<25	68	112.5	5.0	54	82	108	130	246
25-26	199	78.1	2.2	0	58	77	98	225
27-28	265	51.5	2.2	1	27	43	70	231
29-30	345	14.7	1.0	0	3	7	19	130
31-32	622	4.1	0.3	0	0	2	5	52
Total included	1499	29.7	1.0	0	2	8	49	246

*Any respiratory support = any of HFV, IPPV, NI ventilation, CPAP, high flow or oxygen
**Data shown apply to neonates discharged home from network sites (data for neonates transferred to other sites are presently unavailable)

Presentation #63

Days of oxygen support (GA < 33 weeks)

Inclusion:
1. GA < 33 weeks
2. Admission within 4 days of birth to CNN site
3. Discharged home from network sites*
4. No major congenital anomalies



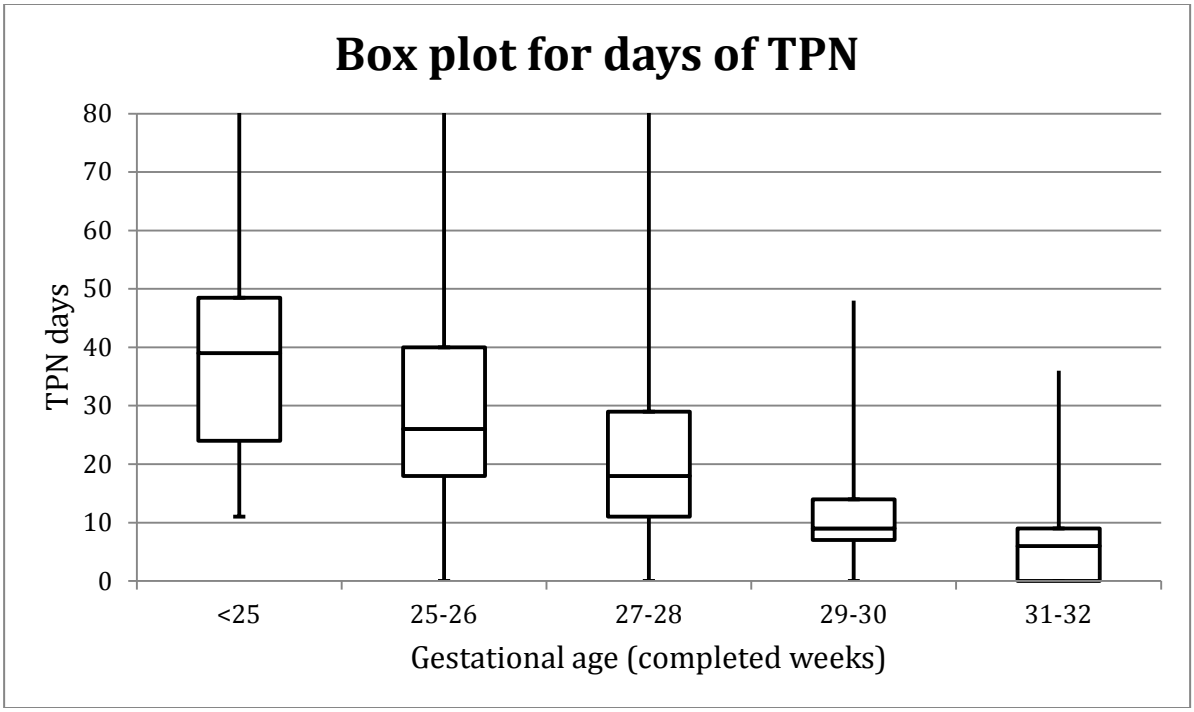
GA at birth (completed weeks)	# of neonates	Mean	Std Error	Min	1st Quartile	Median	3rd Quartile	Max
<25	68	103.5	5.4	36	70	98	128.5	243
25-26	199	64.9	2.5	0	40	66	89	162
27-28	265	35.9	2.4	0	5	21	58	231
29-30	345	7.0	0.8	0	0	1	6	101
31-32	622	1.8	0.2	0	0	0	1	40
Total included	1499	22.0	1.0	0	0	2	29	243

*Data shown apply to neonates discharged home from network sites (data for neonates transferred to other sites are presently unavailable)

Presentation #64

Days of TPN (GA < 33 weeks)

Inclusion:
1. GA < 33 weeks
2. Admission within 4 days of birth to CNN site
3. Discharged home from network sites*
4. No major congenital anomalies



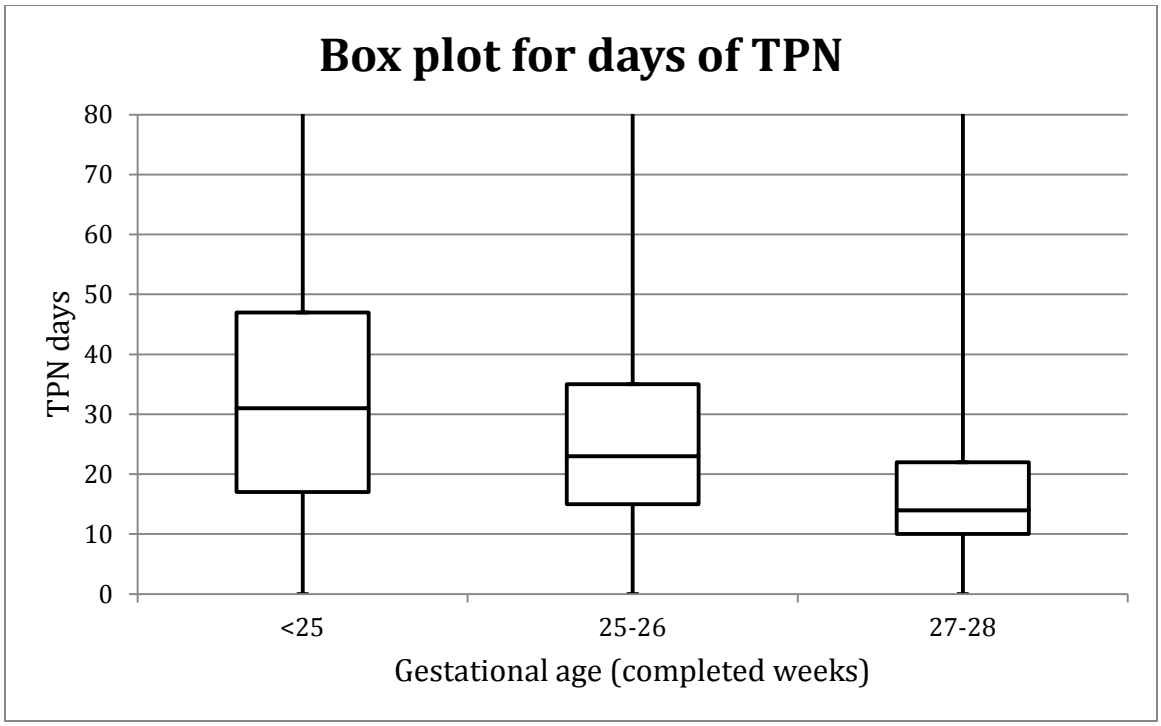
GA at birth (completed weeks)	# of neonates	Mean	Std Error	Min	1st Quartile	Median	3rd Quartile	Max
<25	68	43.6	3.8	11	24	39	48.5	175
25-26	199	31.2	1.4	0	18	26	40	129
27-28	265	22.8	1.0	0	11	18	29	146
29-30	345	11.7	0.5	0	7	9	14	48
31-32	622	6.4	0.3	0	0	6	9	36
Total included	1499	15.5	0.4	0	5	10	21	175

*Data shown apply to neonates discharged home from network sites (data for neonates transferred to other sites are presently unavailable)

Presentation #65

Days of TPN (GA < 29 weeks)

Inclusion:
1. GA <29 weeks
2. Admitted within 4 days of birth to CNN site
3. No major congenital anomalies
4. Discharge destination – ALL excluding death

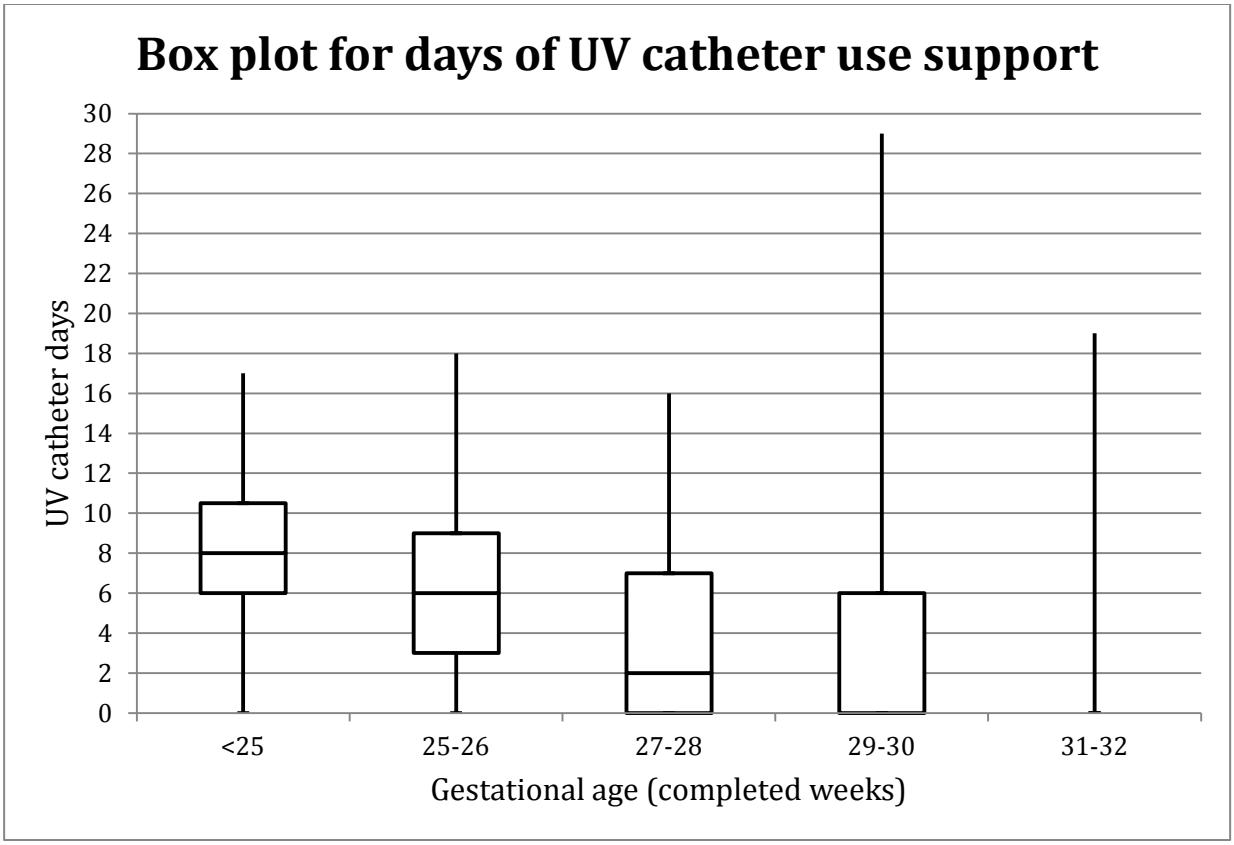


GA at birth (completed weeks)	# of neonates	Mean	Std Error	Min	1st Quartile	Median	3rd Quartile	Max
<25	151	36.6	2.7	0	17	31	47	175
25-26	451	27.9	0.9	0	15	23	35	131
27-28	662	18.9	0.6	0	10	14	22	149
Total included	1264	24.2	0.6	0	12	18	30	175

Presentation #66

Days of UV catheter use (GA < 33 weeks)

Inclusion:
1. GA < 33 weeks
2. Admission within 4 days of birth to CNN site
3. Discharged home from network sites*
4. No major congenital anomalies



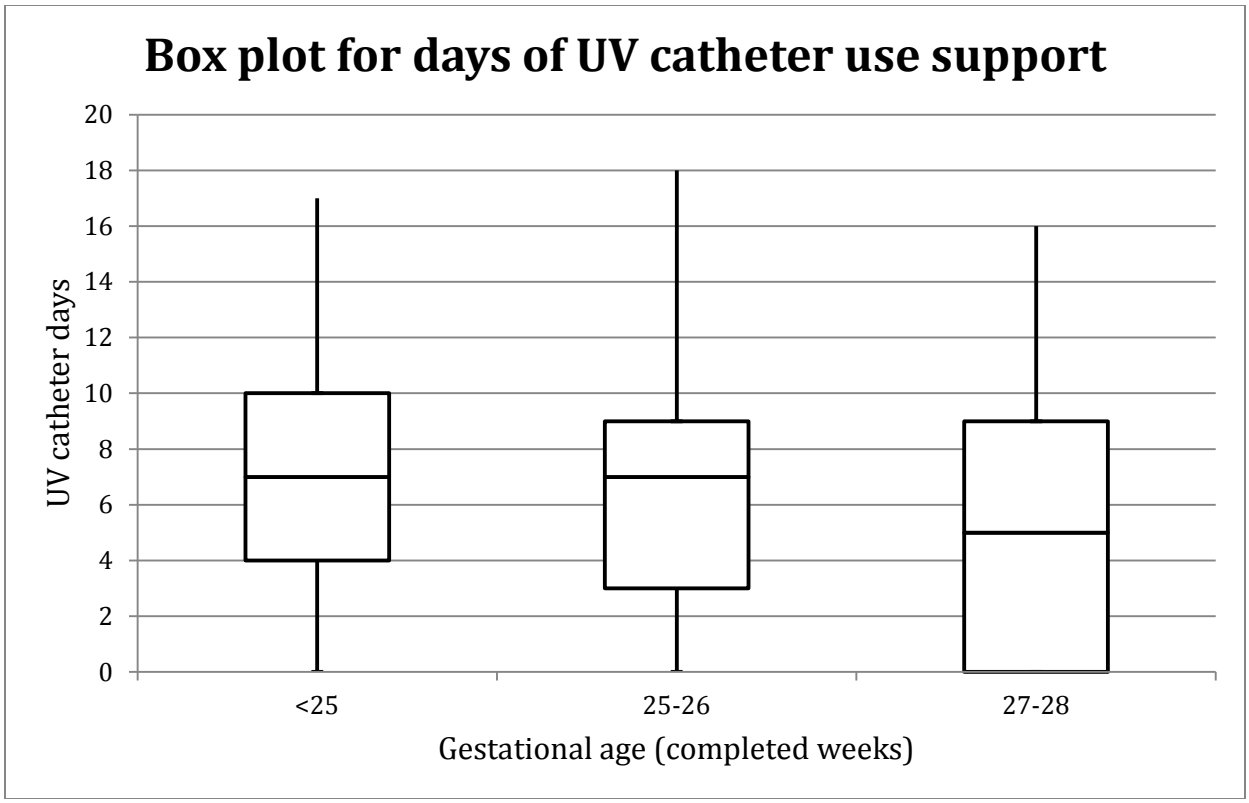
GA at birth (completed weeks)	# of neonates	Mean	Std Error	Min	1st Quartile	Median	3rd Quartile	Max
<25	68	8.5	0.4	0	6	8	10.5	17
25-26	199	6.2	0.3	0	3	6	9	18
27-28	265	4.0	0.3	0	0	2	7	16
29-30	345	2.7	0.2	0	0	0	6	29
31-32	622	1.1	0.1	0	0	0	0	19
Total included	1499	3.0	0.1	0	0	0	6	29

*Data shown apply to neonates discharged home from network sites (data for neonates transferred to other sites are presently unavailable)

Presentation #67

Days of UV catheter use (GA < 29 weeks)

Inclusion:
1. GA <29 weeks
2. Admitted within 4 days of birth to CNN site
3. No major congenital anomalies
4. Discharge destination – ALL excluding death

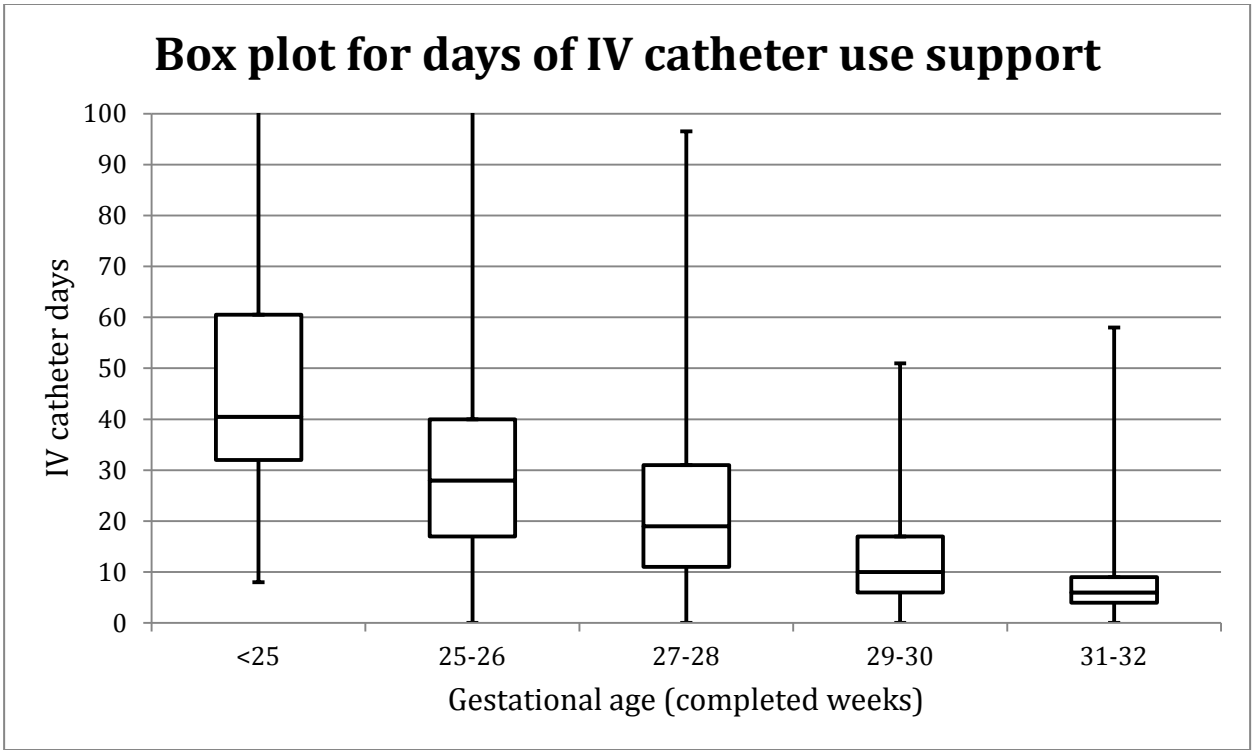


GA at birth (completed weeks)	# of neonates	Mean	Std Error	Min	1st Quartile	Median	3rd Quartile	Max
<25	151	6.8	0.4	0	4	7	10	17
25-26	451	6.5	0.2	0	3	7	9	18
27-28	662	4.9	0.2	0	0	5	9	16
Total included	1264	5.7	0.1	0	2	6	9	18

Presentation #68

Days of IV catheter* use (GA < 33 weeks)

Inclusion:
1. GA < 33 weeks
2. Admission within 4 days of birth to CNN site
3. Discharged home from network sites**
4. No major congenital anomalies



GA at birth (completed weeks)	# of neonates	Mean	Std Error	Min	1st Quartile	Median	3rd Quartile	Max
<25	68	52.9	4.5	8	32	40.5	60.5	208
25-26	199	31.5	1.6	0	17	28	40	143
27-28	265	22.9	1.0	0	11	19	31	96
29-30	345	12.2	0.6	0	6	10	17	51
31-32	622	7.6	0.3	0	4	6	9	57
Total included	1499	16.6	0.5	0	5	10	22	208

*IV catheter = any of Surgical CVL, PICC, or PIV
**Data shown apply to neonates discharged home from network sites (data for neonates transferred to other sites are presently unavailable)

Presentation #69

Length of stay (GA < 33 weeks)

Inclusion:
1. GA < 33 weeks
2. Admission within 4 days of birth to CNN site
3. Discharged home from network sites*
4. No major congenital anomalies

GA at birth (completed weeks)	# of neonates	Mean	Std Error	Min	1st Quartile	Median	3rd Quartile	Max
<25	68	137.1	4.9	57	114	127.5	148	333
25-26	199	107.4	2.0	7	90	103	124	225
27-28	265	84.4	1.5	32	69	78	94	231
29-30	345	56.6	1.1	9	44	52	65	199
31-32	622	35.6	0.6	6	26	33	42	180
Total included	1499	63.2	1.0	6	35	52	84	333

*Data shown apply to neonates discharged home from network sites (data for neonates transferred to other sites are presently unavailable)

H. Hypoxic Ischemic Encephalopathy

Presentation #70

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**	42	114	66	11	233
	No	103	54	32	26	215
	Unknown	0	0	0	1	1
	Total	**145**	**168**	**98**	**38**	**449**

A. Reason for not receiving hypothermia treatment*

Reason	**Number**
Chromosomal anomalies	1
Major congenital anomalies	1
Weight < 2000g or GA < 35 weeks	35
Extreme condition	17
Head trauma or intracranial hemorrhage	6
Mild HIE	103
Unit policy	22
Health care team preference	6
Delayed transfer	42
Parental request	0
Unknown	22

*One neonate can have more than one reason.

B. Time of admission

Time	**Number**
<6 hours from birth	277
6 – 12 hours from birth	101
>12 hours from birth	62
Total**	440

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

Presentation #70 (continued)

Hypoxic Ischemic Encephalopathy
C. Characteristics of neonates who received hypothermia (N=233)

Characteristics	N		Results
Method	233	Selective head	3 (1%)
		Whole body cooling	230 (99%)
Target temperature	233	< 33^0C	5 (2%)
		33-34^0C	181 (78%)
		33.5-34.5^0C	34 (15%)
		34-35^0C	6 (3%)
		34.5-35.5^0C	2 (1%)
		Unknown	5 (2%)
Seizures at initiation	233		86 (37%)
Seizures at completion	233		24 (10%)
Side effects during hypothermia	216	Hypotension	80 (37%)
	209	Thrombocytopenia	45 (22%)
	210	Coagulopathy	62 (30%)
	208	Persistent metabolic acidosis	38 (18%)
Death	233		35 (15%)

D. Encephalopathy stage in relation to hypothermia treatment

Encephalopathy stage*		**At the end of hypothermia**				
		Stage 1	**Stage 2**	**Stage 3**	**Unknown**	**Total**
At the start of hypothermia	**Stage 1**	23	59	1	0	83
	Stage 2	2	36	6	2	46
	Stage 3	0	11	34	0	45
	Unknown	6	15	9	27	57
	Normal	0	2	0	0	2
	Total	31	123	50	29	233

*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 #70 (continued)
Hypoxic Ischemic Encephalopathy
For neonates* who received hypothermia (N=233)

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**	221	4.0	4.6	0.0	1.4	3.2	5.3	50.0	After 6 hours 46 (21%)	
	Target temp achieved	222	6.1	5.6	0.4	3.0	5.0	7.2	50.0	After 10 hours 28 (13%)	After 4 hours of initiation 27 (12%)
	Age at re-warming	228	67.4	20.5	2.9	72.2	74.9	77.3	122.1	After 78 hours 41 (18%)	Re-warming started >72 hours after initiation 37 (17%)
	Age at return of temp to normal	207	85.5	57.4	4.5	79.9	85.2	91.4	827.9	After 86 hours 94 (45%)	Took >8 hours to return temperature to normal after starting re-warming 122 (59%)
Temperature during hypothermia	**Lowest temp during hypothermia**	231	32.5	0.9	27.6	32.2	32.7	33.0	35.8	Lowest temp < 32.5C 74 (32%)	
	Highest temp during hypothermia	231	34.3	0.8	33.0	33.8	34.0	34.6	37.4	Highest temp > 35.5C 20 (9%)	

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

I. Trend Analyses over last 3 years

This section includes trend analyses in the last 3 years (2010-12) 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**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**
2010	82	172	270	333	388	371	480	611	678	788
2011	101	166	242	318	332	391	467	553	643	828
2012	113	184	285	294	348	416	510	610	738	872

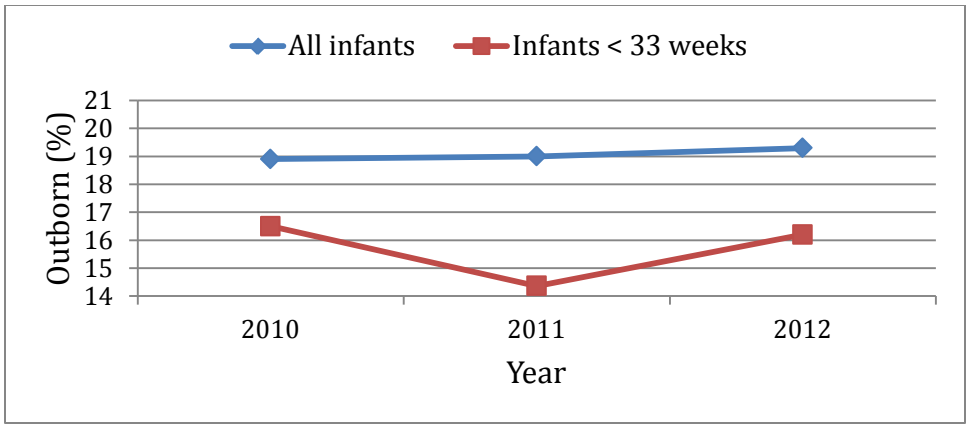
Number of neonates by admission year and birth weight

	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

1. Neonates in the participating sites: Admission status:

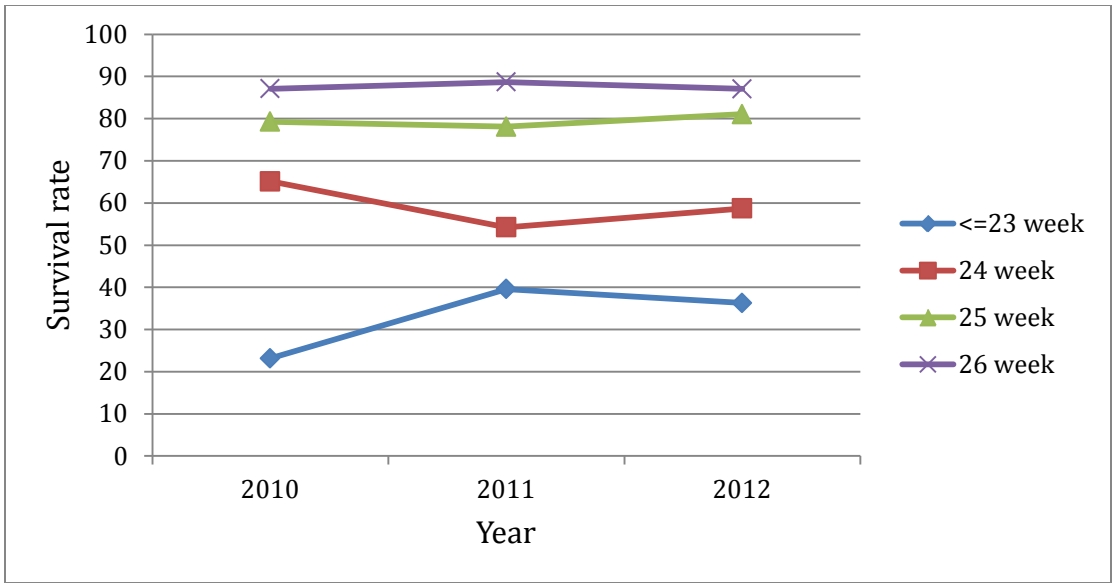
		All infants			Infants with GA<33 weeks		
Year	**Number of Sites**	**Total Number of Neonates***	**Inborn (%)**	**Outborn (%)**	**Number of Neonates* with GA<33**	**Inborn (%)**	**Outborn (%)**
2010	**27**	13 147	10662 (81.1%)	2485 (18.9%)	3 383	2824 (83.5%)	559 (16.5%)
2011	**30**	13 548	10972 (81.0%)	2576 (19.0%)	4 040	3460 (85.6%)	580 (14.4%)
2012	**30**	14 222	11475 (80.7%)	2747 (19.3%)	4 370	3663 (83.8%)	707 (16.2%)

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

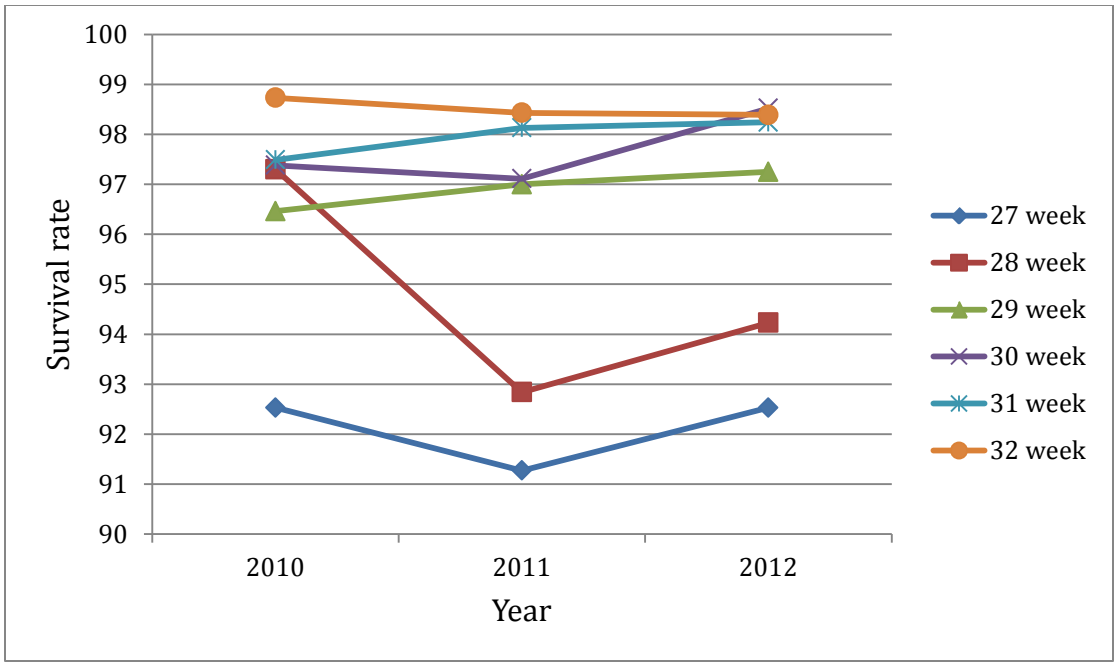


2. Survival rate:

a. 23-26 weeks:

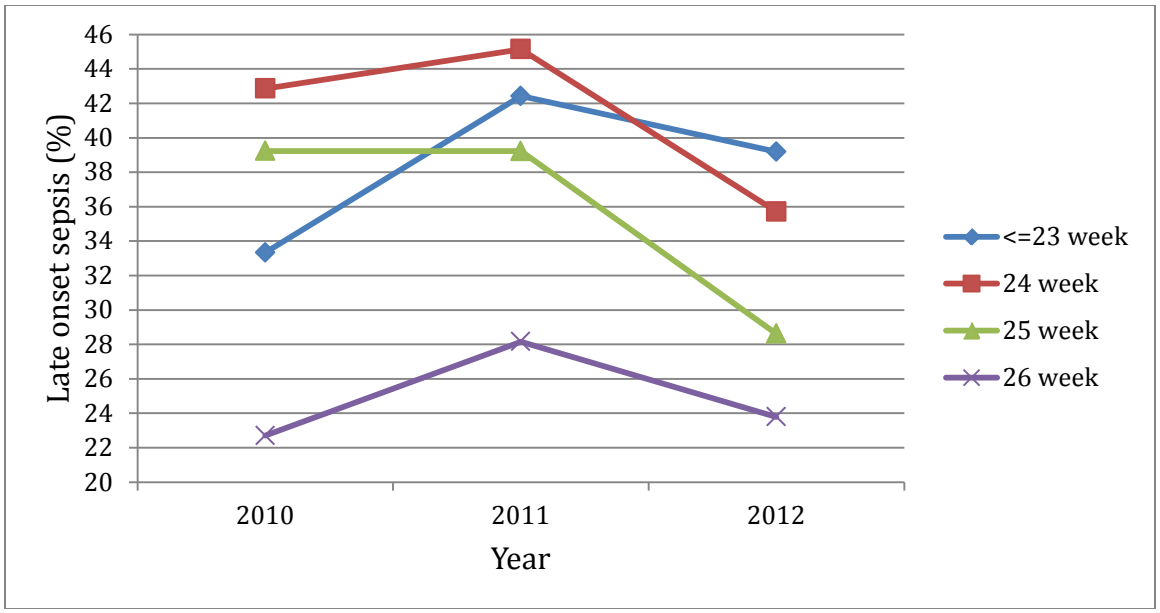


b. 27-32 weeks:

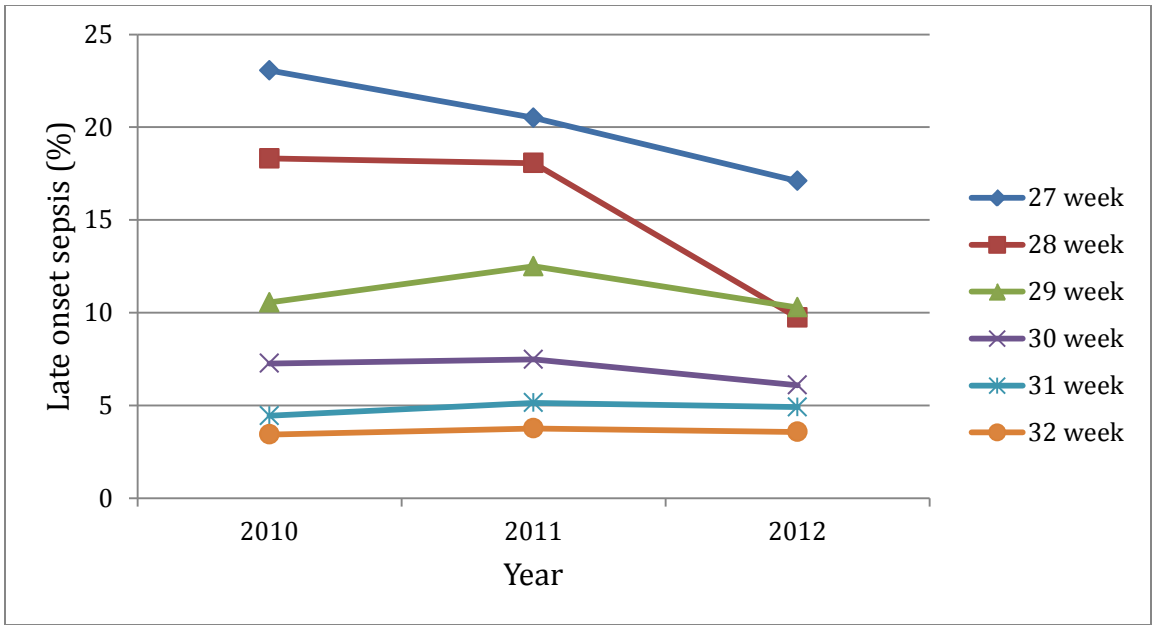


3. Late onset sepsis (with at least one infection) among neonates who survived beyond 2 days after birth

a. 23-26 weeks:

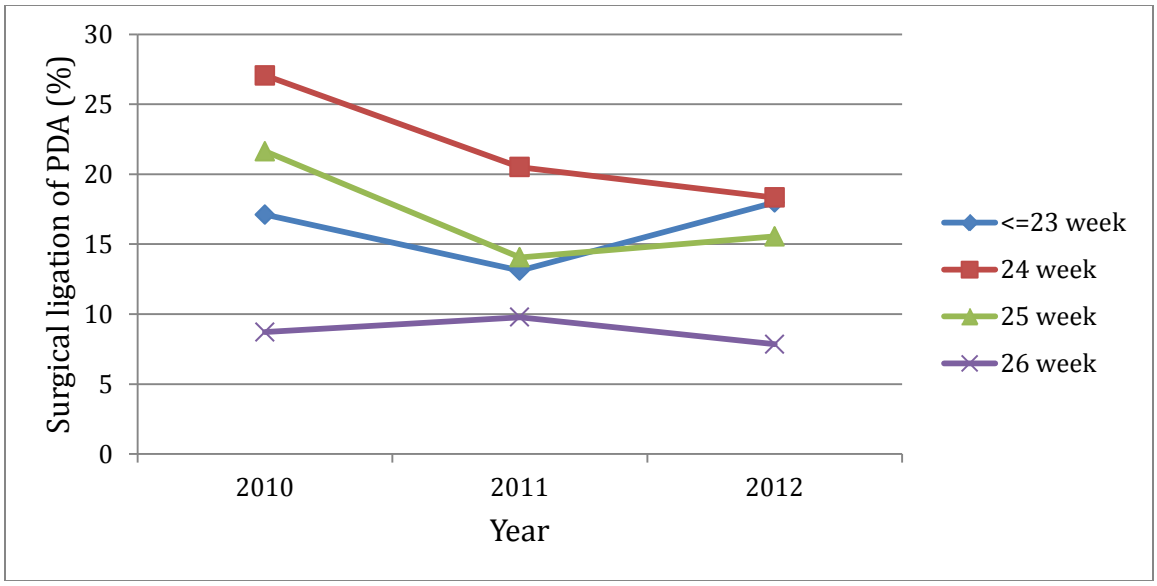


b. 27-32 weeks:

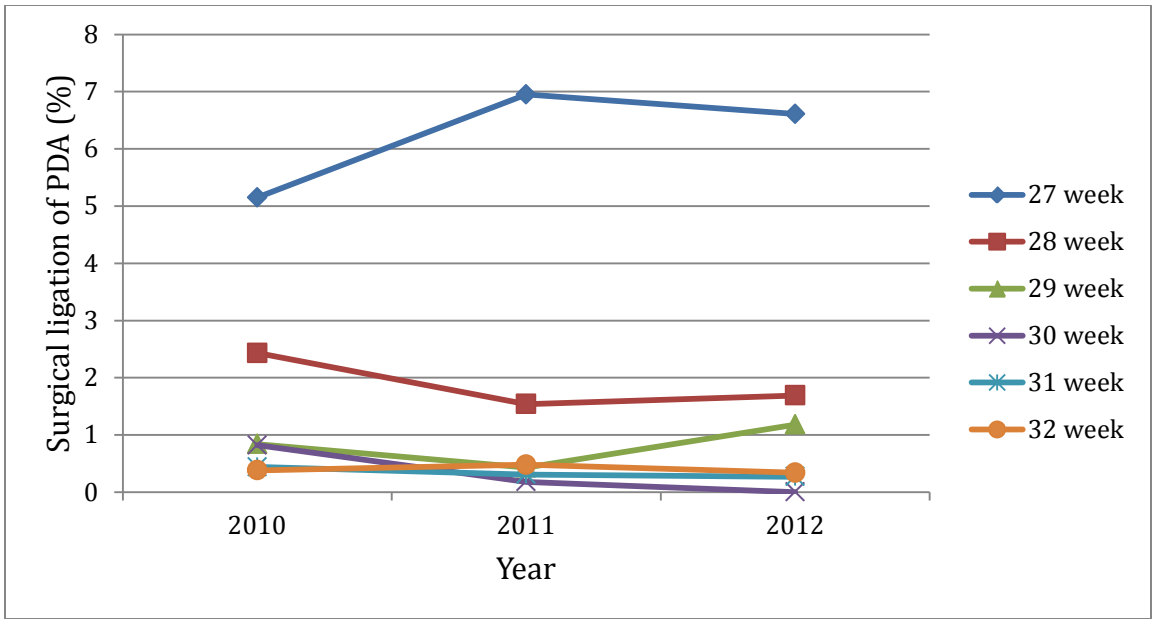


4. Surgical ligation of PDA

a. 23-26 weeks:

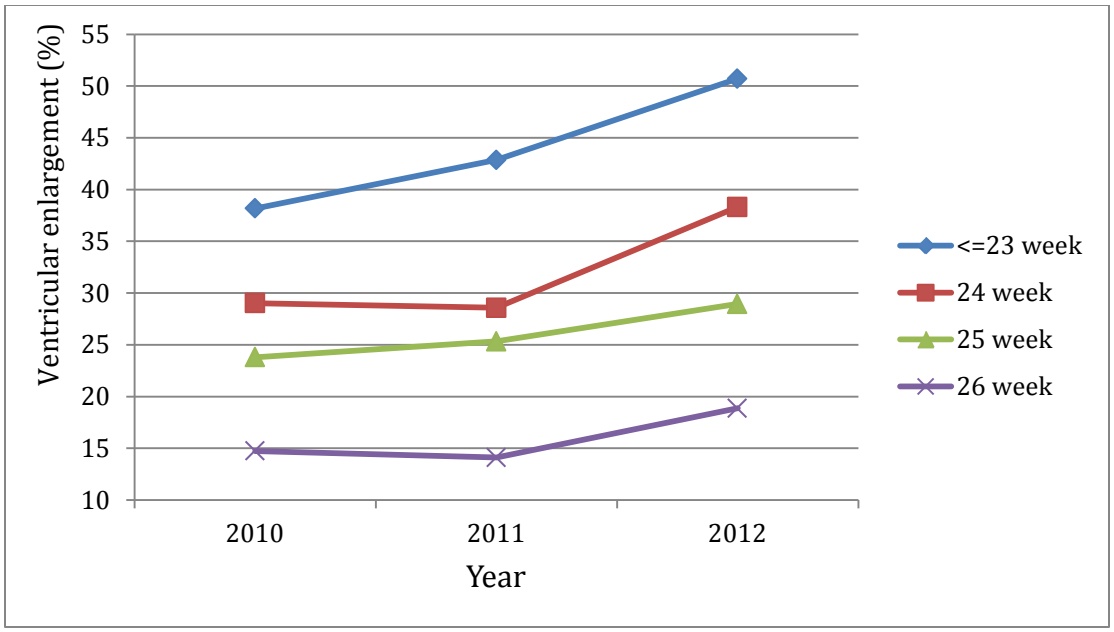


b. 27-32 weeks:

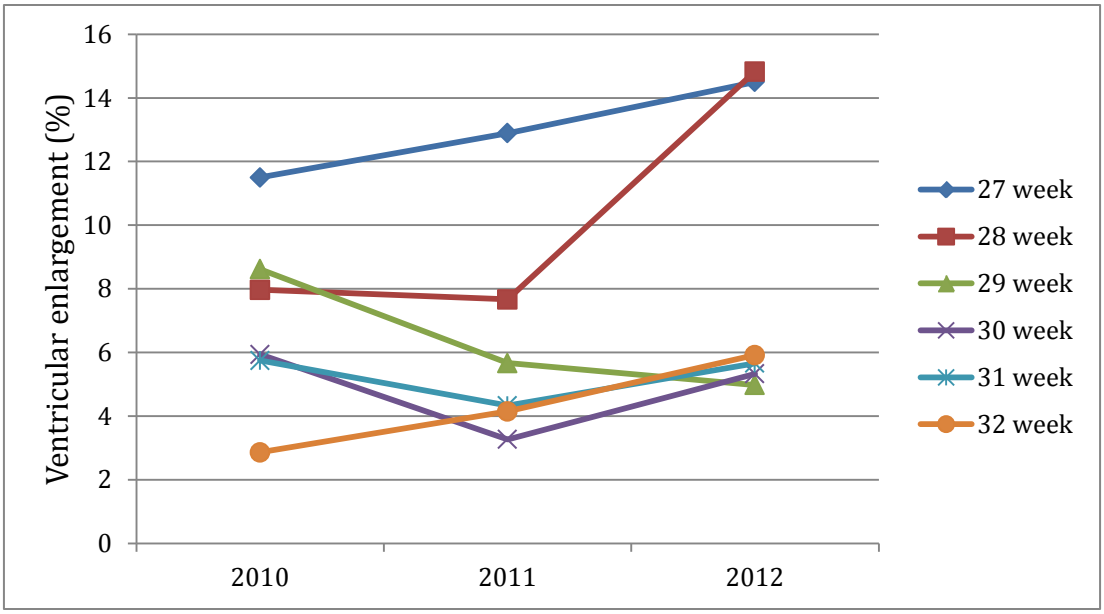


5. Ventricular enlargement: (among neonates who received ultrasound exams)

a. 23-26 weeks:

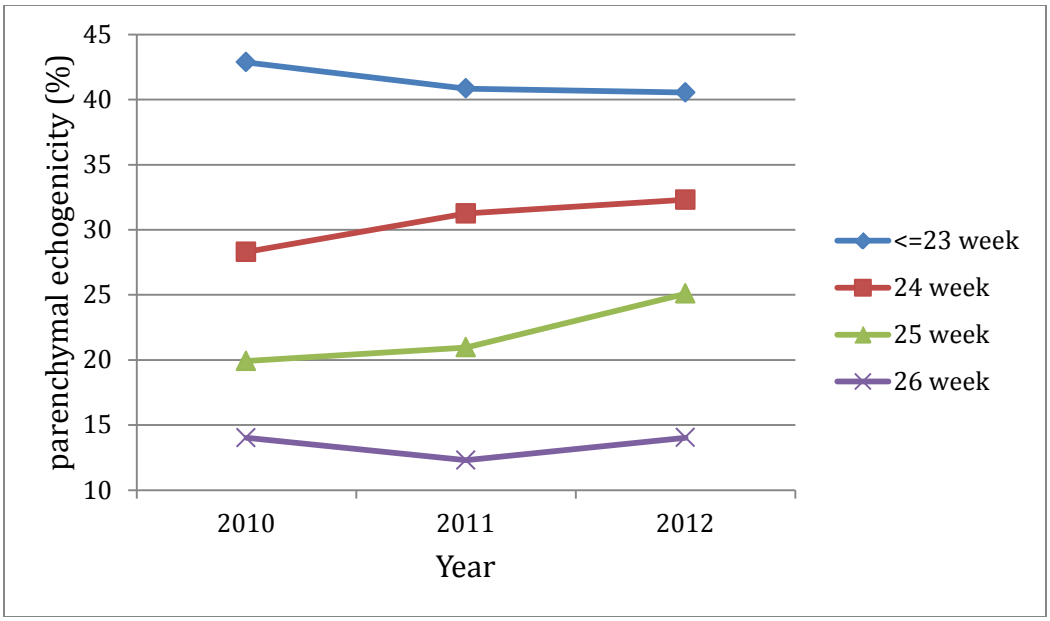


b. 27-32 weeks:

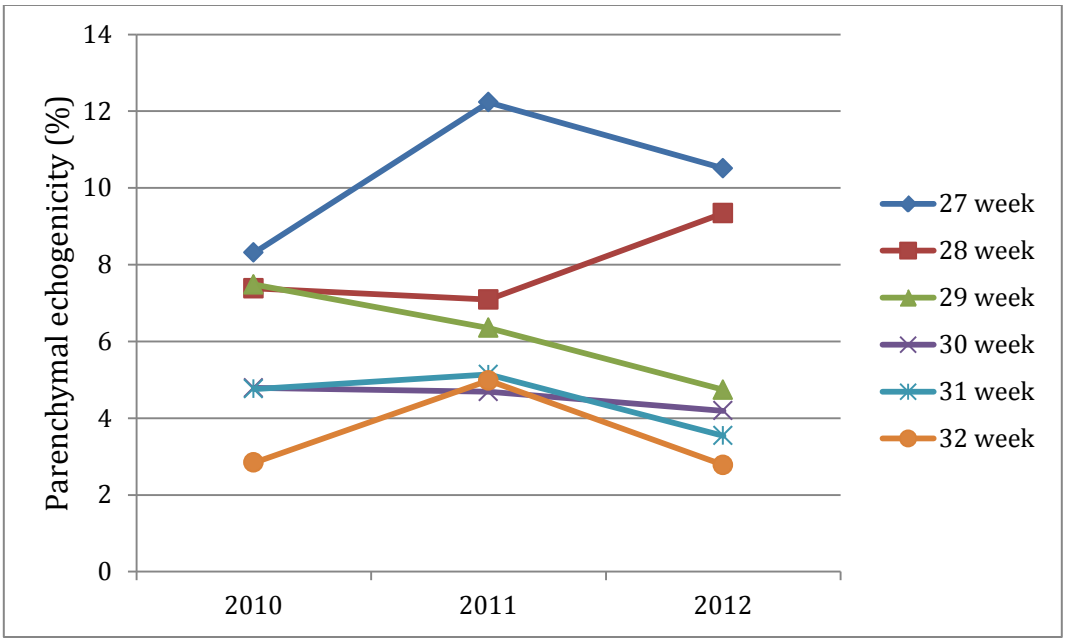


6. Parenchymal echogenicity: (among neonates who received ultrasound exams)

a. 23-26 weeks:

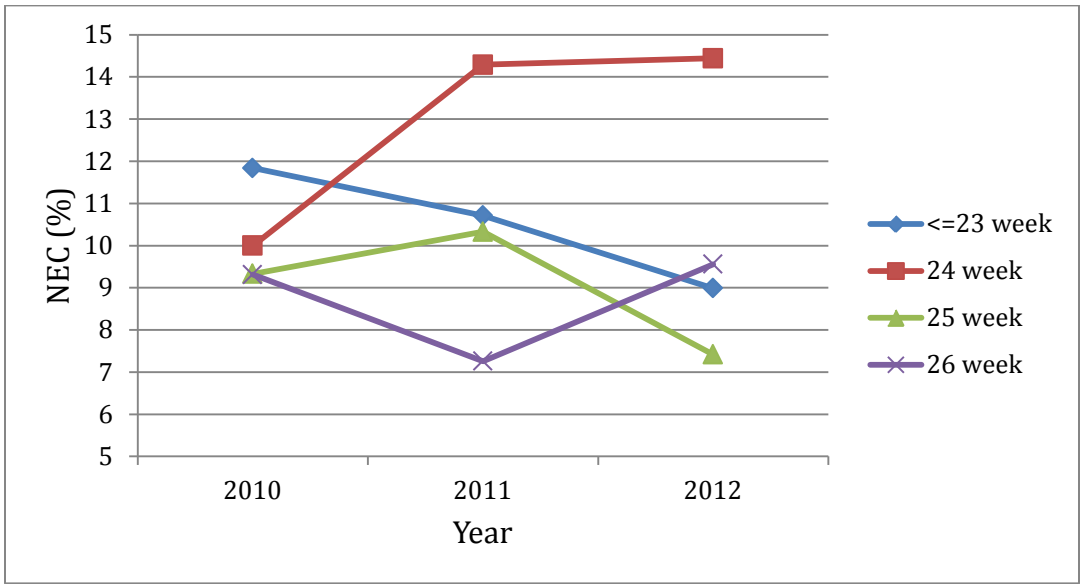


b. 27-32 weeks:

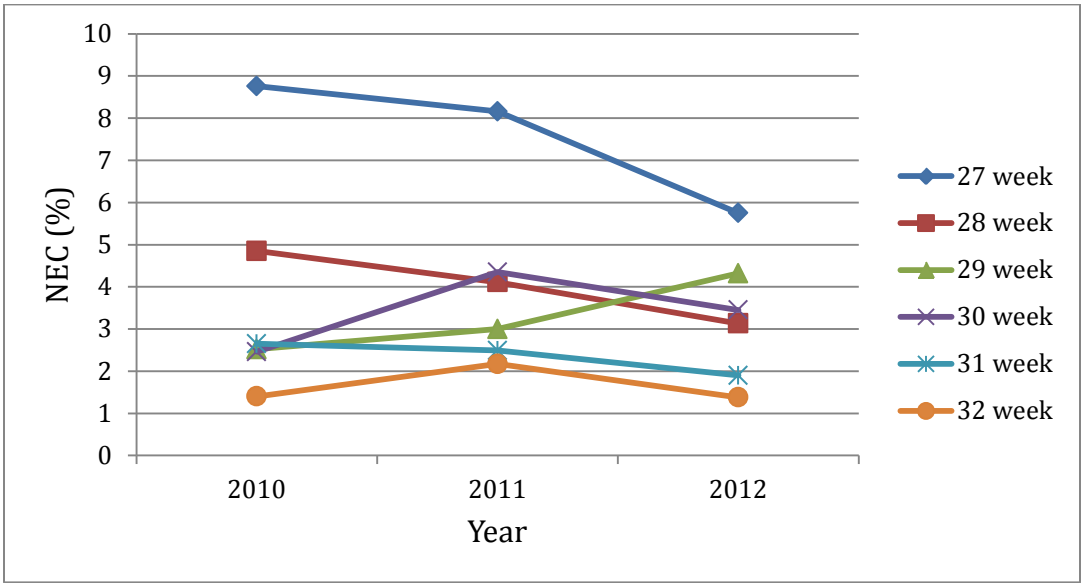


7. NEC:

a. 23-26 weeks:

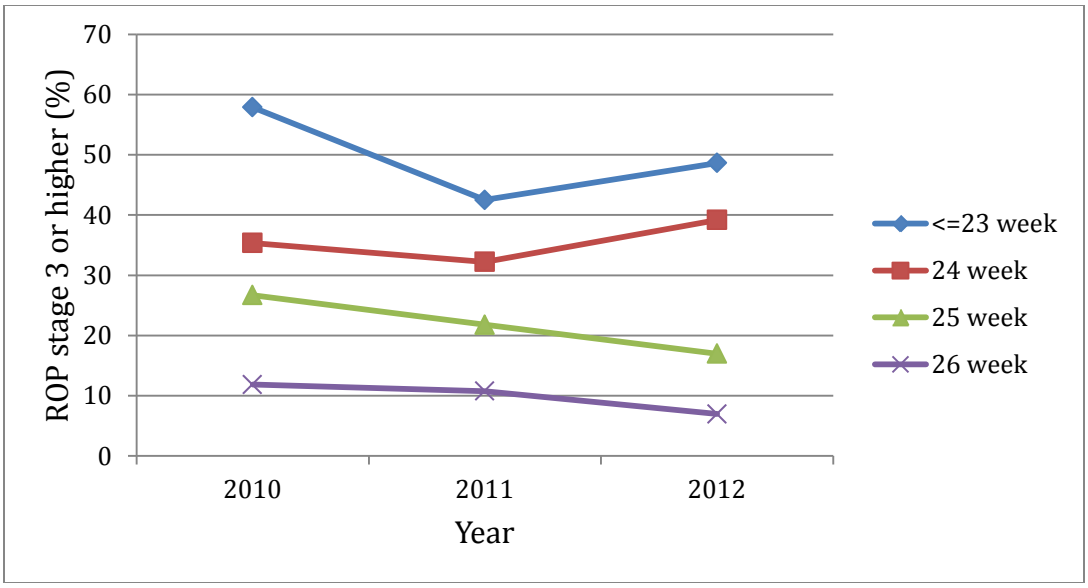


b. 27-32 weeks:

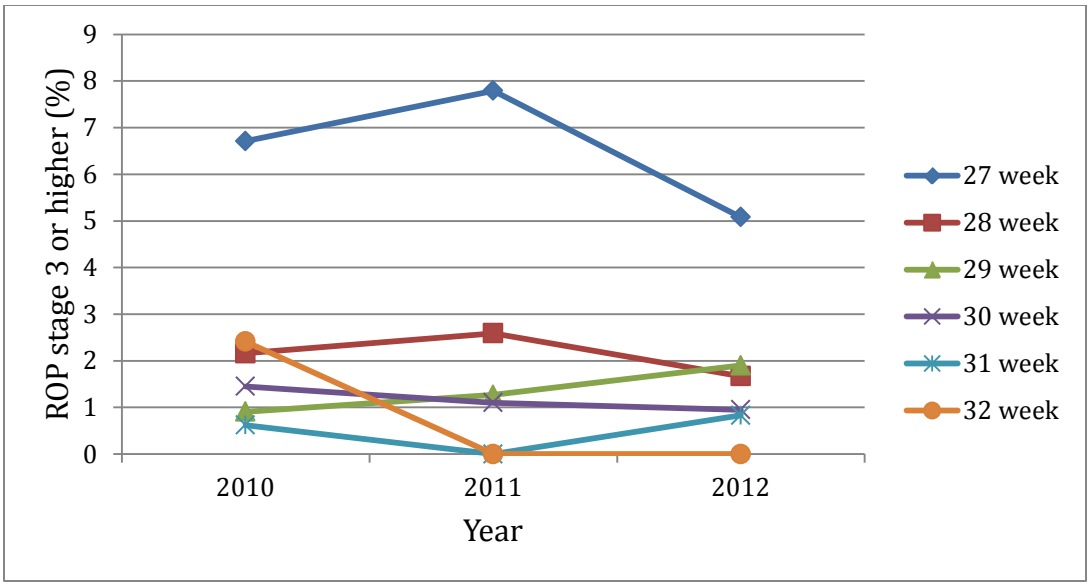


8. Stage 3, 4 and 5 ROP: (among neonates who received eye exams)

a. 23-26 weeks:

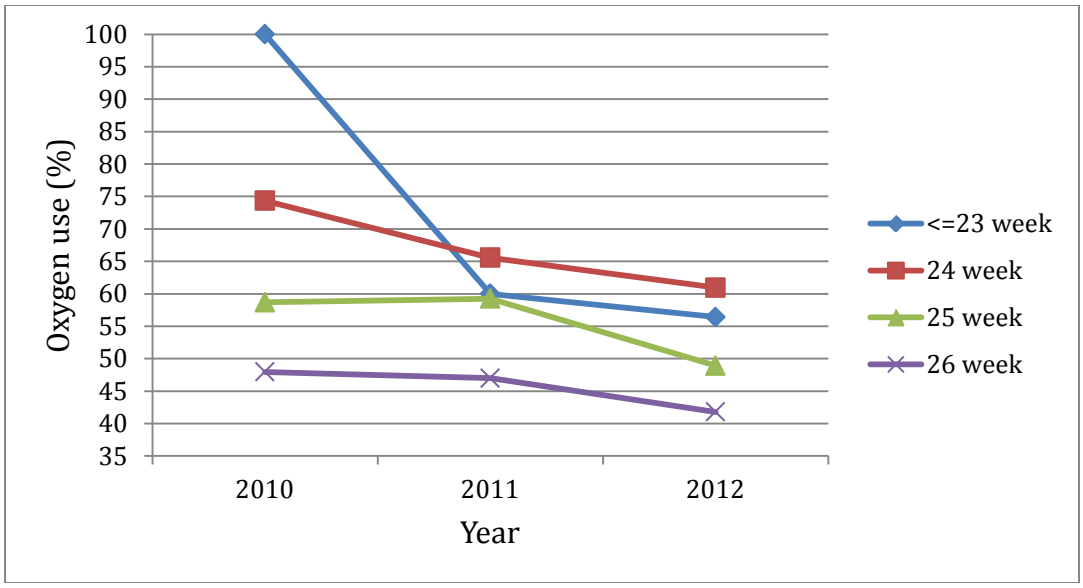


b. 27-32 weeks:

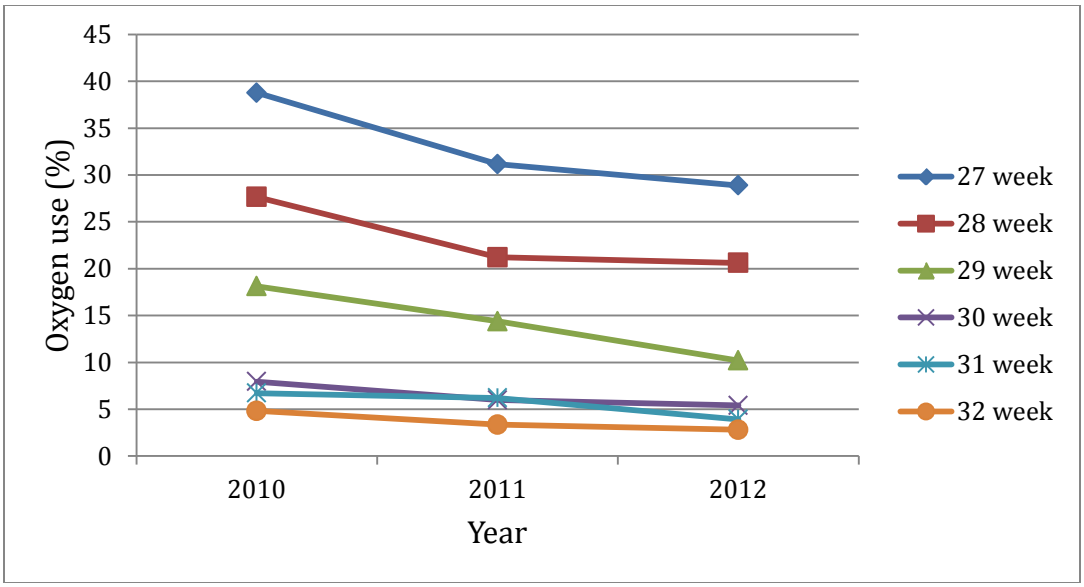


9. Oxygen use at 36 weeks (among neonates who survived beyond 36 weeks PMA):

a. 23-26 weeks:

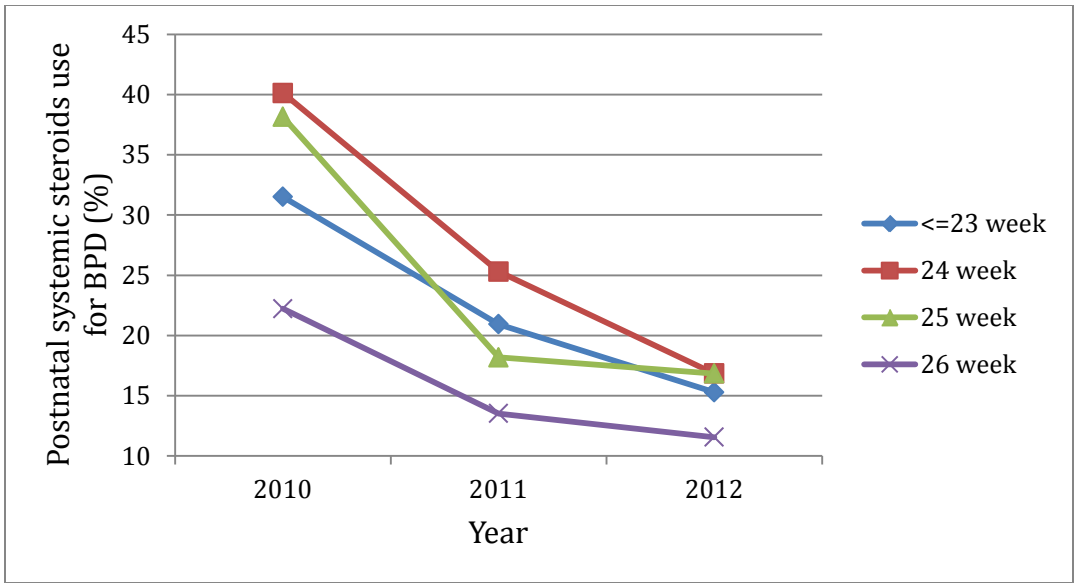


b. 27-32 weeks:

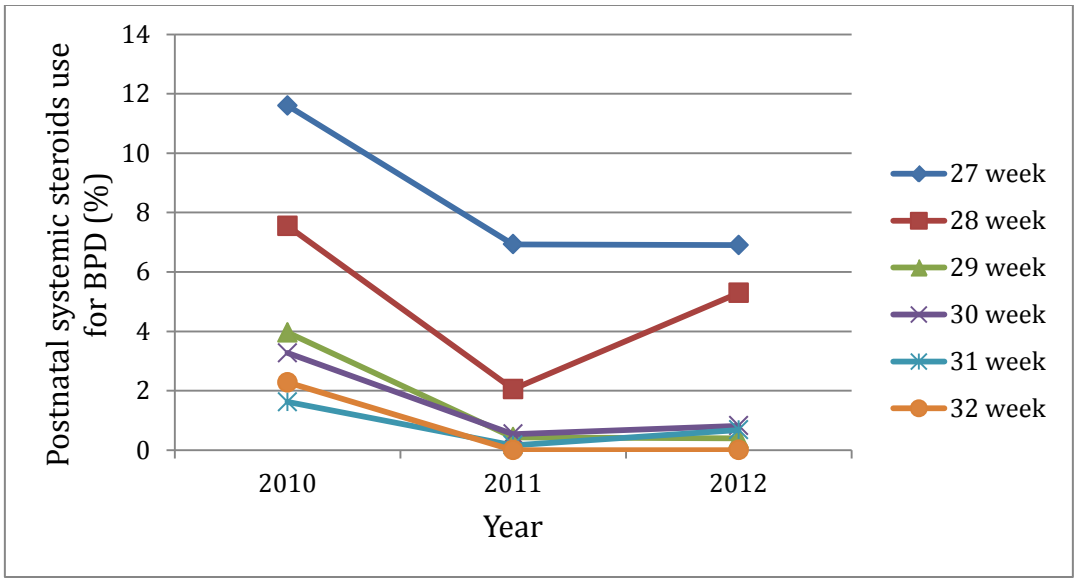


10. Postnatal systemic steroids use for BPD

a. 23-26 weeks:

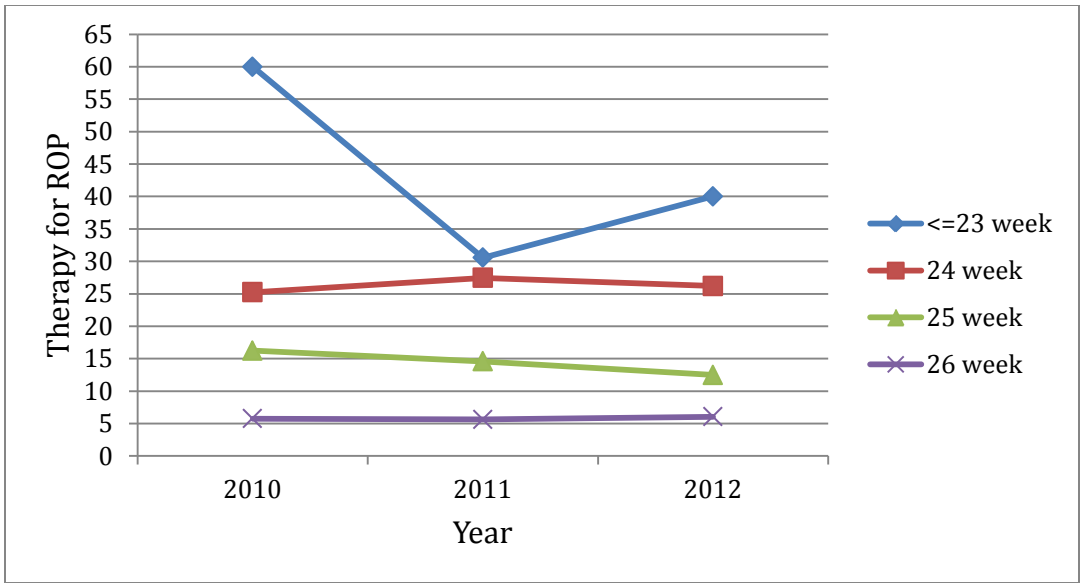


b. 27-32 weeks:

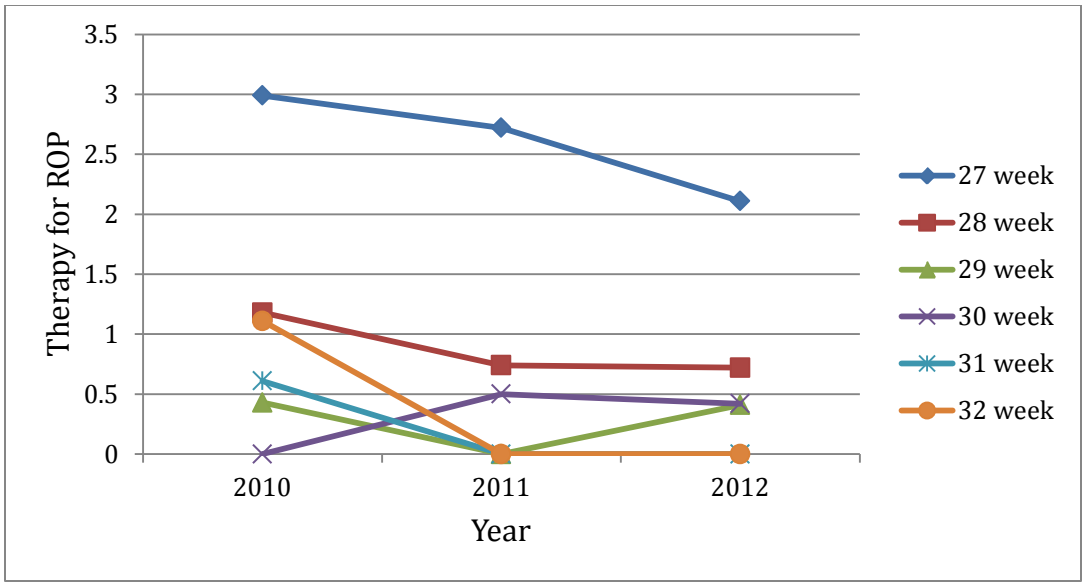


11. Therapy for ROP (among neonates who received eye exams)

a. 23-26 weeks:



b. 27-32 weeks:



J. 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 2012, 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 sites. Individual sites 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.

K. CNN publications for 2012

Peer reviewed publications

1) Yee WH, Soraisham AS, Shah V, Aziz K, Yoon W, Lee SK, Canadian Neonatal Network. Incidence and timing of presentation of necrotizing enterocolitis in preterm infants. Pediatrics. 2012; 129:e298-e304.

2) Wong J, Dow K, Shah P, Andrews W, Lee SK, Canadian Neonatal Network. Percutaneously placed central venous catheter-related sepsis in Canadian neonatal intensive care units. Am J Perinatol. 2012; 29(8):629-34

3) Stritzke A, Smyth J, Synnes AR, Lee SK, Shah P, Canadian Neonatal Network. Transfusion-associated necrotizing enterocolitis in neonates. Arch Dis Child Fetal Neonatal Ed 2013; 98(1):F10-4

4) 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.

5) 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(5):377-82.

6) Bassil KL, Collier S, Mirea L, Yang J, Seshia MM, Shah PS, Lee SK, 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.

7) Mirea L, Sankaran K, Seshia M, Ohlsson A, Allen AC, Aziz K, Lee SK, Shah PS, Canadian Neonatal Network. Treatment of patent ductus arteriosus and aeonatal mortality/morbidities: adjustment for treatment selection bias. J Pediatr. 2012; 161(4):689-94

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. Am J Perinatol. 2013; 30(7):601-6

9) Ko G, Shah P, Lee SK, Asztalos E. Impact of maternal education on cognitive and language scores at 18-24 months among extremely preterm neonates. Am J Perinatol. 2013; 30(9):723-30

10) Isayama T, Lee SK, Mori R, Kusuda S, Fujimura M, Ye XY, Shah PS, Canadian Neonatal Network; Neonatal Research Network of Japan. Comparison of Mortality and Morbidity of Very Low Birth Weight Infants between Canada and Japan. Pediatrics. 2012; 130(4):3957-65

11) 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.

12) Wong C, Mak M, Shivananda S, Yang J, Shah PS, Seidlitz W, Pemberton J, Fitzgerald PG, Cameron BH, Canadian Neonatal Network. Outcomes of neonatal patient ductus arteriosus ligation in Canadian neonatal units with and without pediatric cardiac surgery programs. J Pediatr Sur. 2013; 48(5):909-14

Abstracts

1) Wong J, Shah PS, Yoon W, Yee W, Lee SK, Dow K. Inotrope use among extremely preterm infants in Canadian NICUs: variations and outcomes. E-PAS 2012: 4528.473.
2) Ko G, Shah PS, Lee SK and Asztalos E. Impact of maternal education on cognitive and language scores at 18-24 months among extreme preterm neonates. Poster Session at Pediatric Academic Societies Annual Meeting 2012 Apr 28 – May 1, Boston, MA. E-PAS 2012: 4527.412.
3) Isayama T, Lee SK, Ye XY, Mori R, Kusuda S, Fujimura M Shah PS. Comparison of neonatal outcomes of VLBW neonates between Canada and Japan. E-PAS 2012:4526.389.
4) Soraisham AS, Singhal N, Aziz K, Lodha A, Lee SK, Shah PS. Neonatal outcomes following extensive delivery room resuscitation in preterm infants: A multicenter cohort study. E-PAS 2012:4525.364.
5) Rabi Y, Shah PS, Lodha A, Soraisham AS, Barrington K, Lee SK. Outcomes following the introduction of room air resuscitation for preterm infants. E-PAS 2012: 2855.8.
6) Thomas KE, Shah PS, Canning R, Harrison A, Lee SK, Dow K. Retinopathy of prematurity: Risk factors and variability between Canadian NICUs. E-PAS 2012: 2919.302.
7) Zhao M, Lee SK, Kovacs L, Ojah C, Shah PS. Effect of latency of ruptured membranes on neonatal outcomes. E-PAS 2012: 1150.5.
8) Lee SK, Singhal N, De La Rue S, Ye X, Lodha A, Shah PS. Altitude correlates with chronic lung disease among preterm infants admitted to neonatal intensive care units. E-PAS 2012: 1533.563.
9) Shah PS, James A, McMillan D, Peliowski A, Piedboeuf B, Lee SK. National audit of hypothermia for neonatal hypoxic ischemic encephalopathy: A therapeutic creep? E-PAS 2012: 2917.258.
10) Shah PS, Singhal N, Allen AC, Ohlsson A, Da Silva O, Rouvinez Bouali NG, Seshia M, Lee SK. Neonatal outcomes of spontaneous intestinal perforation in very preterm neonates. E-PAS 2012: 4530.526.
11) Hellmann J, Knighton R, Lee SK, Shah PS. Deaths in Canadian NICUs: exploring the ethical determinants. E-PAS 2012: 4524.290.
12) Jefferies AL, Shah PS, Shah V, Bassil KL, Ye X, Lee SK. Impact of late preterm and term infants admitted to Canadian NICUs. E-PAS 2012: 4526.390.
13) Aziz K, Shah V, Lodha A, Andrews W, Dow K, Yoon W. Incidence and risk factors for cranial ultrasound abnormalities in Canadian NICUs. E-PAS 2012: 1670.7.
14) Hossain S, Shah PS, Lee SK, Darlow B, Sullivan E, Lui K. Comparison of characteristics and outcomes of very preterm infants admitted to Australia-New Zealand and Canadian Neonatal Networks. E-PAS 2012: 4526.388.
15) Shah P, Hossain S, Lui K, Darlow B, Gallimore V, Lee SK. Outcomes of outborn very preterm infants in Australia – New Zeland and in Canada. E-PAS 2012:4536.404.
16) Shah PS, Seshia MK, Riley P, Lee KS, Faucher D Lee SK. Duration of UA catheters and neonatal outcomes of extremely preterm neonates. E-PAS 2012:4534.307.
17) Shah PS, Rouvinez Bouali NG, Synnes A, Shivananda S, Bulleid B Lee SK. Duration of UV catheters and neonatal outcomes of extremely preterm neonates. E-PAS 2012:4526.403.
18) Soraisham AS, Singhal N, Lodha A, Rabi Y, Aziz K, Lee SK, Shah P. Does the concentration of oxygen (21%, 22-99% or 100%) used at the initiation of resuscitation have an impact on the survival without major neonatal morbidity among preterm infants (< 33 weeks)? E-PAS 2012:4525.364.

19) Shah PS, Mirea L, Yang J, Paterson AD, Bassil K, Lee SK. Heritability of neonatal morbidities and mortality in very preterm twins admitted to a NICU. E-PAS 2012:

20) Parikh C, Lee SK, Yoon W, Alvaro R, Dunn M, Shah V. Does the timing of birth impact on neonatal outcomes in infants < 33 weeks gestation? E-PAS 2012:4536.401.

L. Future Plans

Database Improvements: Major changes have taken place to improve data collection for the CNN database over last 3 years. After taking into consideration the input from abstractors and the database review committee, a few minor modifications will be implemented in 2014.

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.

❖ **Expansion of Collaborative Efforts:** The CNN is in the process of establishing collaborative ties with other Neonatal Networks around the world. One such comparison was completed with Japan. Comparisons with Australia and New Zealand and are complete. Collaborations for international comparison are made and will be completed in 2013-14. Results from our network will be compared to those from international networks and potential areas for change/improvement will be sought.

M. Appendix

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

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(Canadian Neonatal Network™, MiCare, Ontario Power Generation Building,
700 University Avenue, Suite 8-500, Toronto ON M5G 1X6)