

The Canadian Neonatal Network TM **Le Réseau Néonatal Canadien TM**



Annual Report

2008

Rapport Annuel

Acknowledgements

This report is based upon data collected from 26 individual hospitals from across Canada that were members of the Canadian Neonatal Network™ during the year 2008. 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 hospitals 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 NICU database and provides a unique opportunity 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 efficacy and efficiency of neonatal care. Research results are published in Network reports and in peer-reviewed journals.

Funding

The CNN infrastructure is funded by the Canadian Institutes of Health Research. Individual participating hospitals provided additional funding for data collection and other related resources.

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A. Executive Summary

This report from the Canadian Neonatal Network™ is based on data from 26 tertiary NICUs, which contributed data in the year 2008. The CNN is funded through the Canadian Institutes of Health Research (CIHR) and additional institutional resources (see Acknowledgements). The purposes of the Network are to:

- ❖ Maintain a national network of multidisciplinary researchers interested in neonatal-perinatal research.
- ❖ Maintain a national neonatal-perinatal database and provide the infrastructure to facilitate collaborative research.
- ❖ Study outcomes and variations in medical care including cost-effectiveness longitudinally.
- ❖ Examine the impact of resource utilization and practice patterns on patient outcomes and costs of care, and provide benchmarking information for Canadian NICUs.
- ❖ Develop innovative research methods that lead to better outcomes.

Summary of Results/Methodology

Canadian Neonatal Network™ Database: Between January 1, 2008 and December 31, 2008,

Total number of eligible admissions to various Canadian NICUs (See section D.1 for analyses)	14388
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Total number of eligible individual neonates admitted to various NICUs (See section D.2. for analyses)	13401
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Total number of eligible very preterm (<33 weeks GA) admitted neonates (See section D.3. for analyses)	4221
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Total number of very low birth weight (VLBW) neonates admitted to various NICUs (See section D.3. for analyses)	2830
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Number of eligible neonates discharged directly home from participating NICUs 5932 (See section D.4. for analyses)	
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Infants who were transferred to a “normal newborn care area” (level I nursery) or discharged home within 24 hours of their admission to the NICU were excluded. Data on patient demographics (no patient identifiers are transferred), components of care and outcome until discharge from the hospital 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: Population demographics;
- Section E: Population incidences of some common neonatal complications;
- Section F: Descriptive and risk-adjusted analyses of survival and outcomes by site.

Some sites are limited by funding and therefore are only able to contribute data from a subset of the eligible infants admitted to their NICU; this will be evident in the presentations to follow. Moreover, the 'missing' data on outcome variables vary for each presentation and **caution should be used in interpreting the data.**

B. Background and Objectives

NICUs utilize the combined abilities of health care team members in expanding knowledge and advancing the technology to provide effective care of newborn infants. To support continuous improvement in newborn outcomes of Canadian NICUs, 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 (SNAPII)¹], a severity of illness scale [Neonatal Therapeutic Intervention Scoring System (NTISS)²], and an instrument for assessing infant 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 NICUs. This demonstrated variations in outcomes and practices among Canadian NICUs, and indicated that different hospitals had different strengths as well as areas requiring 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 NICUs across Canada.

The Evidence-based Practice for Improving Quality (EPIQ) 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 (CQI) techniques, EPIQ used multidisciplinary teams at CNN sites, who worked collaboratively to implement best practice changes. Results of this study were recently published¹.

Research using the data was overseen by a Steering Committee, which was elected by members of the Canadian Neonatal NetworkTM. Separate ethics approvals were obtained from the participating institutions for specific projects. Studies conducted by the CNN researchers are supported by the Neonatal-Perinatal Interdisciplinary Capacity Enhancement (NICE) Team, comprising leading researchers from across Canada.

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

C. Information Systems

Infants included in this report are those who were admitted to a CNN participating site between January 1, 2008 and December 31, 2008, and were discharged by March 31, 2009. The infants must have had a length of stay in the NICU 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 13,401 patients accounted for 14,388 admissions as some infants were admitted on more than one occasion.

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 NetworkTM Coordinating Centre, located at the Maternal-Infant Care Research Centre (MiCARE) in Toronto, Ontario. Patient data at each participating NICU are available to the respective site investigator 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 NICUs 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 often grouped to maintain anonymity. This was not always possible due to small number of data points among all centers for select outcomes.

At each participating NICU, data are stored in a secured database in the NICU or in an alternate secured site used by the NICU 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. gestational age and birth weight). 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 transmittance.

In the Coordinating Centre, analyses were conducted using univariate, bivariate, and multivariate analyses for the total cohort, and for individual sites. Multivariate regression analysis was used to identify risk factors associated with mortality and major morbidities. Grouped data enabled development of outcome graphs by gestational age and birth weight for mortality and selected major morbidities. Similar systems have been used to guide stratification in randomization trials, assist in quality assurance, and predict resource utilization.

D. Descriptive Analyses

Section D is divided in four sub-sections.

Section 1. Analyses based on number of eligible admissions to participating NICUs

These include data from 14388 eligible admissions to 26 NICUs. Of these 22 hospitals submitted complete data (n=12815) on all admissions and four hospitals submitted data on a limited number of admissions (n=1573).

Section 2. Analyses based on number of eligible neonates provided care in participating NICUs

These include data from 13401 eligible neonates in 26 NICUs. Of these 22 hospitals submitted complete data (n=12077) on all admitted neonates and four hospitals submitted data on a limited number of admitted neonates (n=1324).

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

These include data from 4221 eligible very preterm neonates and 2830 eligible VLBW neonates.

Section 4. Analyses based on number of infants discharged home directly from network hospitals

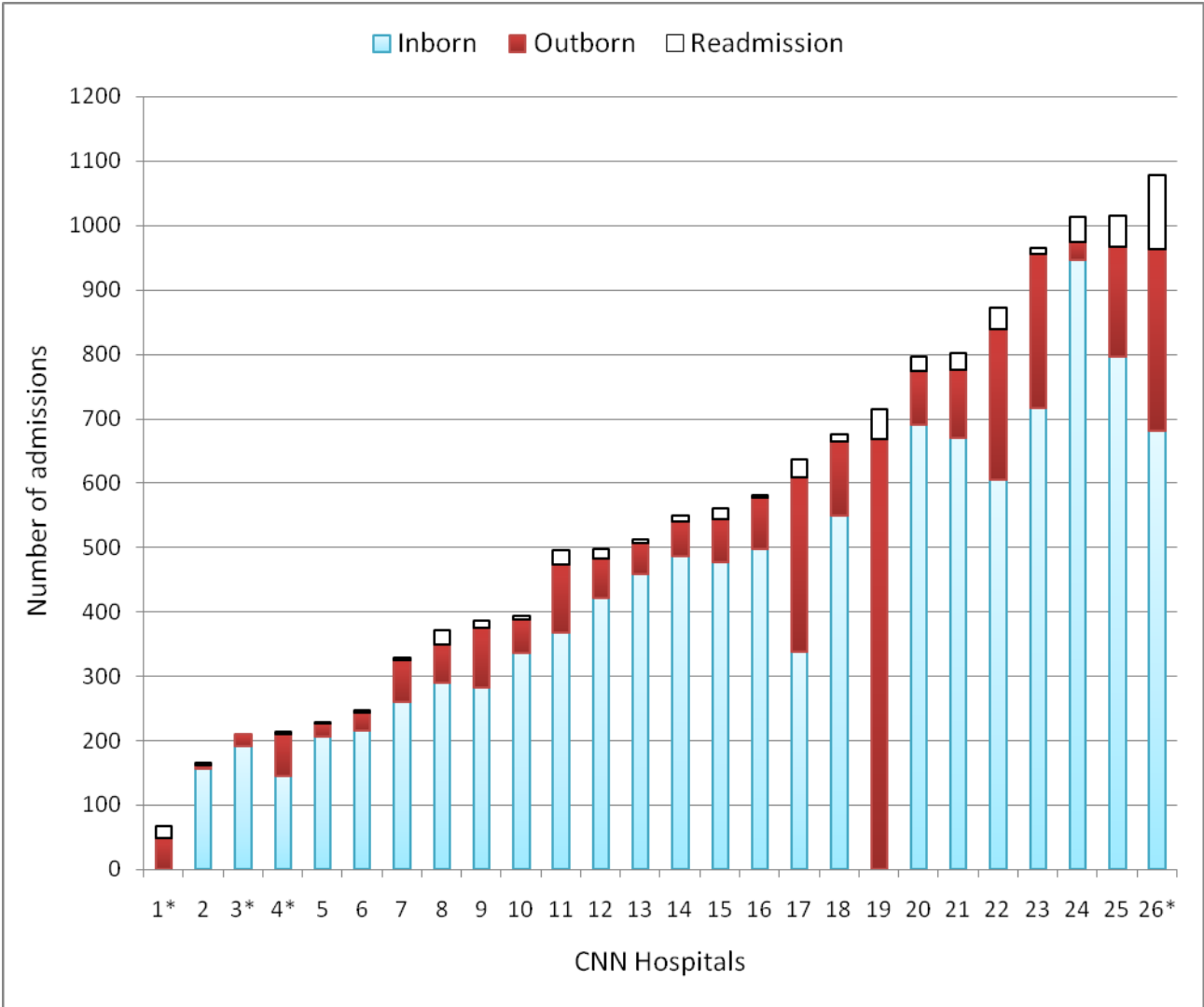
These include 5932 eligible neonates.

Section D.1

Analyses based on number of eligible admissions to participating NICUs

These include data from 14388 eligible admissions to 26 NICUs. Of these 22 hospitals submitted complete data (n=12815) on all admissions and four hospitals submitted data on a limited number of admissions (n=1573).

Presentation #1
Admissions to Canadian Neonatal Network participating hospitals



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

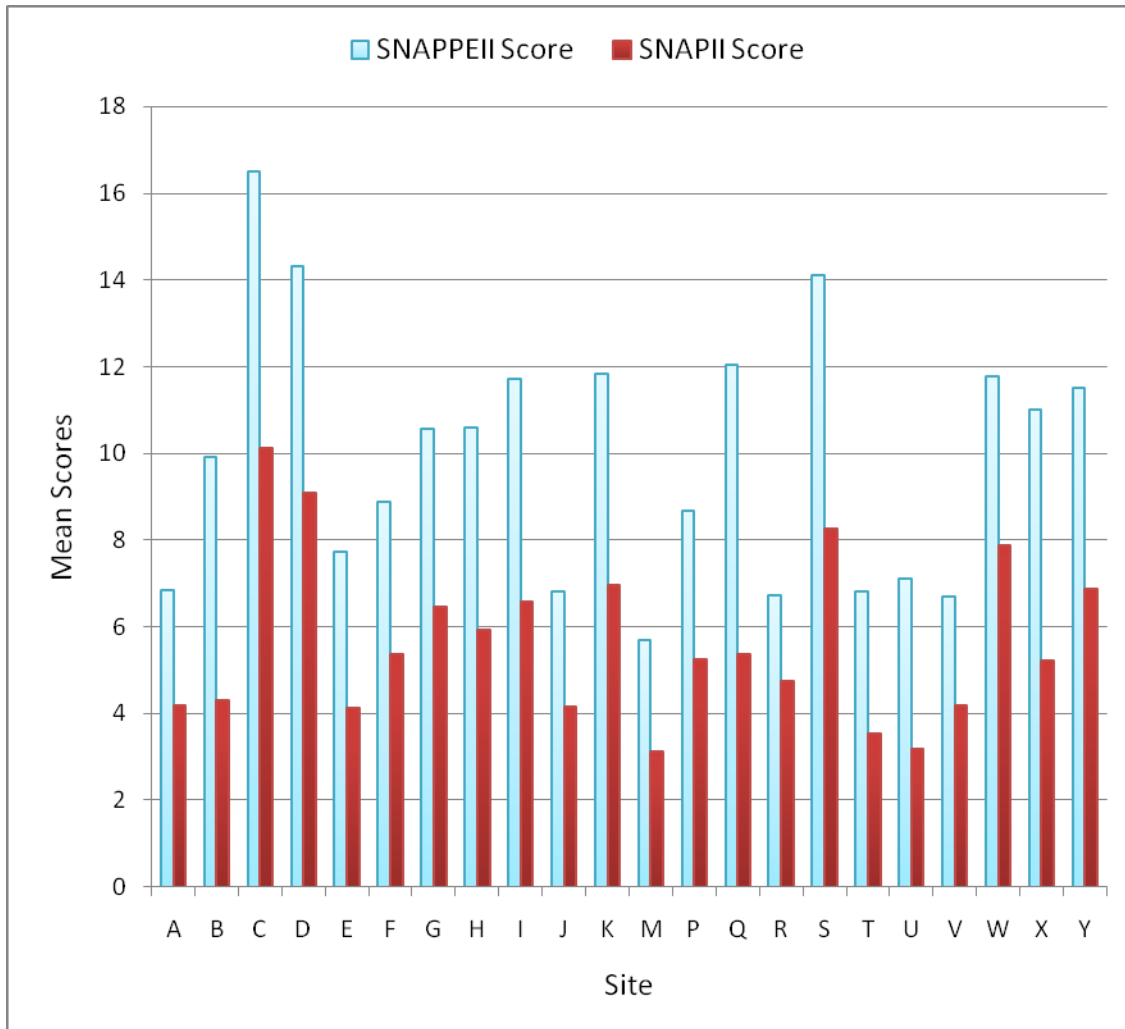
Hospitals		Admission Status			Total
		Inborn	Outborn	Readmissions	
1*	Count	1	47	19	67
	%	1.5	70.2	28.4	(100.0)
2	Count	157	4	5	166
	%	94.6	2.4	3.0	(100.0)
3*	Count	192	19	0	211
	%	91.0	9.0	0.0	(100.0)
4*	Count	145	65	3	213
	%	68.1	30.5	1.4	(100.0)
5	Count	206	20	2	228
	%	90.4	8.8	0.9	(100.0)
6	Count	216	27	4	247
	%	87.5	10.9	1.6	(100.0)
7	Count	261	64	3	328
	%	79.6	19.5	0.9	(100.0)
8	Count	290	59	23	372
	%	78.0	15.9	6.2	(100.0)
9	Count	283	93	11	387
	%	73.1	24.0	2.8	(100.0)
10	Count	337	51	5	393
	%	85.8	13.0	1.3	(100.0)
11	Count	368	105	23	496
	%	74.2	21.2	4.6	(100.0)
12	Count	422	61	15	498
	%	84.7	12.3	3.0	(100.0)
13	Count	459	48	5	512
	%	89.7	9.4	1.0	(100.0)
Hospitals		Admission status			Total
		Inborn	Outborn	Readmissions	
14	Count	487	54	9	550
	%	88.6	9.8	1.6	(100.0)
15	Count	477	67	17	561
	%	85.0	11.9	3.0	(100.0)
16	Count	498	80	4	582
	%	85.6	13.8	0.7	(100.0)
17	Count	338	271	27	636
	%	53.1	42.6	4.3	(100.0)
18	Count	549	116	11	676
	%	81.2	17.2	1.6	(100.0)
19	Count	1	668	46	715
	%	0.1	93.4	6.4	(100.0)
20	Count	690	84	23	797
	%	86.6	10.5	2.9	(100.0)
21	Count	670	106	25	801
	%	83.7	13.2	3.1	(100.0)
22	Count	606	232	34	872
	%	69.5	26.6	3.9	(100.0)
23	Count	717	239	9	965
	%	74.3	24.8	0.9	(100.0)
24	Count	947	28	39	1014
	%	93.4	2.8	3.9	(100.0)
25	Count	797	170	49	1016
	%	78.4	16.7	4.8	(100.0)
26*	Count	681	282	115	1078
	%	63.2	26.2	10.7	(100.0)

Total number of admissions: 14388
 Inborn: 10795 (75.1%)
 Outborn: 3060 (21.3%)
 Readmission: 526 (3.7%)
 Missing data on admission status: 7 (0.05%)

COMMENTS: These analyses include 14388 admissions to various NICUs across Canada during the period of January 1, 2008 to December 31, 2008. Adjusting for readmission and transfers, these represent 13401 infants. **Twenty-two hospitals collected data on all eligible admissions whereas four hospitals (marked by asterisk) collected data on selected eligible admissions only.**

Presentation #2

**Mean admission illness severity scores (SNAPII and SNAPIIPE) by hospital
for hospitals that contributed data on all eligible admissions
(n=22 hospitals, 12774 admissions, 41 missing data)**



Presentation #2 (continued)**Admission illness severity scores (SNAPII and SNAPIPE) by hospital**

Site		SNAPIPE	SNAPII	Site		SNAPIPE	SNAPII
A	Mean	6.8	4.2	N*	Mean	30.7	10.8
	SEM	0.6	0.4		SEM	2.7	2.2
B	Mean	9.9	4.3	O*	Mean	21.7	12.0
	SEM	0.7	0.4		SEM	1.4	0.8
C	Mean	16.5	10.1	P	Mean	8.7	5.3
	SEM	0.8	0.6		SEM	1.0	0.7
D	Mean	14.3	9.1	Q	Mean	12.0	5.4
	SEM	0.6	0.4		SEM	0.6	0.4
E	Mean	7.7	4.1	R	Mean	6.7	4.8
	SEM	0.5	0.4		SEM	0.7	0.5
F	Mean	8.9	5.4	S	Mean	14.1	8.3
	SEM	0.6	0.4		SEM	0.7	0.5
G	Mean	10.6	6.5	T	Mean	6.8	3.5
	SEM	0.6	0.4		SEM	0.4	0.3
H	Mean	10.6	5.9	U	Mean	7.1	3.2
	SEM	0.5	0.3		SEM	0.5	0.3
I	Mean	11.7	6.6	V	Mean	6.7	4.2
	SEM	0.6	0.4		SEM	0.5	0.4
J	Mean	6.8	4.2	W	Mean	11.8	7.9
	SEM	0.7	0.5		SEM	0.5	0.4
K	Mean	11.8	7.0	X	Mean	11.0	5.2
	SEM	0.8	0.5		SEM	0.8	0.5
L*	Mean	10.7	5.0	Y	Mean	11.5	6.9
	SEM	0.5	0.3		SEM	0.5	0.3
M	Mean	5.7	3.1	Z*	Mean	22.6	15.5
	SEM	0.7	0.4		SEM	1.3	0.8

Overall Mean (SEM): SNAPIPE 10.8 (0.1) SNAPII 6.1 (0.1)

COMMENTS: These analyses include 14338 admissions (50 missing data) to various NICUs across Canada during the period of January 1, 2008 to December 31, 2008. Adjusting for readmission and transfers, these represent 13401 infants. **Twenty-two hospitals collected data on all eligible admissions whereas four hospitals (marked by asterisk) collected data on selected eligible admissions only.**

* Please note that the criteria for entering infants in the CNN dataset are not the same for these four hospitals and thus, the scores are not comparable with each other or with centers contributing complete data. These four hospitals included infants at lower gestational ages and/or lower birth weights; thus, their severity of illness scores may be higher than the remaining hospitals.

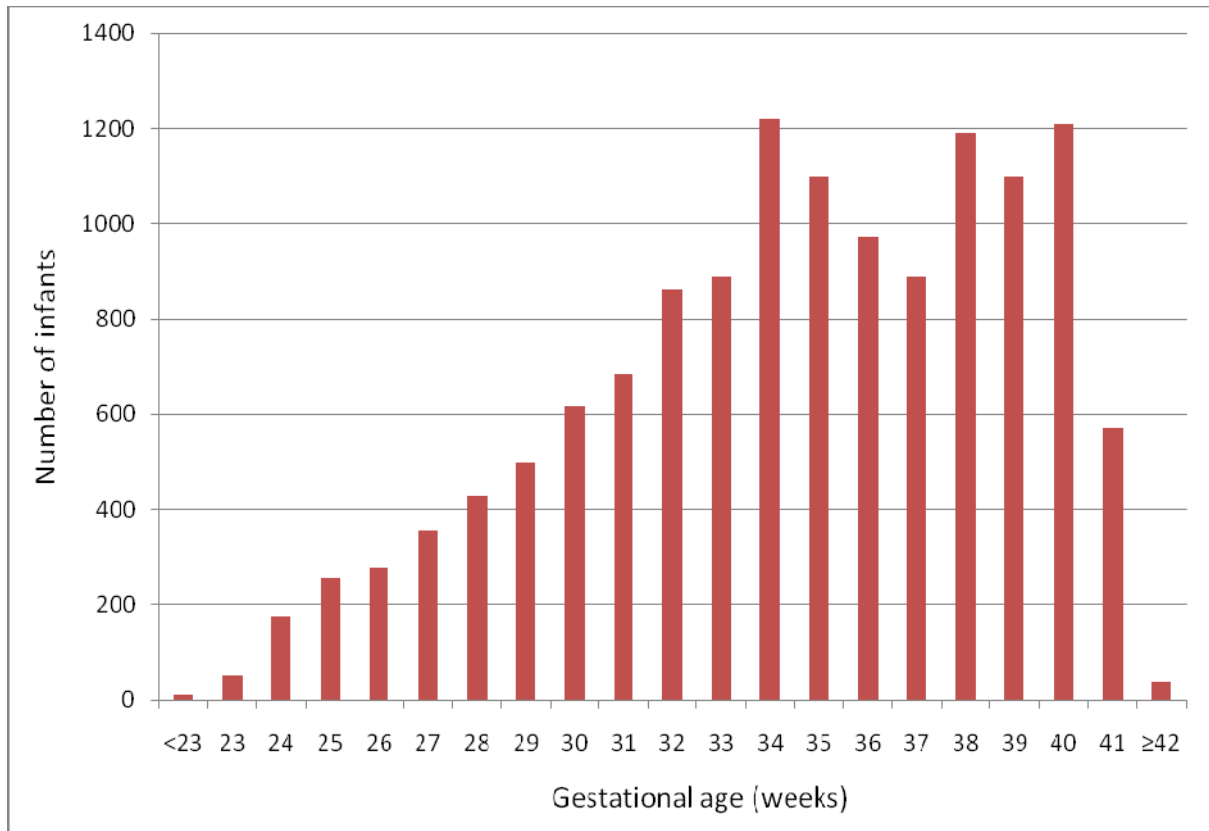
Section D.2

Analyses based on number of eligible neonates to participating NICUs

These include data from 13401 eligible neonates in 26 NICUs. Of these, 22 hospitals submitted complete data (n=12077) on all eligible admitted neonates and four hospitals submitted data on selected eligible admitted neonates (n=1324).

Presentation #3

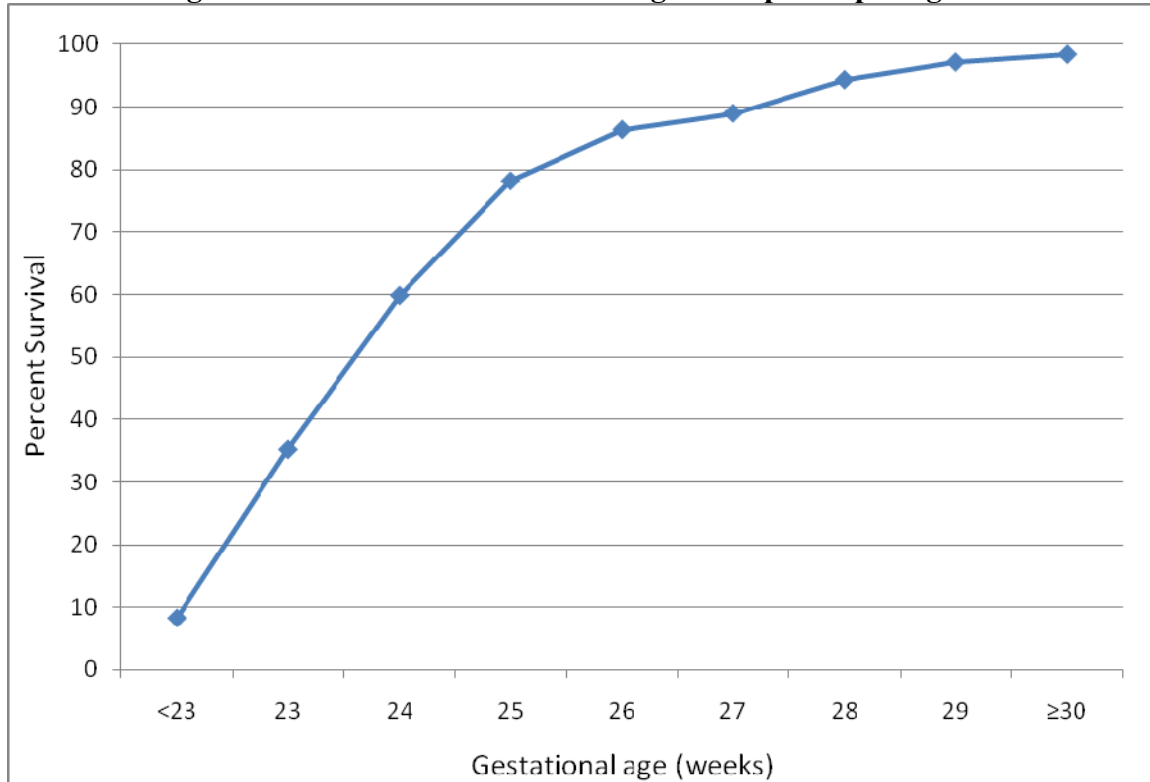
Gestational age at birth



Presentation #3 (continued)
Gestational age at birth

Gestational age in completed weeks at birth	Frequency	Percent	Cumulative Percent
<23	12	0.1	0.1
23	51	0.4	0.5
24	177	1.3	1.8
25	257	1.9	3.7
26	279	2.1	5.8
27	355	2.7	8.4
28	428	3.2	11.6
29	498	3.7	15.4
30	616	4.6	20.0
31	685	5.1	25.1
32	863	6.4	31.5
33	888	6.6	38.1
34	1219	9.1	47.2
35	1099	8.2	55.4
36	972	7.3	62.7
37	889	6.6	69.3
38	1190	8.9	78.2
39	1100	8.2	86.4
40	1208	9.0	95.5
41	572	4.3	99.7
≥42	38	0.3	100.0
Total included	13396	100.0	
Total # of missing (GA)	5		
Total # of infants	13401		

COMMENTS: The gestational age distribution of infants is shown here. Term babies (≥ 37 weeks) represent approximately 37% of the total neonates. Twenty-two hospitals collected data on all eligible admissions whereas four hospitals collected data on selected eligible admissions.

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

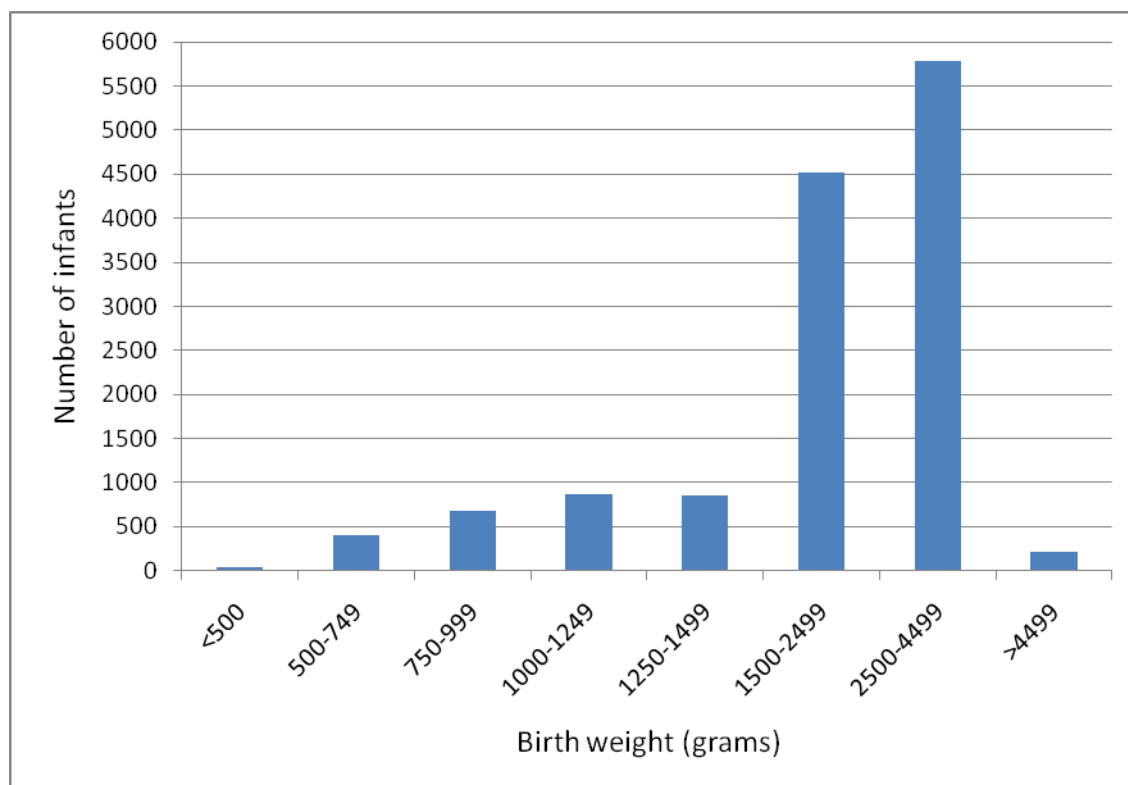
Gestational age (weeks)	Number of infants	Number of survivors	% survival
<23	12	1	8
23	51	18	35
24	177	106	60
25	257	201	78
26	279	241	86
27	355	316	89
28	428	404	94
29	498	484	97
≥30	11339	11160	98
Total included	13396	12931	97
Total # of missing (GA)	5		
Total # of infants	13401		

Note: The survival rates refer only to infants admitted to the NICUs and should be used cautiously for antenatal counseling.

COMMENTS: The survival rates are based upon the final discharge from the participating neonatal site. Note that these rates include only infants admitted to NICUs and thus, are not reflective of the Canadian population. Numbers and rates do not include infants (especially those at very low gestational ages) who died prior to admission to any of the participating NICUs.

Presentation #5

Birth weight

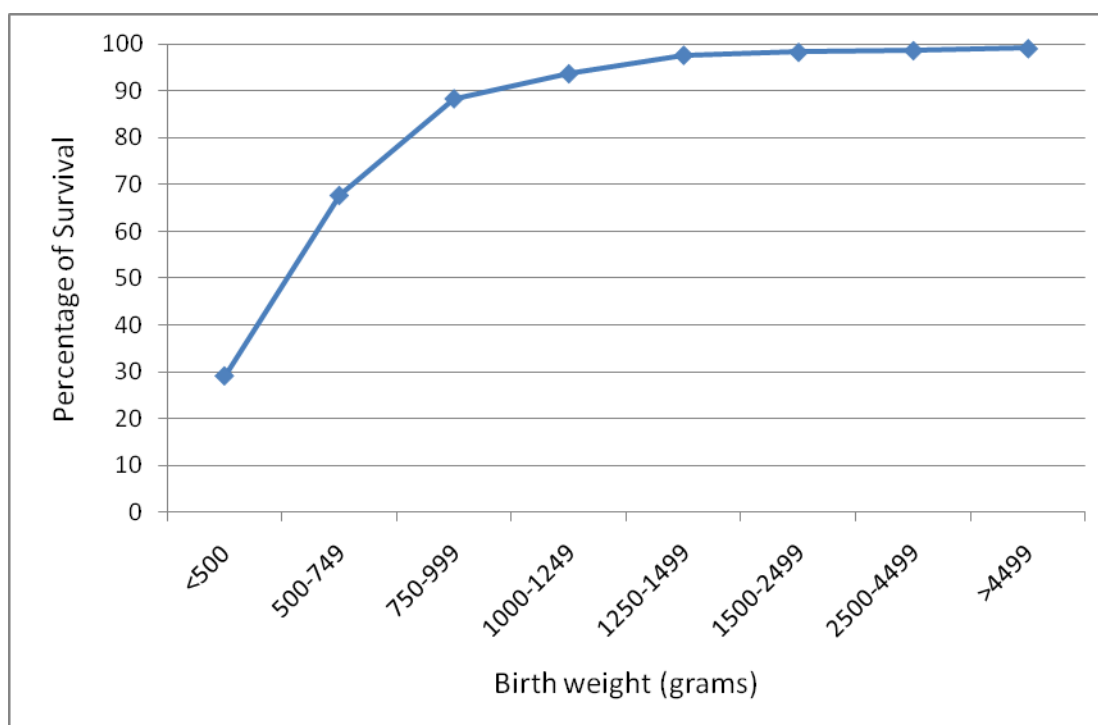


Birth weight (grams)	Frequency	Percent from total number of infants	Cumulative Percent
<500	31	0.2	0.2
500-749	402	3.0	3.2
750-999	679	5.1	8.3
1000-1249	861	6.4	14.8
1250-1499	857	6.4	21.2
1500-2499	4522	33.8	55.0
2500-4499	5790	43.3	98.4
>4499	219	1.6	100.0
Total included	13361	100.0	
Missing (BW)	40		
Total # of infants	13401		

COMMENTS: The birth weight distribution of infants admitted to NICUs. Seventy-nine percent weighed over 1500g at birth and 45% weighed over 2500g. Twenty-two hospitals collected data on all admissions whereas four hospitals collected data on selected eligible admissions only.

Presentation #6

Birth weight and survival to discharge from participating NICUs

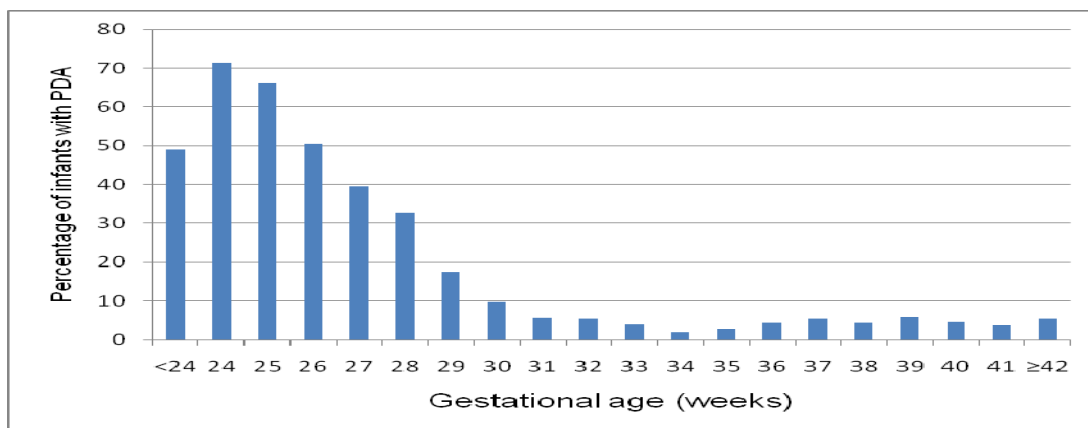


Birth weight (grams)	Number of infants	Number of survivors	% survival
<500	31	9	29
500-749	402	272	68
750-999	679	600	88
1000-1249	861	807	94
1250-1499	857	837	98
1500-2499	4522	4445	98
2500-4499	5790	5713	99
>4499	219	217	99
Total included	13361	12900	97
Missing (BW)	40		
Total # of infants	13401		

Note: The survival rates refer only to infants admitted to the NICUs, 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 infants admitted to NICUs and thus, are not reflective of the Canadian population. Numbers and rates do not represent infants (especially those at very low gestational ages) who died prior to admission to participating NICUs.

Presentation #7
Incidence of patent ductus arteriosus (by gestational age)

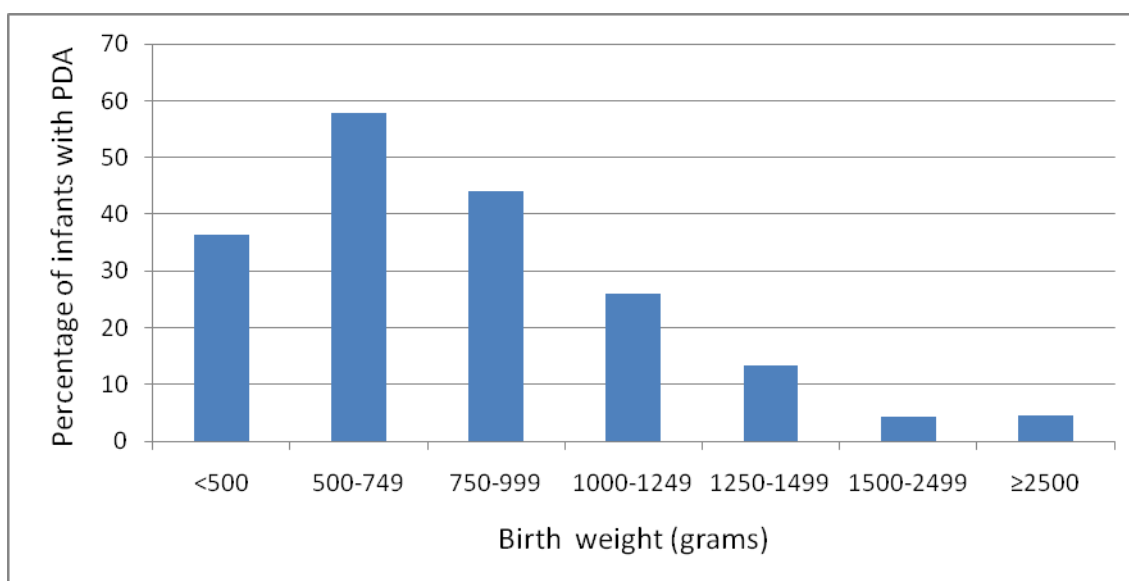


Gestational age(birth)	Total # of infants	# of infants with data field incomplete on PDA (may include death prior to diagnosis)	Number of infants with data available on PDA	# of infants with PDA	%
<24	63	12	51	25	49
24	177	13	164	117	71
25	257	20	237	157	66
26	279	12	267	135	51
27	355	13	342	135	39
28	428	7	421	138	33
29	498	4	494	87	18
30	616	7	609	59	10
31	685	10	675	38	6
32	863	17	846	46	5
33	888	17	871	35	4
34	1219	32	1187	22	2
35	1099	27	1072	29	3
36	972	32	940	41	4
37	889	28	861	47	5
38	1190	43	1147	51	4
39	1100	35	1065	64	6
40	1208	41	1167	55	5
41	572	25	547	21	4
≥42	38	2	36	2	6
Missing data (PDA)		397			
Missing data (GA)	5				
Total # of infants	13401				

COMMENTS: The diagnosis of a patent ductus arteriosus (PDA) was clinical and did not require cardiac ultrasound confirmation. The incidence of PDA included infants who were commenced on treatment (indomethacin or ibuprofen >24 hours following admission and/or surgical ligation), and those who were diagnosed as “clinically significant/severe” but not treated due to other medical reasons. Infants who died before being diagnosed are included in the “Missing data” category.

Presentation #8

Incidence of patent ductus arteriosus (by birth weight)

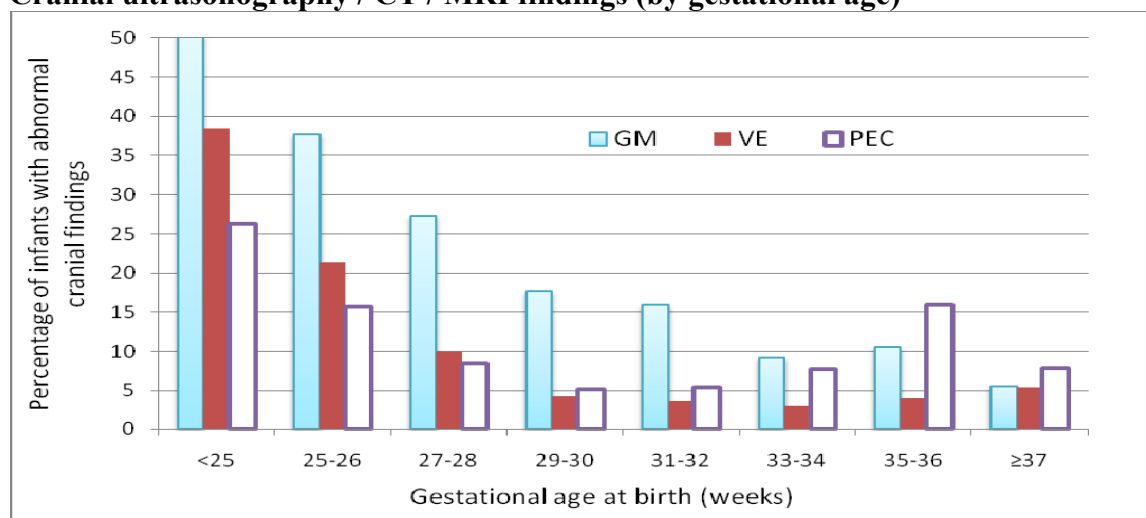


Birth weight (grams)	Total number of infants	Number of infants with missing data on PDA (may include death prior to diagnosis)	Number of infants with data available on PDA	with PDA	%
<500	31	9	22	8	36
500-749	402	29	373	216	58
750-999	679	24	655	288	44
1000-1249	861	15	846	219	26
1250-1499	857	11	846	112	13
1500-2499	4522	99	4423	191	4
≥2500	6009	210	5799	268	5
Total missing data (PDA)		397			
Total missing (BW)	40				
Total	13401				

COMMENTS: The incidence of clinically diagnosed PDA in relation to gestational age and birth weight is shown in Presentation #7 and #8. Diagnosis was made by a physician and did not require cardiac ultrasound confirmation. Incidence of PDA included infants who were commenced on treatment (indomethacin or ibuprofen >24 hours following admission and/or surgical ligation), and those who were diagnosed as “clinically significant/severe” but not treated due to other medical reasons. Infants who died before being diagnosed are included in the “Missing data” category.

Presentation #9

Cranial ultrasonography / CT / MRI findings (by gestational age)

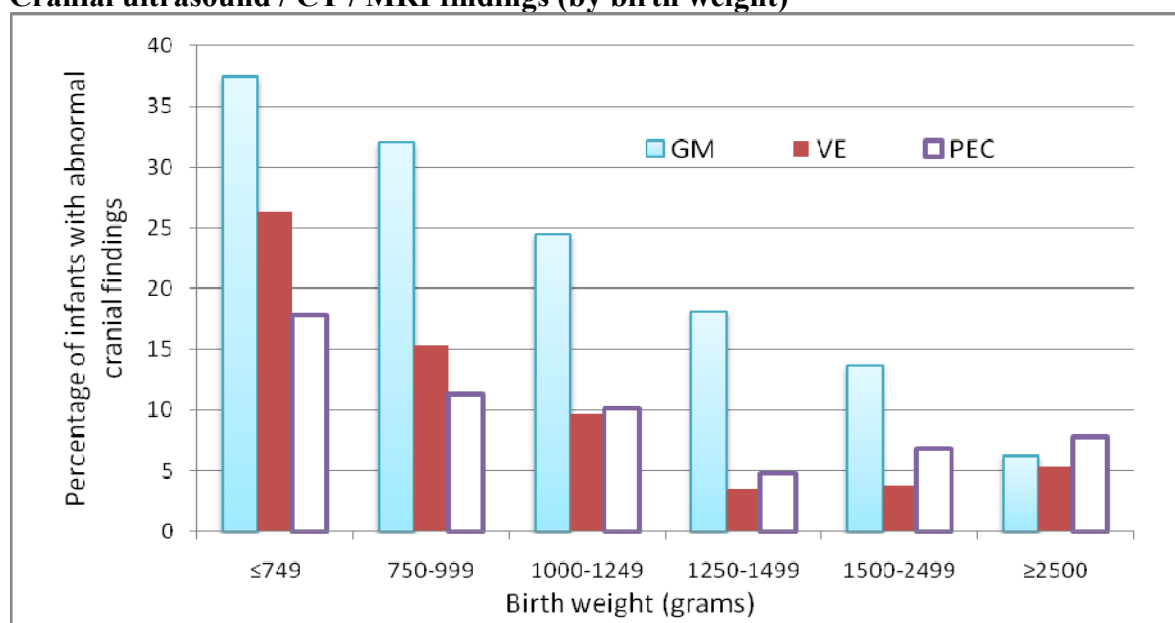


Birth gestational age (weeks)		Total number of infants	Findings of cranial ultrasonography / CT / MRI								
			GM			VE			PEC		
			Data not available	None	GM	Data not available	None	VE	Data not available	None	PEC
<25	N	240	57	91	92	63	109	68	122	87	31
	%			50%	50%		62%	38%		74%	26%
25-26	N	536	87	280	169	97	345	94	155	321	60
	%			62%	38%		79%	21%		84%	16%
27-28	N	783	115	486	182	127	591	65	297	445	41
	%			73%	27%		90%	10%		92%	8%
29-30	N	1114	220	736	158	231	845	38	586	501	27
	%			82%	18%		96%	4%		95%	5%
31-32	N	1548	686	724	138	695	822	31	1156	371	21
	%			84%	16%		96%	4%		95%	5%
33-34	N	2107	1692	377	38	1697	398	12	2004	95	8
	%			91%	9%		97%	3%		92%	8%
35-36	N	2071	1767	272	32	1772	287	12	2021	42	8
	%			89%	11%		96%	4%		84%	16%
≥37	N	4997	3967	973	57	3981	961	55	4844	141	12
	%			94%	6%		95%	5%		92%	8%
Total included	N	13396	8591	3939	866	8663	4358	375	11185	2003	208
	%			82%	18%		92%	8%		91%	9%
Missing GA		5									
Total		13401									

*Not all infants at these gestational age groups were screened. GM= germinal matrix hemorrhage, VE= Ventricular enlargement and PEC= Parenchymal echogenicity

COMMENTS: GM and VE diagnoses are based on cranial ultrasound examination, CT Scans or MRIs in the first two weeks after birth. PEC is based on cranial ultrasound examination, CT Scans or MRIs after 21 days of age. There may be discrepancy between the numbers of infants for whom data on GM or VE is available compared with PEC.

Presentation #10
Cranial ultrasound / CT / MRI findings (by birth weight)



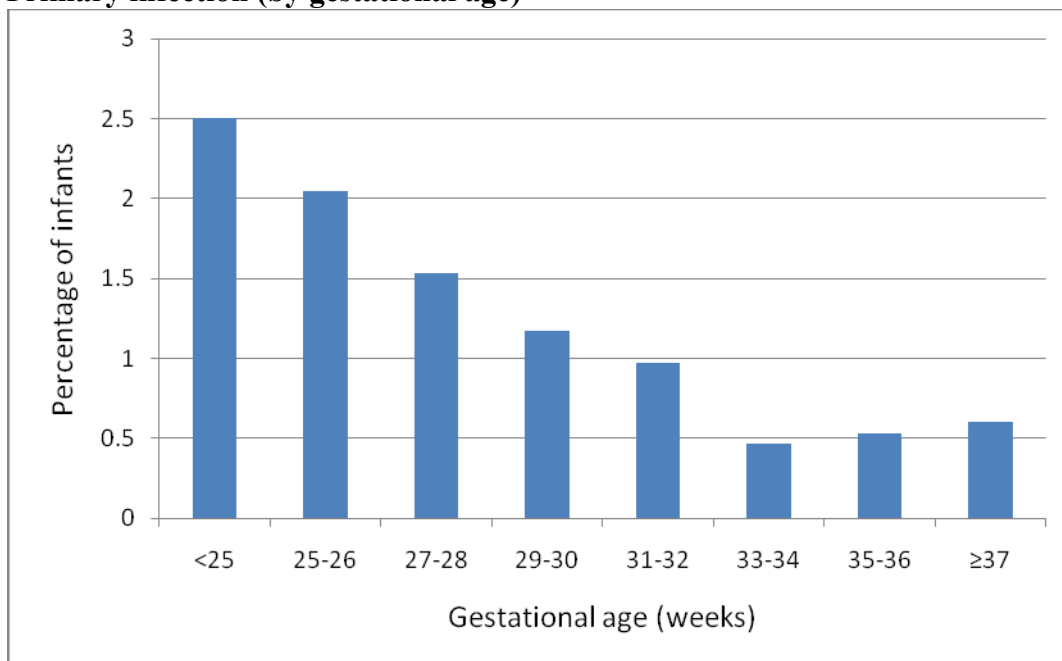
Birth weight (grams)		Total number of infants	Findings of cranial ultrasonography / CT / MRI								
			GM			VE			PEC		
			Data not available	None	GM	Data not available	None	VE	Data not available	None	PEC
≤749	N	433	88	215	129	94	249	89	180	207	45
	%			63%	38%		74%	26%		82%	18%
750-999	N	679	112	385	182	130	465	84	226	402	51
	%			68%	32%		85%	15%		89%	11%
1000-1249	N	861	138	545	177	145	646	69	387	425	48
	%			75%	25%		90%	10%		90%	10%
1250-1499	N	857	189	547	121	199	635	23	498	342	17
	%			82%	18%		97%	3%		95%	5%
1500-2499	N	4522	3145	1187	187	3163	1305	51	4031	455	33
	%			86%	14%		96%	4%		93%	7%
≥2500	N	6009	4882	1053	70	4895	1051	59	5824	167	14
	%			94%	6%		95%	5%		92%	8%
Total included	N	13361	8583	3939	866	8655	4358	375	11177	2003	208
	%			82%	18%		92%	8%		91%	9%
Missing birth weight		40									
Total		13401									

GM= Germinal matrix hemorrhage, VE= Ventricular enlargement and PEC= Parenchymal echogenicity

COMMENTS: GM and VE diagnoses are based upon cranial ultrasound examination, CT Scans or MRIs in the first two weeks after birth. PEC diagnoses are based on cranial ultrasound examination, CT Scans or MRIs after 21 days of age. There may be discrepancy between the numbers of infants for whom data on GM or VE is available compared with PEC.

Presentation #11

Primary infection (by gestational age)

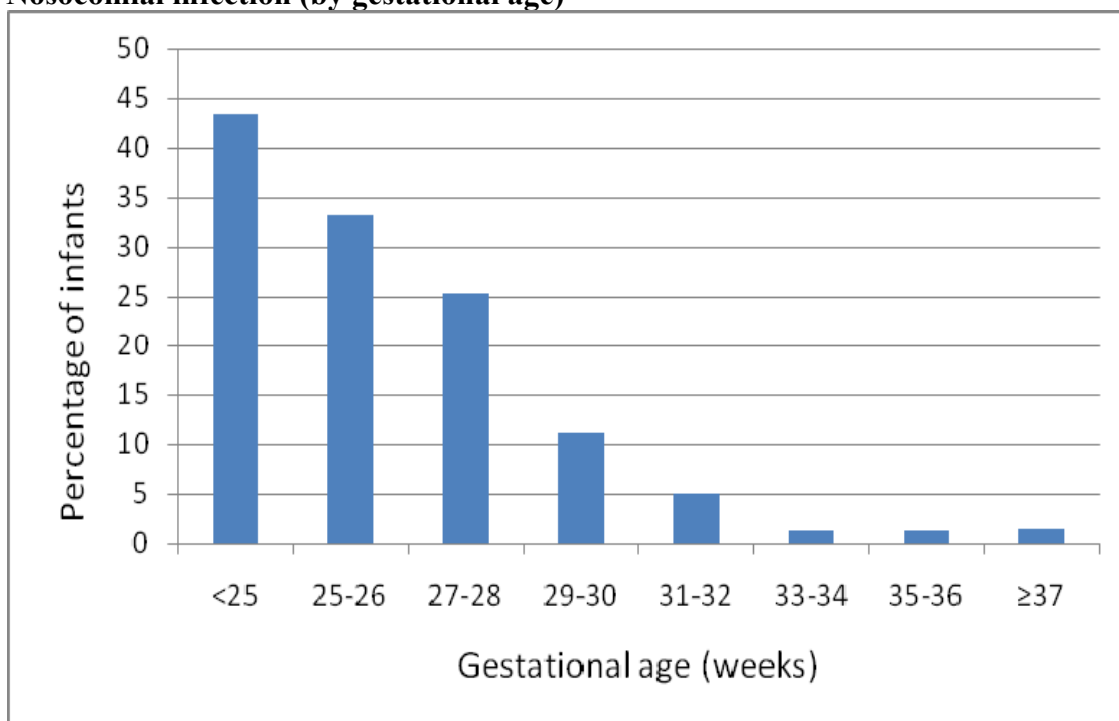


Gestational age at birth	Total number of Infants	No. of infants with infection	%
<25	240	6	2.5
25-26	536	11	2.1
27-28	783	12	1.5
29-30	1114	13	1.2
31-32	1548	15	1.0
33-34	2107	10	0.5
35-36	2071	11	0.5
≥37	4997	30	0.6
Total included	13396	108	0.8
Missing (GA)	5		
Total # of infants	13401		

COMMENTS: Primary infection is indicated by positive bacterial or fungal culture in blood and/or cerebrospinal fluid, in the first two days after birth.

Presentation #12

Nosocomial infection (by gestational age)

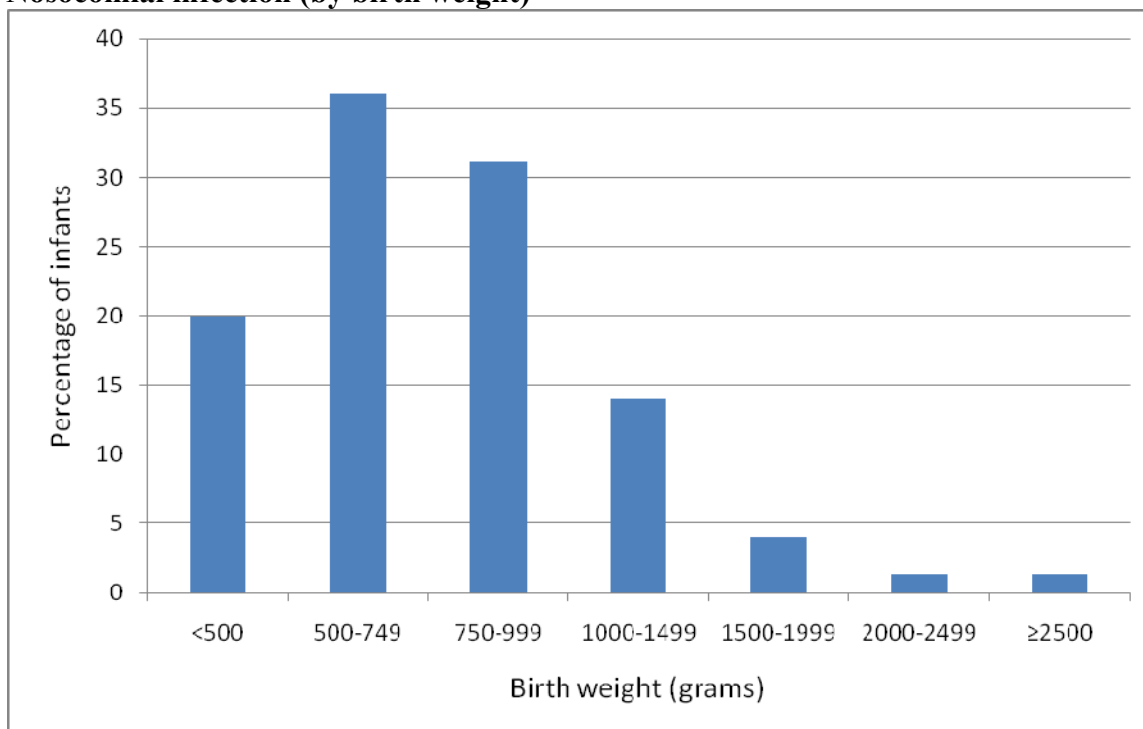


Gestational age at birth	Total number of infants	Number of deaths in the first 3 days after birth	Number of infants survived beyond day 3 after birth	# with at least one infection	%
<25	240	35	205	89	43
25-26	536	9	527	175	33
27-28	783	17	766	194	25
29-30	1114	8	1106	124	11
31-32	1548	2	1546	77	5
33-34	2107	10	2097	26	1
35-36	2071	6	2065	27	1
≥37	4997	12	4985	75	2
Total included	13396	99	13297	787	6
Missing (GA)	5				
Total # of infants	13401				

COMMENTS: Nosocomial infection indicates any positive blood and/or cerebrospinal fluid culture for bacteria or fungi after 2 days of an admission (analysis is infant-based and deaths <3 days are excluded). The numbers are adjusted for readmission and transfer.

Presentation #13

Nosocomial infection (by birth weight)

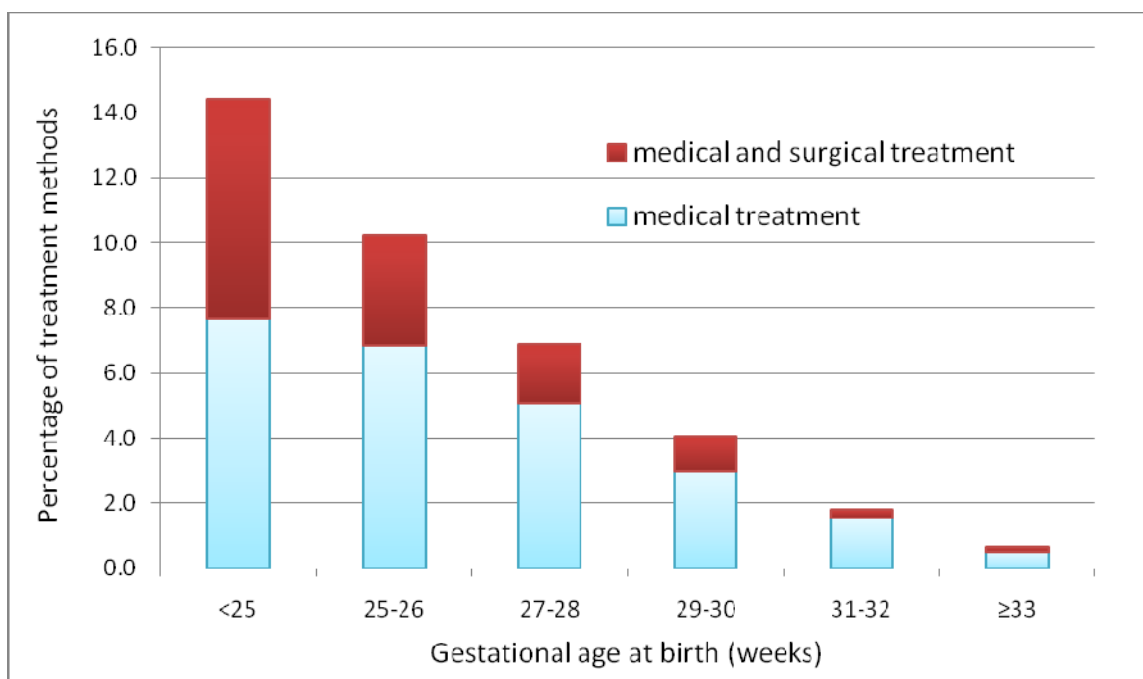


Birth weight (grams)	Total number of infants	Number of deaths in the first 3 days after birth	Number of infants survived beyond day 3 after birth	# with at least one infection	%
<500	31	6	25	5	20
500-749	402	33	369	133	36
750-999	679	10	669	208	31
1000-1499	1718	15	1703	239	14
1500-1999	2183	11	2172	88	4
2000-2499	2339	6	2333	31	1
≥2500	6009	18	5991	82	1
Total included	13361	99	13262	786	6
Missing (BW)	40				
Total # of infants	13401				

COMMENTS: Nosocomial infection indicates any positive blood and/or cerebrospinal fluid culture for bacteria or fungi after 2 days of an admission (analysis is infant-based and deaths <3 days are excluded). The numbers are adjusted for readmission and transfer.

Presentation #14

Incidence of stage 2 or 3 necrotizing enterocolitis and treatment modalities received (by gestational age)

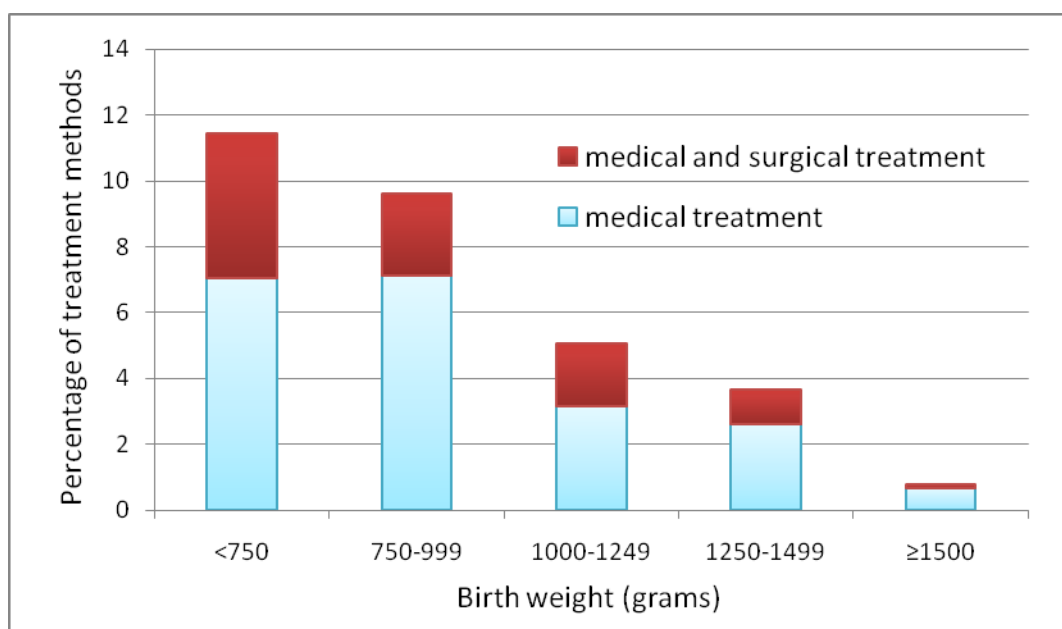


Gestational age at birth (weeks)		Total number of infants	Number of deaths in the first 3 days after birth	Number of infants survived beyond day 3 after birth	Number of infants with missing data on NEC	Number of infants with data available on NEC	none	Necrotizing enterocolitis	
								Medical treatment only	Medical and surgical treatment
<25	N %	240	35	205	18	222 (=100%)	190 85.6%	17 7.7%	15 6.8%
25-26	N %	536	9	527	8	528 (=100%)	474 89.8%	36 6.8%	18 3.4%
27-28	N %	783	17	766	13	770 (=100%)	717 93.1%	39 5.1%	14 1.8%
29-30	N %	1114	8	1106	6	1108 (=100%)	1063 95.9%	33 3.0%	12 1.1%
31-32	N %	1548	2	1546	9	1539 (=100%)	1511 98.2%	24 1.6%	4 0.3%
≥33	N %	9175	28	9147	46	9129 (=100%)	9071 99.4%	46 0.5%	12 0.1%
Total included	N	13396	99	13297	100	13296 (=100%)	13026 98.0%	195 1.5%	75 0.6%
Missing (GA)		5							
Total # of infants		13401							

COMMENTS: Necrotizing enterocolitis is scored according to the following criteria: a) definite pneumatosis (air within the bowel wall) or portal/hepatic air 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 free air without pneumatosis are not classified as NEC.

Presentation #15

Incidence of stage 2 or 3 necrotizing enterocolitis and treatment modalities received (by birth weight)



Birth weight (grams)		Total number of infants	Number of deaths in the first 3 days after birth	Number of infants survived beyond day 3 after birth	Number of infants with missing data on NEC	Number of infants with data available on NEC	None	Necrotizing enterocolitis	
								Medical treatment only	Medical and surgical treatment
<750	N %	433	39	394	22	411 (=100%)	364 88.6%	29 7.1%	18 4.4%
750-999	N %	679	10	669	4	675 (=100%)	610 90.4%	48 7.1%	17 2.5%
1000-1249	N %	861	11	850	9	852 (=100%)	809 95.0%	27 3.2%	16 1.9%
1250-1499	N %	857	4	853	10	847 (=100%)	816 96.3%	22 2.6%	9 1.1%
≥1500	N %	10531	35	10496	56	10475 (=100%)	10392 99.2%	68 0.7%	15 0.1%
Total included	N	13361	99	13262	101	13260 (=100%)	12991 98.0%	194 1.5%	75 0.6%
Missing (BW)		40							
Total # of infants		13401							

COMMENTS: Necrotizing enterocolitis is scored according to the following criteria: a) definite pneumatosis (air within the bowel wall) or portal/hepatic air 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 free air without pneumatosis are not classified as NEC.

Section D.3

**Analyses based on number of eligible very preterm (< 33 weeks GA)
or very low birth weight neonates (<1500g birth weight) neonates**

These include data from 4221 eligible very preterm neonates and 2830 eligible VLBW neonates.

Presentation #16

Antenatal corticosteroid administration to mothers for infants born at <33 weeks gestational age (n=26 hospitals, 4221 infants)

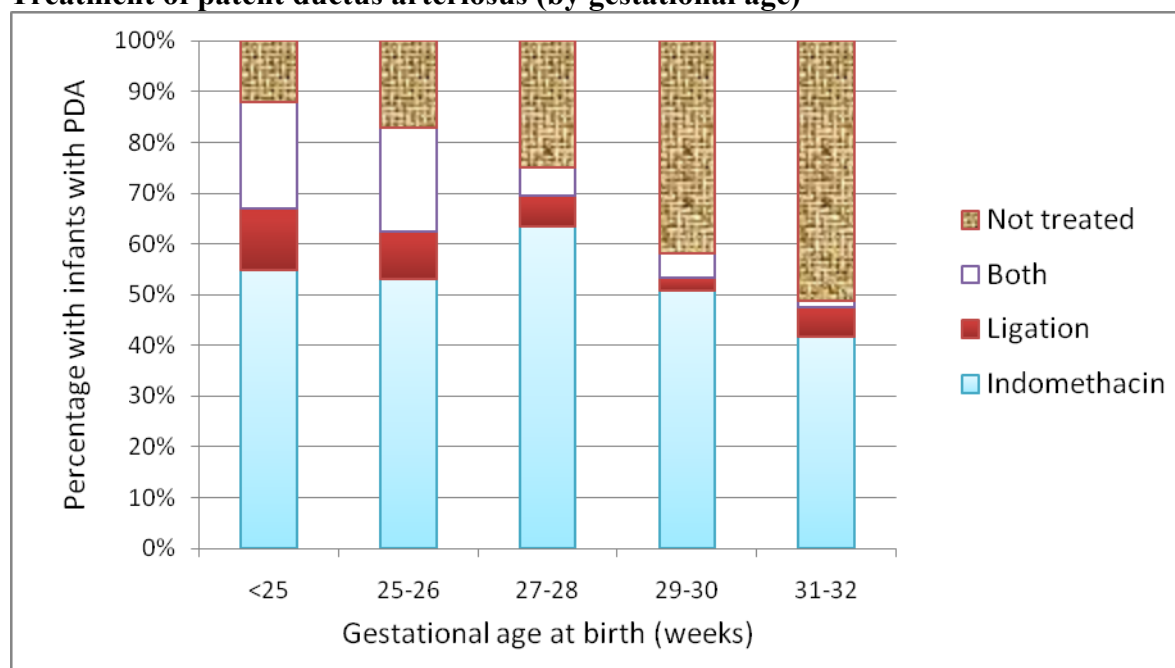
Site	Antenatal corticosteroid (%)			
	No treatment	Partial treatment	Complete treatment	Unknown
Overall	16.2	42.1	37.8	3.9
A	22.7	33.3	34.7	9.3
B	10.8	57.3	26.1	5.7
C	12.7	24.6	53.6	9.1
D	12.5	57.1	29.7	0.7
E	22.4	44.8	32.8	0.0
F	13.1	17.7	68.0	1.3
G	15.9	17.5	66.7	0.0
H	11.2	81.2	7.1	0.6
I	21.3	40.8	37.4	0.5
J	21.3	21.3	57.4	0.0
K	5.5	23.9	58.7	11.9
L	20.8	43.6	31.4	4.2
M	21.1	18.4	60.5	0.0
N*	43.8	18.8	31.3	6.3
O	12.8	26.6	59.0	1.6
P	26.5	20.6	44.1	8.8
Q	21.3	46.5	16.8	15.5
R	9.7	45.2	35.5	9.7
S	14.1	44.7	35.7	5.5
T	13.5	52.7	33.1	0.7
U	19.8	45.7	31.0	3.5
V	11.0	58.2	18.7	12.1
W	19.0	55.0	26.0	0.0
X	16.2	20.5	61.5	1.7
Y	25.1	24.6	48.3	2.0
Z*	7.1	30.1	54.1	8.7
Overall	16.2	42.1	37.8	3.9

***Note: Two hospitals have selected eligible admissions for infants with GA<33 and thus, the rates may not be comparable with other sites.**

COMMENTS: Doses of antenatal corticosteroid are scored according to the following criteria: a) complete = at least 1 dose of corticosteroids 24 hours or greater before birth AND a second dose at 7 days or less prior to birth; a complete course is therefore comprised of 2 doses, and b) partial = at least 1 dose <24 hours or more than 7 days prior to birth.

Presentation #17

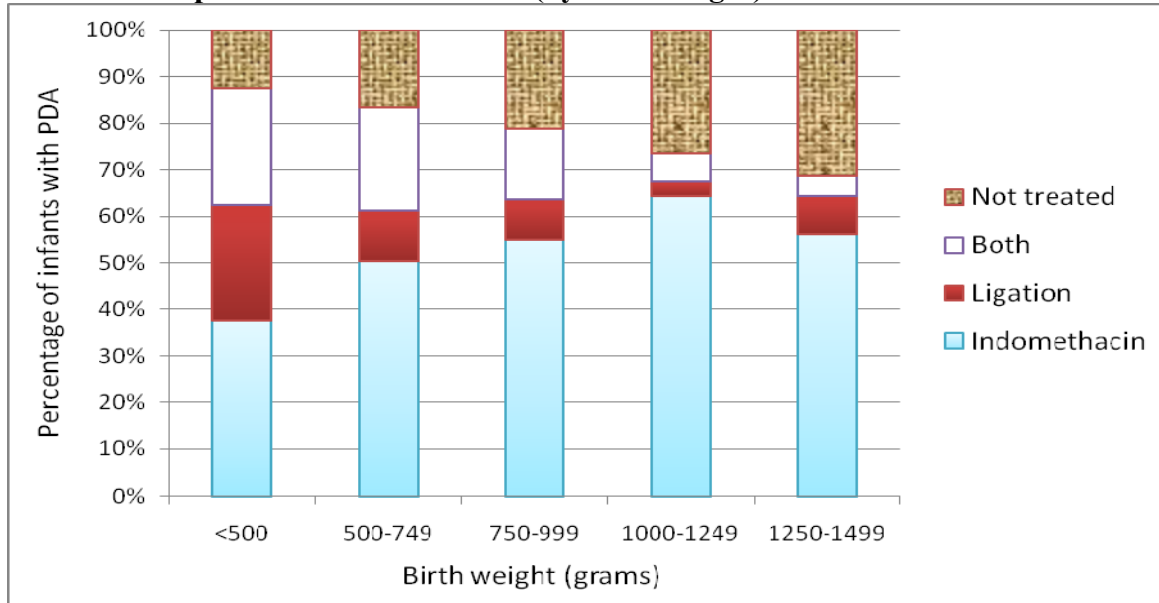
Treatment of patent ductus arteriosus (by gestational age)



Birth gestational age (weeks)		Total number of infants	Number of infants with missing data on PDA treatment (may include death)	Number of infants with data available on PDA treatment	Infants with diagnosed PDA	Treatment			
						Indomethacin	Ligation	Both	Not treated
<25	N %	240	25	215	142 (=100%)	78 55%	17 12%	30 21%	17 12%
25-26	N %	536	32	504	292 (=100%)	155 53%	27 9%	60 21%	50 17%
27-28	N %	783	20	763	273 (=100%)	173 63%	17 6%	15 5%	68 25%
29-30	N %	1114	11	1103	146 (=100%)	74 51%	4 3%	7 5%	61 42%
31-32	N %	1548	27	1521	84 (=100%)	35 42%	5 6%	1 1%	43 51%
Total included	N	4221	115	4106	937 (=100%)	515 55%	70 7%	113 12%	239 26%

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 life. Only two hospitals used ibuprofen for PDA and data on ibuprofen administration are not included. Infants were identified as without PDA using the following criteria: no clinical PDA noted, PDA not considered serious enough to treat, or PDA treated with indomethacin in the first 24 hours after admission and not restarted after 24 hours following admission.

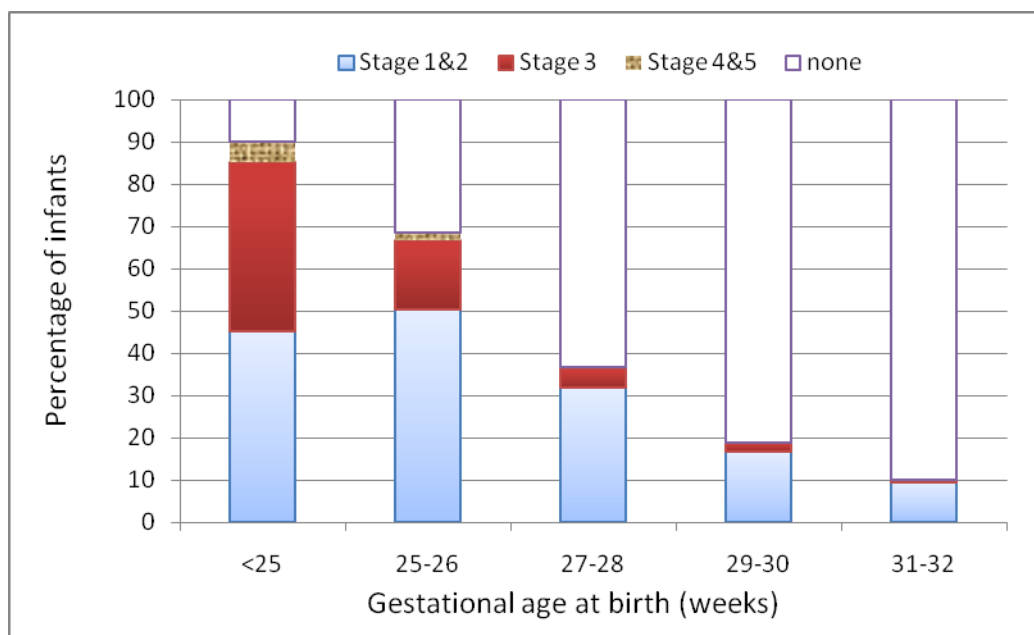
Presentation #18
Treatment of patent ductus arteriosus (by birth weight)



Birth weight (grams)		Total number of infants	Number of infants with missing data on PDA treatment (may include death)	Number of infants with data available on PDA treatment	Infants with PDA	Treatment			Not treated
						Indomethacin	Ligation	Both	
<500	N %	31	9	22	8 (=100%)	3 38%	2 25%	2 25%	1 13%
500-749	N %	402	29	373	216 (=100%)	109 50%	23 11%	48 22%	36 17%
750-999	N %	679	24	655	288 (=100%)	158 55%	25 9%	44 15%	61 21%
1000-1249	N %	861	15	846	219 (=100%)	141 64%	7 3%	13 6%	58 26%
1250-1499	N %	857	11	846	112 (=100%)	63 56%	9 8%	5 4%	35 31%
Total included	N %	2830	88	2742	843 (=100%)	474 56%	66 8%	112 13%	191 23%

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 life. Only two hospitals used ibuprofen for PDA and data on ibuprofen administration are not included. Infants were identified as without PDA using the following criteria: no clinical PDA noted, PDA not considered serious enough to treat, or PDA treated with indomethacin in the first 24 hours after admission and not restarted after 24 hours following admission.

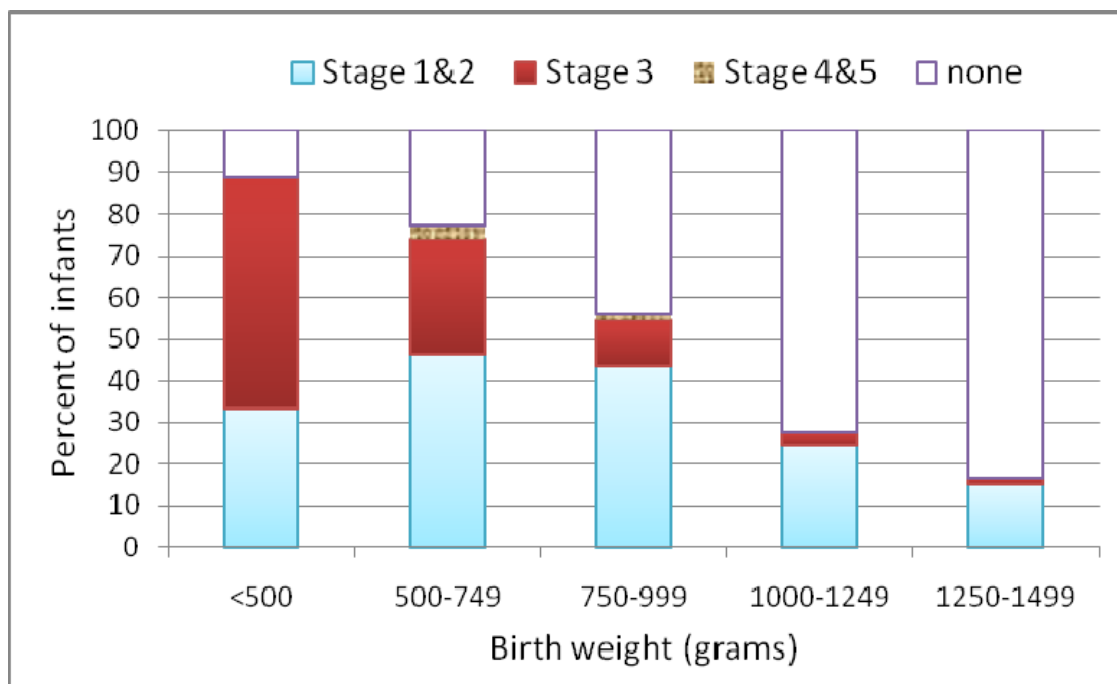
Presentation #19
Incidence of retinopathy of prematurity (by gestational age)



Birth gestational age (weeks)		Total number of infants	Number of infants alive at 6 weeks	Number of infants with known eye examination results	Retinopathy of prematurity			
					None	Stages 1 & 2	Stage 3	Stage 4 & 5
<25	N	240	134	122	12	55	49	6
	%			(=100%)	9.8	45.1	40.2	4.9
25-26	N	536	457	406	128	204	67	7
	%			(=100%)	31.5	50.3	16.5	1.7
27-28	N	783	725	525	333	167	24	1
	%			(=100%)	63.4	31.8	4.6	0.2
29-30	N	1114	1087	471	382	78	11	0
	%			(=100%)	81.1	16.6	2.3	0.0
31-32	N	1548	1522	247	222	23	2	0
	%			(=100%)	89.9	9.3	0.8	0.0
Total included	N	4221	3925	1771	1077	527	153	14
	%			(=100%)	60.8	29.8	8.6	0.8

COMMENTS: Retinopathy of prematurity is defined according to the International Classification of Retinopathy of Prematurity (ICROP). Information is based on infants who received eye examinations. More advanced stages may have been detected in infants transferred from network NICUs to level II hospitals or units. **Caution should be used in interpreting these data.**

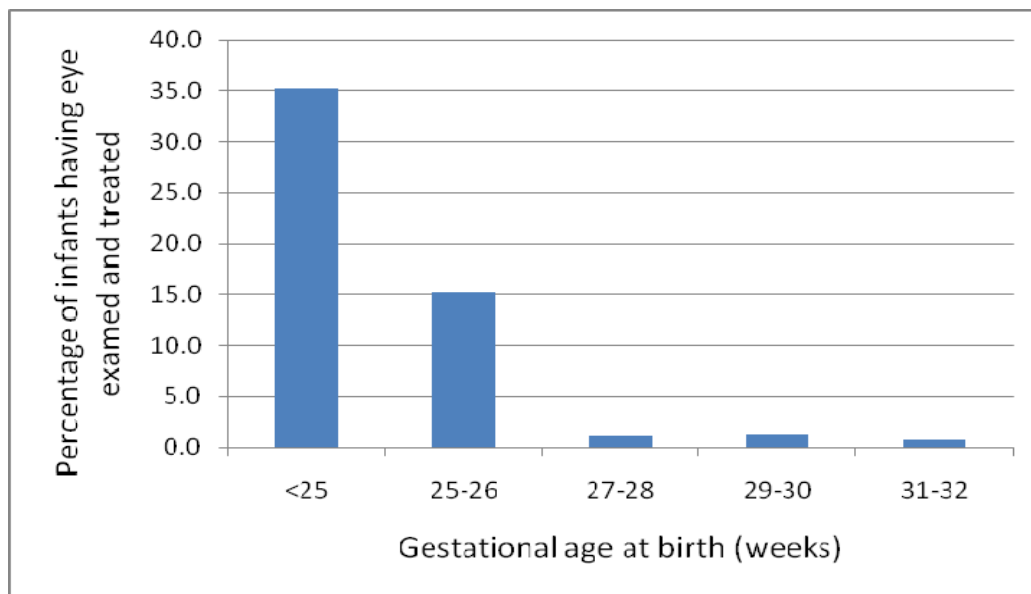
Presentation #20
Incidence of retinopathy of prematurity (by birth weight)



Birth weight (grams)		Total number of infants	Number of infants alive at 6 weeks	Number of infants with known eye examination results	Retinopathy of prematurity			
					None	Stages 1 & 2	Stage 3	Stage 4 & 5
<500	N	31	10	9	1	3	5	0
	%			(=100%)	11.1	33.3	55.6	0.0
500-749	N	402	289	263	60	122	73	8
	%			(=100%)	22.8	46.4	27.8	3.0
750-999	N	679	609	480	212	208	54	6
	%			(=100%)	44.2	43.3	11.3	1.3
1000-1249	N	861	813	508	368	126	14	0
	%			(=100%)	72.4	24.8	2.8	0.0
1250-1499	N	857	840	358	299	54	5	0
	%			(=100%)	83.5	15.1	1.4	0.0
Total included	N	2830	2561	1618	940	513	151	14
	%			(=100%)	58.1	31.7	9.3	0.9

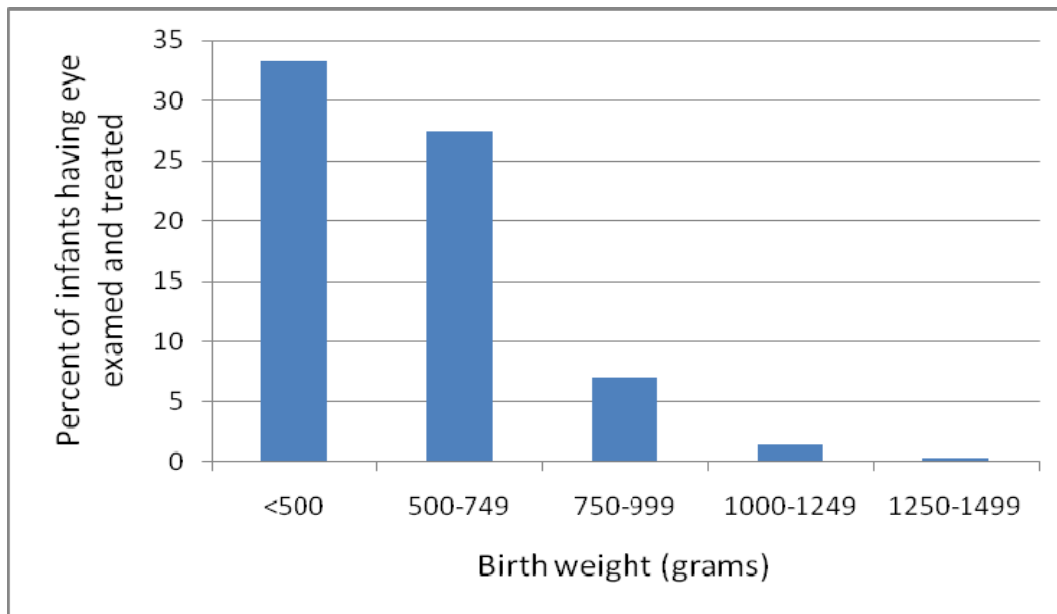
COMMENTS: Retinopathy of prematurity is defined according to the International Classification of Retinopathy of Prematurity (ICROP). Information is based on infants who received eye examinations. More advanced stages may have been detected in infants transferred from network NICUs to level II hospitals or units. **Caution should be used in interpreting these data.**

Presentation #21

Incidence of cryo/laser therapy for infants with retinopathy of prematurity (by gestational age)

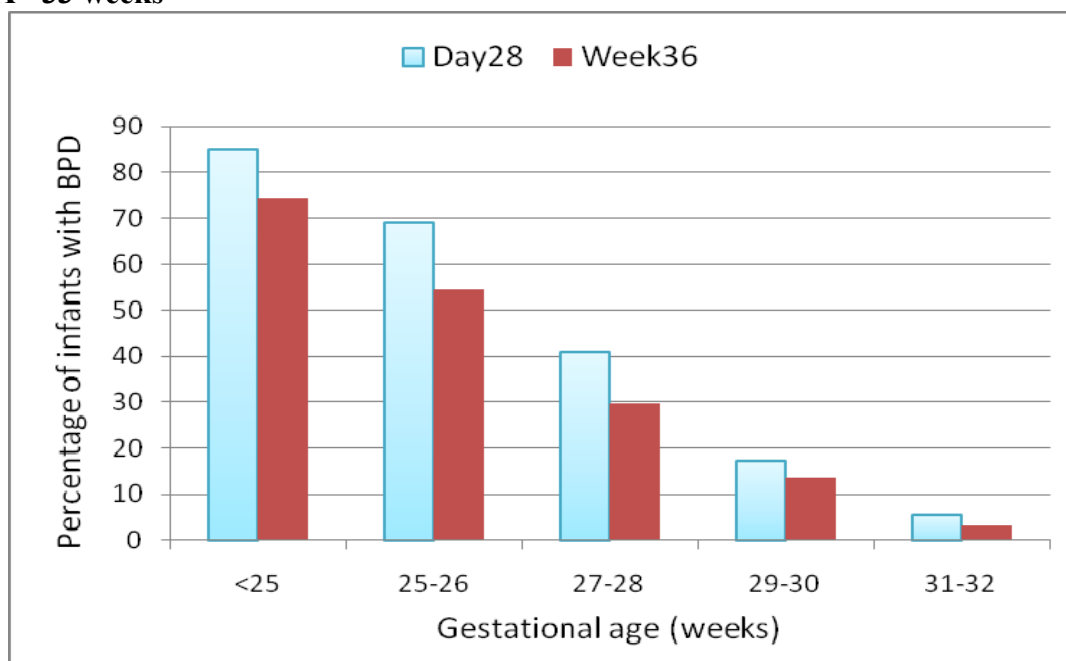
Birth gestational age (weeks)		Total number of infants	Number of infants with known eye examination results	Therapy
<25	N	240	122	43
	%		(=100%)	35%
25-26	N	536	408	62
	%		(=100%)	15%
27-28	N	783	526	6
	%		(=100%)	1%
29-30	N	1114	472	6
	%		(=100%)	1%
31-32	N	1548	248	2
	%		(=100%)	1%
Total included	N	4221	1776	119
	%		(=100%)	.7%

COMMENTS: Retinopathy of prematurity is defined according to the International Classification of Retinopathy of Prematurity (ICROP). Information is based on infants who received eye examinations. More advanced stages may have been detected in infants transferred from network NICUs to level II hospitals or units. **Caution should be used in interpreting these data.**

Presentation #22**Incidence of cryo/laser therapy for infants with retinopathy of prematurity (by birth weight)**

Birth weight (grams)		Total number of infants	Number of infants with known eye examination results	Therapy
<500	N	31	9	3
	%		(=100%)	33%
500-749	N	402	263	72
	%		(=100%)	27%
750-999	N	679	480	33
	%		(=100%)	6.8%
1000-1249	N	861	508	7
	%		(=100%)	1%
1250-1499	N	857	358	1
	%		(=100%)	0.3%
Total included	N	2830	1618	116
	%		(=100%)	7%

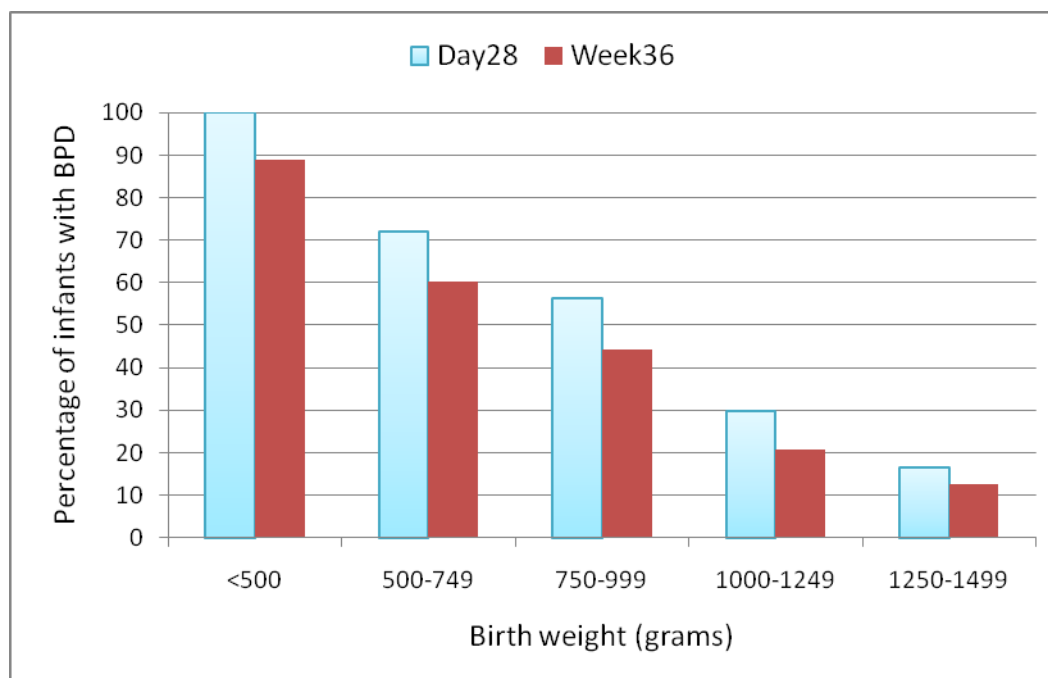
COMMENTS: Retinopathy of prematurity is defined according to the International Classification of Retinopathy of Prematurity (ICROP). Information is based on infants who received eye examinations. More advanced stages may have been detected in infants transferred from network NICUs to level II hospitals or units. **Caution should be used in interpreting these data.**

Presentation #23**Incidence of bronchopulmonary dysplasia (by gestational age) among infants with GA <33 weeks**

Gestation al age (weeks)	Day 28				Week 36			
	Total number of infants	Number of infants who survived beyond day 28 after birth	Number of infants with BPD	% of infants with BPD among survivors	Total number of infants	Number of infants who survived beyond 36 weeks PMA	Number of infants with BPD	% of infants with BPD among survivors
<25	240	138	117	85	240	129	96	74
25-26	536	471	325	69	536	452	246	54
27-28	783	730	299	41	783	721	214	30
29-30	1114	1088	189	17	1114	1086	146	13
31-32	1548	1519	83	6	1548	1517	48	3
Total	4221	3946	1013	26	4221	3905	750	19

COMMENTS: Infants were classified as having BPD –Day 28 if they were receiving any respiratory support including oxygen, CPAP, or mechanical ventilation on day 28 of age or, if discharged prior to Day 28, they were receiving respiratory support at the time of discharge. Similarly, infants were classified as having BPD-Week 36 if they were receiving any respiratory support including oxygen, CPAP or mechanical ventilation at 36 weeks’ post-menstrual age, or if they were discharged prior to 36 weeks’ post-menstrual age while receiving respiratory support. The information is only for infants with gestational age <33 weeks at birth. There were no requirements for chest radiographs at the time of diagnosis.

Presentation #24

Incidence of bronchopulmonary dysplasia (by birth weight) among infants with BW < 1500g

Birth weight (grams)	Day 28				Week 36			
	Total number of infants	Number of infants who survived beyond day 28 after birth	Number of infants with BPD	% of infants with BPD among survivors	Total number of infants	Number of infants who survived beyond 36 weeks PMA	Number of infants with BPD	% of infants with BPD among survivors
<500	31	10	10	100	31	9	8	89
500-749	402	297	214	72	402	280	169	60
750-999	679	609	343	56	679	595	263	44
1000-1249	861	798	238	30	861	791	165	21
1250-1499	857	728	121	17	857	728	91	13
Total	2830	2442	926	38	2830	2403	696	29

COMMENTS: Infants were classified as having BPD –Day 28 if they were receiving any respiratory support including oxygen, CPAP or mechanical ventilation on day 28 of age or, if discharged prior to Day 28, they were receiving respiratory support at the time of discharge. Similarly, infants were classified as having BPD-Week 36 if they were receiving any respiratory support including oxygen, CPAP or mechanical ventilation at 36 weeks’ post-menstrual age, or if they were discharged prior to 36 weeks’ post-menstrual age, while receiving respiratory support. There were no requirements for chest radiographs at the time of diagnosis.

Presentation #25a
Gestational age specific mortality or significant morbidity (6 morbidities)

GA	Number of infants	Number survived (%)	Number of infants discharged home directly from network hospitals	Percent with any one morbidity prior to discharge	Percent with any two morbidities prior to discharge	Any three morbidities prior to discharge (%)	Any four morbidities prior to discharge (%)	Any five morbidities prior to discharge (%)	All six morbidities prior to discharge (%)	Without any of the six morbidities (%)
<24	63	19 (30)	5	0	40	40	20	0	0	0
24	177	106 (60)	40	32	25	28	5	5	0	5
25	257	201 (78)	80	36	23	18	5	3	0	15
26	279	241 (86)	92	38	19	8	1	1	0	33
27	355	316 (89)	117	36	18	7	2	0	0	36
28	428	404 (94)	139	32	15	2	0	0	0	50
29	498	484 (97)	177	28	7	1	0	0	0	63
30	616	597 (97)	206	23	5	1	0	0	0	70
31	685	668 (98)	243	16	2	0	0	0	0	81
32	863	847 (98)	308	8	2	0	0	0	0	90
Total	4221	3883 (92)	1407	23	9	3	1	0.4	0	63

Inclusion criteria for these analyses:

1. Infant born at < 33 weeks GA
2. Infant discharged home from participating network hospital

COMMENTS:

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

- i. Grade 3 or 4 IVH or VE, PEC or PVL
- ii. Stage 3 or 4 ROP
- iii. BPD at 36 weeks or discharge home
- iv. Culture proven primary or nosocomial sepsis
- v. Stage 2 or 3 NEC
- vi. PDA requiring surgical ligation

Presentation #25b
Gestational age specific mortality or significant morbidity (3 morbidities)

GA	Number of infants	Number survived (%)	Number of infants discharged home directly from network hospitals	Any one morbidity prior to discharge (%)	Any two morbidities prior to discharge (%)	All three morbidities prior to discharge (%)	Without any of the three morbidities (%)
<24	63	19 (30)	5	40	40	0	20
24	177	106 (60)	40	48	30	10	13
25	257	201 (78)	80	51	18	11	20
26	279	241 (86)	92	38	10	2	50
27	355	316 (89)	117	36	6	2	56
28	428	404 (94)	139	32	1	0	66
29	498	484 (97)	177	21	1	0	79
30	616	597 (97)	206	15	2	0	84
31	685	668 (98)	243	10	0	0	90
32	863	847 (98)	308	2	0	0	98
Total	4221	3883 (92)	1407	20	4	1	75

Inclusion criteria for these analyses:

1. Infant born at < 33 weeks GA
2. Infant discharged home from participating network hospital

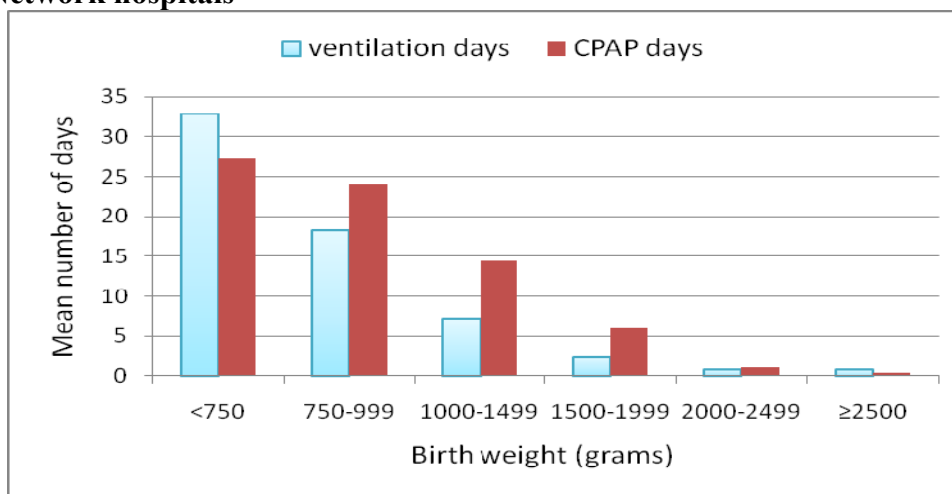
COMMENTS:

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

- i. Grade 3 or 4 IVH or VE, PEC or PVL
- ii. Stage 3 or 4 ROP
- iii. BPD at 36 weeks or discharge home

Section D.4

Analyses based on number of infants discharged directly home from network hospitals. This includes 5932 eligible neonates out of a total of 13401 neonates (44%). Many units retro transfer infants to Level 2 centers when they are stable, those who are discharged directly from Network hospitals may be selected because of severe illness or high-risk of complications.

Presentation #26**Days on assisted ventilation (by birth weight) for infants discharged directly home from Network hospitals**

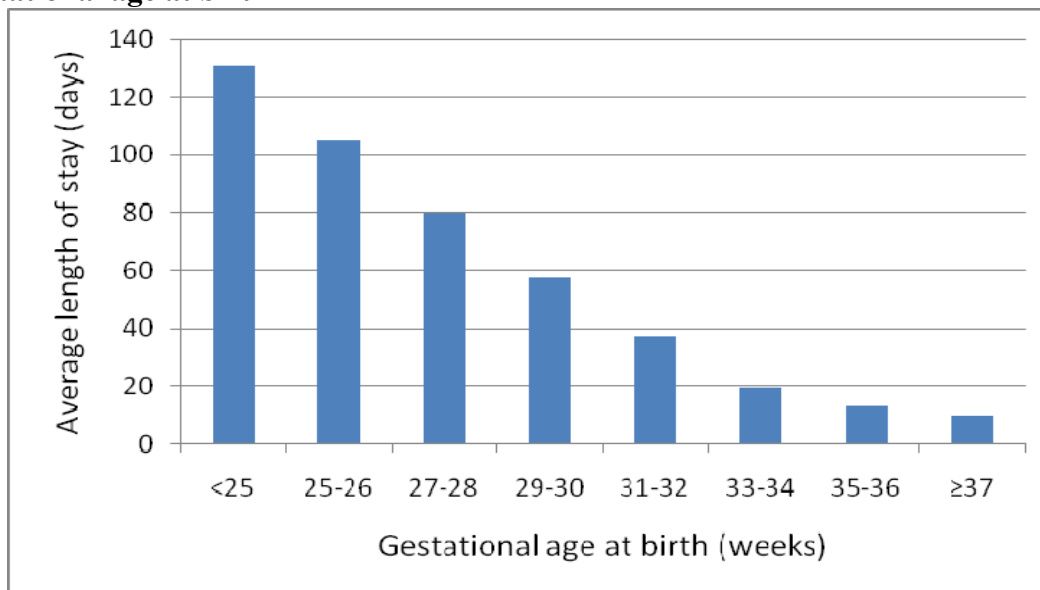
		Birth weight (grams)						Total # of infants included	# of missing data	Total # of infants discharged home
		<750	750-999	1000-1249	1250-1499	1500-2499	≥2500			
Ventilation days*	N	117	212	297	293	2053	2939	5911	18(BW) 3(ventilation)	5932
	Mean	32.9	18.2	7.1	2.4	0.7	0.7			
	SEM	2.4	1.4	0.7	0.3	0.1	0.1			
	Median	33	10.5	2	0	0	0			
CPAP days*	N	117	212	297	293	2052	2939	5910	18(BW), 4(ventilation)	5932
	Mean	27.2	24.0	14.5	6.0	1.0	0.4			
	SEM	2.0	1.2	0.9	0.6	0.1	0.1			
	Median	27	25	9	2	0	0			

GA	Total number of infants discharged home	# of infants intubated	Percentage of infants intubated
23	5	5	100
24	40	36	90
25	80	75	94
26	92	86	94
27	117	102	87
28	139	116	84
29	177	115	65
30	206	114	55
31	243	101	42
Total	1099	750	68

COMMENTS: This presentation represents respiratory support information collected at time of discharge where only the highest form of support is recorded for each day. The information is only for infants discharged home directly from network hospitals and does not represent entire population.

Presentation #27

Length of stay prior to discharge home from Network hospitals in relation to gestational age at birth*



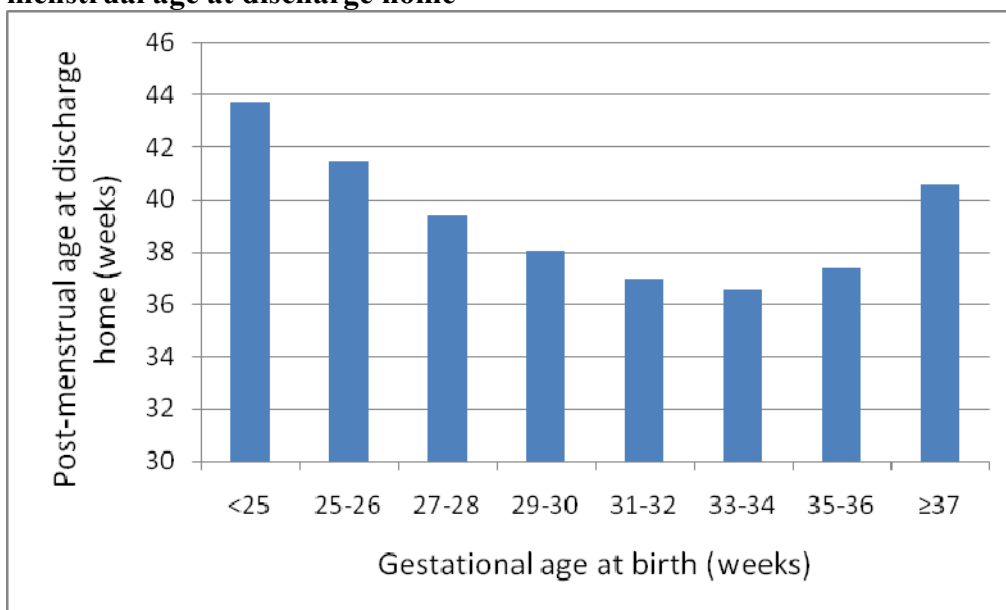
Gestational age at birth	# of infants	Mean	SEM	Median
<25	45	131.0	6.8	128
25-26	172	105.2	2.6	104
27-28	256	79.8	1.7	76
29-30	383	57.3	1.1	54
31-32	551	37.3	0.9	34
33-34	1053	19.6	0.4	17
35-36	1057	12.8	0.3	10
≥37	2412	9.6	0.2	7
Total included	5929	24.3	0.4	13
Missing (GA/error)	3			
Total # of infants discharged home from network hospitals	5932			
Total # of infants who died or were transferred to non-network hospitals prior to discharge home	7469			
Total # of infants	13401			

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

COMMENTS: For infants discharged home from a network hospital, the length of stay in hospital from the day of admission to the day when the patient went home from the hospital, in relation to gestational age at birth, is illustrated. It is unknown whether those transferred to another hospital have different lengths of stay.

Presentation #28

Post-menstrual age at discharge home*



Gestational age at birth	Post-menstrual age (weeks) at discharge home			
	# of infants	Mean	SEM	Median
<24	45	43.7	0.7	42.6
25-26	172	41.5	0.4	40.6
27-28	256	39.4	0.2	38.7
29-30	382	38.1	0.2	37.6
31-32	551	36.9	0.1	36.4
33-34	1053	36.6	0.1	36.1
35-36	1058	37.4	0.0	37.0
≥37	2412	40.6	0.1	40.3
Total included	5929	24.3	0.4	13.0
Missing (GA/error)	3			
Total # of infants discharged home from network hospitals	5932			
Total # of infants who died or were transferred to non-network hospitals prior to discharge home	7469			
Total # of infants	13401			

*Data shown apply to infants discharged home from network NICUs (data for infants transferred to other hospitals are presently unavailable)

COMMENTS: For infants discharged home from a network hospital, the length of stay in hospital from the day of admission to the day when the patient went home from the hospital, in relation to gestational age at birth, is illustrated. It is unknown whether those transferred to another hospital have different lengths of stay.

Presentation #29**Use of oxygen at discharge for infants who were discharged home from participating Network hospitals**

Gestational age (weeks)	# of infants discharged to home	Oxygen	
		N	%
<25	45	24	53.3
25-26	172	36	20.9
27-28	256	24	9.4
29-30	383	10	2.6
31-32	551	12	2.2
33-34	1053	5	0.5
35-36	1058	1	0.1
≥37	2412	8	0.3
Total included	5930	120	2.0
Missing (GA)	2		
Total # of infants discharged home from network hospitals	5932		
Total # of infants died or transferred to non-network hospitals prior to discharge home	7469		
Total # of infants	13401		

E. Site Comparisons – Mortality

Presentation #30
Site-specific gestational age categories of infants

		Gestational age (weeks)								Total %	Criteria of data collecting
		<25	25-26	27-28	29-30	31-32	33-34	35-36	≥37		
Infants per site (%)	1	2.2	0.8	1.4	3.8	8.4	18.7	15.5	49.3	100	Complete
	2	2.3	4.4	4.4	9.3	13.7	21.9	15.7	28.3	100	Complete
	3	3.3	4.6	7.7	7.0	12.8	15.8	15.4	33.6	100	Complete
	4	2.3	2.7	5.7	7.6	13.8	23.1	12.8	32.1	100	Complete
	5	1.8	3.6	6.0	9.3	15.9	16.7	12.6	34.1	100	Complete
	6	0.5	1.1	3.7	7.5	7.2	15.5	24.1	40.4	100	Complete
	7	8.4	14.4	14.9	28.7	26.7	6.9	NA	NA	100	Partial
	8	0.2	1.3	2.8	5.2	7.5	17.4	23.4	42.1	100	Complete
	9	1.9	6.3	6.9	10.6	10.9	15.3	14.6	33.5	100	Complete
	10	5.0	30.0	35.0	5.0	5.0	5.0	NA	15.0	100	Partial
	11	0.8	2.0	2.6	4.0	8.5	14.5	18.0	49.7	100	Complete
	12	0.5	0.5	0.9	3.6	10.0	10.9	15.9	57.7	100	Complete
	13	0.6	0.6	2.2	4.8	4.4	13.4	23.9	50.1	100	Complete
	14	1.6	4.7	5.6	8.0	11.4	16.2	16.4	36.2	100	Complete
	15	2.2	5.4	7.0	11.4	8.6	22.2	17.1	26.0	100	Complete
	16	NA	2.6	4.5	3.8	13.4	12.1	21.7	42.0	100	Complete
	17	3.9	8.7	20.9	24.8	30.6	11.2	NA	NA	100	Partial
	18	1.6	3.8	5.6	8.0	12.4	17.5	16.7	34.4	100	Complete
	19	0.4	0.0	1.3	3.8	7.6	14.8	33.3	38.8	100	Complete
	20	2.2	6.2	9.6	9.6	15.6	12.0	9.4	35.6	100	Complete
	21	1.3	5.6	6.9	11.3	15.1	13.8	9.6	36.4	100	Partial
	22	2.4	6.2	5.8	8.2	6.3	8.8	11.4	50.9	100	Complete
	23	4.7	9.4	14.2	14.6	11.6	14.8	13.1	17.6	100	Complete
	24	0.7	2.1	3.5	5.2	7.9	14.9	16.0	49.7	100	Complete
	25	0.5	1.4	3.4	3.5	7.5	17.1	17.4	49.2	100	Complete
	26	1.6	3.9	3.7	12.0	14.9	20.5	16.3	27.1	100	Complete
Total		1.8	4.0	5.8	8.3	11.6	15.7	15.5	37.3	100	

NA = no data available

COMMENTS: Proportion of the gestational age categories of infants varied considerably among sites. Note some centers are only submitting a subset of the eligible population.

Presentation #31
Site-specific birth weight categories of infants

		Birth weight (g)							Total %	Criteria of data collecting
		<500	500-749	750-999	1000-1249	1250-1499	1500-2499	≥2500		
Infants per site (%)	1	0.3	2.5	1.1	2.2	4.1	30.3	59.5	100	Complete
	2	0.6	2.3	4.4	7.0	7.3	42.6	35.9	100	Complete
	3	0.4	3.9	7.7	7.2	7.1	34.4	39.3	100	Complete
	4	0.4	4.0	3.4	6.9	6.7	40.9	37.7	100	Complete
	5	0.1	2.8	4.8	7.9	8.2	35.9	40.3	100	Complete
	6	NA	0.3	2.1	3.7	5.1	32.8	56.0	100	Complete
	7	2.0	13.4	15.8	19.3	14.9	33.7	1.0	100	Partial
	8	NA	0.6	3.2	2.4	3.4	35.6	54.9	100	Complete
	9	0.7	3.6	5.6	8.5	8.5	32.6	40.6	100	Complete
	10	NA	15.0	35.0	5.0	15.0	15.0	15.0	100	Partial
	11	NA	0.8	2.6	3.7	2.6	31.2	59.1	100	Complete
	12	NA	0.9	1.4	1.8	4.1	28.6	63.2	100	Complete
	13	NA	1.0	0.8	3.6	3.0	27.1	64.5	100	Complete
	14	0.1	3.4	5.1	5.5	6.9	33.2	45.9	100	Complete
	15	NA	3.5	8.9	6.7	6.0	39.4	35.6	100	Complete
	16	NA	2.6	1.9	2.6	3.2	45.9	44.0	100	Complete
	17	0.5	8.3	11.7	21.4	16.0	40.8	1.5	100	Partial
	18	NA	3.0	5.5	6.0	7.3	36.7	41.6	100	Complete
	19	NA	0.4	1.3	2.1	2.1	32.6	61.4	100	Complete
	20	0.3	3.4	7.3	8.7	7.9	31.6	40.8	100	Complete
	21	NA	3.0	6.5	7.4	8.6	33.4	41.0	100	Partial
	22	0.2	3.4	6.6	7.2	6.3	22.0	54.3	100	Complete
	23	1.5	7.3	11.4	13.7	8.8	34.3	23.0	100	Complete
	24	NA	1.4	3.1	4.6	4.2	31.0	55.6	100	Complete
	25	NA	1.2	2.4	3.5	3.2	32.1	57.7	100	Complete
	26	NA	5.1	3.0	5.6	7.4	42.1	36.8	100	Complete
Total		0.2	3.0	5.1	6.4	6.4	33.8	45.0	100	

NA = no data available

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

Presentation #32
Site-specific survival rates by gestational age

Site	Percentage survival for each gestational age (weeks)										
	<23	23	24	25	26	27-28	29-30	31-32	33-34	≥35	Overall*
A	NA	NA	50.0	100.0	100.0	85.7	92.9	100.0	100.0	99.6	98.4
B	NA	100.0	83.3	88.9	100.0	100.0	98.1	100.0	100.0	100.0	99.3
C	NA	50.0	54.5	85.7	100.0	92.9	98.2	96.7	100.0	96.2	95.6
D	0.0	33.3	100.0	94.7	83.3	94.4	93.5	97.5	97.6	98.6	96.8
E	0.0	NA	33.3	50.0	85.7	92.3	96.3	96.5	99.2	98.8	97.6
F	NA	0.0	25.0	77.8	100.0	96.3	100.0	97.0	100.0	100.0	97.1
G	NA	NA	66.7	100.0	0.0	81.8	100.0	100.0	100.0	98.9	98.4
H	0.0	33.3	55.0	73.7	88.0	94.6	97.0	97.6	98.0	97.0	94.6
I	0.0	50.0	66.7	62.5	65.0	82.5	96.7	98.4	96.6	97.8	93.4
J	NA	60.0	100.0	50.0	100.0	80.0	92.9	100.0	98.6	98.7	97.6
K	NA	NA	42.9	60.0	71.4	100.0	94.4	100.0	98.6	100.0	95.9
L [#]	NA	0.0	70.0	75.0	88.5	91.9	96.0	97.8	100.0	98.8	96.5
M	NA	NA	NA	100.0	100.0	100.0	100.0	100.0	94.7	100.0	99.4
N [#]	NA	NA	100.0	100.0	66.7	71.4	0.0	100.0	0.0	66.7	70.0
O [#]	100.0	0.0	53.3	75.0	84.6	90.0	98.3	100.0	100.0	NA	91.1
P	NA	NA	0.0	NA	100.0	100.0	100.0	95.5	91.7	99.4	97.7
Q	NA	0.0	75.0	68.8	88.2	90.3	90.9	85.3	93.6	95.8	92.5
R	NA	100.0	NA	NA	NA	100.0	100.0	100.0	100.0	100.0	100.0
S	0.0	20.0	61.1	78.9	93.5	93.4	96.2	100.0	98.7	99.4	94.6
T	NA	100.0	100.0	81.8	100.0	100.0	100.0	98.3	98.2	99.6	99.1
U	NA	0.0	33.3	80.0	87.5	88.2	100.0	96.4	98.9	98.9	97.5
V	NA	0.0	NA	50.0	100.0	93.3	100.0	97.5	98.9	99.1	98.5
W	NA	40.0	62.5	80.0	78.9	87.0	98.5	98.9	100.0	98.4	96.5
X	0.0	0.0	40.0	66.7	100.0	86.7	100.0	100.0	100.0	100.0	97.4
Y	NA	100.0	60.0	90.5	69.2	93.0	100.0	98.7	100.0	97.3	96.8
Z [#]	NA	NA	37.5	80.0	75.0	90.7	96.1	95.2	100.0	NA	91.3
Overall**	8.3	35.3	59.9	78.2	86.4	92.0	97.0	97.9	98.8	98.6	96.5

These analyses include 13396 infants from 26 hospitals (5 infants had missing data for GA). **Twenty-two hospitals collected data on all eligible admissions whereas four hospitals (marked by #) collected data on selected eligible admissions only.**

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

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

Overall** = (number of infants for gestational age category / total number of infants in gestational age category)*100

NA = no data available, 0 = no infants survived

Presentation #33

Site-specific survival rates by birth weight

Site	Percentage survival for each birth weight (g) category								
	<500	500-749	750-999	1000-1249	1250-1499	1500-2499	2500-4499	>4499	Overall*
A	NA	100.0	75.0	92.9	89.5	100.0	99.5	100.0	98.4
B	NA	90.9	100.0	100.0	96.9	100.0	100.0	100.0	99.3
C	100.0	70.0	90.7	94.1	100.0	96.2	97.4	87.5	95.4
D	NA	75.9	90.6	94.8	98.6	97.7	98.2	100.0	96.8
E	NA	55.6	83.3	92.6	95.8	98.4	99.0	100.0	97.6
F	0.0	57.9	87.5	100.0	96.9	99.5	100.0	100.0	97.1
G	NA	60.0	100.0	88.9	100.0	100.0	98.7	100.0	98.4
H	0.0	59.5	90.5	92.8	98.5	97.6	97.0	100.0	94.7
I	0.0	47.6	81.3	89.8	95.9	97.3	97.8	100.0	93.4
J	100.0	66.7	100.0	87.5	100.0	98.2	98.5	100.0	97.5
K	NA	45.5	89.3	95.2	100.0	98.4	99.1	100.0	95.9
L [#]	NA	66.7	87.9	90.9	100.0	98.7	98.6	100.0	96.5
M	NA	100.0	100.0	100.0	100.0	98.6	100.0	100.0	99.4
N [#]	NA	66.7	100.0	0.0	33.3	66.7	66.7	NA	70.0
O [#]	75.0	66.7	81.3	100.0	93.3	100.0	100.0	NA	91.1
P	NA	50.0	100.0	100.0	88.9	96.8	99.2	100.0	97.7
Q	100.0	66.7	85.7	89.5	87.9	92.2	96.4	100.0	92.8
R	NA	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
S	12.5	71.8	90.2	97.3	97.9	98.9	100.0	100.0	94.6
T	NA	81.8	100.0	100.0	100.0	98.7	99.5	100.0	99.1
U	NA	40.0	76.5	95.8	100.0	99.0	98.7	92.3	97.5
V	NA	100.0	82.4	100.0	100.0	98.9	98.9	100.0	98.5
W	0.0	71.4	85.7	84.4	100.0	98.2	99.5	100.0	96.5
X	0.0	62.5	86.7	95.8	96.0	100.0	100.0	100.0	97.4
Y	100.0	65.4	88.9	94.6	100.0	98.8	98.4	100.0	97.0
Z [#]	0.0	76.5	87.5	88.6	100.0	94.0	100.0	NA	91.3
Overall**	29.0	67.7	88.4	93.7	97.7	98.3	98.7	99.1	96.5

These analyses include 13361 infants from 26 hospitals (40 infants had missing data for GA). **Twenty-two hospitals collected data on all eligible admissions whereas four hospitals (marked by #) collected data on selected eligible admissions only.**

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

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

Overall** = (number of infants for gestational age category / total number of infants in gestational age category)*100

NA = no data available, 0 = no infants survived

Presentation#34

Site comparison of mortality (adjusted for congenital anomalies)

Figure1: Crude Odds Ratio (Number of infants: 13401)

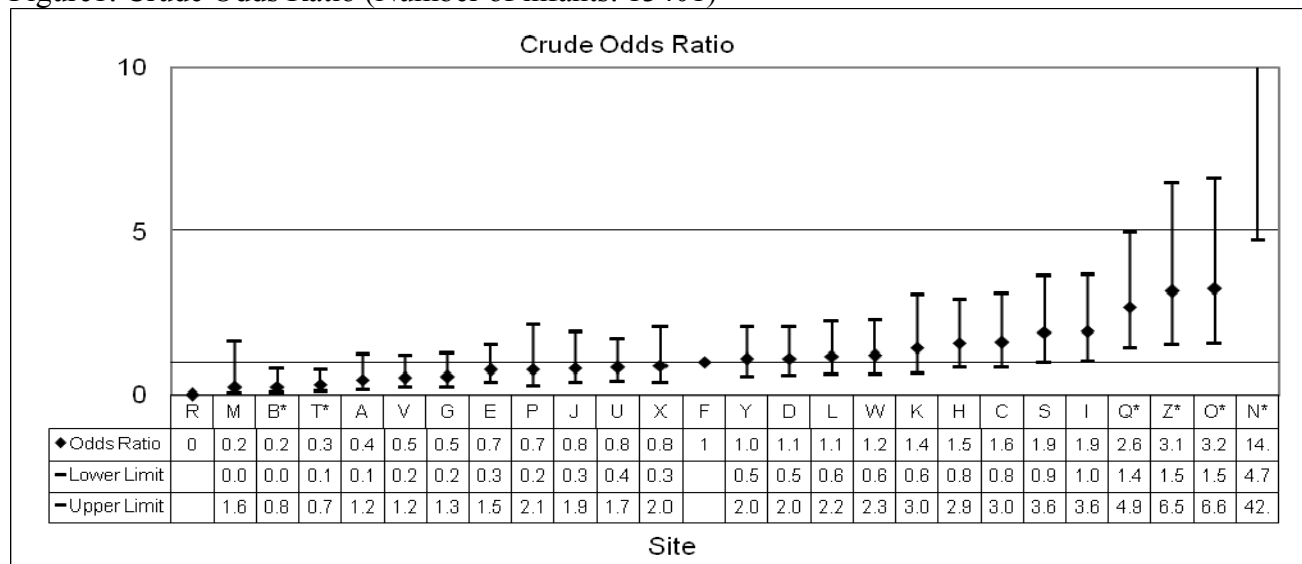
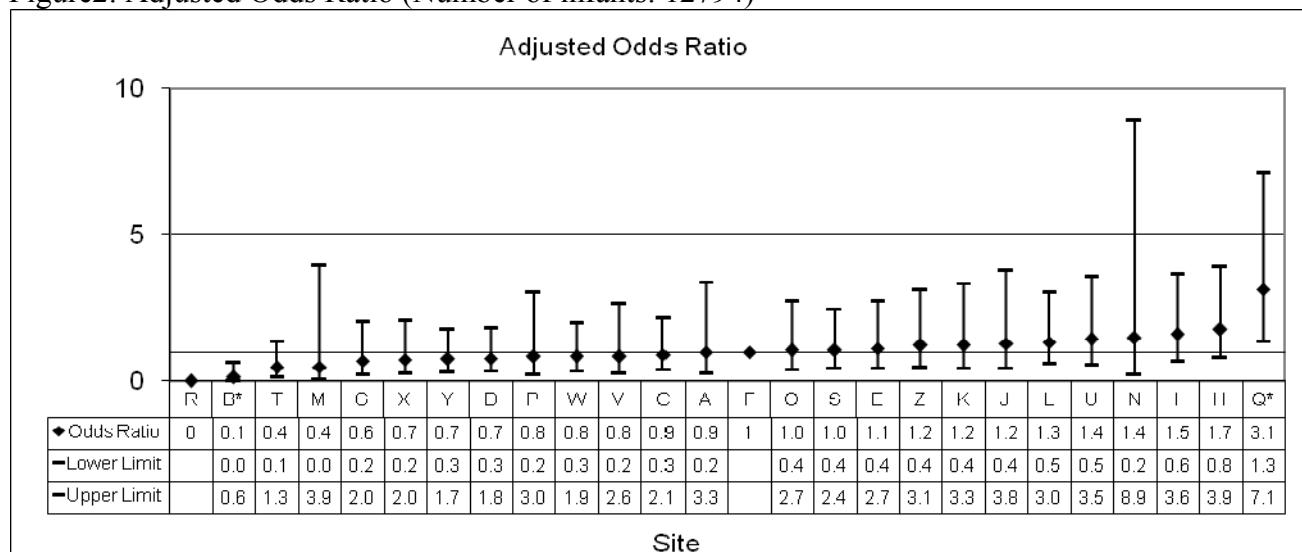


Figure2: Adjusted Odds Ratio (Number of infants: 12794)



Reference site: F

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

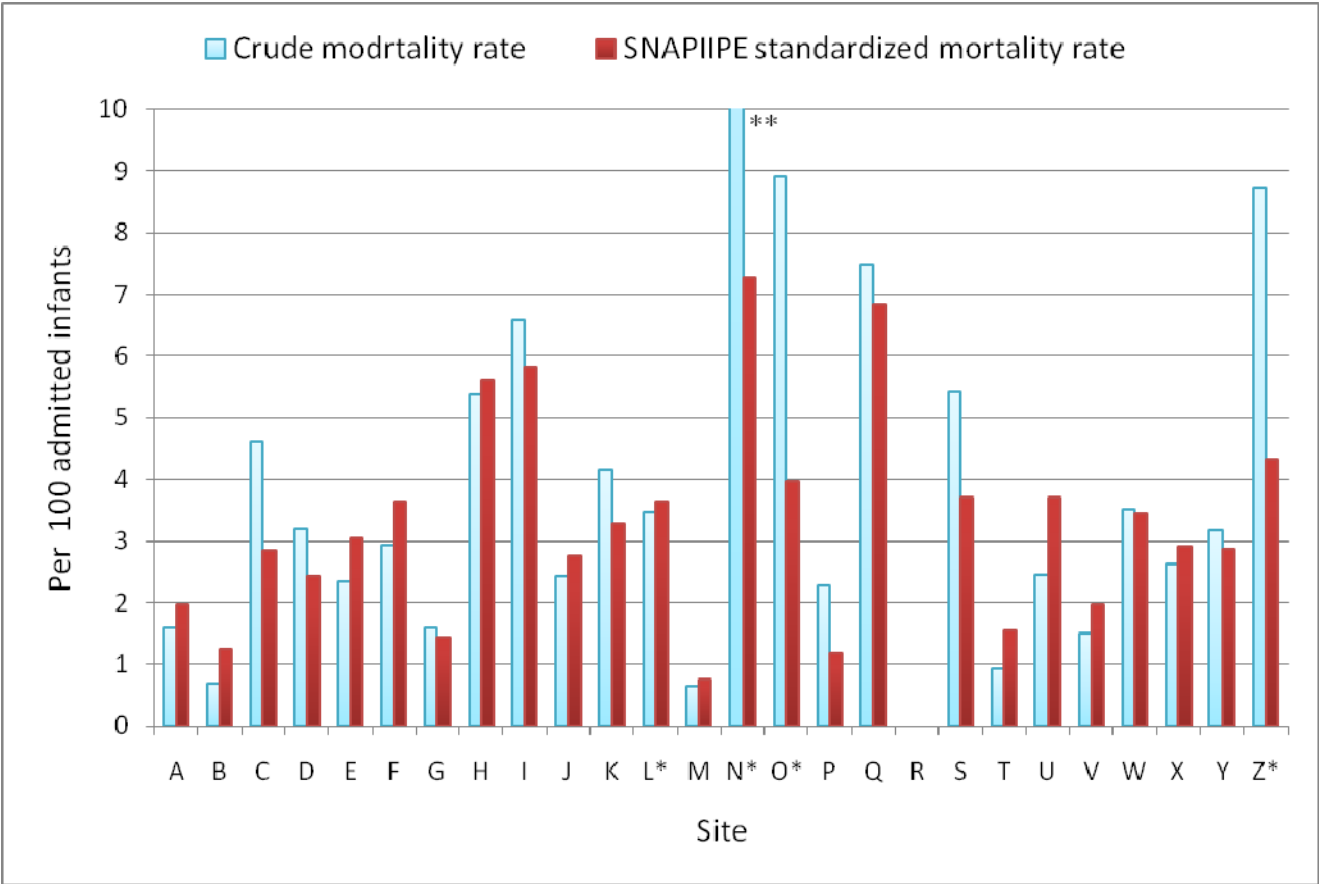
Inclusion criteria:
All infants included

**Mortality is attributed to the Network hospital
of first admission.**

**Significant predictors identified by
multivariate analysis and adjusted for:**

Congenital anomalies
SNAP-II
Apgar at 5 min
Antenatal steroids
Gestational age
Small for GA

Presentation #35
SNAP-II PE adjusted site mortality rates



** Site N has crude mortality rate of 30%, but is not shown completely in the graph.
Please refer to the table for the actual percentage for site N.

Presentation #35 (continued)

SNAP-II PE adjusted site mortality rates

Site	Mortality rate (%)	SNAP-II PE Standardized rate (%)
A	1.6	2.0
B	0.7	1.2
C	4.6	2.8
D	3.2	2.4
E	2.4	3.0
F	2.9	3.6
G	1.6	1.4
H	5.4	5.6
I	6.6	5.8
J	2.4	2.8
K	4.1	3.3
L*	3.5	3.6
M	0.6	0.8
N*	30.0	7.3
O*	8.9	4.0
P	2.3	1.2
Q	7.5	6.8
R	0.0	0.0
S	5.4	3.7
T	0.9	1.6
U	2.5	3.7
V	1.5	2.0
W	3.5	3.4
X	2.6	2.9
Y	3.2	2.9
Z*	8.7	4.3
Mean	3.5	3.5

COMMENTS: SNAP-II PE standardized mortality rates were calculated by adjusting mortality for illness severity. Mortality is attributed to the hospital of first admission. Adjusting for readmission and transfers, these represent 13401 infants. **Twenty-two hospitals collected data on all eligible admissions whereas four hospitals (marked by asterisk) collected data on selected eligible admissions only.**

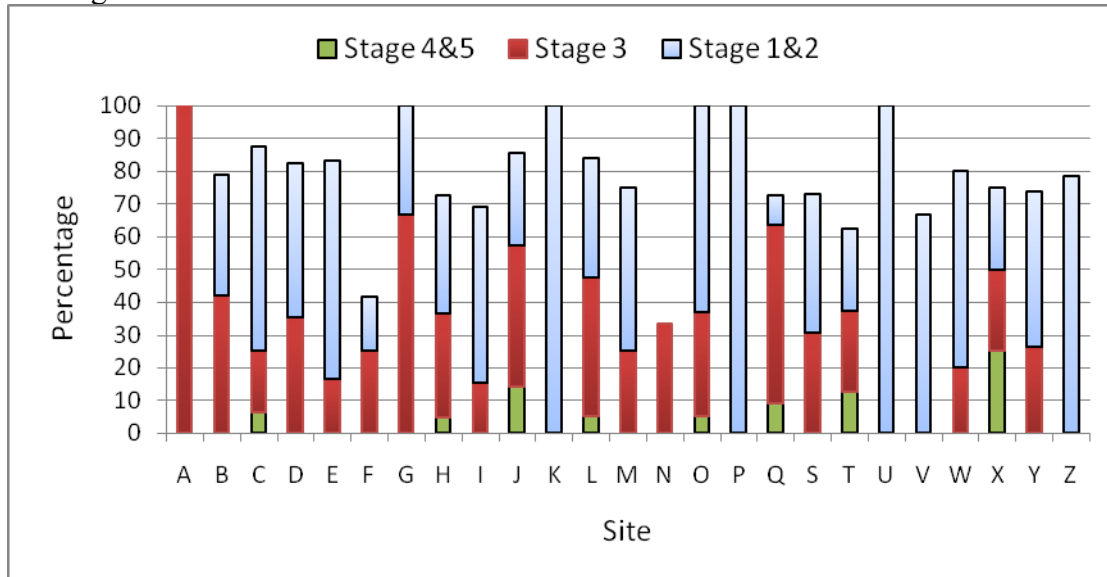
* Please note that the criteria for entering infants in the CNN dataset are not the same for these four hospitals and thus, the rates may not be comparable with other sites.

F. Site Comparisons – Morbidity Outcomes

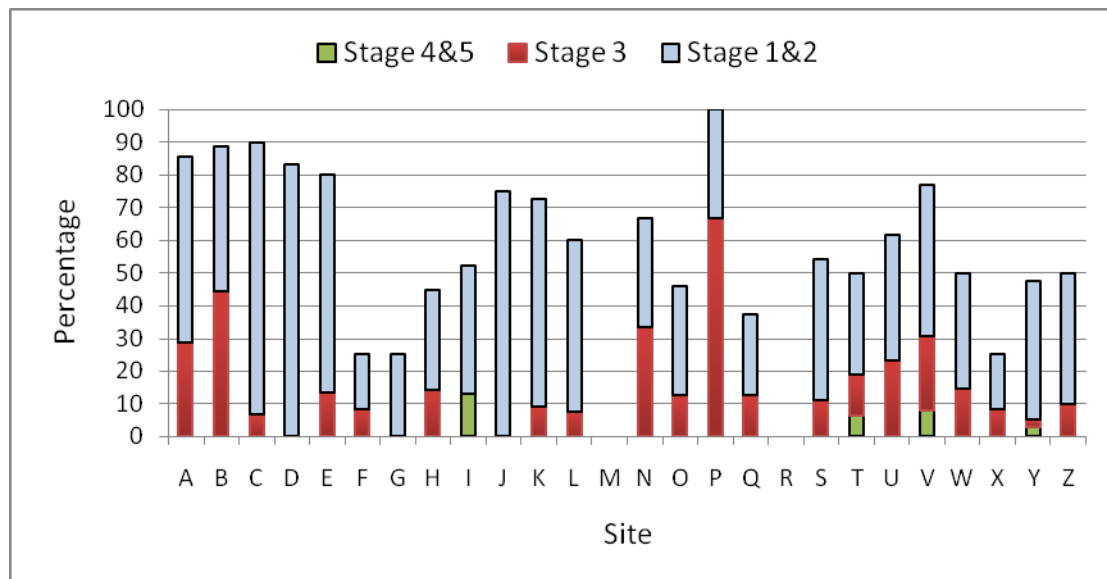
Presentation #36

Incidence of retinopathy of prematurity among infants with eye exams with birth weight <1500g

A. <750g



B. 750-999g



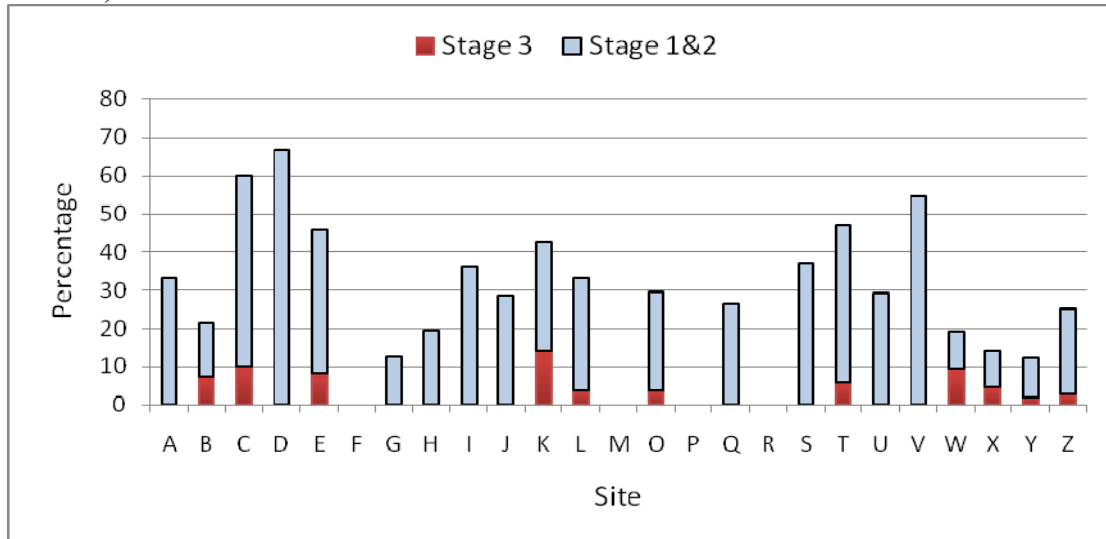
Note that for site M and R, among those infants with eye exams, none was diagnosed with ROP, so the incidence rate is zero.

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

Presentation #36 (continued)

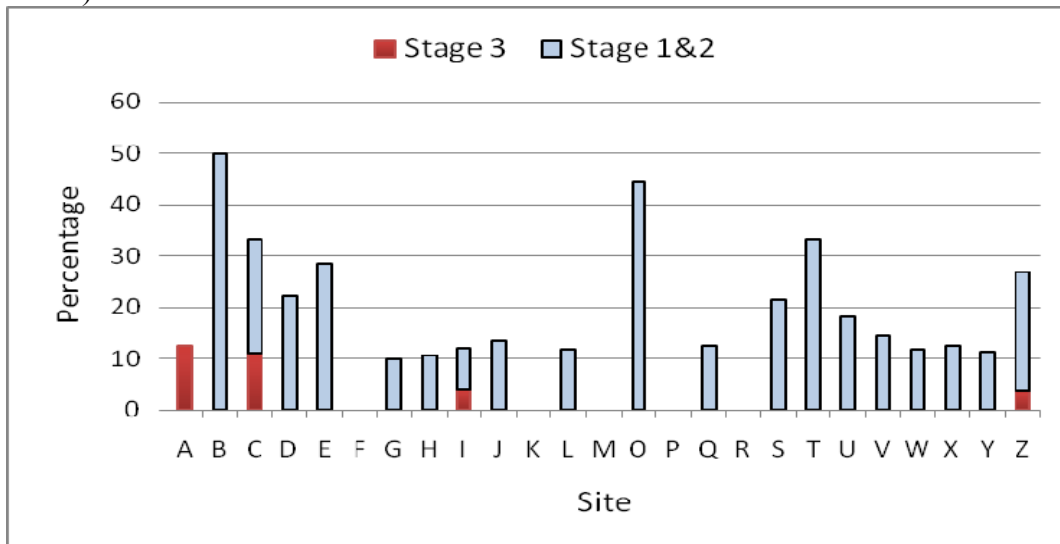
Incidence of retinopathy of prematurity among infants with eye exams with birth weight <1500g

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



Note that for site F, M, P and R, among those infants with eye exams, none was diagnosed with ROP, so the incidence rate is zero. There were no infants in site N in this BW category.

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



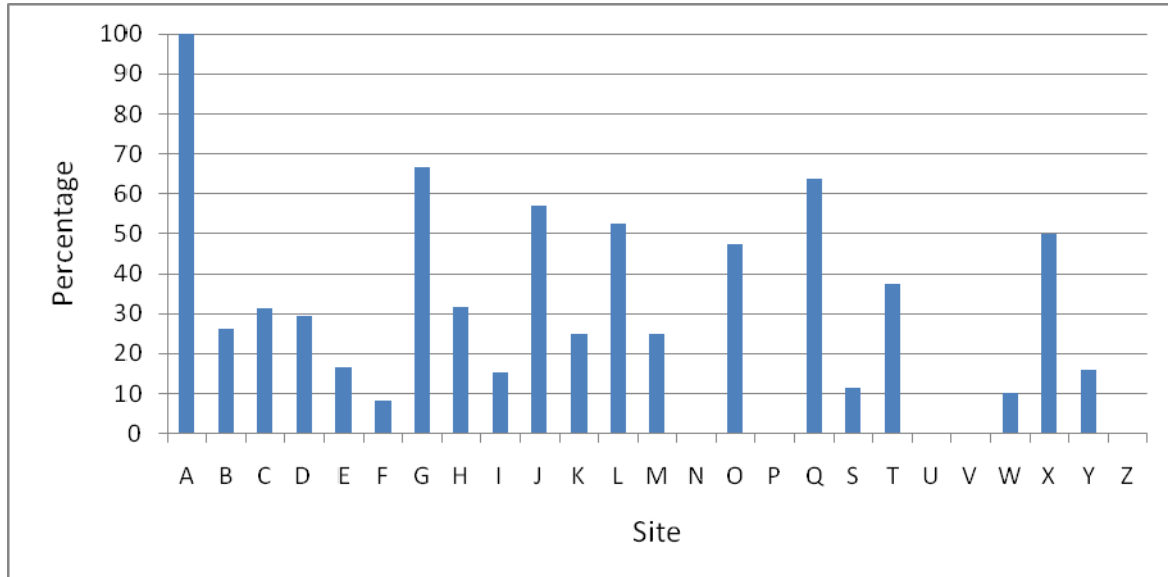
Note that for site F, K, M, P and R, among those infants with eye exams, none were diagnosed with ROP, so the incidence rate is zero. All infants with eye exams in site N had stage 3 ROP.

COMMENTS: Not all centers have data on infants in each birth weight category.

Presentation #37

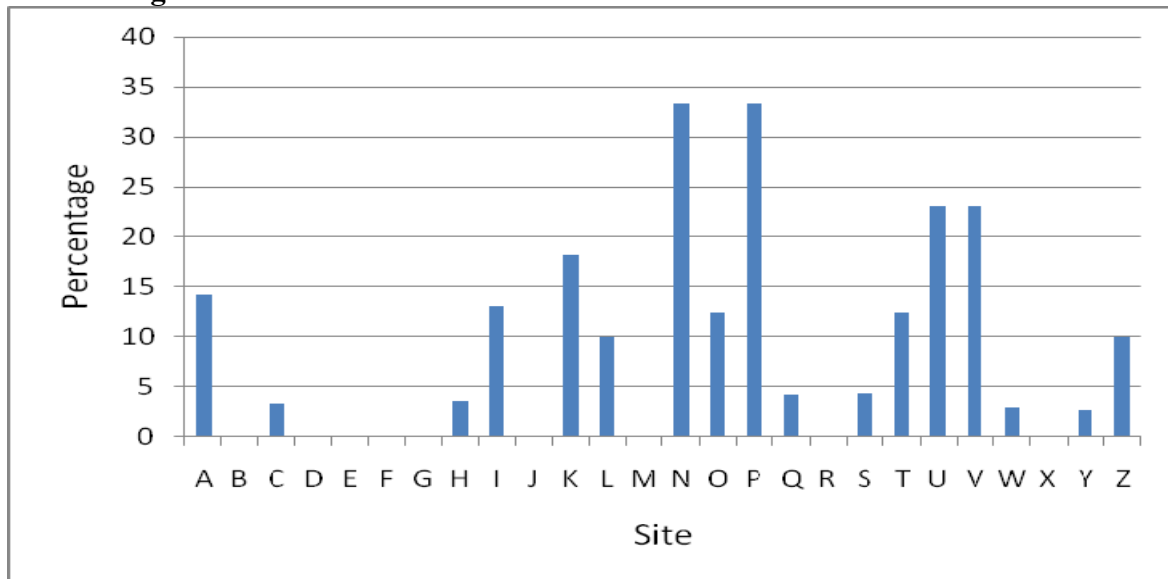
Treatment for retinopathy of prematurity among infants with eye exams with birth weight <1500g

A. <750g



For sites N, P, U, V and R, none of the infants received treatment.

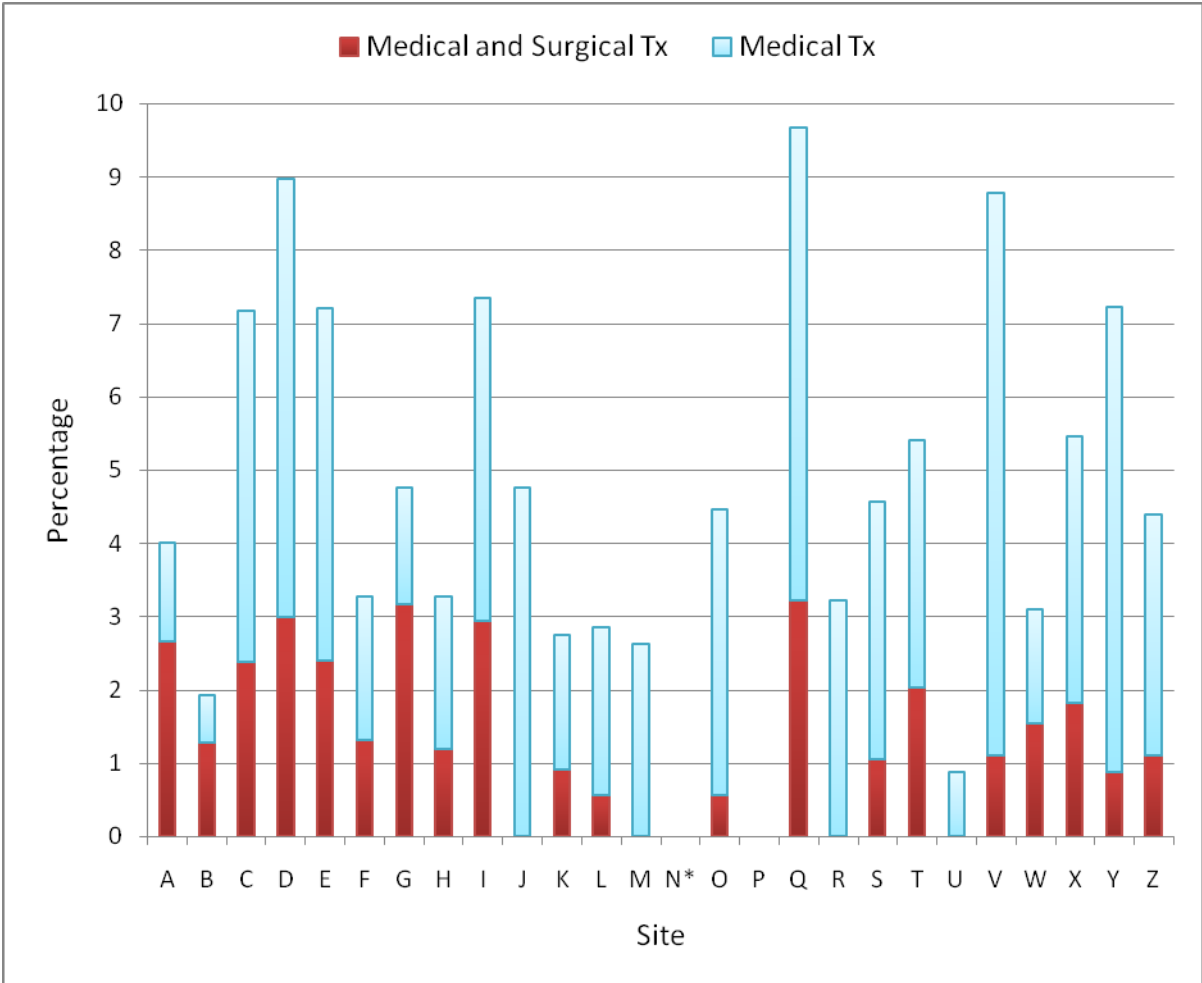
B. 750-999g



Note that for site M and R, no infants diagnosed with ROP for this BW subgroup. For sites D and X, no infants required treatment.

COMMENTS: Not all centers have data on infants in each birth weight category.

Presentation #38a
Incidence of necrotizing enterocolitis for infants with gestational age < 33 weeks



Presentation #38a (continued)**Incidence of necrotizing enterocolitis for infants with gestational age < 33 weeks**

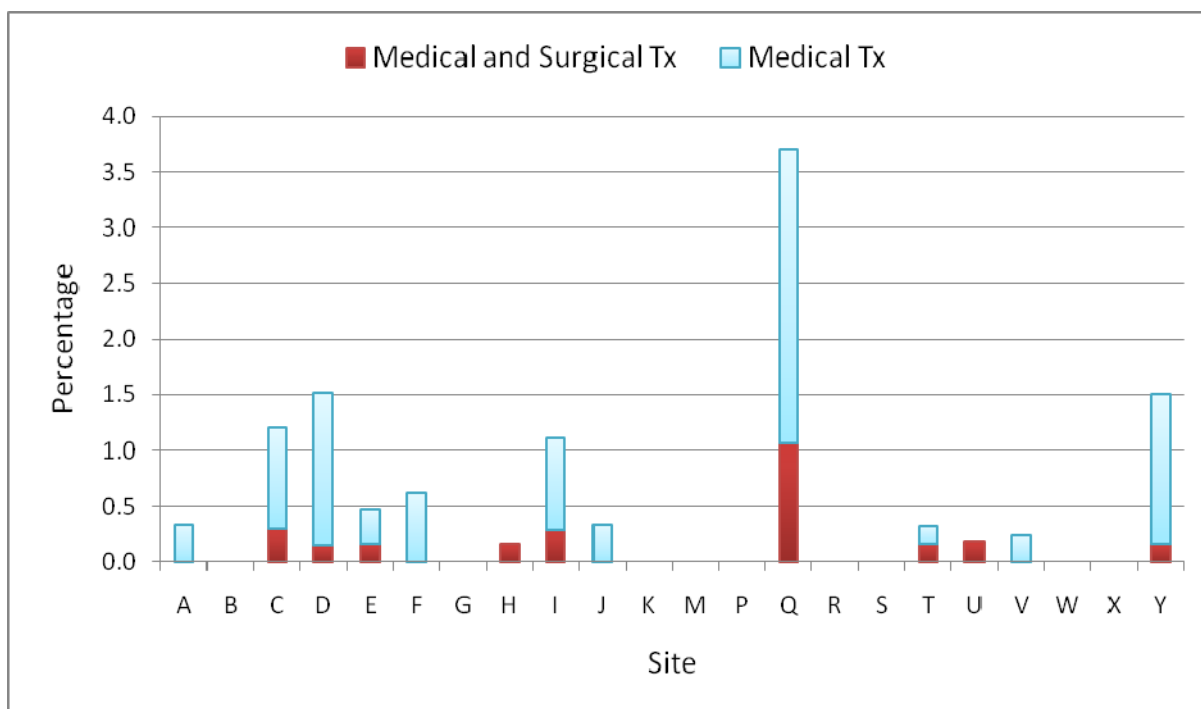
Site	Treatment (%)		
	Medical Treatment	Medical and Surgical Treatment	Any
A	1.3	2.7	4.0
B	0.6	1.3	1.9
C	4.8	2.4	7.2
D	6.0	3.0	9.0
E	4.8	2.4	7.2
F	2.0	1.3	3.3
G	1.6	3.2	4.8
H	2.1	1.2	3.3
I	4.4	2.9	7.4
J	4.8	0.0	4.8
K	1.8	0.9	2.8
L	2.3	0.6	2.9
M	2.6	0.0	2.6
N*	0.0	0.0	0.0
O	3.9	0.6	4.5
P	0.0	0.0	0.0
Q	6.5	3.2	9.7
R	3.2	0.0	3.2
S	3.5	1.1	4.6
T	3.4	2.0	5.4
U	0.9	0.0	0.9
V	7.7	1.1	8.8
W	1.6	1.6	3.1
X	3.6	1.8	5.5
Y	6.4	0.9	7.2
Z	3.3	1.1	4.4
Total	3.6	1.5	5.1

COMMENTS: These analyses include 4171 infants from 26 hospitals. 55 infants were missing data on NEC. **Twenty-five hospitals collected data on all eligible admissions for infants with GA < 33 weeks whereas one hospital (marked by asterisk) collected data on selected eligible admissions only.**

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

Presentation #38b

Incidence of necrotizing enterocolitis for infants with gestational age ≥ 33 weeks from centers which contributed all data



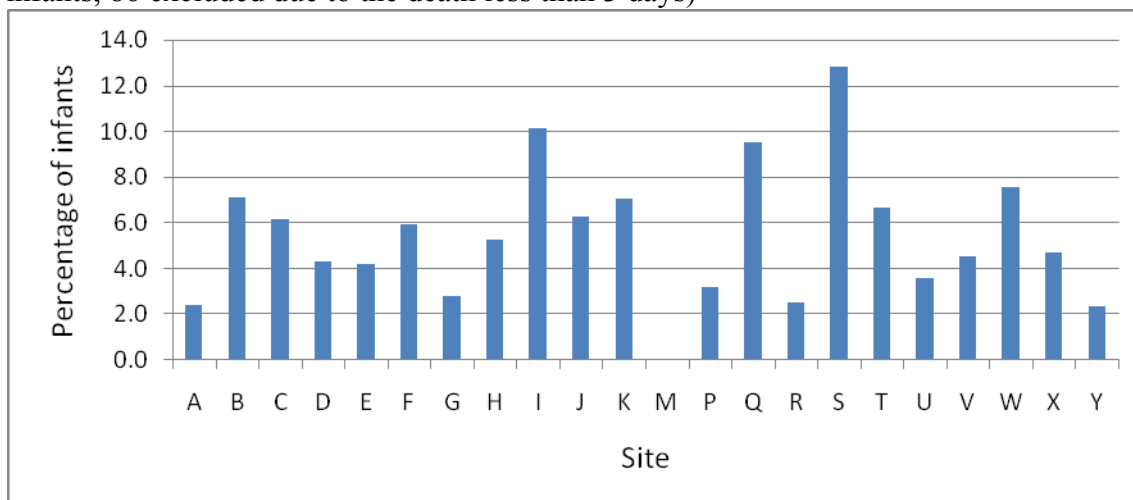
Site	Treatment (%)		
	Medical Tx	Medical and Surgical Tx	Any
A	0.3	0.0	0.3
B	0.0	0.0	0.0
C	0.9	0.3	1.2
D	1.4	0.2	1.5
E	0.3	0.2	0.5
F	0.6	0.0	0.6
G	0.0	0.0	0.0
H	0.0	0.2	0.2
I	0.8	0.3	1.1
J	0.3	0.0	0.3
K	0.0	0.0	0.0
Total			
0.5			
0.1			
0.6			

Site	Treatment (%)		
	Medical Tx	Medical and Surgical Tx	Any
M	0.0	0.0	0.0
P	0.0	0.0	0.0
Q	2.7	1.1	3.7
R	0.0	0.0	0.0
S	0.0	0.0	0.0
T	0.2	0.2	0.3
U	0.0	0.2	0.2
V	0.2	0.0	0.2
W	0.0	0.0	0.0
X	0.0	0.0	0.0
Y	1.3	0.2	1.5
Total			
1.3			
0.2			
1.5			

COMMENTS: These analyses include 8557 infants from 22 hospitals. 41 infants were missing data on NEC.

Presentation #39**Incidence of nosocomial infection***

Part A: Hospitals that contributed data on all eligible admissions (n=22 hospitals, 11991 infants, 86 excluded due to the death less than 3 days)



Site	A	B	C	D	E	F	G	H	I	J	K	M	P	Q	R	S	T	U	V	W	X	Y	Mean
%	2.4	7.1	6.2	4.3	4.2	5.9	2.8	5.3	10.2	6.3	7.1	0.0	3.2	9.5	2.5	12.8	6.7	3.6	4.5	7.6	4.7	2.3	5.6

Part B: Hospitals that contributed data on selected eligible admissions (n=4 hospitals, 1310 infants, 14 excluded due to the death less than 3 days)



Site	L	N	O	Z	Mean
%	6.3	31.6	12.7	15.3	9.0

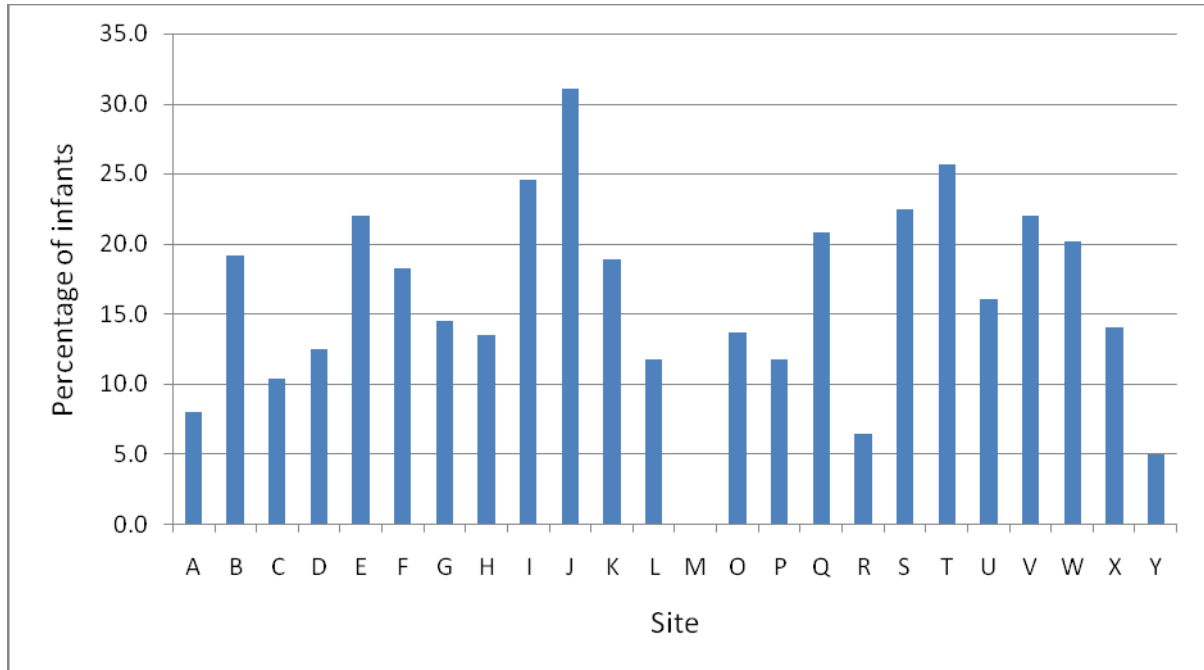
Note that the criteria for entering infants in the CNN dataset are not the same for these four hospitals and thus, the rates may not be comparable.

COMMENTS: Nosocomial infection indicates any positive blood and/or cerebrospinal fluid culture for bacteria or fungi after 2 days of an admission (analysis is infant-based and deaths <3 days are excluded).

Presentation #39a

Incidence of nosocomial infection* for infants with gestational age < 33 weeks

a. Hospitals that contributed data on all eligible admissions for infants with GA < 33
(n=24 hospitals, 3956 infants, 67 excluded due to death before 3 days of age)



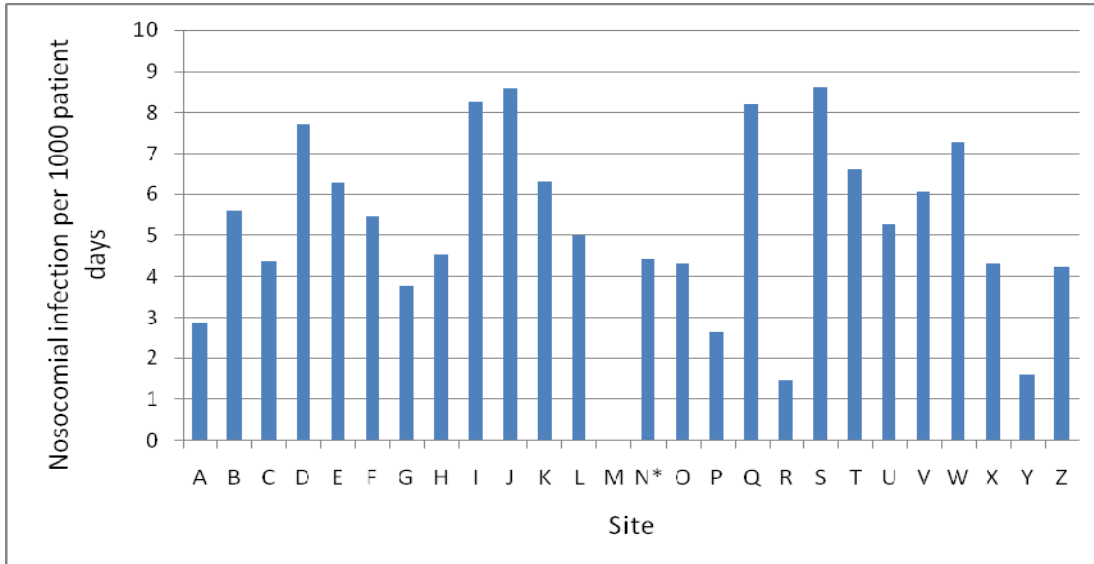
Site	A	B	C	D	E	F	G	H	I	J	K	L	
%	8.0	19.1	10.3	12.5	22.0	18.2	14.5	13.5	24.5	31.0	18.9	11.8	
Site	M	O	P	Q	R	S	T	U	V	W	X	Y	Mean
%	0.0	13.7	11.8	20.8	6.5	22.4	25.7	16.1	22.0	20.2	14.0	5.0	15.8

COMMENTS: *Nosocomial infection indicates any positive blood and/or cerebrospinal fluid culture after 2 days of an admission (analysis is infant-based and deaths before 3 days of age are excluded).

Note: If an infant is admitted to two hospitals and had episodes of nosocomial infections at two sites, it is counted twice.

Presentation #40a

Nosocomial infection per 1000 Patient days for infants with gestational age < 33 weeks



Site	Infections per 1000 patient days	Site	Infections per 1000 patient days
A	2.9	N*	4.4
B	5.6	O	4.3
C	4.4	P	2.6
D	7.7	Q	8.2
E	6.3	R	1.5
F	5.5	S	8.6
G	3.8	T	6.6
H	4.5	U	5.3
I	8.3	V	6.1
J	8.6	W	7.3
K	6.3	X	4.3
L	5.0	Y	1.6
M	0.0	Z	4.2
Total	5.4		

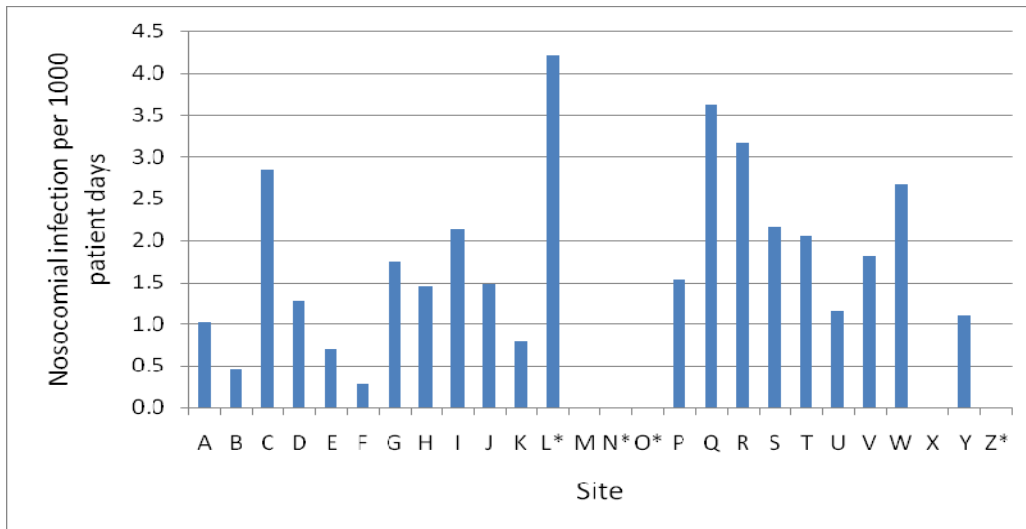
Total number of infants = 4221

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

COMMENTS: Nosocomial infection indicates positive blood and/or cerebrospinal fluid culture 2 days following admission (includes all admissions). Considerable variation persists when nosocomial infections are 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 infants who are transferred are those with lower acuity.

Presentation #40b

Nosocomial infection per 1000 Patient days for infants with gestational age > 32 weeks



Site	Infections per 1000 patient days	Site	Infections per 1000 patient days
A	1.0	N*	0.0
B	0.5	O*	0.0
C	2.9	P	1.5
D	1.3	Q	3.6
E	0.7	R	3.2
F	0.3	S	2.2
G	1.7	T	2.0
H	1.4	U	1.2
I	2.1	V	1.8
J	1.5	W	2.7
K	0.8	X	0.0
L*	4.2	Y	1.1
M	0.0	Z*	0.0
Total	1.8		

Total number of infants = 9175

***Note that the criteria for entering infants in the CNN dataset are not same for these four hospitals and thus, the rates may not be comparable with other sites.**

COMMENTS: Nosocomial infection indicates positive blood and/or cerebrospinal fluid culture 2 days following admission (includes all admissions). Considerable variation persists when nosocomial infections are 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 infants who are transferred are those with lower acuity.

Presentation #41**Incidence of bronchopulmonary dysplasia (28 days) in infants with gestational age <33 weeks at birth**

Gestational age at birth						
Site	<25	25-26	27-28	29-30	31-32	Overall
A	100.0	50.0	58.3	33.3	3.7	29.2
B	66.7	68.8	31.3	5.9	0.0	14.9
C	87.5	61.8	22.6	9.1	7.9	21.8
D	80.0	85.3	49.0	30.6	10.3	33.8
E	100.0	44.4	52.2	3.9	3.6	18.1
F	66.7	75.0	38.5	2.8	1.6	16.3
G	100.0	100.0	100.0	41.7	4.6	39.7
H	100.0	86.5	27.1	7.7	8.3	26.3
I	100.0	89.3	60.0	18.3	4.8	34.6
J	100.0	100.0	75.0	15.4	0.0	23.2
K	66.7	40.0	54.6	28.6	3.7	30.4
L	88.9	76.7	57.9	33.7	8.3	34.8
M	NA	75.0	28.6	16.7	4.8	18.4
N*	0.0	33.3	33.3	NA	0.0	28.6
O	88.9	82.6	71.4	15.8	5.6	34.5
P	NA	0.0	50.0	25.0	4.8	12.5
Q	20.0	35.5	33.3	14.0	0.0	19.9
R	100.0	NA	66.7	44.4	0.0	22.6
S	92.9	46.7	16.4	6.8	0.0	19.1
T	100.0	93.8	37.0	12.5	5.1	25.9
U	100.0	36.4	76.5	11.5	9.4	24.1
V	NA	85.7	64.3	14.3	2.5	22.5
W	87.5	61.8	20.0	15.2	2.2	19.9
X	100.0	85.7	50.0	18.8	2.1	26.4
Y	90.9	80.0	53.7	22.7	10.1	29.6
Z	100.0	84.6	17.5	4.1	3.3	15.7
Overall	84.8	69.0	41.0	17.4	5.5	25.7

Total number of infants = 3946

275 infants were excluded due to death prior to day 28 of life.

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

- Note that outcomes are attributed to the hospital of first admission.

Comments: Infants were classified as having BPD –Day 28 if they were receiving any respiratory support including oxygen, CPAP or mechanical ventilation on day 28 of age or, if discharged prior to day 28, they were receiving respiratory support at the time of discharge. Similarly, infants were classified as having BPD-Week 36 if they were receiving any respiratory support oxygen, CPAP or mechanical ventilation at 36 weeks' post-menstrual age, or if they were discharged prior to 36 weeks' post-menstrual age, while receiving respiratory support. There were no requirements for chest radiographs at the time of diagnosis.

NA = no data available

Presentation #42**Incidence of bronchopulmonary dysplasia (36 weeks) in infants with gestational age <33 weeks at birth**

Gestational age at birth						
Site	<25	25-26	27-28	29-30	31-32	Overall
A	100.0	25.0	41.7	29.6	0.0	22.2
B	50.0	43.8	25.0	3.9	0.0	10.4
C	14.3	41.2	26.4	1.8	2.3	13.5
D	90.0	72.7	43.1	29.2	9.4	30.7
E	100.0	37.5	13.0	0.0	1.8	7.0
F	100.0	63.6	23.1	0.0	1.6	12.1
G	0.0	0.0	22.2	16.7	4.6	12.1
H	92.9	57.1	27.1	13.9	5.0	22.0
I	100.0	76.9	41.2	13.3	3.2	26.2
J	83.3	50.0	25.0	0.0	0.0	12.5
K	66.7	64.3	54.6	20.6	0.0	30.0
L	87.5	56.1	40.4	22.5	3.8	23.9
M	NA	25.0	28.6	0.0	4.8	10.5
N*	0.0	66.7	66.7	NA	0.0	57.1
O	77.8	60.9	40.7	10.5	3.7	23.5
P	NA	0.0	0.0	12.5	4.8	6.3
Q	80.0	46.4	48.2	20.9	0.0	31.2
R	100.0	NA	0.0	11.1	0.0	6.5
S	69.2	40.9	18.3	6.8	0.0	17.1
T	60.0	71.4	18.5	17.5	1.7	17.9
U	0.0	18.2	13.3	3.9	3.8	6.6
V	NA	16.7	21.4	14.3	0.0	9.1
W	42.9	37.5	12.5	15.4	1.1	13.1
X	100.0	71.4	35.7	15.6	2.1	21.1
Y	100.0	86.7	39.6	14.8	5.4	24.0
Z	33.3	46.2	13.2	4.1	3.3	9.8
Overall	74.4	54.4	29.7	13.4	3.2	19.2

Total number of infants = 3905

316 infants were excluded due to death prior to week 36.

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

- Note that outcomes are attributed to the hospital of first admission.

Infants were classified as having BPD –Day 28 if they were receiving any respiratory support including oxygen, CPAP or mechanical ventilation on day 28 of age or, if discharged prior to day 28, they were receiving respiratory support at the time of discharge. Similarly, infants were classified as having BPD-Week 36 if they were receiving any respiratory support oxygen, CPAP or mechanical ventilation at 36 weeks' post-menstrual age, or if they were discharged prior to 36 weeks' post-menstrual age, while receiving respiratory support. There were no requirements for chest radiographs at the time of diagnosis.

Presentation #43

Incidence of bronchopulmonary dysplasia (28 days) or death in infants with gestational age <33 weeks at birth

Gestational age at birth						
Site	<25	25-26	27-28	29-30	31-32	Overall
A	100.0	50.0	64.3	35.7	3.7	32.0
B	71.4	70.6	31.3	7.7	0.0	16.6
C	92.3	63.9	26.8	10.7	9.9	25.8
D	86.7	86.5	51.9	35.1	12.5	38.0
E	100.0	54.6	57.7	7.4	5.3	24.0
F	90.9	76.9	40.7	2.8	4.6	22.9
G	100.0	100.0	100.0	41.7	4.6	44.4
H	100.0	88.6	31.1	10.5	9.8	33.2
I	100.0	91.7	65.0	19.7	6.4	40.8
J	100.0	100.0	80.0	21.4	0.0	29.5
K	85.7	47.1	54.6	30.6	3.7	34.9
L	91.7	80.0	61.3	35.6	10.4	38.6
M	NA	75.0	28.6	16.7	4.8	18.4
N*	0.0	33.3	42.9	100.0	0.0	37.5
O	94.1	86.2	73.3	17.2	5.6	40.4
P	100.0	0.0	50.0	25.0	9.1	17.7
Q	38.5	39.4	41.9	15.9	11.8	27.1
R	100.0	NA	66.7	44.4	0.0	22.6
S	96.0	52.0	19.7	11.5	1.6	25.8
T	100.0	93.8	37.0	12.5	6.7	26.4
U	100.0	46.2	76.5	11.5	12.7	29.3
V	100.0	85.7	66.7	14.3	2.5	24.2
W	92.3	66.7	30.4	15.2	3.2	25.2
X	100.0	86.7	53.3	18.8	2.1	30.8
Y	94.1	82.4	56.1	22.7	11.3	32.7
Z	100.0	88.9	23.3	7.8	7.9	23.5
Overall	91.3	72.8	45.0	19.3	7.2	30.5

Total number of infants = 4221

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

- Note that outcomes are attributed to the hospital of first admission.

Infants were classified as having BPD –Day 28 if they were receiving any respiratory support including oxygen, CPAP or mechanical ventilation on day 28 of age or, if discharged prior to day 28, they were receiving respiratory support at the time of discharge. Similarly, infants were classified as having BPD-Week 36 if they were receiving any respiratory support oxygen, CPAP or mechanical ventilation at 36 weeks' post-menstrual age, or if they were discharged prior to 36 weeks' post-menstrual age, while receiving respiratory support. There were no requirements for chest radiographs at the time of diagnosis.

NA = no data available

Presentation #44**Incidence of bronchopulmonary dysplasia (36 weeks) or death in infants with gestational age <33 weeks at birth**

Gestational age at birth						
Site	<25	25-26	27-28	29-30	31-32	Overall
A	100.0	25.0	50.0	32.1	0.0	25.3
B	57.1	47.1	25.0	5.8	0.0	12.1
C	53.9	44.4	30.4	3.6	4.4	18.3
D	93.3	75.7	46.3	33.8	11.7	35.3
E	100.0	54.6	23.1	3.7	3.5	15.2
F	100.0	69.2	25.9	0.0	4.6	19.6
G	66.7	33.3	36.4	16.7	4.6	19.1
H	96.9	65.9	31.1	16.4	6.5	30.0
I	100.0	83.3	50.0	14.8	4.8	34.6
J	87.5	66.7	40.0	7.1	0.0	19.7
K	85.7	70.6	54.6	25.0	0.0	35.8
L	91.7	64.0	45.2	24.8	6.7	29.2
M	.	25.0	28.6	0.0	4.8	10.5
N*	0.0	66.7	71.4	100.0	0.0	62.5
O	88.2	69.0	46.7	12.1	3.7	30.9
P	100.0	0.0	0.0	12.5	9.1	11.8
Q	84.6	54.6	54.8	22.7	11.8	38.7
R	100.0	.	0.0	11.1	0.0	6.5
S	84.0	48.0	23.7	11.5	1.6	25.1
T	60.0	75.0	18.5	17.5	3.3	19.6
U	80.0	30.8	23.5	3.9	7.3	14.7
V	100.0	28.6	26.7	14.3	0.0	12.1
W	69.2	48.7	23.9	16.7	2.1	20.2
X	100.0	73.3	40.0	15.6	2.1	26.5
Y	100.0	88.2	43.9	14.8	7.3	27.8
Z	75.0	61.1	23.3	7.8	7.9	19.7
Overall	86.3	61.6	35.3	15.6	5.1	25.3

Total number of infants = 4221

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

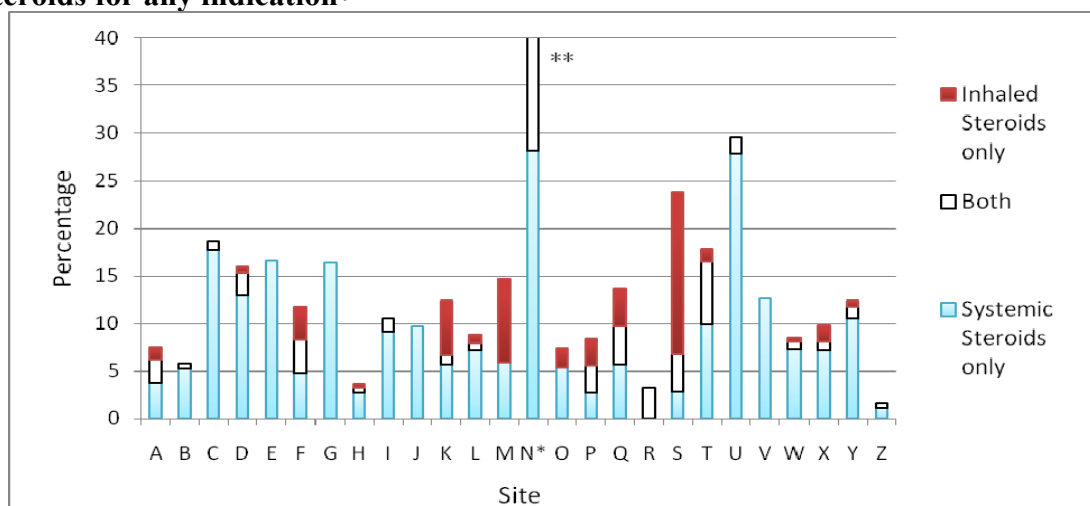
- Note that outcomes are attributed to the hospital of first admission.

Infants were classified as having BPD –Day 28 if they were receiving any respiratory support including oxygen, CPAP or mechanical ventilation on day 28 of age or, if discharged prior to day 28, they were receiving respiratory support at the time of discharge. Similarly, infants were classified as having BPD-Week 36 if they were receiving any respiratory support oxygen, CPAP or mechanical ventilation at 36 weeks' post-menstrual age, or if they were discharged prior to 36 weeks' post-menstrual age, while receiving respiratory support. There were no requirements for chest radiographs at the time of diagnosis.

NA = no data available

Presentation #45

Percentage of infants with gestational age <33 weeks at birth with postnatal use of steroids for any indication[†]



Site	Postnatal steroid use (%)		
	Systemic Steroids only	Both	Inhaled Steroids only
A	3.8	2.5	1.3
B	5.2	0.6	0
C	17.8	0.9	0
D	13.0	2.3	0.7
E	16.7	0	0
F	4.8	3.5	3.5
G	16.4	0	0
H	2.7	0.6	0.3
I	9.1	1.4	0
J	9.7	0	0
K	5.7	1	5.7
L	7.2	0.8	0.8
M	5.9	0	8.8
Total	8.5	1.7	2.1

Site	Postnatal steroid use (%)		
	Systemic Steroids only	Both	Inhaled Steroids only
N*	28.1	21.9	6.3
O	5.3	0	2.1
P	2.8	2.8	2.8
Q	5.7	4	4
R	0.0	3.2	0
S	2.9	3.9	17.1
T	9.9	6.6	1.3
U	27.8	1.7	0
V	12.6	0	0
W	7.3	0.8	0.4
X	7.1	0.9	1.8
Y	10.6	1.2	0.6
Z	1.1	0.6	0

Total number of infants = 4218

[†] Percentage of infants to each network NICU and result is attributed to original hospital.

**Note that the bar representing site N's steroids use in the graph goes over the upper limit of this graph and is not completely shown. Refer to the table for the actual percentage.

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

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

Presentation #46

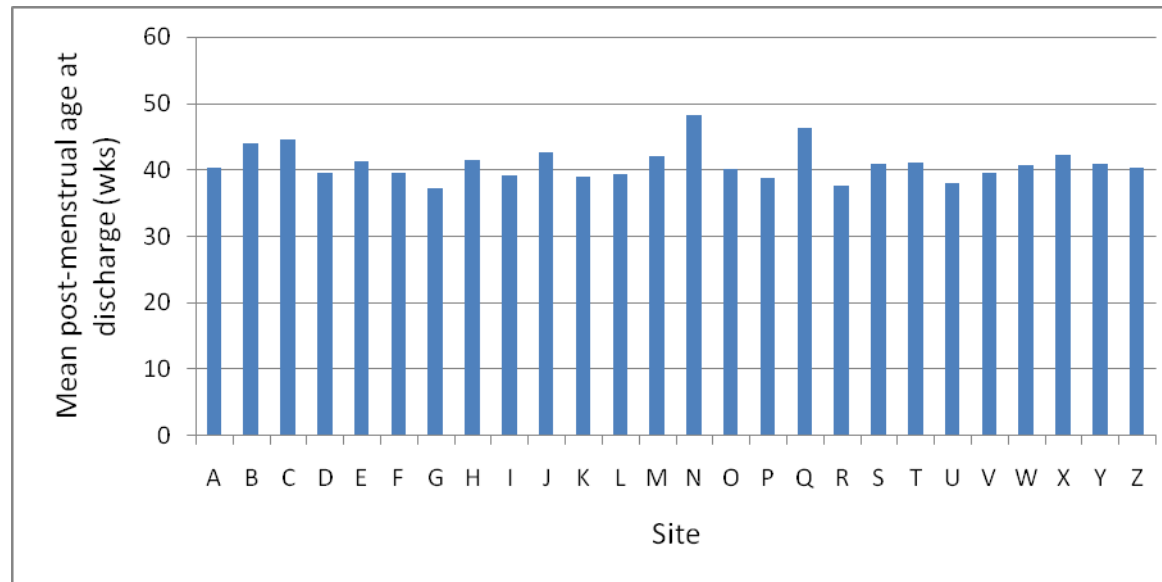
Discharge destination of infants <33 weeks (n=3883, Data for 338 infants excluded due to death)

	Home %	Level 1 %	Level 2 %	Level 3 %	Other/unknown %
A	61.4	4.3	34.3	0.0	0.0
B	16.2	27.3	54.6	2.0	0.0
C	14.4	3.4	60.2	19.5	2.5
D	3.2	1.1	93.3	2.5	0.0
E	80.7	12.3	5.3	1.8	0.0
F	77.7	0.7	15.1	5.8	0.7
G	94.9	1.7	1.7	1.7	0.0
H	14.1	0.0	80.0	5.9	0.0
I	42.9	0.0	57.1	0.0	0.0
J	94.6	1.8	0.0	1.8	1.8
K	45.4	0.0	46.4	7.2	1.0
L	37.4	2.1	50.3	10.2	0.0
M	92.1	0.0	0.0	7.9	0.0
N	25.0	0.0	8.3	58.3	8.3
O	37.1	2.4	56.5	0.0	4.1
P	81.3	9.4	9.4	0.0	0.0
Q	3.8	0.0	81.8	14.4	0.0
R	83.9	0.0	9.7	3.2	3.2
S	12.9	0.0	82.2	4.6	0.4
T	62.8	0.0	19.3	13.8	4.1
U	87.7	8.5	0.9	0.0	2.8
V	90.8	4.6	4.6	0.0	0.0
W	9.3	0.0	88.6	1.3	0.9
X	53.7	33.3	0.0	12.0	0.9
Y	30.2	19.5	39.6	8.5	2.1
Z	37.6	49.7	10.9	1.2	0.6
Total	36.2	7.3	49.5	6.1	1.0

COMMENTS: Discharge destinations varied considerably, possibly affected by the availability of the health care resources, geography and practice variations at different hospitals. Destinations to Level 1 and 2 nurseries may include nursery within own hospital. “Other/unknown” is the pediatric ward(s).

Presentation #47

Post-menstrual age at discharge home directly from NICU for infants <29 weeks who were discharged home from participating network sites (n=473)

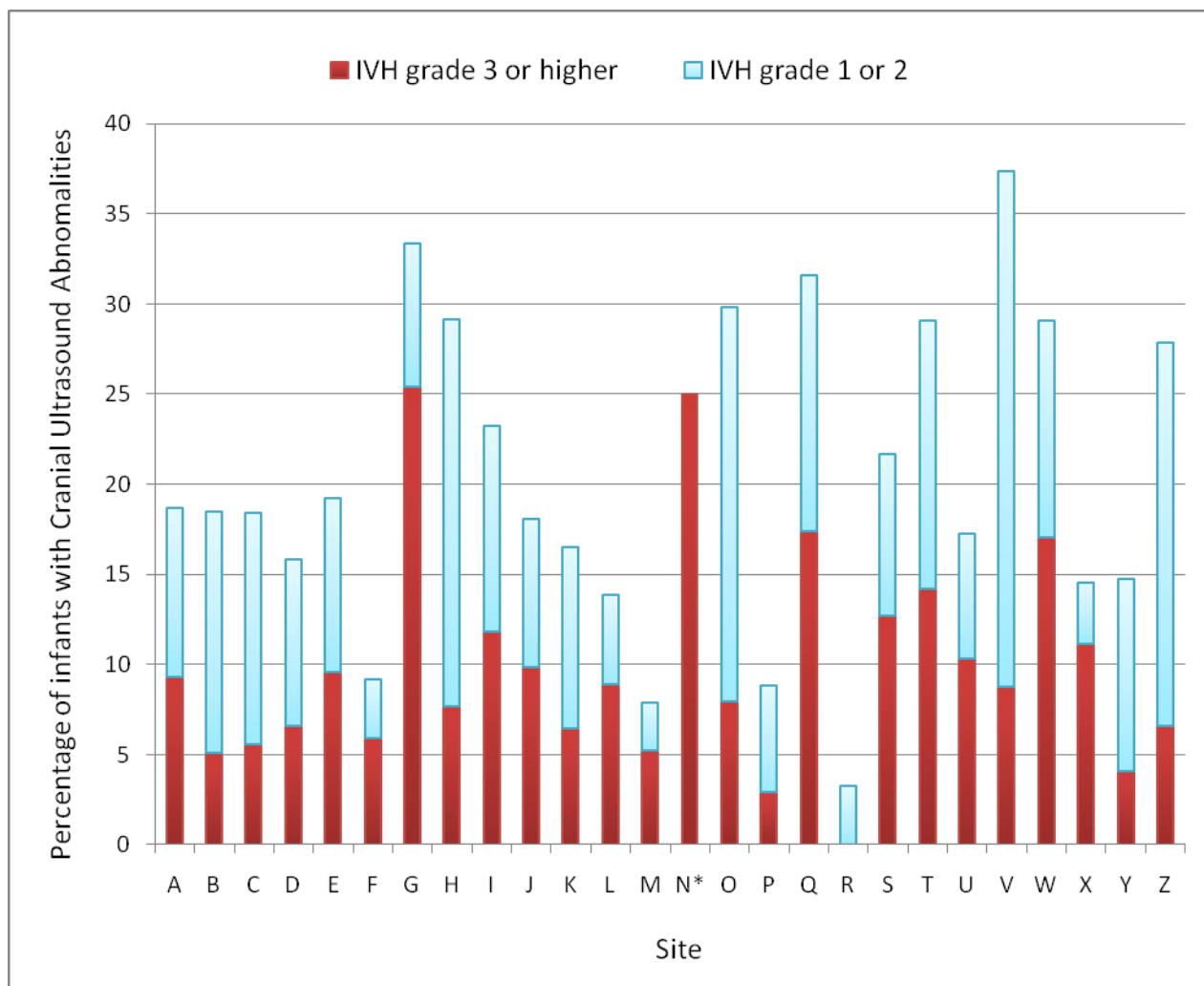


Site	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Mean
Mean	40.3	43.9	44.6	39.5	41.2	39.6	37.2	41.4	39.2	42.7	39.1	39.4	42.1	48.2	40.2	38.9	46.4	37.5	41.0	41.0	37.9	39.6	40.8	42.3	40.9	40.2	40.6
Std. Error of Mean	0.9	3.0	2.4	0.7	1.3	0.9	0.6	0.7	0.6	1.2	0.7	0.4	1.2	0.5	0.7	1.0	5.7	1.5	0.7	0.7	0.5	0.7	1.9	1.5	0.4	0.6	0.2
Median	40.0	42.0	40.8	40.4	39.5	38.0	36.4	40.7	38.6	41.7	38.0	38.9	40.9	47.7	39.0	39.1	44.4	36.9	40.9	40.3	37.9	39.9	40.6	40.9	40.4	39.6	39.7

COMMENT: This analysis is only for infants whose gestational age at birth is less than 29 weeks and went home from participating center.

Presentation #48

Incidence of cranial ultrasound abnormalities (Germinal matrix hemorrhage [or grade I], intraventricular hemorrhage [Grade 2 or 3 and PVL]) among infants <33 weeks of gestational age



Presentation #48 (continued)

Incidence of cranial ultrasound abnormalities (Germinal matrix hemorrhage [or grade I], intraventricular hemorrhage [Grade 2 or 3 and PVL]) among infants <33 weeks of gestational age

Site	<25	25-26	27-28	29-30	31-32	Overall %*
A	100.0	0.0	35.7	17.9	7.4	18.7
B	14.3	23.5	43.8	21.2	9.2	18.5
C	53.9	42.9	21.8	14.3	4.4	18.4
D	66.7	46.0	20.4	9.1	2.5	15.8
E	50.0	9.1	26.9	37.0	7.0	19.2
F	18.2	23.1	11.1	8.3	4.6	9.2
G	100.0	66.7	45.5	20.8	27.3	33.3
H	53.1	50.0	37.8	13.4	18.7	29.1
I	36.4	41.7	30.0	16.4	12.7	23.2
J	50.0	33.3	40.0	7.1	9.7	18.0
K	71.4	41.2	9.1	5.6	7.4	16.5
L	41.7	34.0	14.5	8.9	7.4	13.9
M	NA	50.0	0.0	0.0	4.8	7.9
N [#]	0.0	16.7	42.9	0.0	0.0	25.0
O	52.9	44.8	40.0	24.1	14.8	29.8
P	100.0	0.0	0.0	12.5	4.6	8.8
Q	38.5	27.3	41.9	29.6	26.5	31.6
R	0.0	NA	33.3	0.0	0.0	3.2
S	48.0	42.0	23.7	10.3	6.5	21.7
T	60.0	75.0	44.4	20.0	13.3	29.1
U	80.0	38.5	41.2	0.0	7.3	17.2
V	100.0	71.4	26.7	35.7	35.0	37.4
W	76.9	59.0	26.1	30.3	10.6	29.1
X	62.5	33.3	13.3	12.5	2.1	14.5
Y	29.4	29.4	22.8	13.6	7.3	14.7
Z	37.5	33.3	20.9	29.4	28.6	27.9
Overall %**	50.0	40.4	26.7	16.6	10.5	21.2

Total number of infants = 4219

2 infants were missing data on cranial ultrasound abnormalities.

[#] Note that the criteria for entering infants with GA < 33 in the CNN dataset are not same for site N and thus, the rates may not be comparable with other sites.

Overall %* = (number of infants with cranial ultrasound abnormalities for site / total number of infants for site)*100

Overall %** = (number of infants with cranial ultrasound abnormalities for gestational age category / total number of infants in gestational category)*100

NA = no data available

G. Site Comparisons – Risks Adjusted Analyses

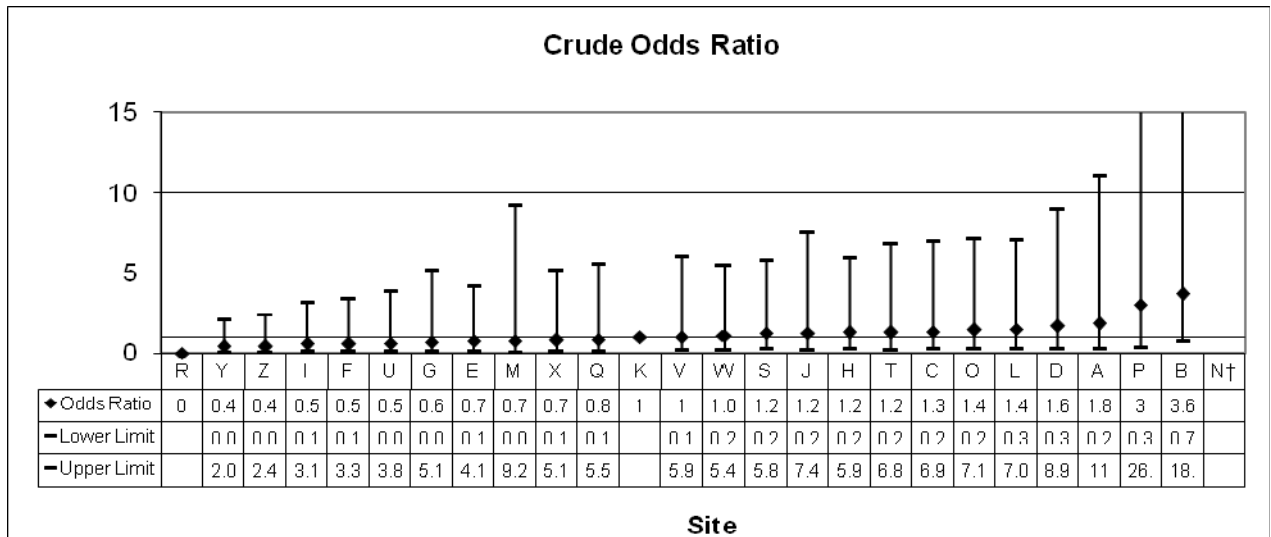
Comments: Logistic regression is used for this section-- Risk Adjusted Analysis. This technique is used to analyze interactions in which there are one or more independent variables that determine an outcome. The outcome is measured using a dichotomous variable.

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 *logic transformation* of the probability of presence of the characteristic of interest:

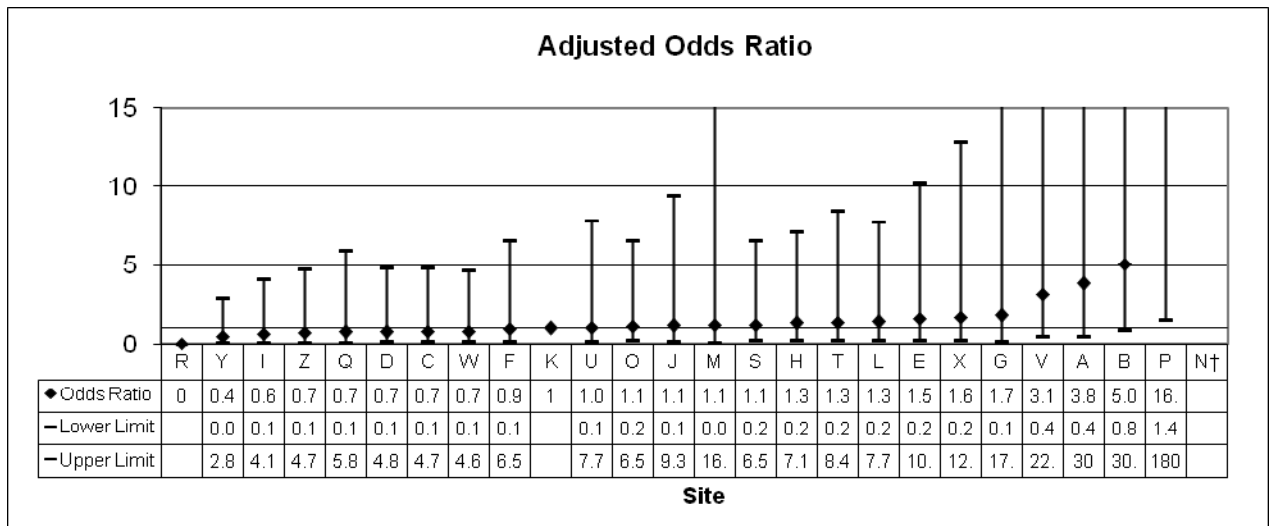
$$\text{logit}(p) = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + \dots + b_k X_k$$

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

Presentation #49
Site comparison of retinopathy of prematurity stage 3 and higher



Number of infants: 1433



Number of infants: 1412

Reference site: K

#Inclusion criteria:

Birth weight <1500g Screened for ROP
 Age at admission less than 4 days

Outcome is attributed to the network hospital of first admission.

All the infants who meet the criteria in site R did not have retinopathy of prematurity stage 3 and higher (Odds Ratio: 0)

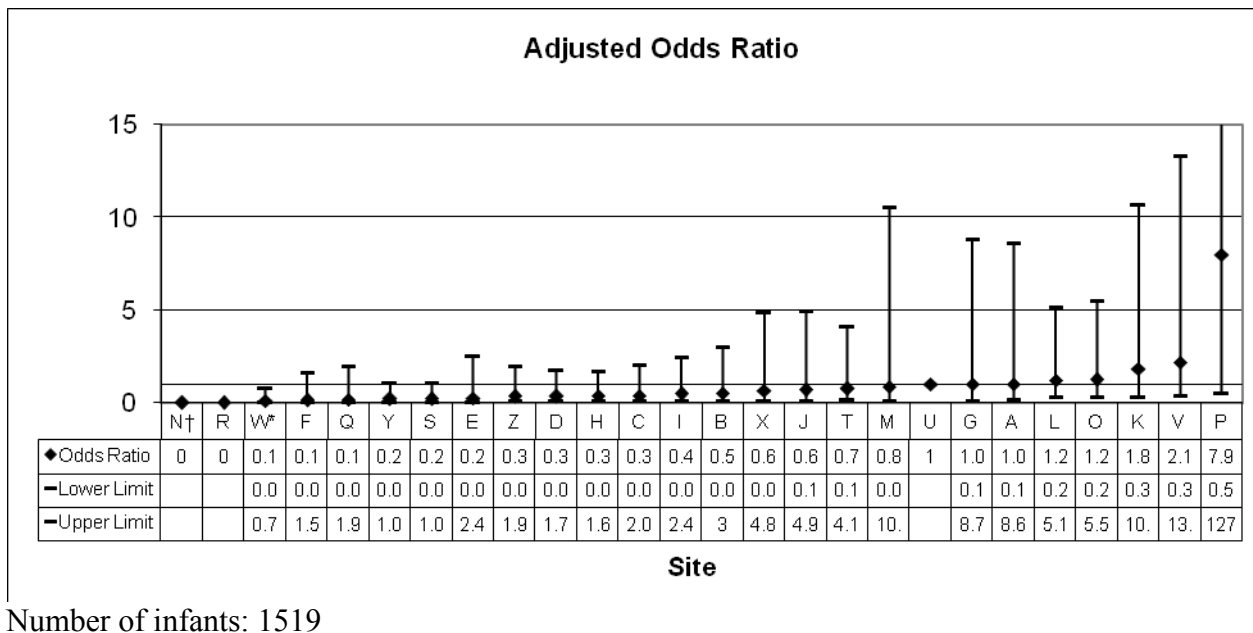
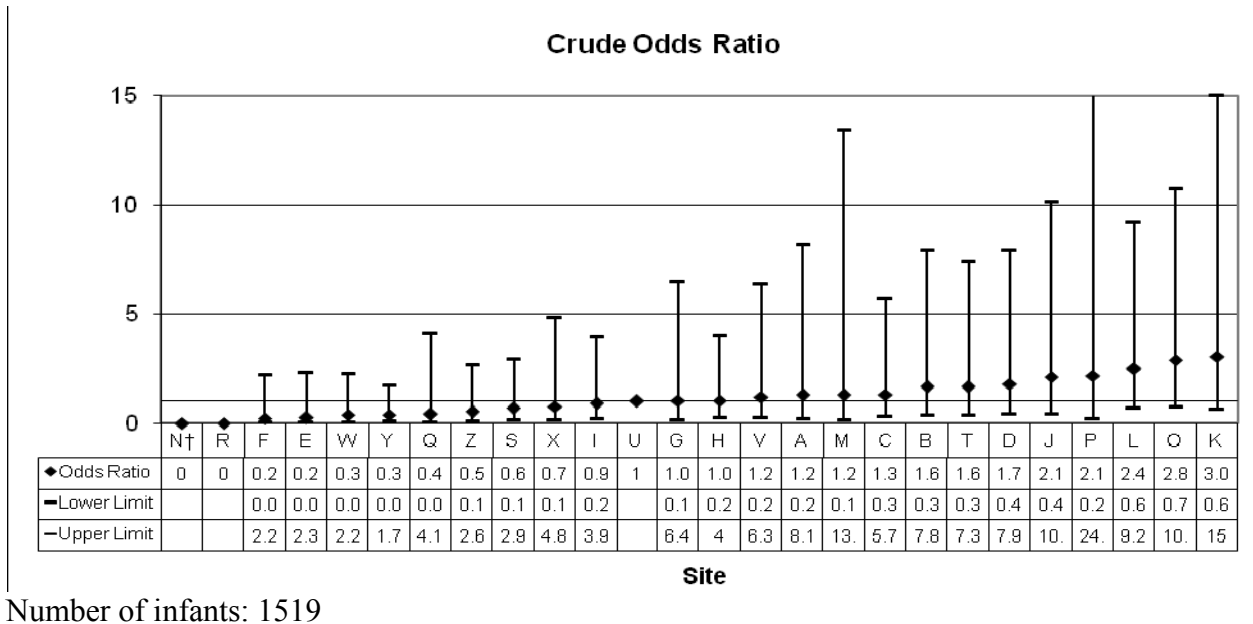
Significant predictors identified by multivariate analysis and adjusted for:

Gestational age SGA
 Apgar at 5 minutes Diabetic mother

†Sites with different criteria for entering infants in the CNN dataset, and may not be comparable with other sites.

All the infants who meet the criteria in site N had retinopathy of prematurity stage 3 and higher (Odds Ratio: ∞)

Presentation #50
Site comparison of cryo/laser therapy for retinopathy of prematurity



Reference site: U

#Inclusion criteria:

Birth weight <1500g Screened for ROP
 Age at admission less than 4 days

Outcome is attributed to the network hospital of first admission.

All the infants who meet the criteria in site N and R were not treated (Odds Ratio: 0)

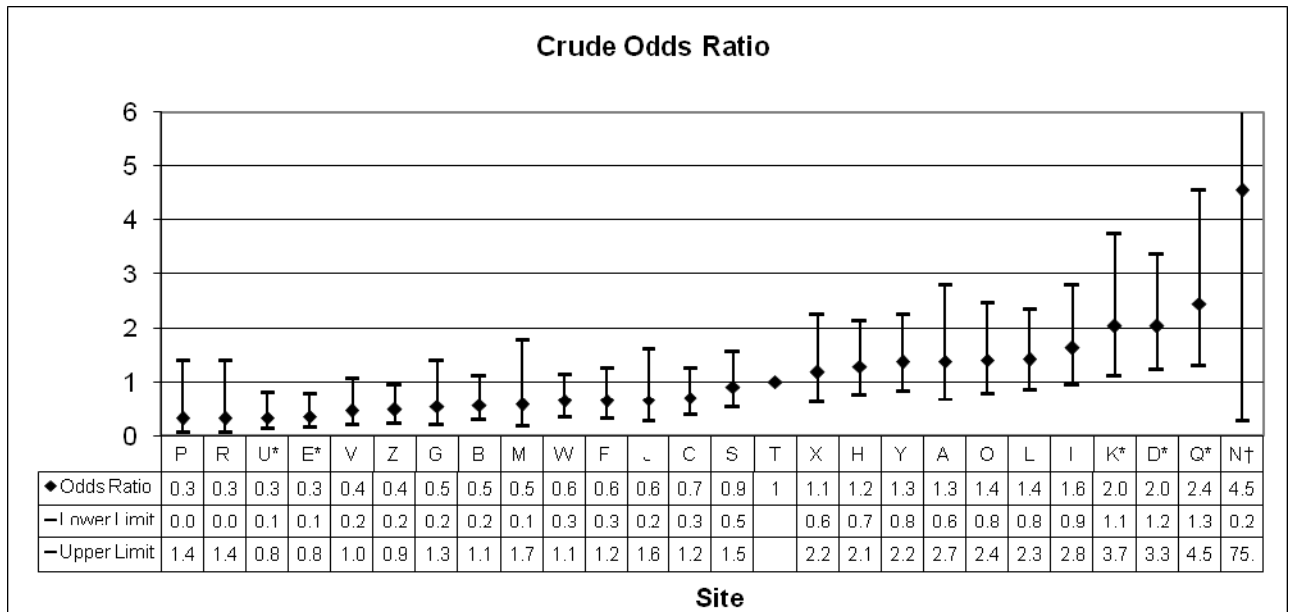
Significant predictors identified by multivariate analysis and adjusted for:
 Gestational age SGA

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

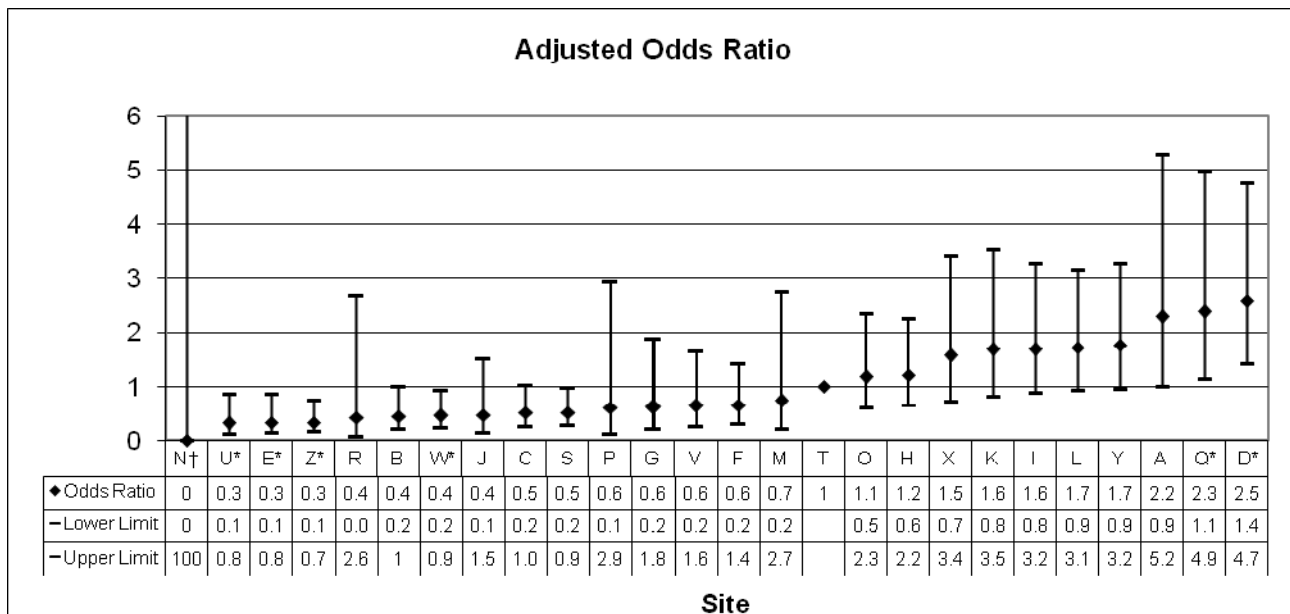
†Sites with different criteria for entering infants in the CNN dataset, and may not be comparable with other sites.

Presentation #51a

Site comparison of oxygen dependency at 36 weeks post-menstrual age



Number of infants: 3725



Number of infants: 3680

Reference site: T

#Inclusion criteria:

Gestational age <33 weeks

Age at admission less than 4 days

Survival to 36 weeks post-menstrual age

Outcome is attributed to the network hospital of first admission.

Significant predictors identified by multivariate analysis and adjusted for:

Gestational age

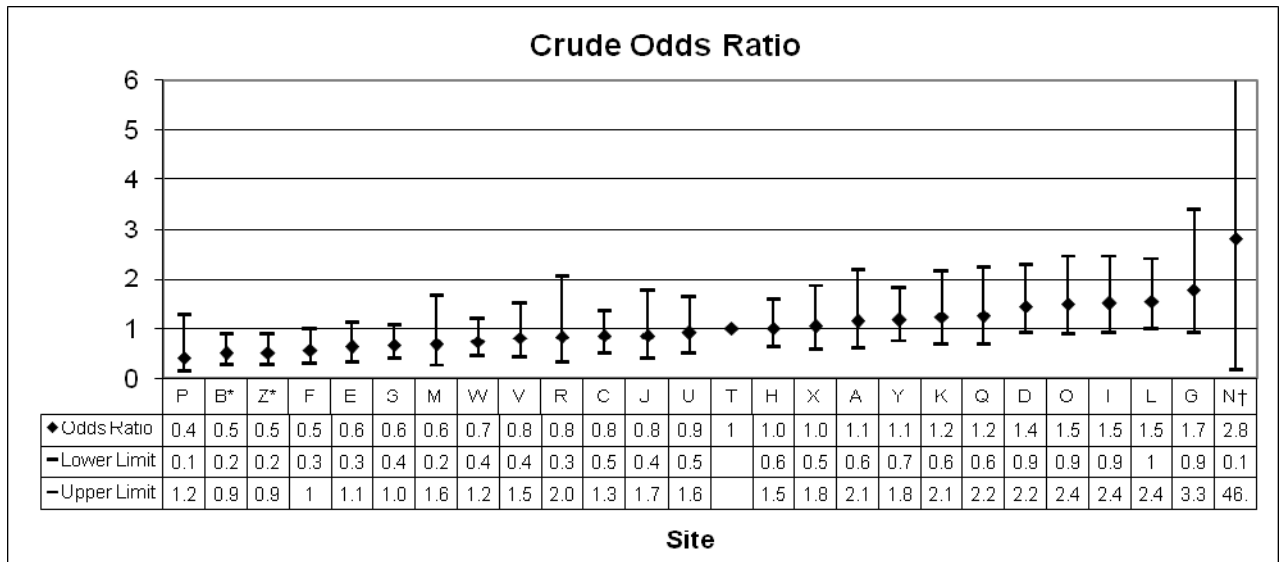
SGA

Apgar at 5 minutes

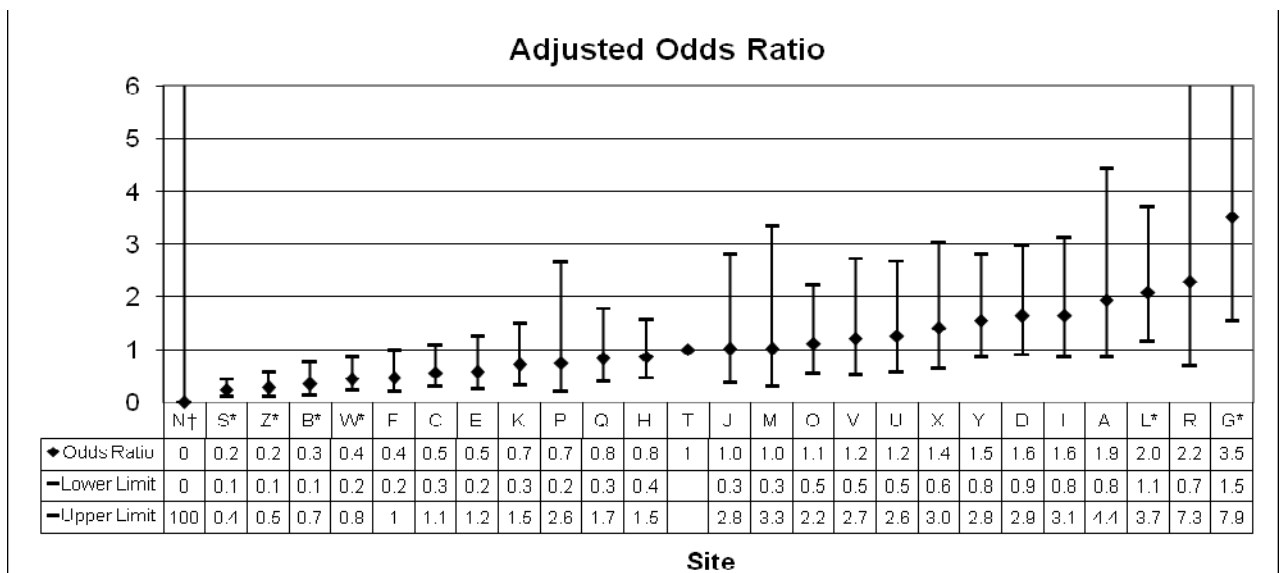
SNAP-II Score

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

†Sites with different criteria for entering infants in the CNN dataset, and may not be comparable.

Presentation #51b**Site comparison of oxygen dependency at 28 days after birth**

Number of infants: 3765



Number of infants: 3695

Reference site: T**#Inclusion criteria:**

Gestational age <33 weeks
 Age at admission less than 4 days
 Survival to 28 days after birth

**Outcome is attributed to the network
 hospital of first admission.**

Significant predictors identified by multivariate analysis and adjusted for:

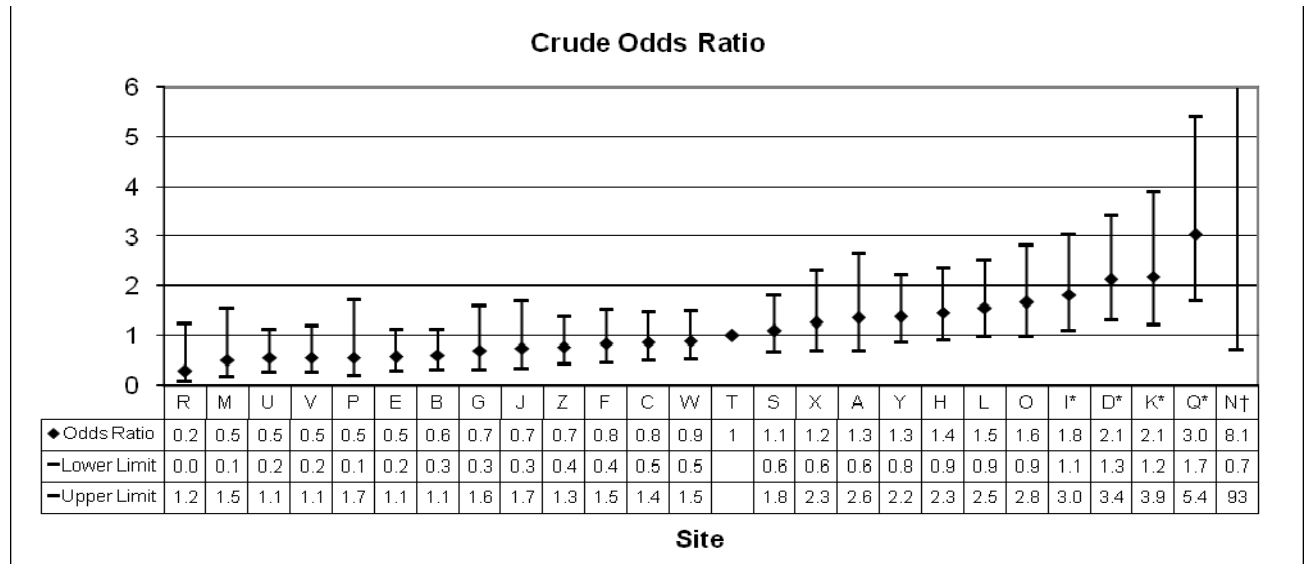
Gestational age SGA
 Male Cesarean section
 Apgar at 5 minutes SNAP-II Score

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

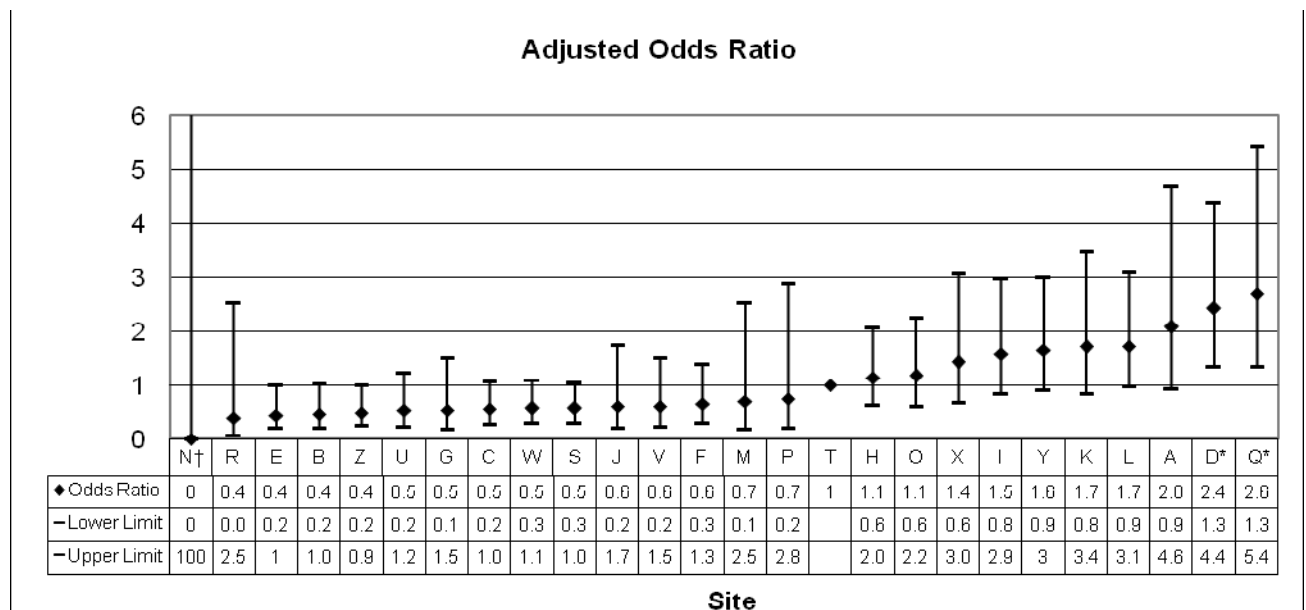
**†Sites with different criteria for entering infants
 in the CNN dataset, and may not be comparable.**

Presentation #52a

Site comparison of oxygen dependency at 36 weeks post-menstrual age or death



Number of infants: 3965



Number of infants: 3916

Reference site: T

#Inclusion criteria:

Gestational age <33 weeks

Age at admission less than 4 days

Outcome is attributed to the network hospital of first admission.

Significant predictors identified by multivariate analysis and adjusted for:

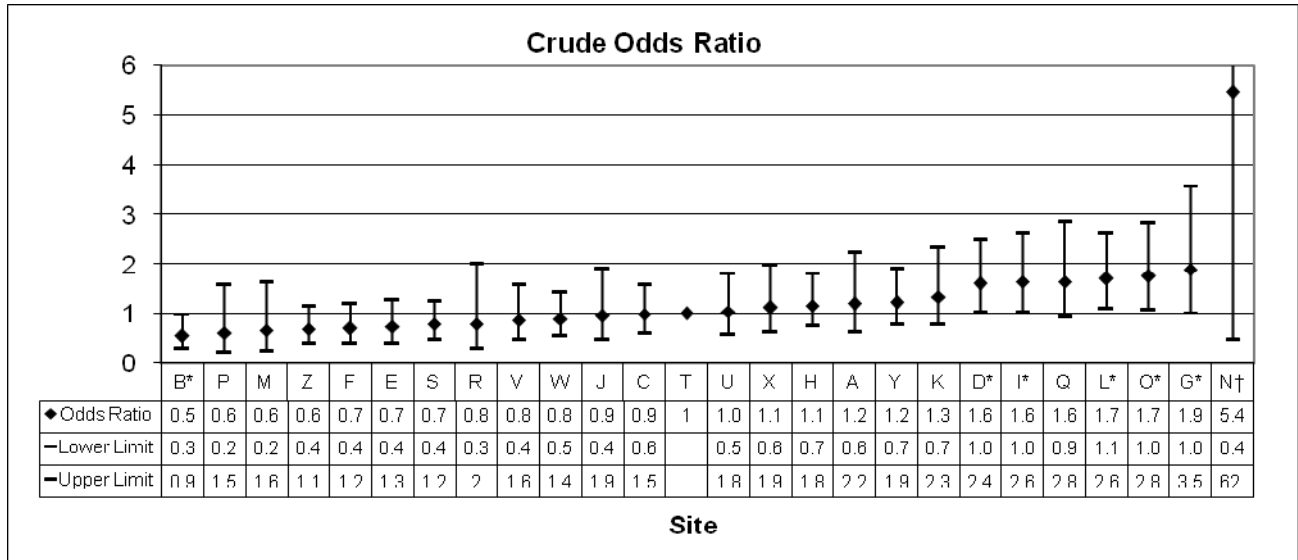
Gestational age SGA Male

Apgar at 5 minutes SNAP-II Score

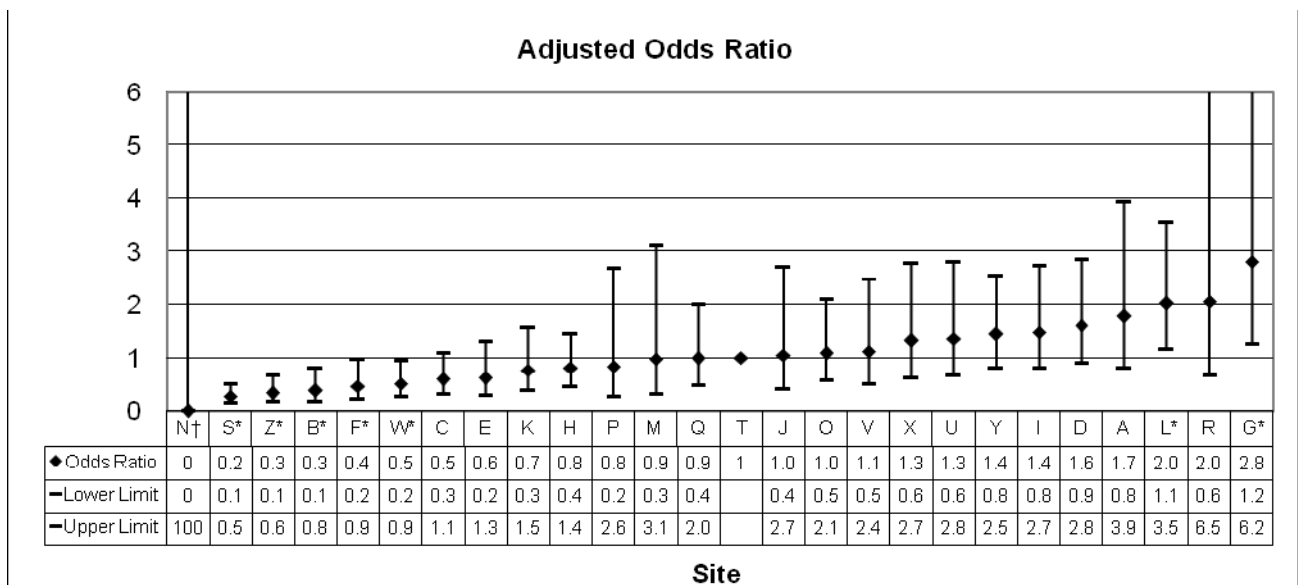
*Sites significantly different from reference site (P<0.05)

†Sites with different criteria for entering infants in the CNN dataset, and may not be comparable.

Presentation #52b
Site comparison of oxygen dependency at 28 days after birth or death



Number of infants: 3965



Number of infants: 3876

Reference site: T

#Inclusion criteria:

Gestational age <33 weeks

Age at admission less than 4 days

Outcome is attributed to the network hospital of first admission.

Significant predictors identified by multivariate analysis and adjusted for:

Gestational age SGA

Apgar at 5 minutes Male

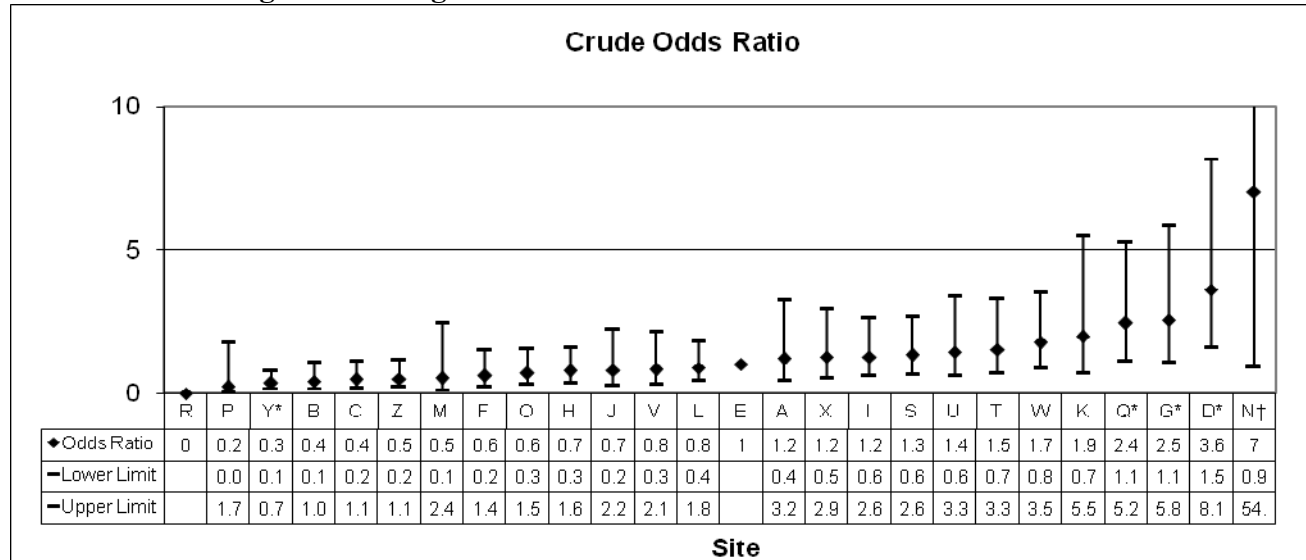
SNAP-II Score Cesarean section

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

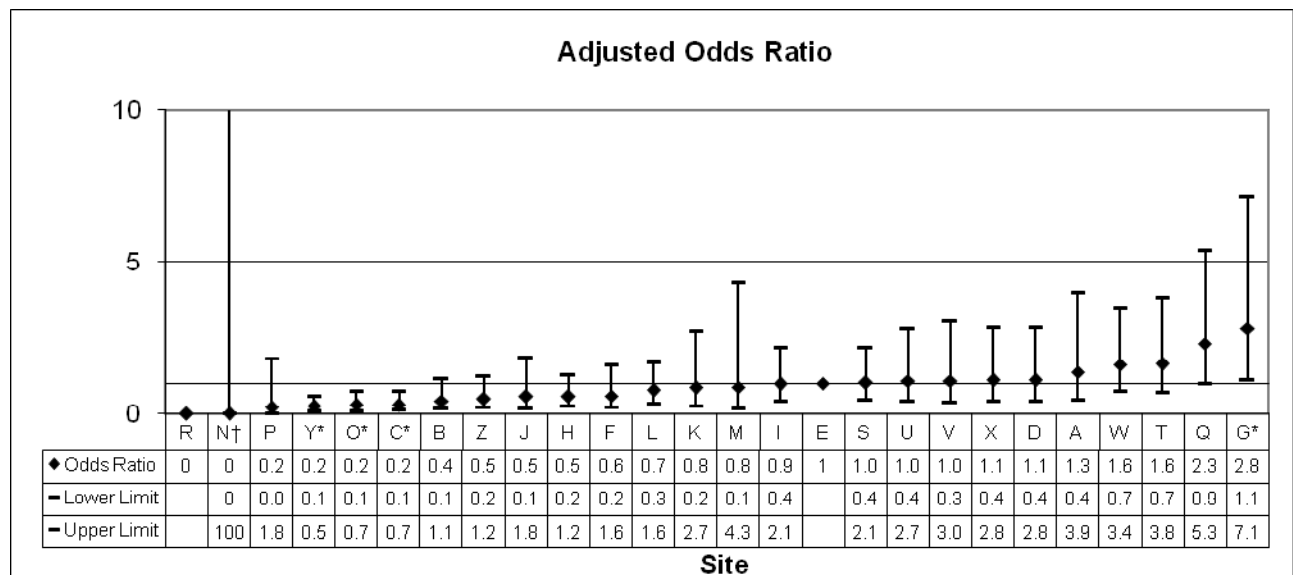
†Sites with different criteria for entering infants in the CNN dataset, and may not be comparable.

Presentation #53

Site comparison of significant cranial ultrasound abnormality (VE or PEC) among infants <33 weeks gestational age



Number of infants: 3031



Number of infants: 2962

Reference site: E

#Inclusion criteria:

Gestational age <33 weeks
Age at admission less than 4 days
Ultrasound reports in the first two weeks of life

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

Outcome is attributed to the network hospital of first admission.

Significant predictors identified by multivariate analysis and adjusted for:

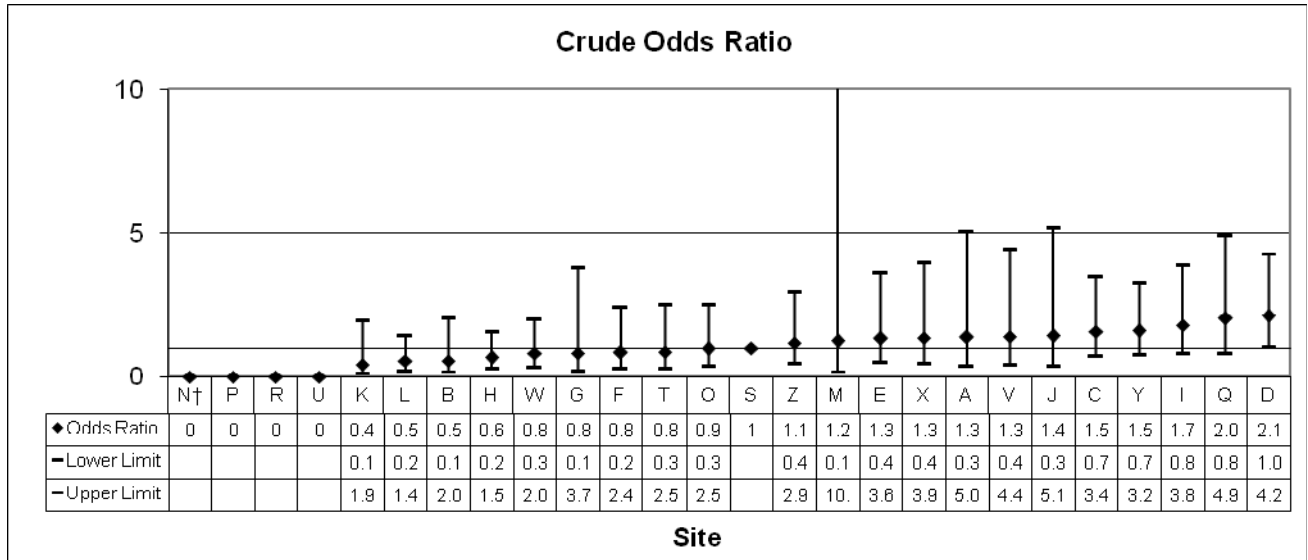
Gestational age Cesarean section
Apgar at 5 minutes SNAP-II Score

†Sites with different criteria for entering infants in the CNN dataset, and may not be comparable.

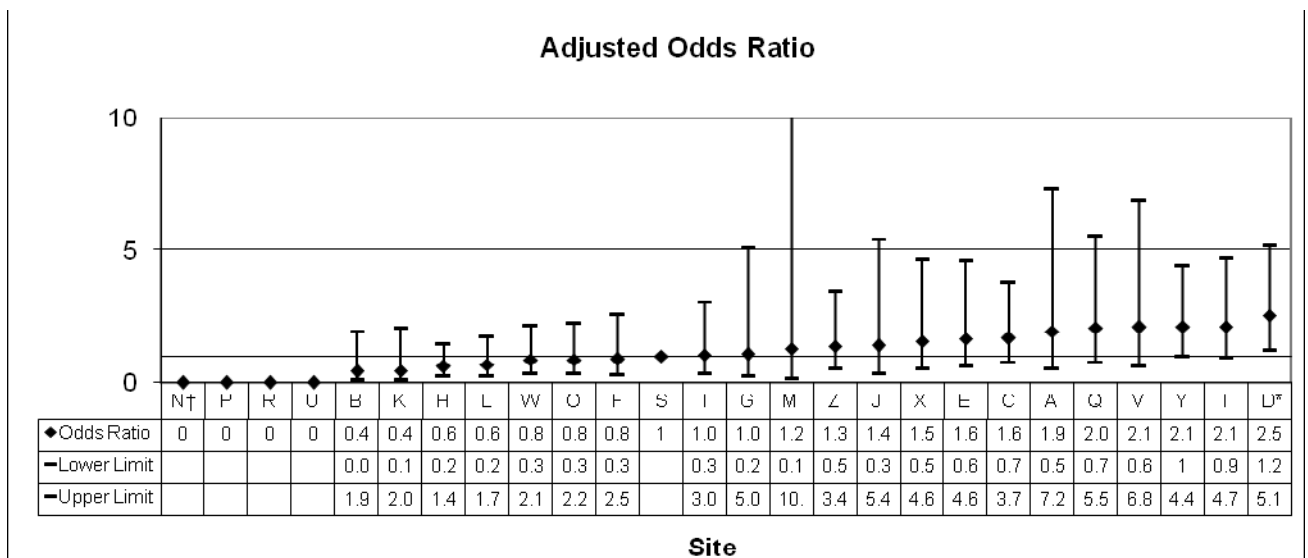
All the infants who meet the criteria in site R did not have cranial ultrasound abnormality (VE or PEC) (Odds Ratio: 0)

Presentation #54

Site comparison of necrotizing enterocolitis stage 2 or higher among infants <1500g at birth



Number of infants: 2649



Number of infants: 2566

Reference site: S

#Inclusion criteria:

Birth weight <1500g

Age at admission less than 4 days

Outcome is attributed to the network hospital of first admission.

All the infants who meet the criteria in site N, P, R, and U did not have NEC stage 2 or higher (Odds Ratio: 0)

Significant predictors identified by multivariate analysis and adjusted for:

Gestational age

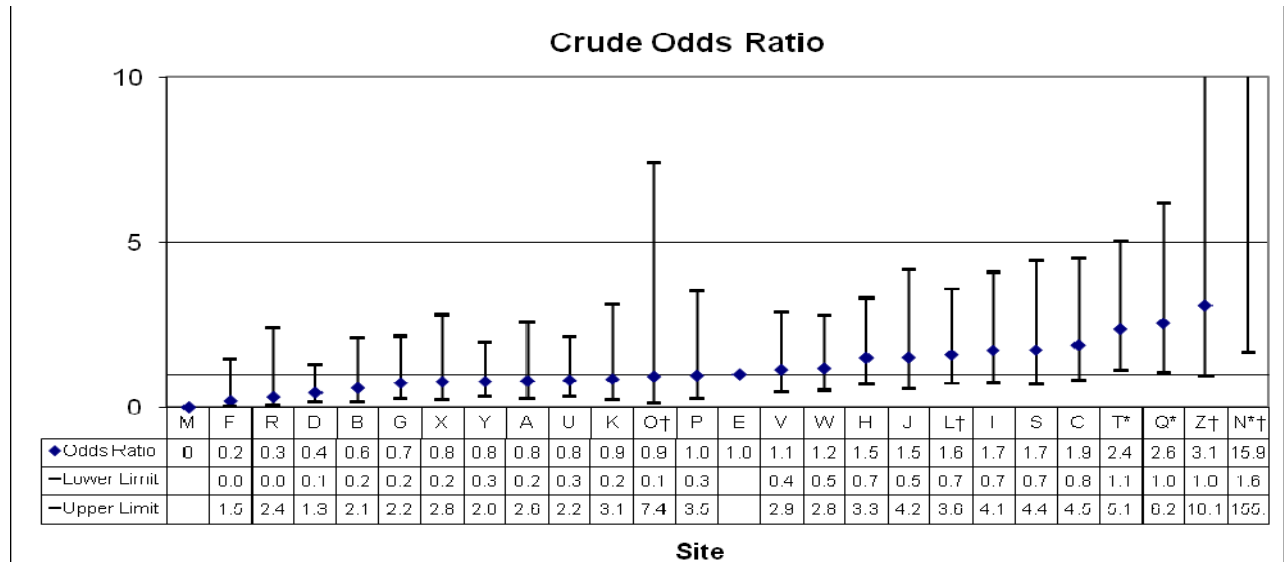
Antenatal corticosteroid

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

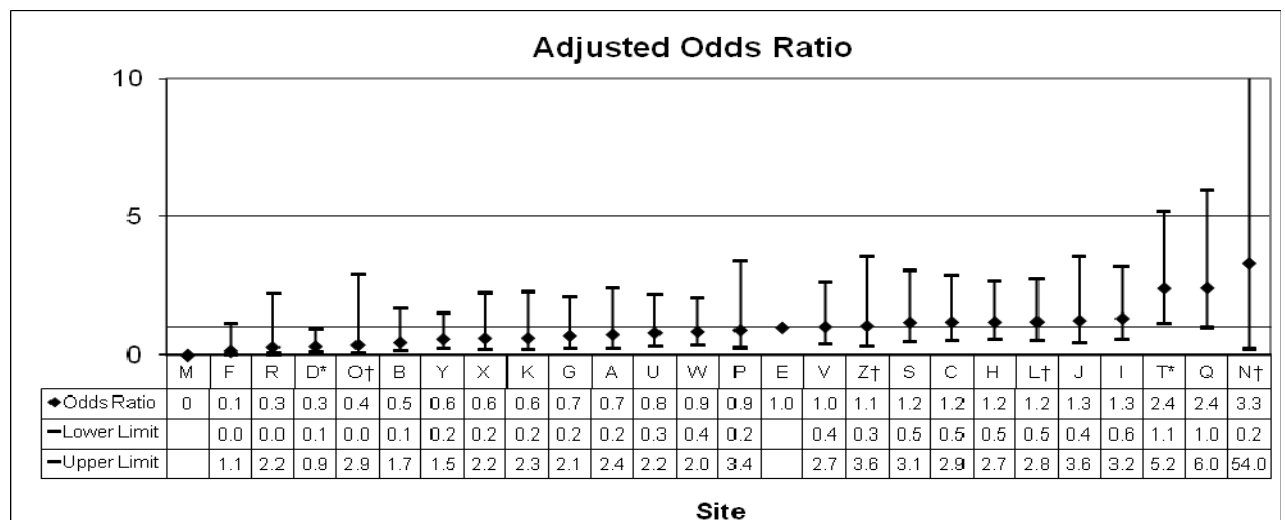
†Sites with different criteria for entering infants in the CNN dataset, and may not be comparable.

Presentation #55

Site comparison of nosocomial infection among infants $\geq 1500\text{g}$ at birth



Number of infants: 9784



Number of infants: 9643

Reference site: E

#Inclusion criteria:

Birth weight $\geq 1500\text{g}$

Age at admission less than 4 days

Remained hospitalized beyond 2 days after birth

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

Outcome is attributed to the hospital in which the infection occurred (adjusted for transfer).

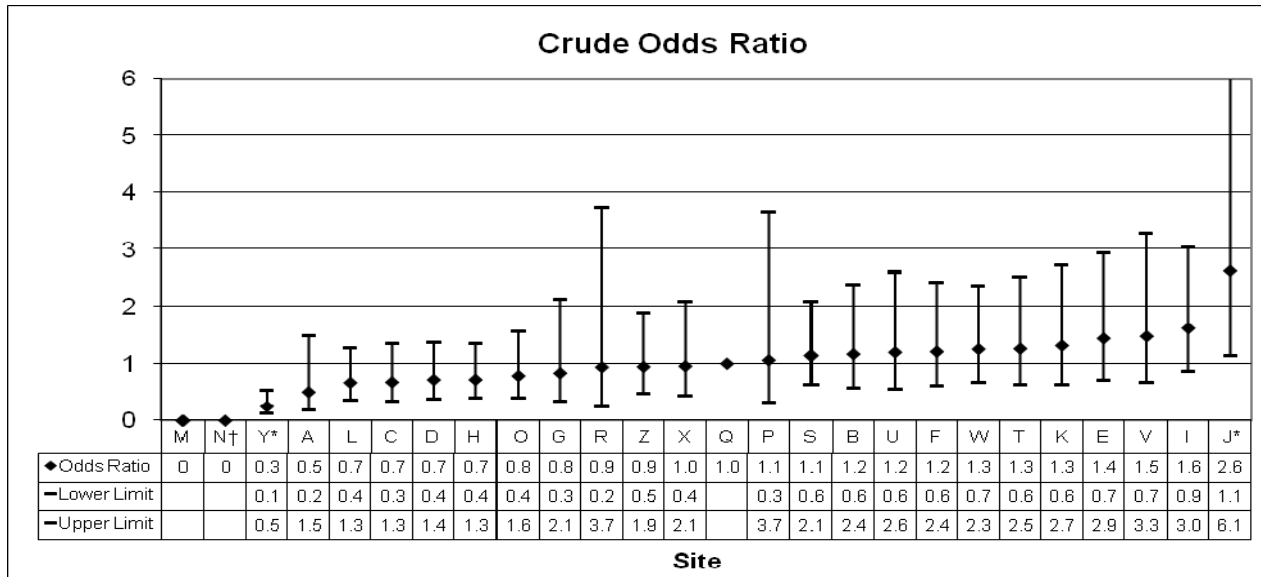
Significant predictors identified by multivariate analysis and adjusted for:
Gestational age SNAP_II score

All the infants who meet the criteria in site M did not have nosocomial infection (Odds Ratio: 0)

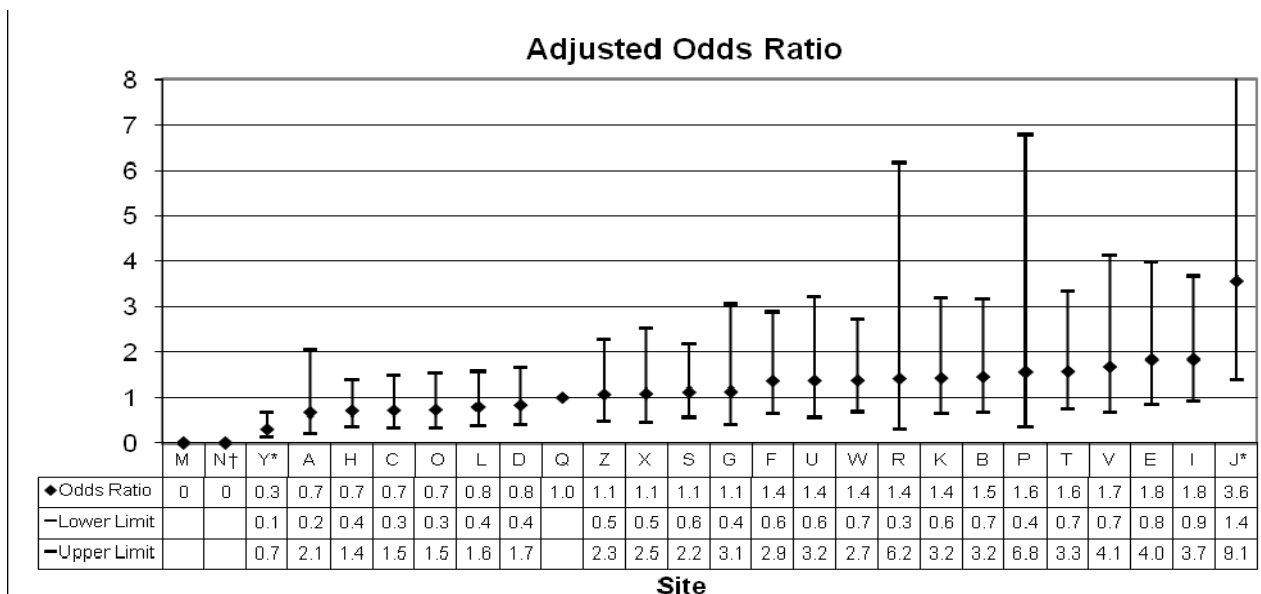
†Sites with different criteria for entering infants in the CNN dataset, and may not be comparable.

Presentation #56

Site comparison of nosocomial infection among infants <1500g at birth



Number of infants: 2689



Number of infants: 2606

Reference site: Q**#Inclusion criteria:**

Birth weight <1500g

Age at admission less than 4 days

Remained hospitalized beyond 2 days after birth

Sites significantly different from reference site (P<0.05)*Outcome is attributed to the hospital in which the infection occurred (adjusted for transfer).****Significant predictors identified by multivariate analysis and adjusted for:**

Gestational age

Antenatal corticosteroid use

All the infants who meet the criteria in site M and N did not have nosocomial infection (Odds Ratio: 0)**†Sites with different criteria for entering infants in the CNN dataset, and may not be comparable.**

Presentation 57a

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

Parameter / Site rank	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	Lowest											Median											Highest		
According to total number of infants																									
SNAPII-PE adjusted mortality rates	R	M	P	B	G	T	V	A	D	J	C	Y	X	E	K	W	L	F	S	U	O	Z	H	I	Q
Primary infection rate	M	R	V	X	T	P	B	W	O	U	K	Y	E	C	Q	A	D	S	Z	F	H	G	I	L	J
Nosocomial infection rate (SNAPII-PE adjusted)	M	G	Y	A	P	D	R	V	U	E	X	C	L	H	K	W	F	B	Q	O	J	T	Z	I	S
Nosocomial infection/1000 patient days	M	Y	P	A	R	G	X	U	E	F	H	C	V	Z	O	K	B	T	L	J	D	W	Q	I	S
Survival with no major morbidities	O	Z	S	Q	C	I	L	D	Y	K	W	H	T	B	A	F	X	J	G	E	V	U	P	R	M
Among infants <32 weeks																									
Non-receipt of AN steroid	K	Z	R	B	V	H	D	C	O	F	T	S	G	X	W	U	L	M	Q	J	I	E	A	Y	P
Surgical ligation of PDA	G	P	R	A	B	F	J	V	Z	X	E	S	T	W	K	H	I	D	U	Q	L	Y	C	M	O
Stage 2 or 3 NEC (adjusted odds ratio)	P	U	B	K	H	L	O	W	F	M	S*	J	Z	R	T	G	A	X	C	I	Q	Y	E	D	V
Stage 3-5 ROP (adjusted odds ratio)	R	Y	I	Z	Q	D	C	W	F	K*	U	J	M	O	S	H	T	L	E	G	X	V	A	B	P
BPD at 36 weeks (adjusted odds ratio)	U	E	Z	R	B	W	J	S	C*	P	G	V	F	M	T	O	H	X	K	I	L	Y	A	Q	D
VE or PEC (adjusted odds ratio)	R	P	Y	O	C	B	Z	J	H	F	L	K	M	I	E*	S	U	V	X	D	A	W	T	Q	G
Use of systemic steroids	Z	R	H	O	P	B	M	A	K	S	L	X	W	F	J	Q	I	Y	V	D	G	T	E	C	U
SNAPII-PE adjusted mortality for < 32 weeks GA	M	R	P	G	J	T	B	V	Y	D	C	A	O	Z	E	U	X	L	S	K	W	F	H	I	Q
Survival with no major morbidities	Q	G	T	D	K	I	S	V	J	L	H	W	O	E	A	C	Y	Z	X	F	B	U	P	R	M
Among infants < 1500g																									
Non-receipt of AN steroid	M	K	R	Z	O	V	B	C	F	H	T	X	S	A	G	P	D	U	W	J	E	L	I	Q	Y
Surgical ligation of PDA	G	P	R	A	B	F	J	V	Z	X	S	T	W	K	E	H	I	U	D	Q	L	Y	C	M	O
Stage 2 or 3 NEC (adjusted odds ratio)	P	R	U	B	K	H	L	W	O	F	S*	T	G	M	Z	J	X	E	C	A	Q	V	Y	I	D
Stage 3-5 ROP (adjusted odds ratio)	R	Y	I	Z	Q	D	C	W	F	K*	U	O	J	M	S	H	T	L	E	X	G	V	A	B	P
BPD at 36 weeks (adjusted odds ratio)	U	Z	E	W	V	S	R	B	C*	J	M	F	G	P	T	O	H	Y	L	K	X	I	D	Q	A
VE or PEC (adjusted odds ratio)	R	Y	C	O	B	P	Z	F	H	J	M	K	L	D	E*	V	A	U	S	I	X	T	W	Q	G
Use of systemic steroids	Z	H	R	M	O	K	S	A	B	P	W	Q	L	J	F	I	X	Y	V	D	T	G	C	E	U
SNAPII-PE adjusted mortality for <1500g	M	R	T	G	J	V	B	P	D	C	E	Y	Z	U	A	L	K	O	X	S	F	W	H	I	Q
Survival with no major morbidities	G	K	I	Q	D	A	T	V	S	W	O	E	L	C	X	J	H	Y	F	Z	B	P	U	R	M

*Indicates reference site in logistic regression analysis.

†sites G, P, R do not have any PDA occurrences, so surgical ligation of PDA is not applicable to these sites.

Presentation 57b

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

Parameter / Site rank	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	Lowest												Median												Highest	
According to number of infants																										
Non-receipt of AN steroid	M	P	R	B	O	Z	F	K	S	V	X	H	A	C	E	G	J	T	D	W	Y	L	U	Q	I	N [#]
Surgical ligation of PDA	G [†]	P [†]	R [†]	A	B	F	J	V	Z	X	E	S	T	W	H	K	I	U	D	L	Q	Y	C	M	N [#]	O
Stage 2 or 3 NEC (adjusted odds ratio)	G	N [#]	P	R	U	K	B	H	L	O	W	S [*]	A	E	Z	F	C	T	I	M	V	X	J	Q	Y	D
Stage 3-5 ROP (adjusted odds ratio)	R	Z	Y	K [*]	C	I	D	Q	W	J	F	S	O	U	M	H	T	L	E	X	G	A	V	B	P	N [#]
BPD at 36 weeks (adjusted odds ratio)	G	R	U	W	Z	E	V	S	C [*]	M	B	J	T	F	H	O	L	A	X	D	K	Q	Y	I	P	N [#]
VE or PEC (adjusted odds ratio)	P	R	Y	B	C	O	A	H	E [*]	F	Z	J	K	L	M	D	V	I	X	T	S	W	U	Q	G	N [#]
Use of systemic steroids	Z	H	M	K	S	O	A	L	Q	B	X	W	R	I	F	P	C	Y	J	D	V	E	T	G	N [#]	U
SNAPII-PE adjusted mortality	M	R	P	T	J	G	E	B	D	V	A	C	Y	L	U	Z	N [#]	S	X	K	F	O	W	H	Q	I
Survival with no major morbidities	J	K	D	I	O	T	Y	G	B	E	L	F	Q	V	N	X	H	S	C	U	W	Z	A	P	M	R

*Indicates reference site in logistic regression analysis.

[†] Sites G, P, and R do not have any PDA occurrences, so not applicable for surgical ligation of PDA

[#] The criteria for entering infants in the CNN dataset for Site N is not the same and thus, may not be comparable with other sites.

H. Conclusions

The Canadian Neonatal Network™ was established in 1995. The number of NICUs participating in the national database has continued to increase, now with 26 sites participating in data collection for this report. Currently (as of September 2009) there are 29 centers participating across the country.

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

CNN researchers continue to utilize the database and produce many publications that will have significant impact on neonatal care and policy in Canada and internationally. With the participation of additional NICUs for 2009, we anticipate that the CNN will strive to produce NICU population-based data on outcomes and practices, and apply quality improvement strategies.

I. Future Plans

- ❖ **Database Improvements:** Major improvements are planned for data collection for the CNN database. Over time this will include:
 - Report on population-based information and follow-up of all infants in a standardized manner by capturing information from hospitals to which infants are transferred.
 - Enhance the data management capabilities on both data server and client application to facilitate individual hospital analyses of their own data.
 - Streamline the data process for data integration for the Annual Report.
 - Provision of multiple options in data capture and management to meet the unique needs of individual sites.
 - After taking into consideration the input from abstractors and the database review committee, certain variables will be improved, deleted, or added to the database to incorporate changing needs from health care providers, policy makers, researchers and other potential users.

- ❖ **Expansion of Collaborative Efforts:** The CNN is in the process of establishing collaborative ties with other Neonatal Networks around the world. Data from our network will be compared to those from international networks and potential areas for change/improvement will be sought.