Acknowledgements

This report is based upon data collected from 25 individual hospitals from across Canada that were members of the Canadian Neonatal Network™ during the year 2007. In addition to all investigators and funding agencies, we would like to recognize the invaluable support of the Neonatal Intensive Care Units (NICUs) which 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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Table of Contents

		Page
A. Executive Summary	.....	1
B. Background & Objectives	.....	3
C. Information Systems	.....	4
D. Descriptive Analyses		
D.1. Analyses based on number of admissions to various Canadian NICUs		
Presentation #1.....	Admissions to Canadian NICU Network participating hospitals	7-8
Presentation #2.....	Mean Admission illness severity scores (SNAPII and SNAPIIPE) by hospital	9-11
D.2. Analyses based on number of infants admitted to various Canadian NICUs		
Presentation #3.....	Gestational age at birth	13-14
Presentation #4.....	Gestational age at birth and survival to NICU discharge	15
Presentation #5.....	Birth weight	16
Presentation #6.....	Birth weight and survival to NICU discharge	17
Presentation #7.....	Incidence of patent ductus arteriosus (by gestational age)	18
Presentation #8.....	Incidence of patent ductus arteriosus (by birth weight)	19
Presentation #9.....	Cranial Ultrasonography findings / CT / MRI (by gestational age)	20
Presentation #10.....	Cranial ultrasonography / CT / MRI findings (by birth weight)	21
Presentation #11.....	Primary infection (by gestational age)	22
Presentation #12.....	Nosocomial infection (by gestational age)	23
Presentation #13.....	Nosocomial infection (by birth weight)	24
Presentation #14.....	Incidence of stage 2 or 3 necrotizing enterocolitis (by gestational age)	25
Presentation #15.....	Incidence of stage 2 or 3 necrotizing enterocolitis (by birth weight)	26
D.3. Analyses based on number of very preterm (≤32 weeks GA) or VLBW (<1500g) infants		
Presentation #16.....	Antenatal corticosteroid treatment of infants ≤32 weeks gestational age	28
Presentation #17.....	Treatment of patent ductus arteriosus (by gestational age)	29
Presentation #18.....	Treatment of patent ductus arteriosus (by birth weight)	30
Presentation #19.....	Incidence of retinopathy of prematurity (by gestational age)	31
Presentation #20.....	Incidence of retinopathy of prematurity (by birth weight)	32
Presentation #21.....	Incidence of cryo/laser therapy for infants with retinopathy of prematurity (by gestational age)	33
Presentation #22.....	Incidence of cryo/laser therapy for infants with retinopathy of prematurity (by birth weight)	34
Presentation #23.....	Incidence of bronchopulmonary dysplasia (by gestational age) among infants with GA ≤32 weeks	35
Presentation #24.....	Incidence of bronchopulmonary dysplasia (by birth weight) among infants with GA ≤32 weeks	36
Presentation #25.....	Gestational age specific mortality or significant morbidity	37

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

Presentation #26..... Days on assisted ventilation (by birth weight) for infants discharged home 39
Presentation #27..... Length of stay prior to discharge home from the Network hospital in relation to gestational age at birth 40
Presentation #28..... Post-menstrual age at discharge home 41
Presentation #29..... Use of oxygen at discharge for infants who were discharged home from participating network hospitals 42

E. Site Comparisons: ***Mortality***

Presentation #30..... Site specific gestational age categories of infants 44
Presentation #31..... Site specific birth weight categories of infants 45
Presentation #32..... Site-specific survival rates by gestational age 46
Presentation #33..... Site-specific survival rates by birth weight 47
Presentation #34..... Site comparison of mortality 48
Presentation #35..... SNAP-II PE adjusted site mortality rates 49-50

F. Site Comparisons: ***Morbidity Outcomes***

Presentation #36..... Incidence of retinopathy of prematurity among infants with eye exams with birth weight <1500g 52-53
Presentation #37..... Treatment for retinopathy of prematurity among infants with eye exams with birth weight <1500g 54
Presentation #38..... Incidence of necrotizing enterocolitis 55-56
Presentation #39..... Positive blood and CSF cultures by admission 57
Presentation #40..... Incidence of nosocomial infection 58
Presentation #40a..... Incidence of nosocomial infection for infants <32 weeks gestational age 59
Presentation #41..... Nosocomial infection per 1000 patient days 60-61
Presentation #42..... Nosocomial infection per 1000 patient days among sites 62
Presentation #43..... Incidence of bronchopulmonary dysplasia (28 days) in infants with gestational age ≤32 weeks at birth 63
Presentation #44..... Incidence of bronchopulmonary dysplasia (36 weeks) in infants with gestational age ≤32 weeks at birth 64
Presentation #45..... Percentage of infants with gestational age ≤32 weeks at birth with postnatal use of steroids for any indication 65-66
Presentation #46..... Use of narcotics on Day 1 (by birth weight) 67
Presentation #47..... Discharge destination of infants ≤32 weeks 68
Presentation #48..... Post-menstrual age at discharge home directly from NICU 69
Presentation #49..... Incidence of cranial ultrasound abnormalities among infants ≤32 weeks of gestational age 70-71

G. Site Comparisons: ***Risks Adjusted Analyses***

Presentation #50..... Site comparison of retinopathy of prematurity stage 3 and higher 73-74
Presentation #51..... Site comparison of cryo/laser therapy for retinopathy of prematurity 75-76
Presentation #52..... Site comparison of oxygen dependency at 36 weeks post-menstrual age 77-78
Presentation #53..... Site comparison of oxygen dependency at 36 weeks post-menstrual age or death 79-80
Presentation #54..... Site comparison of significant cranial ultrasound abnormality (VE or PEC) among infants <33 weeks gestational age 81-82

Presentation #55.....	Site comparison of necrotizing enterocolitis among infants <1500g at birth	83-84
Presentation #56.....	Site comparison of nosocomial infection among infants ≥1500g at birth	85
Presentation #57.....	Site comparison of nosocomial infection among infants <1500g at birth	86-87
Presentation #58a.....	Benchmarking sites which contribute all eligible admissions	88
Presentation #58b.....	Benchmarking all sites that contribute data for infants ≤ 28 weeks GA	89
I. Conclusions	.....	90
J. Future Plans	.....	91
References	.....	92

A. Executive Summary

This report from the Canadian Neonatal Network™ is based on data from 25 tertiary NICUs, which contributed data in the year 2007. 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, 2007 and December 31, 2008,

Total number of eligible admissions to various Canadian NICUs 11734
(See section D.1 for analyses)

Total number of eligible individual neonates admitted to various NICUs 11086
(See section D.2. for analyses)

Total number of eligible very preterm (<32 weeks GA) admitted neonates 3209
(See section D.3. for analyses)

Total number of very low birth weight (VLBW) neonates admitted to various NICUs 2331
(See section D.3. for analyses)

Number of eligible neonates discharged home from participating NICUs 5034
(See section D.4. for analyses)

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

Integrated Centre for Care Advancement through Research (*i*CARE), where the data were verified and analyzed.

Results presented in this report are comprised of the following sections: (D) population demographics, (E) population incidences of some common neonatal complications, and (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 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 target of specific practices for change to improve outcomes in NICUs across Canada.

The Evidence-based Practice for Improving Quality (EPIQ) project explores new methodologies for identifying care practices associated with good or poor outcomes, and provides an evidence-based approach to improving quality of care. Building upon traditional Continuous Quality Improvement (CQI) techniques, EPIQ uses multidisciplinary teams at CNN sites, who work collaboratively to implement best practice changes and monitor outcomes.

Research using the data was overseen by a Steering Committee, which was elected by members of the Canadian Neonatal Network™. 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.

C. Information Systems

Infants included in this report are those who were admitted to a CNN participating site between January 1, 2007 and December 31, 2007, and were discharged by March 31, 2008. 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 11,086 patients accounted for 11,734 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 Network™ Coordinating Centre, located at the Integrated Centre for Care Advancement through Research (*i*CARE) in Edmonton, Alberta. 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 analysis, 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 Capital Health Information Systems 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 various NICUs

These include data from 11734 eligible admissions to 25 NICUs. Of these 21 hospitals submitted complete data (n=11418) on all admissions and four hospitals submitted data on a limited number of admissions (n=316).

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

These include data from 11086 eligible neonates in 25 NICUs. Of these 21 hospitals submitted complete data (n=10,815) on all admitted neonates and four hospitals submitted data on a limited number of admitted neonates (n=271).

Section 3. Analyses based on number of eligible very preterm (≤ 32 weeks GA) or very low birth weight (<1500g birth weight) neonates

These include data from 3209 eligible very preterm neonates and 2331 eligible VLBW neonates.

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

These include 5034 eligible neonates.

Section D.1

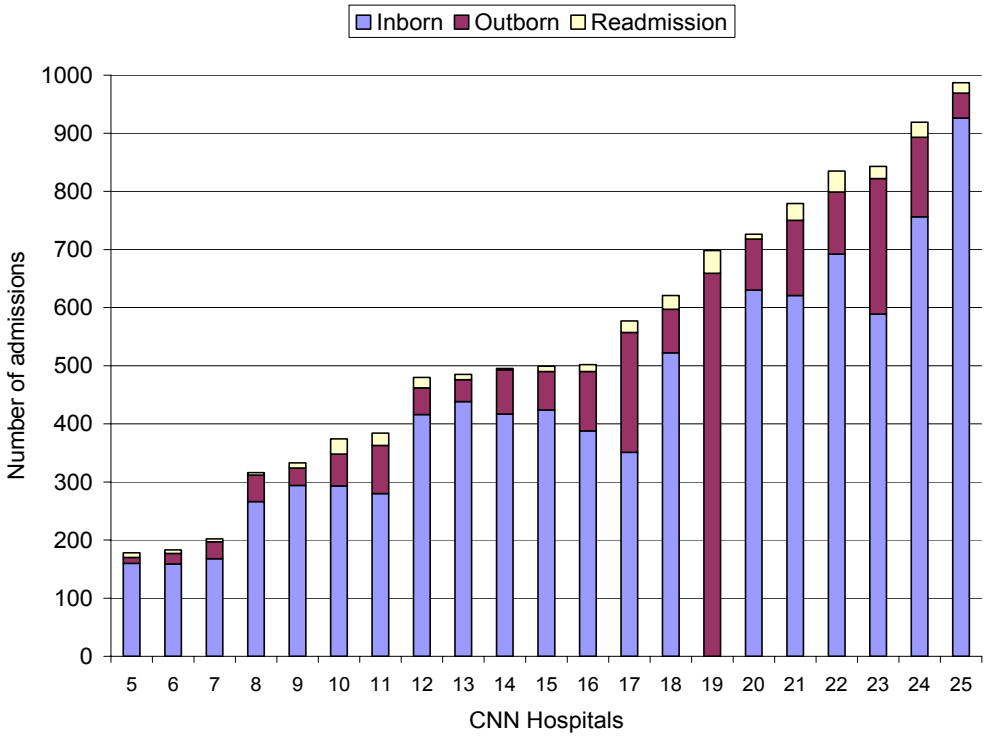
Analyses based on number of eligible admissions to various NICUs

These include data from 11734 eligible admissions to 25 NICUs. Of these 21 hospitals submitted complete data (n=11418) on all admissions and four hospitals submitted data on a limited number of admissions (n=316).

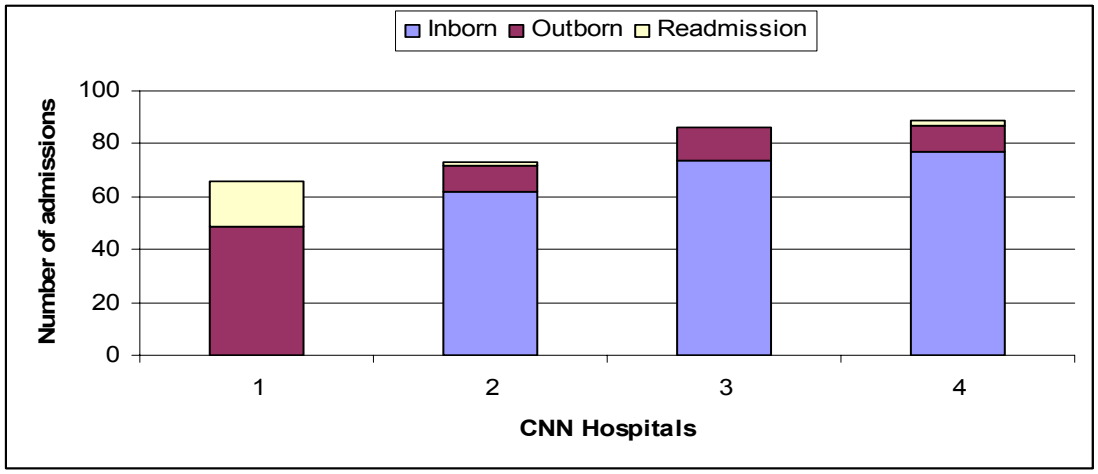
Presentation #1

Admissions to Canadian NICU Network participating hospitals

A. Hospitals that contributed data on all eligible admissions (n=21 hospitals, 11416 admissions, data on admission status were missing for 2 infants)



b. Hospitals that contributed data on selected eligible admissions (n=4 hospitals, 314 admissions, data on admission status were missing for 2 admissions)



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

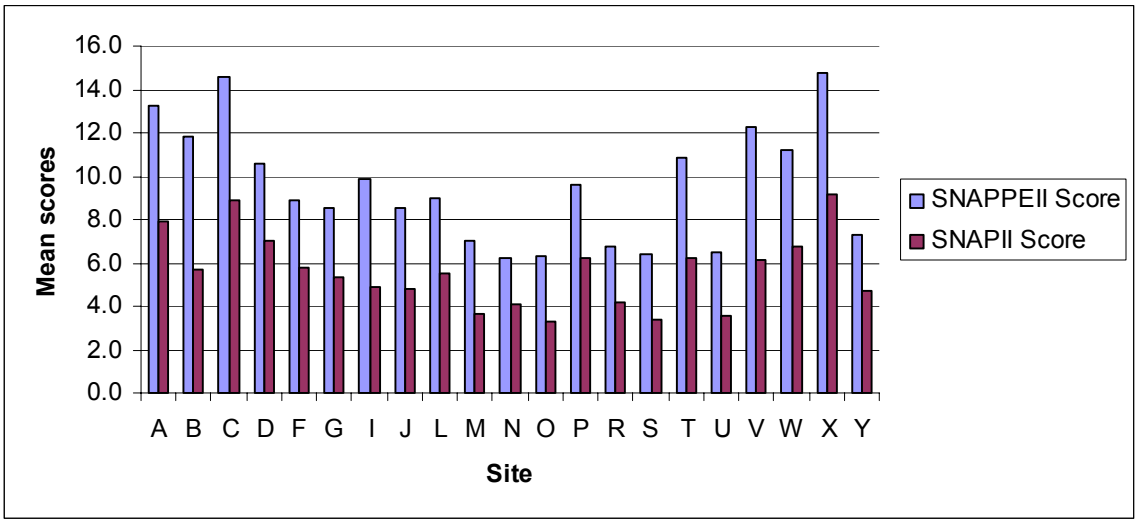
Hospitals		Admission Status			Total	Hospitals	Admission status			Total
		Inborn	Outborn	Readmissions			Inborn	Outborn	Readmissions	
1*	Count	0	49	17	66	**13**	438	38	9	485
	%	0.0	74.2	25.8	100.0		90.3	7.8	1.9	100.0
2*	Count	62	10	1	73	**14**	417	76	2	495
	%	84.9	13.7	1.4	100.0		84.2	15.4	0.4	100.0
3*	Count	74	12	0	86	**15**	424	66	9	499
	%	86.0	14.0	0.0	100.0		85.0	13.2	1.8	100.0
4*	Count	77	10	2	89	**16**	388	102	12	502
	%	86.5	11.2	2.2	100.0		77.3	20.3	2.4	100.0
5	Count	160	10	8	178	**17**	351	206	20	577
	%	89.9	5.6	4.5	100.0		60.8	35.7	3.5	100.0
6	Count	159	18	6	183	**18**	522	75	24	621
	%	86.9	9.8	3.3	100.0		84.1	12.1	3.9	100.0
7	Count	168	29	5	202	**19**	0	659	39	698
	%	83.2	14.4	2.5	100.0		0.0	94.4	5.6	100.0
8	Count	266	46	4	316	**20**	630	88	8	726
	%	84.2	14.6	1.3	100.0		86.8	12.1	1.1	100.0
9	Count	294	30	9	333	**21**	621	129	29	779
	%	88.3	9.0	2.7	100.0		79.7	16.6	3.7	100.0
10	Count	293	55	26	374	**22**	692	107	36	835
	%	78.3	14.7	7.0	100.0		82.9	12.8	4.3	100.0
11	Count	280	83	21	384	**23**	589	233	21	843
	%	72.9	21.6	5.5	100.0		69.9	27.6	2.5	100.0
12	Count	416	46	18	480	**24**	756	137	26	919
	%	86.7	9.6	3.8	100.0		82.3	14.9	2.8	100.0
						25	926	43	18	987
							93.8	4.4	1.8	100.0
Missing										4
Total number of admissions										11,734

COMMENTS: These analyses include 11734 admissions to various NICUs across Canada during the period of January 1, 2007 to December 31, 2007. Adjusting for readmission and transfers, these represent 11086 infants. **Twenty-one 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

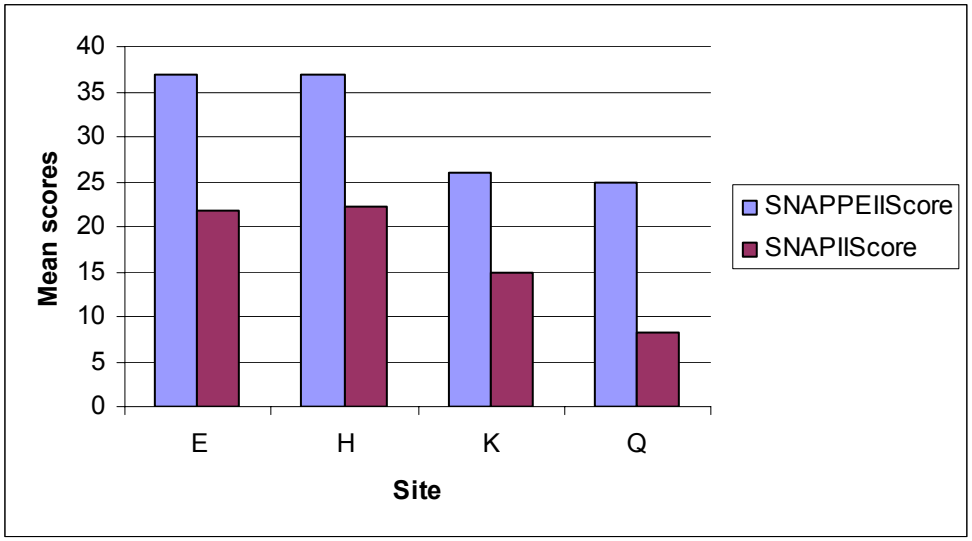
Figure A: Hospitals that contributed data on all eligible admissions **(n=21 hospitals, 11375 admissions, 43 missing data)**



Site		SNAPIIPE	SNAPII	Site		SNAPIIPE	SNAPII
A	Mean	13.3	7.9	**O**	Mean	6.3	3.2
	SEM	0.6	0.4		SEM	0.4	0.3
B	Mean	11.8	5.7	**P**	Mean	9.6	6.2
	SEM	0.6	0.4		SEM	0.7	0.5
C	Mean	14.6	8.9	**R**	Mean	6.8	4.1
	SEM	0.8	0.5		SEM	1.0	0.6
D	Mean	10.5	7.1	**S**	Mean	6.4	3.4
	SEM	0.5	0.4		SEM	0.4	0.3
F	Mean	8.9	5.8	**T**	Mean	10.9	6.3
	SEM	1.1	0.7		SEM	0.5	0.3
G	Mean	8.6	5.3	**U**	Mean	6.5	3.6
	SEM	0.6	0.4		SEM	0.5	0.3
I	Mean	9.9	4.9	**V**	Mean	12.2	6.1
	SEM	0.8	0.5		SEM	0.8	0.4
J	Mean	8.6	4.8	**W**	Mean	11.2	6.7
	SEM	0.7	0.4		SEM	0.7	0.5
L	Mean	9.0	5.5	**X**	Mean	14.8	9.2
	SEM	1.1	0.7		SEM	0.7	0.5
M	Mean	7.1	3.7	**Y**	Mean	7.3	4.7
	SEM	0.7	0.4		SEM	0.6	0.4
N	Mean	6.3	4.1				
	SEM	0.6	0.4				
Total	Mean	9.8	5.7				
	SEM	0.1	0.1				

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

Figure B: Hospitals that contributed data on selected eligible admissions **(n=4 hospitals, 314 admissions, 2 missing data)**

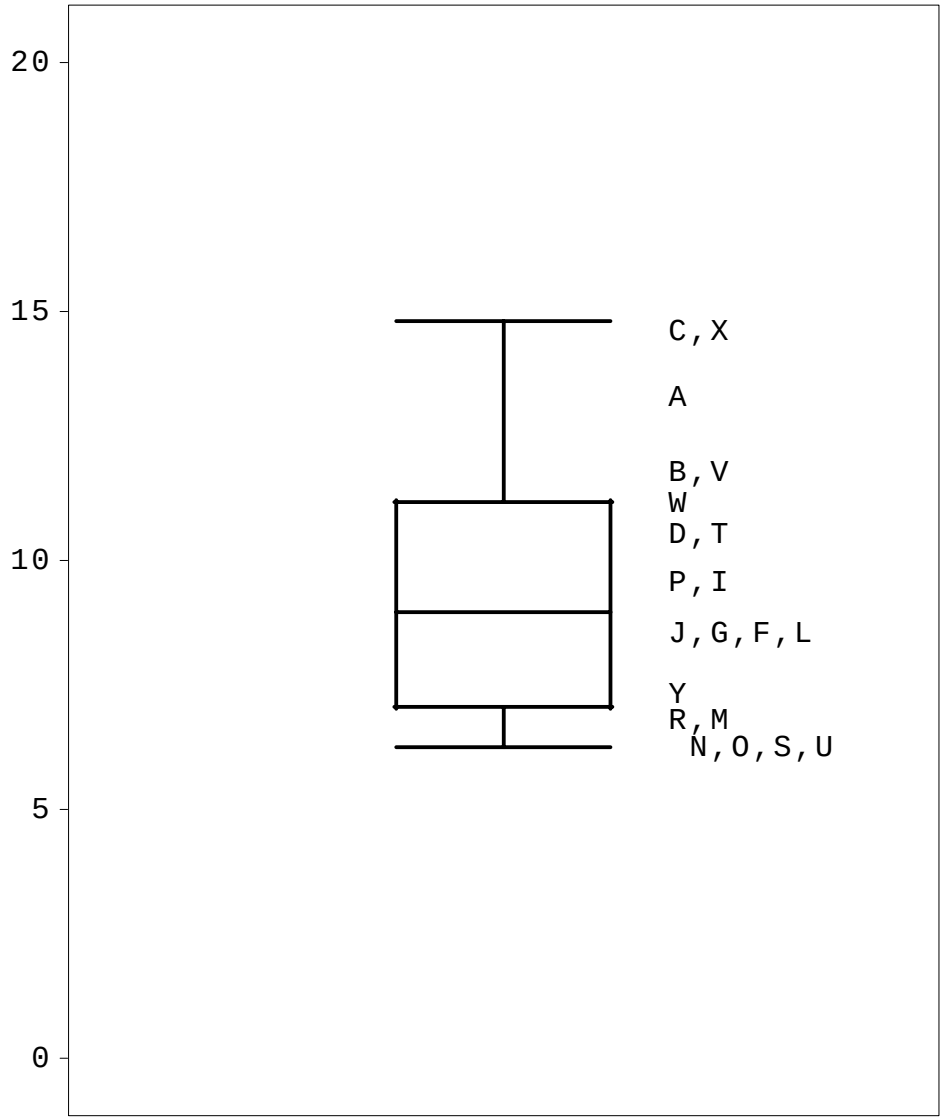


Site		SNAPIIPE	SNAPII
E	Mean	36.9	21.9
	SEM	2.2	1.7
H	Mean	37.0	22.3
	SEM	2.6	1.8
K	Mean	26.0	14.9
	SEM	2.5	1.6
Q	Mean	24.8	8.1
	SEM	2.6	1.7
Total	Mean	31.4	17.2
	SEM	1.3	0.9

***** 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 each other. These four hospitals included infants at lower gestational ages and/or lower birth weights; and thus their severity of illness scores may be higher than the rest of the hospitals.

Presentation #2 *(continued)*
Admission illness severity (SNAPIIPE) scores among sites

Figure 3. Box plot of hospitals that contributed data on all eligible admissions **(n=21 hospitals, 11375 admissions, 43 missing data)**



This BOX plot shows the smallest observation, 25th percentile, median, 75th percentile and largest observation. It also indicates which observations, if any, might be considered outliers.

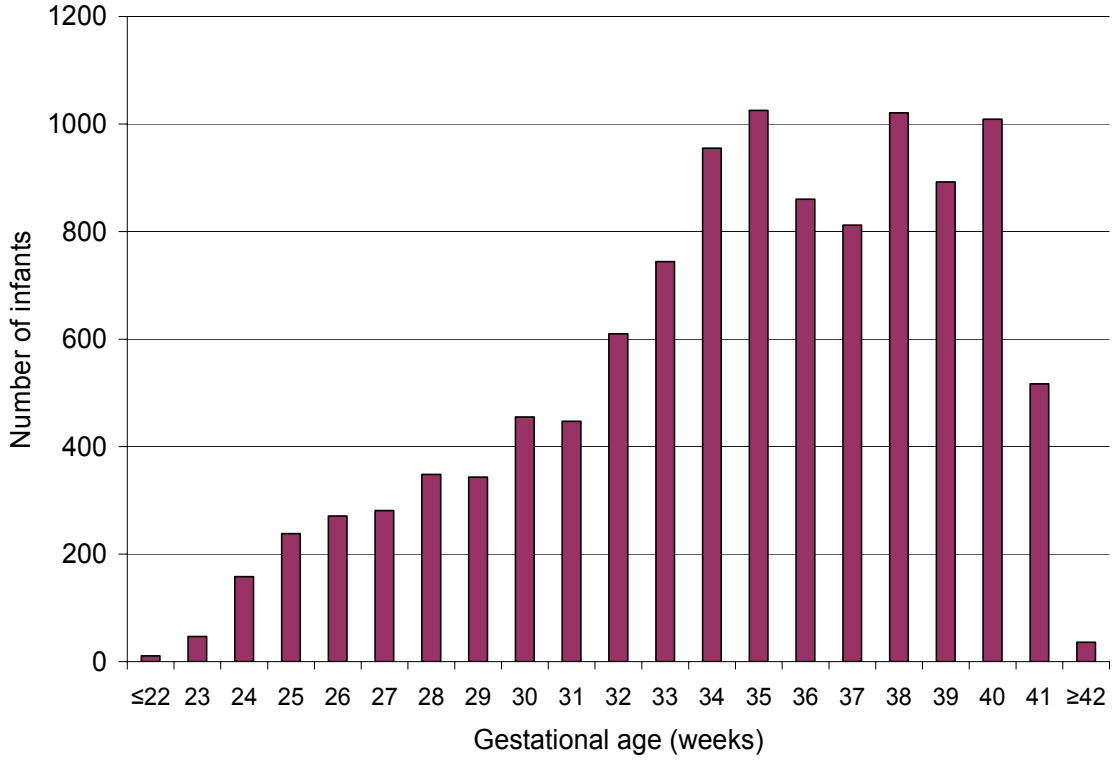
Section D.2

Analyses based on number of eligible neonates to various NICUs

These include data from 11086 eligible neonates in 25 NICUs. Of these, 21 hospitals submitted complete data (n=10815) on all eligible admitted neonates and four hospitals submitted data on selected eligible admitted neonates (n=271).

Presentation #3

Gestational age at birth



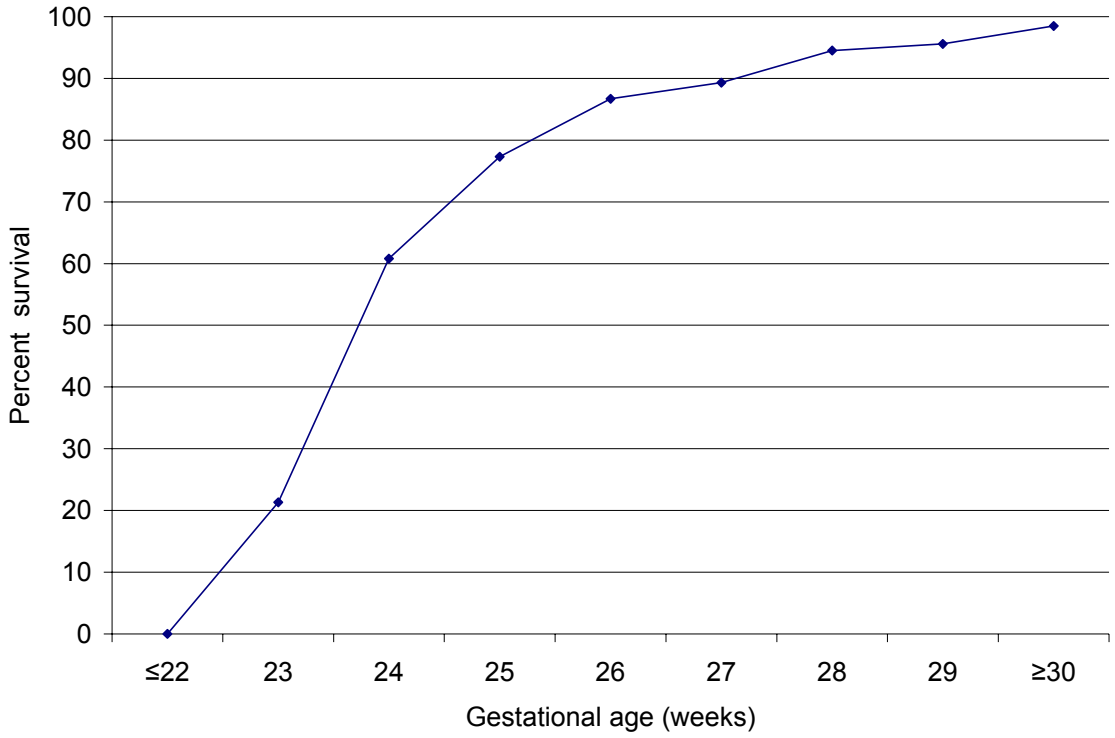
Presentation #3 (*continued*)
Gestational age at birth

Gestational age at birth	Frequency	Percent	Cumulative Percent
≤22	11	0.1	0.1
23	47	0.4	0.5
24	158	1.4	1.9
25	238	2.1	4.1
26	271	2.4	6.5
27	281	2.5	9.1
28	348	3.1	12.2
29	343	3.1	15.3
30	455	4.1	19.4
31	447	4.0	23.5
32	610	5.5	29.0
33	744	6.7	35.7
34	955	8.6	44.3
35	1,025	9.3	53.5
36	860	7.8	61.3
37	812	7.3	68.6
38	1,021	9.2	77.9
39	892	8.1	85.9
40	1,009	9.1	95.0
41	517	4.7	99.7
≥42	36	0.3	100.0
Total included	11,080	100.0	
Total # of missing (GA)	6		
Total # of infants	11,086		

COMMENTS: The gestational age distribution of infants is shown here. Term babies (≥37 weeks) represent approximately 39% of the total neonates. Twenty-one 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 NICU discharge



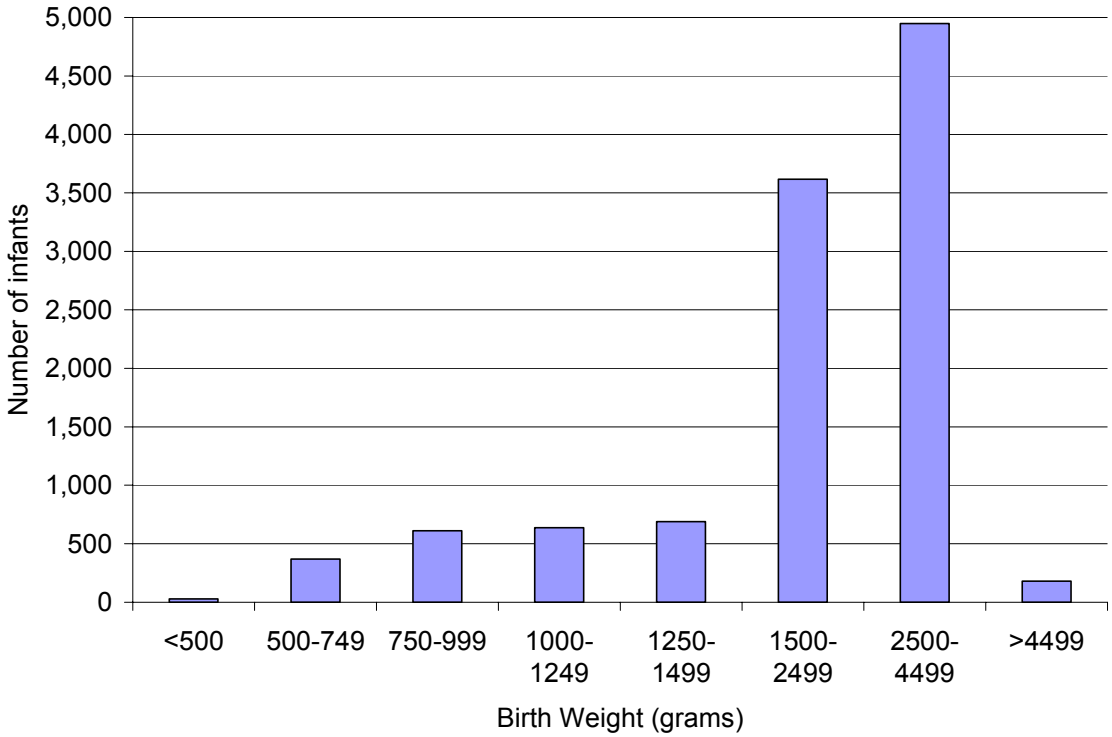
Gestational age (weeks)	Number of infants	Number of survivors	% of survivors
≤22	11	0	0.0
23	47	10	21.3
24	158	96	60.8
25	238	184	77.3
26	271	235	86.7
27	281	251	89.3
28	348	329	94.5
29	343	328	95.6
≥30	9383	9244	98.5
Total included	11080	10677	96.4
Total # of missing (GA)	6		
Total # of infants	**11086**		

Caveat: The survival rates refer only to infants admitted to the NICU 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 the NICU 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 the NICU.

Presentation #5

Birth Weight

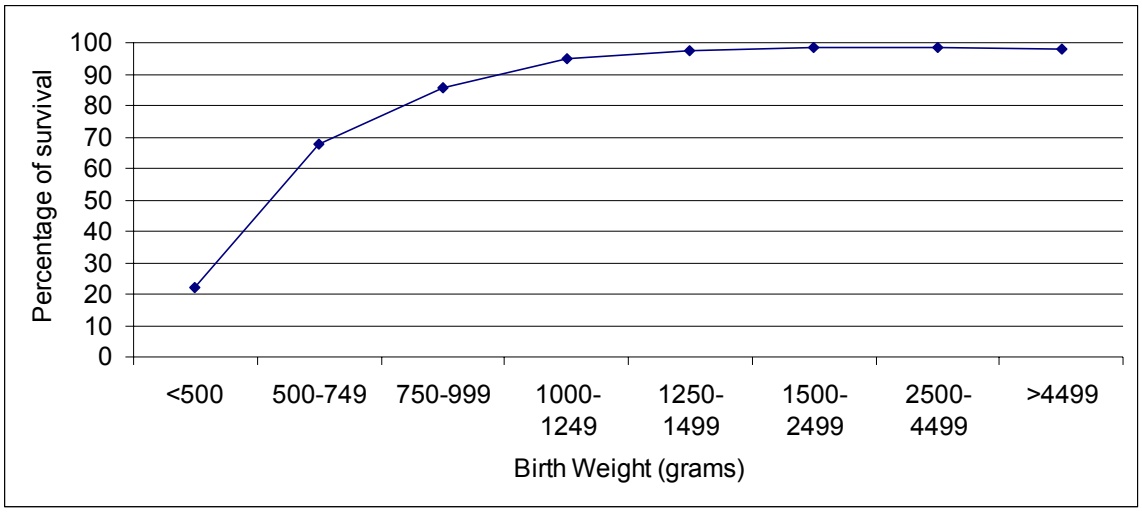


Birth weight	Frequency	Percent	Cumulative Percent
<500	27	.2	.2
500-749	369	3.3	3.6
750-999	610	5.5	9.1
1000-1249	636	5.7	14.8
1250-1499	689	6.2	21.0
1500-2499	3617	32.6	53.7
2500-4499	4948	44.6	98.4
>4499	180	1.6	100.0
Total included	11076	100.0	
Missing (BW)	10		
Total # of infants	11086		

COMMENTS: The birth weight distribution of infants admitted to NICUs. Seventy-nine percent weighed over 1500g at birth and 46.2% weighed over 2500g. Twenty-one hospitals collected data on all admissions whereas four hospitals collected data on selected eligible admissions only.

Presentation #6

Birth weight and survival to NICU discharge



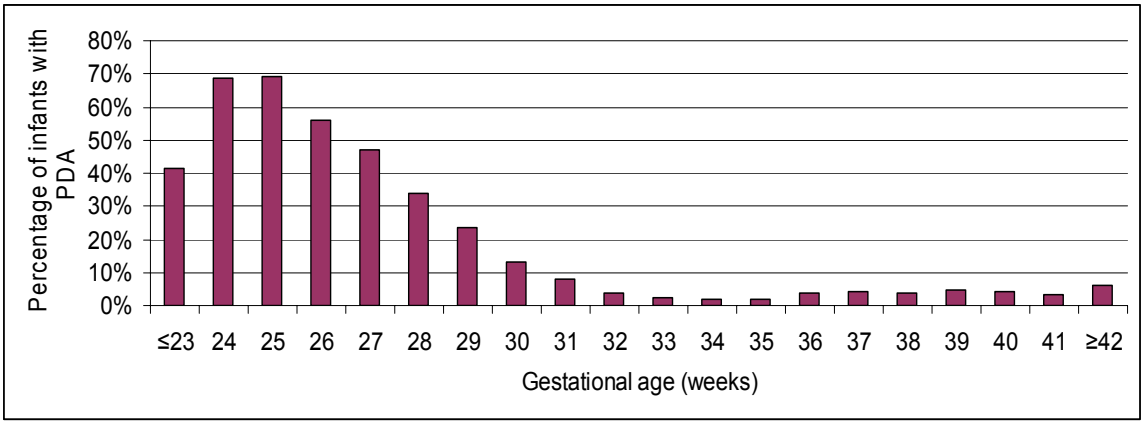
Birth weight (g)	Number of infants	Number of survivors	% of survivors
<500	27	6	22.2
500-749	369	249	67.5
750-999	610	523	85.7
1000-1249	636	604	95.0
1250-1499	689	671	97.4
1500-2499	3,617	3,569	98.7
2500-4499	4,948	4,876	98.5
>4499	180	176	97.8
Total included	11,076	10,674	96.4
Missing (BW)	**10**		
Total # of infants	**11,086**		

Caveat: The survival rates refer only to infants admitted to the NICU, 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 the NICU 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 the NICU.

Presentation #7

Incidence of patent ductus arteriosus (by gestational age)

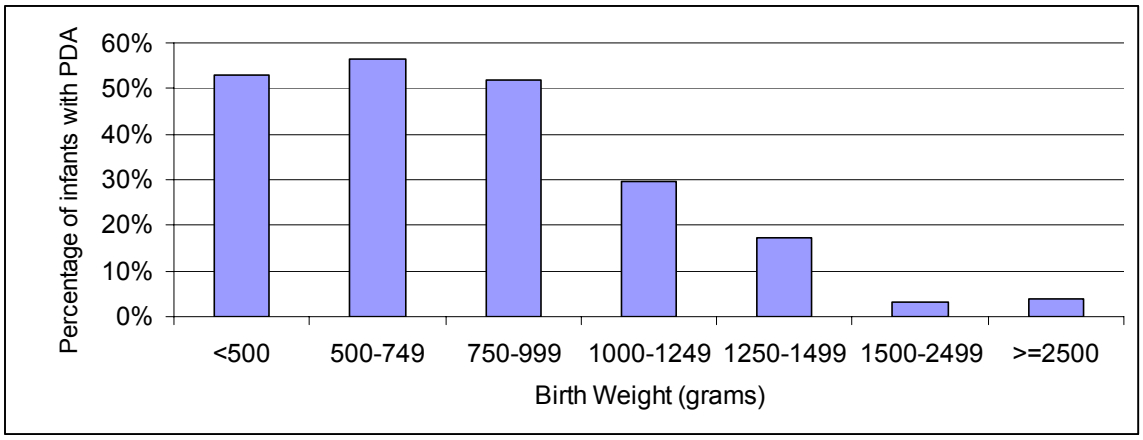


Gestational age(birth)	Total # of infants	# of infants with missing data on PDA	Number of infants with data available on PDA	# of infants with PDA	%
≤23	58	17	41	17	41.5%
24	158	18	140	96	68.6%
25	238	11	227	157	69.2%
26	271	12	259	145	56.0%
27	281	10	271	128	47.2%
28	348	4	344	116	33.7%
29	343	6	337	79	23.4%
30	455	12	443	59	13.3%
31	447	8	439	36	8.2%
32	610	32	578	23	4.0%
33	744	48	696	16	2.3%
34	955	63	892	18	2.0%
35	1025	76	949	17	1.8%
36	860	65	795	32	4.0%
37	812	61	751	31	4.1%
38	1021	80	941	36	3.8%
39	892	92	800	38	4.8%
40	1009	76	933	38	4.1%
41	517	57	460	16	3.5%
≥42	36	3	33	2	6.1%
Missing data (PDA)		751			
Missing data (GA)	**6**				
Total # of infants	**11086**				

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 received treatment (indomethacin >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

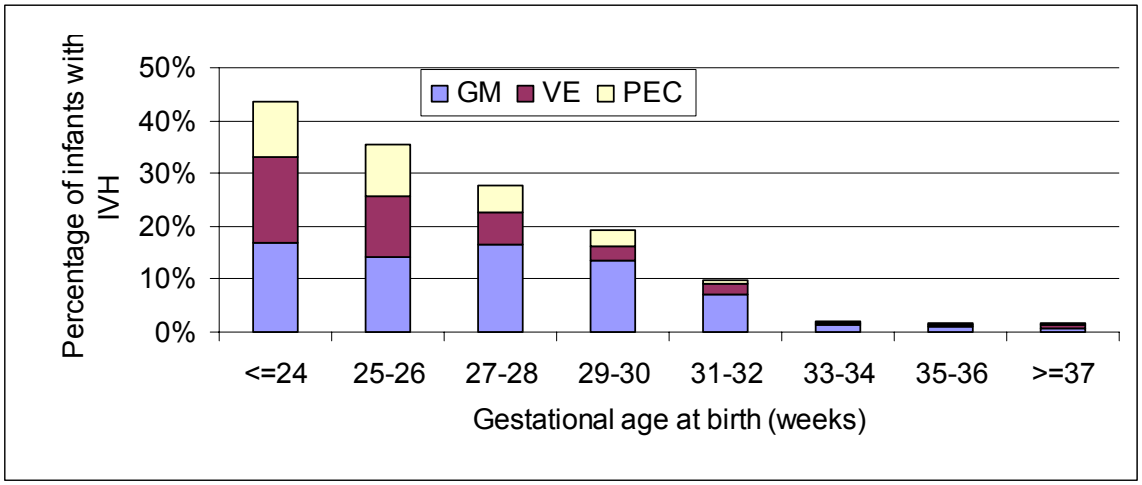
Incidence of patent ductus arteriosus (by birth weight)



Birth weight(g)	Total number of infants	Number of infants with missing data on PDA	Number of infants with data available on PDA	with PDA	%
<500	27	10	17	9	52.9%
500-749	369	30	339	192	56.6%
750-999	610	30	580	301	51.9%
1000-1249	636	11	625	186	29.8%
1250-1499	689	12	677	117	17.3%
1500-2499	3617	225	3,392	106	3.1%
≥2500	5128	430	4,698	186	4.0%
Total missing data (PDA)		**748**			
Total missing (BW)	**10**				
Total	**11086**				

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 received treatment (indomethacin >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)

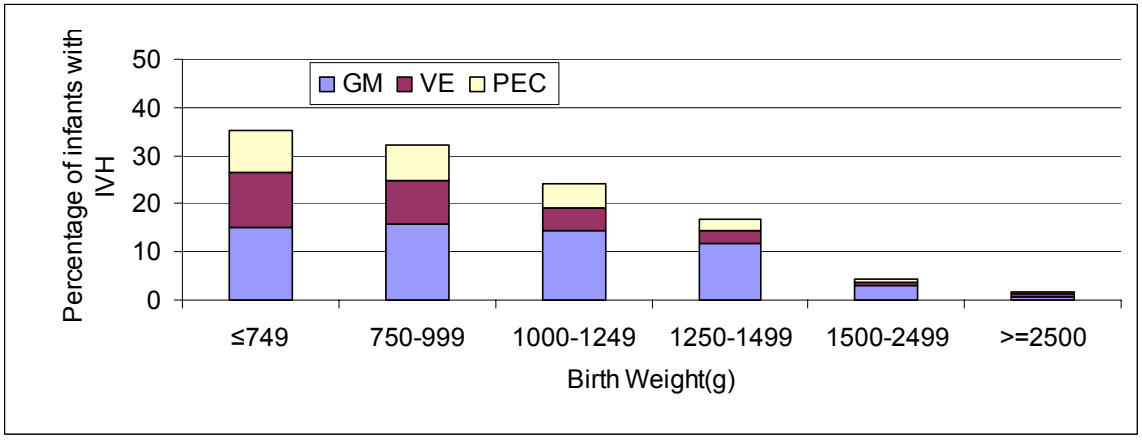


Birth gestational age (weeks)		Total number of infants	Number of infants with missing data on IVH	Number of infants with data available on IVH	Findings of cranial ultrasonography / CT / MRI				Not screened
					None	GM	VE	PEC	
≤24	N %	216	2	214 100.0%	62 29.0%	36 16.8%	35 16.4%	22 10.3%	59 27.6%
25-26	N %	509	1	508 100.0%	258 50.8%	72 14.2%	59 11.6%	49 9.6%	70 13.8%
27-28	N %	629	1	628 100.0%	389 61.9%	104 16.6%	37 5.9%	32 5.1%	66 10.5%
29-30	N %	798	2	796 100.0%	499 62.7%	108 13.6%	20 2.5%	26 3.3%	143 18.0%
31-32	N %	1057	3	1,054 100.0%	458 43.5%	75 7.1%	20 1.9%	10 .9%	491 46.6%
33-34	N %	1699	4	1,695 100.0%	244 14.4%	25 1.5%	4 .2%	7 .4%	1415 83.5%
35-36	N %	1885	3	1,882 100.0%	254 13.5%	19 1.0%	5 .3%	5 .3%	1599 85.0%
≥37	N %	4287	5	4,282 100.0%	793 18.5%	33 .8%	31 .7%	9 .2%	3416 79.8%
Total included	N	11080	21	11,059	2957	472	211	160	7259
Missing (GA)		6							
Total # of infants		11086							

*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 diagnoses are based on cranial ultrasound examination, CT Scans or MRIs after 21 days of age.

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



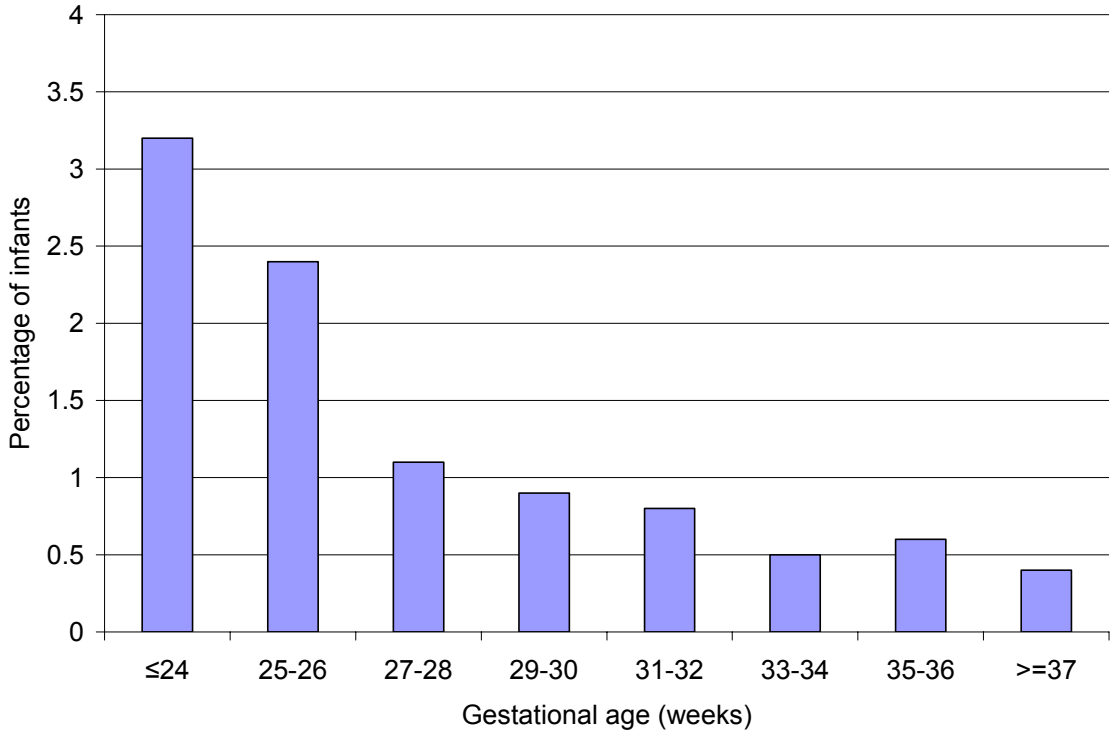
Birth weight (g)		Total number of infants	Number of infants with missing data on IVH	Number of infants with data available on IVH	Cranial ultrasonography / CT / MRI findings				Not screened
					None	GM	VE	PEC	
≤749	N %	396	2	394 100.0%	167 42.4%	59 15.0%	46 11.7%	34 8.6%	88 22.3%
750-999	N %	610	0	610 100.0%	337 55.2%	97 15.9%	54 8.9%	45 7.4%	77 12.6%
1000-1249	N %	636	2	634 100.0%	400 63.1%	92 14.5%	30 4.7%	31 4.9%	81 12.8%
1250-1499	N %	689	3	686 100.0%	413 60.2%	80 11.7%	20 2.9%	15 2.2%	158 23.0%
1500-2499	N %	3617	7	3610 100.0%	768 21.3%	108 3.0%	28 .8%	24 .7%	2682 74.3%
≥2500	N %	5128	7	5121 100.0%	871 17.0%	35 .7%	33 .6%	11 .2%	4171 81.4%
Total included	N	11076	21	11055	2956	471	211	160	7257
Missing (BW)		10							
Total # of infants		**11086**							

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.

Presentation #11

Primary infection (by gestational age)

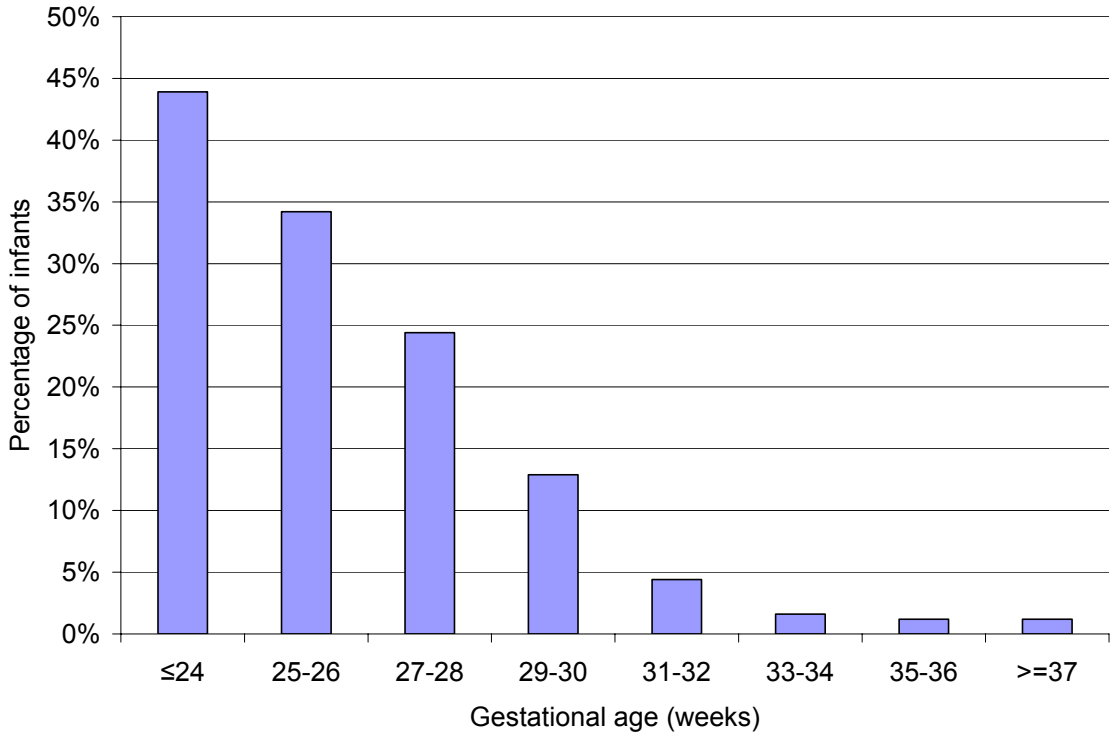


Gestational age at birth	Total number of Infants	No. of infants with infection	%
≤24	216	7	3.2%
25-26	509	12	2.4%
27-28	629	7	1.1%
29-30	798	7	0.9%
31-32	1057	8	0.8%
33-34	1699	8	0.5%
35-36	1885	11	0.6%
≥37	4287	18	0.4%
Total included	11080	78	0.7%
Missing (GA)	**6**		
Total # of infants	**11086**		

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

Presentation #12

Nosocomial infection (by gestational age)

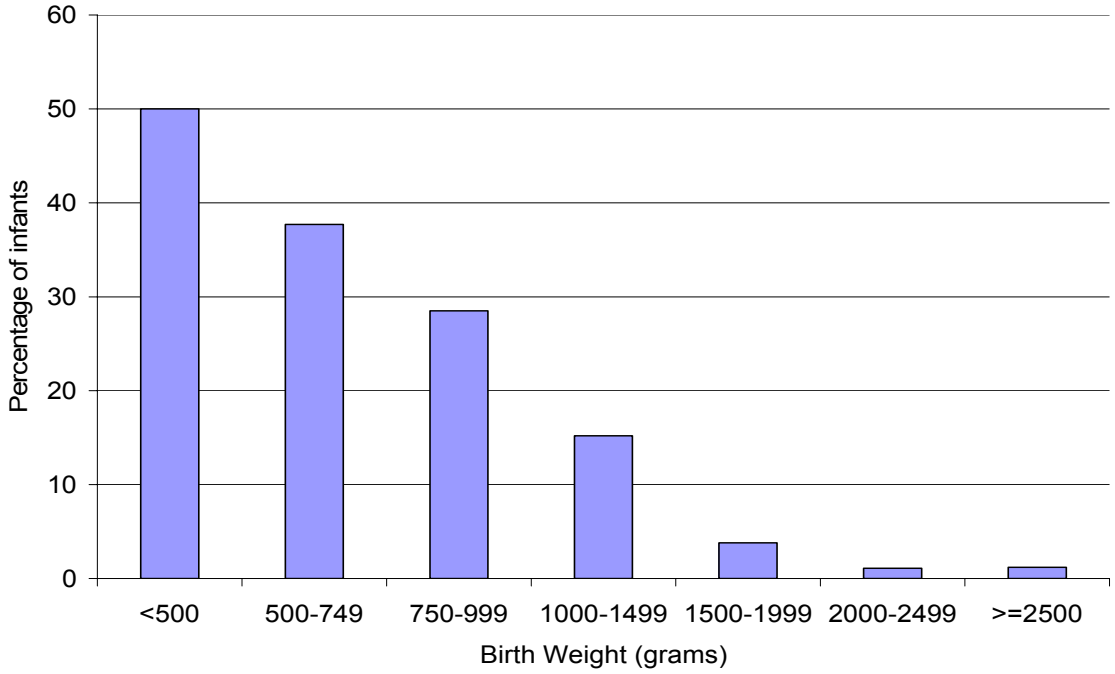


Gestational age at birth	Total number of infants	Number of deaths in the first 3 days after birth	Number of infants survived beyond day 3 after birth	# with at least one infection	%
≤24	216	43	173	76	43.9%
25-26	509	15	494	169	34.2%
27-28	629	15	614	150	24.4%
29-30	798	8	790	102	12.9%
31-32	1057	6	1051	46	4.4%
33-34	1699	5	1694	27	1.6%
35-36	1885	9	1876	22	1.2%
≥37	4287	19	4268	50	1.2%
Total included	11080	120	10960	642	5.9%
Missing (GA)	6				
Total # of infants	**11086**				

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

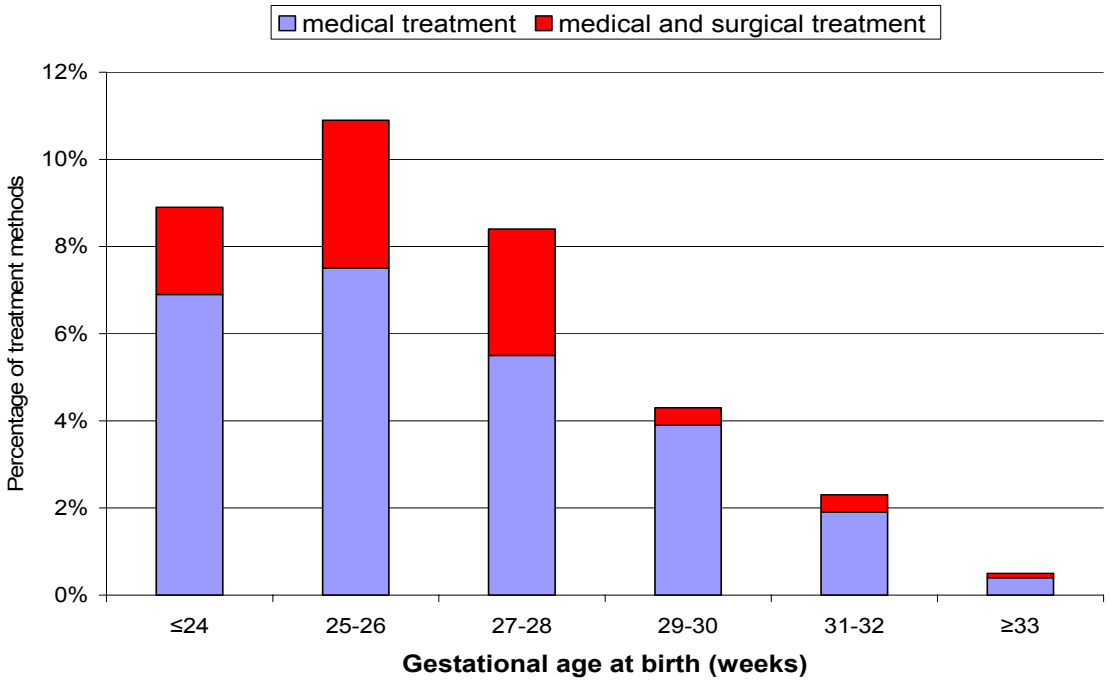
Nosocomial infection (by birth weight)



Birth Weight(g)	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	27	15	12	6	50.0%
500-749	369	35	334	126	37.7%
750-999	610	17	593	169	28.5%
1000-1499	1325	15	1310	199	15.2%
1500-1999	1611	10	1601	61	3.8%
2000-2499	2006	4	2002	22	1.1%
≥2500	5128	23	5105	59	1.2%
Total included	11076	119	10957	642	5.9%
Missing (BW)	10				
Total # of infants	**11086**				

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.

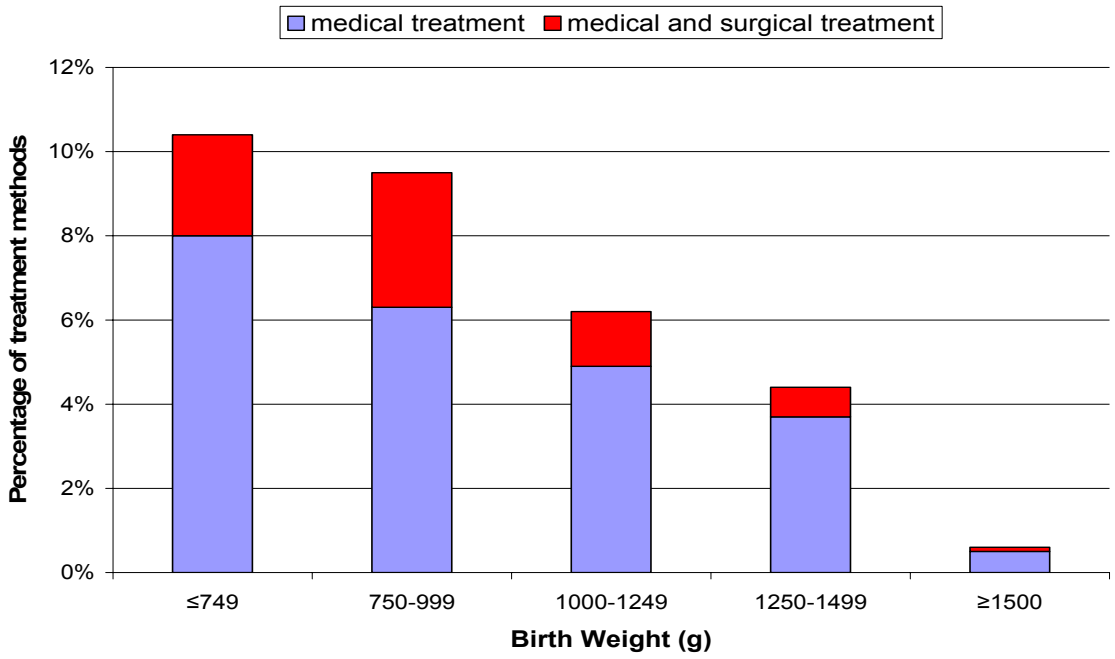
Presentation #14
Incidence of stage 2 or 3 necrotizing enterocolitis (by gestational age)



Gestational age at birth (weeks)		Total number of infants	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
≤24	N %	216	14	202 100.0%	184 91.1%	14 6.9%	4 2.0%
25-26	N %	509	5	504 100.0%	449 89.1%	38 7.5%	17 3.4%
27-28	N %	629	10	619 100.0%	567 91.6%	34 5.5%	18 2.9%
29-30	N %	798	5	793 100.0%	759 95.7%	31 3.9%	3 .4%
31-32	N %	1057	8	1049 100.0%	1025 97.7%	20 1.9%	4 .4%
≥33	N %	7871	47	7824 100.0%	7782 99.5%	34 .4%	8 .1%
Total included	N %	11080	89	10991	10766	171	54
Missing (GA)		**6**					
Total # of infants		**11086**					

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 (by birth weight)



Birth weight (g)		Total number of infants	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
≤749	N %	396	20	376 100.0%	337 89.6%	30 8.0%	9 2.4%
750-999	N %	610	8	602 100.0%	545 90.5%	38 6.3%	19 3.2%
1000-1249	N %	636	4	632 100.0%	593 93.8%	31 4.9%	8 1.3%
1250-1499	N %	689	5	684 100.0%	654 95.6%	25 3.7%	5 .7%
≥1500	N %	8745	50	8695 100.0%	8636 99.3%	46 .5%	13 .1%
Total included	N	11076	87	10989	10765	170	54
Missing (BW)		**10**					
Total # of infants		**11086**					

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 (≤ 32 weeks GA) or very low birth weight neonates (<1500g birth weight) neonates

These include data from 3209 eligible very preterm neonates and 2331 eligible VLBW neonates.

Presentation #16

Antenatal corticosteroid administration to mothers for infants born at ≤32 weeks gestational age

Part A: Hospitals that contributed data on all eligible admissions **(n=21 hospitals, 2961 infants)**

Site	Antenatal corticosteroid (%)			
	No treatment	Partial treatment	Complete treatment	Unknown
A	9.2%	44.7%	45.8%	0.4%
B	24.8%	35.5%	24.1%	15.6%
C	7.5%	16.8%	62.4%	13.3%
D	13.0%	58.6%	26.4%	1.9%
F	12.0%	60.0%	28.0%	0.0%
G	11.1%	22.2%	63.0%	3.7%
I	11.0%	47.7%	40.4%	0.9%
J	11.3%	15.6%	71.6%	1.4%
L	23.1%	15.4%	61.5%	0.0%
M	15.8%	35.1%	42.1%	7.0%
N	22.0%	23.7%	52.5%	1.7%
O	20.4%	33.3%	36.6%	9.7%
P	10.6%	29.8%	52.1%	7.4%
R	27.3%	22.7%	50.0%	0.0%
S	10.0%	60.0%	29.3%	0.7%
T	9.9%	74.3%	14.9%	0.8%
U	20.2%	40.4%	37.5%	1.9%
V	25.1%	34.4%	40.5%	0.0%
W	9.6%	56.3%	29.3%	4.8%
X	13.8%	48.5%	33.8%	3.9%
Y	15.5%	50.0%	25.0%	9.5%
Overall	13.7%	44.6%	37.7%	4.0%

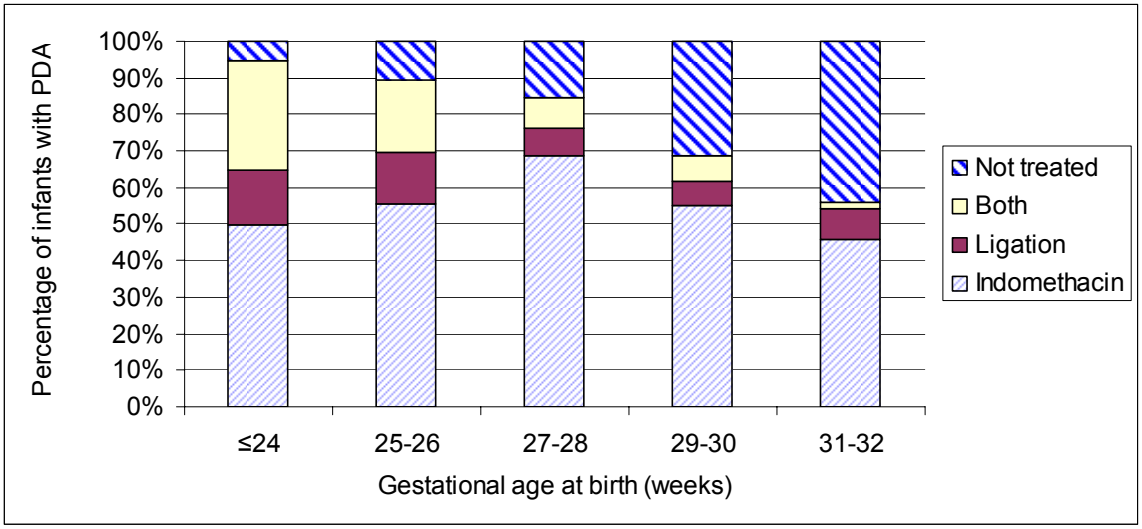
Part B: Hospitals that contributed data on selected eligible admissions **(n=4 hospitals, 248 infants)**

Site	Antenatal corticosteroid (%)			
	No treatment	Partial treatment	Complete treatment	Unknown
E	13.9%	20.8%	65.3%	0.0%
H	6.9%	40.3%	44.4%	8.3%
K	12.2%	25.6%	62.2%	0.0%
Q	0.0%	22.7%	18.2%	59.1%
Overall	10.1%	28.2%	54.0%	7.7%

*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 each other.

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)

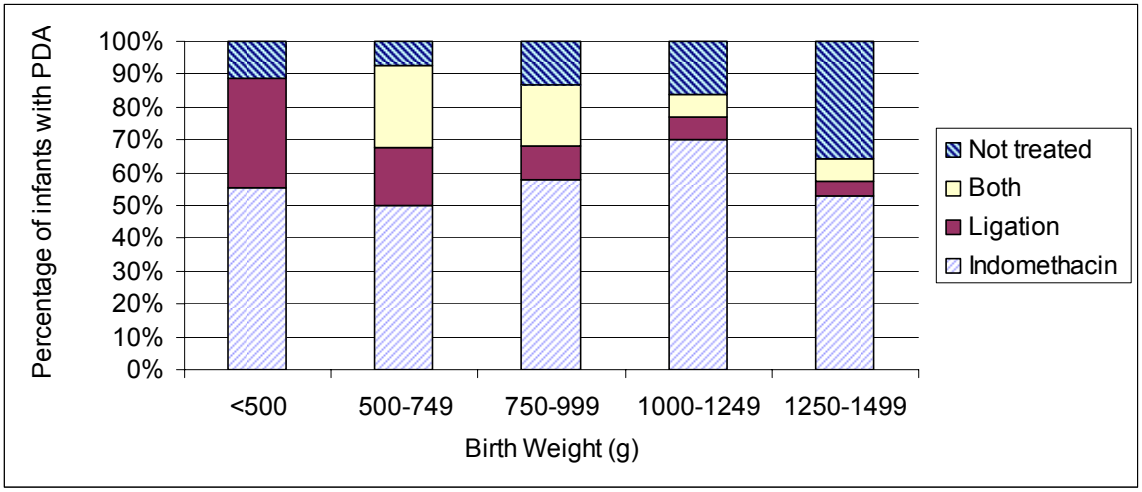


Birth gestational age (weeks)		Total number of infants	Number of infants with missing data on PDA treatment	Number of infants with data available on PDA treatment	Infants with diagnosed PDA	Treatment			Not treated
						Indomethacin	Ligation	Both	
≤24	**N**	216	35	181	113	56	17	34	6
	%			0	100.0%	49.6%	15.0%	30.1%	5.3%
25-26	**N**	509	23	486	302	168	42	60	32
	%			0	100.0%	55.6%	13.9%	19.9%	10.6%
27-28	**N**	629	14	615	244	168	18	20	38
	%			0	100.0%	68.9%	7.4%	8.2%	15.6%
29-30	**N**	798	18	780	138	76	9	10	43
	%			0	100.0%	55.1%	6.5%	7.2%	31.2%
31-32	**N**	1057	40	1017	59	27	5	1	26
	%				100.0%	45.8%	8.5%	1.7%	44.1%
Total included	**N**	3209	**130**	3079	856	495	91	125	145

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 one hospital used ibuprofen for PDA and data on ibuprofen administration are not included. Infants were identified as without PDA using the following criteria: no 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

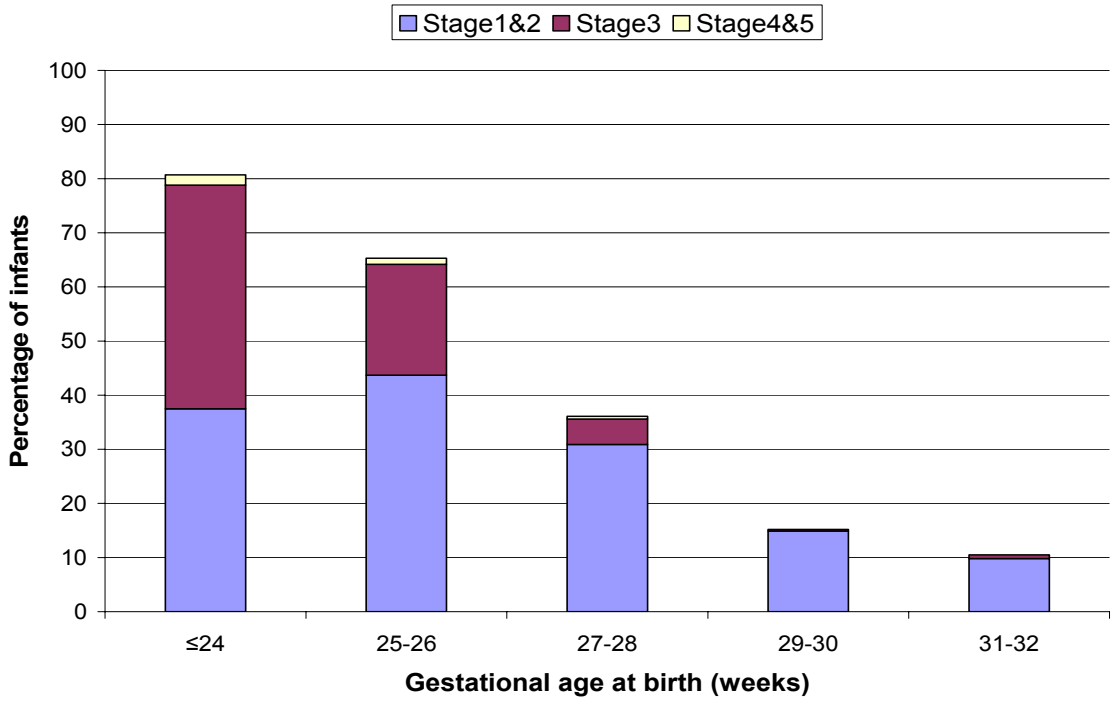
Treatment of patent ductus arteriosus (by birth weight)



Birth weight (g)		Total number of infants	Number of infants with missing data on PDA treatment	Number of infants with data available on PDA treatment	Infants with PDA	Treatment			Not treated
						Indomethacin	Ligation	Both	
<500	**N**	27	10	17	9	5	3	0	1
	%				100.0%	55.6%	33.3%	.0%	11.1%
500-749	**N**	369	30	339	192	96	34	48	14
	%				100.0%	50.0%	17.7%	25.0%	7.3%
750-999	**N**	610	30	580	301	174	31	56	40
	%				100.0%	57.8%	10.3%	18.6%	13.3%
1000-1249	**N**	636	11	625	186	130	13	13	30
	%				100.0%	69.9%	7.0%	7.0%	16.1%
1250-1499	**N**	689	12	677	117	62	5	8	42
	%				100.0%	53.0%	4.3%	6.8%	35.9%
Total included	**N**	2331	93	2238	805	467	86	125	127
	%								

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 one hospital used ibuprofen for PDA and data on ibuprofen administration are not included. Infants were identified as without PDA using the following criteria: no 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.

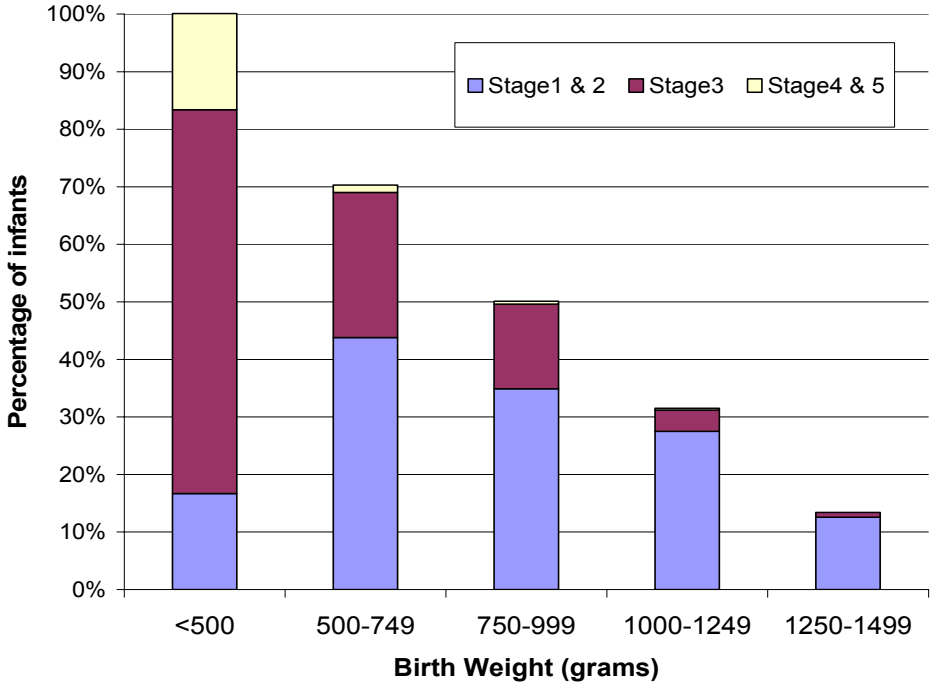
Presentation #19
Incidence of retinopathy of prematurity (by gestational age)



Birth gestational age (weeks)		Total number of infants	Number of infants alive at 6 weeks	Number of infants who received eye examination	Retinopathy of prematurity			
					None	Stages 1 & 2	Stage 3	Stage 4 & 5
≤24	N	216	115	104	20	39	43	2
	%			100.0%	19.2%	37.5%	41.3%	1.9%
25-26	N	509	429	371	129	162	76	4
	%			100.0%	34.8%	43.7%	20.5%	1.1%
27-28	N	629	587	424	271	131	20	2
	%			100.0%	63.9%	30.9%	4.7%	.5%
29-30	N	798	777	335	284	50	1	0
	%			100.0%	84.8%	14.9%	.3%	.0%
31-32	N	1057	1038	143	128	14	1	0
	%			100.0%	89.5%	9.8%	.7%	.0%
Total included	N	3209	2946	1377	832	396	141	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)

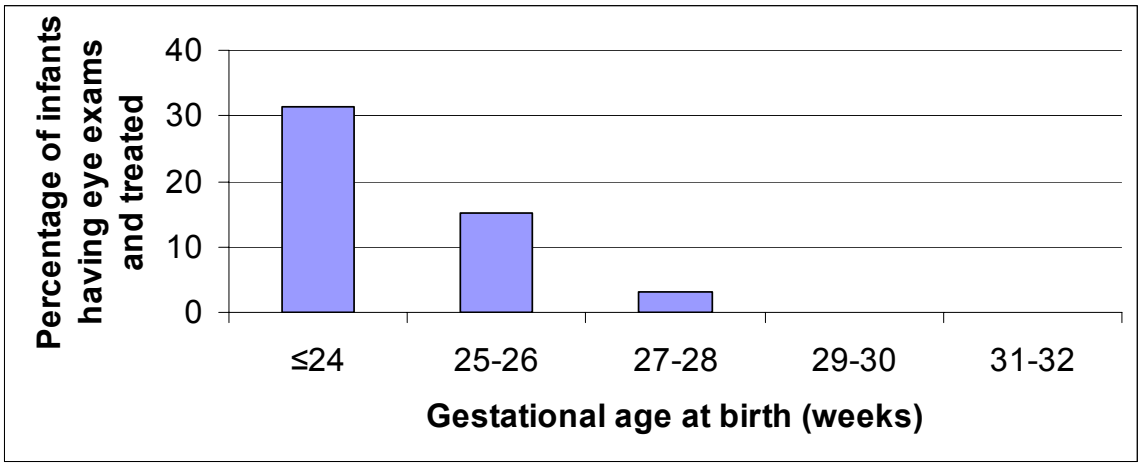


Birth weight (grams)		Total number of infants	Number of infants alive at 6 weeks	Number of infants who received eye examination	Retinopathy of prematurity			
					None	Stages 1 & 2	Stage 3	Stage 4 & 5
<500	N	27	6	6	0	1	4	1
	%			100.0%	.0%	16.7%	66.7%	16.7%
500-749	N	369	261	226	67	99	57	3
	%			100.0%	29.6%	43.8%	25.2%	1.3%
750-999	N	610	537	441	220	154	65	2
	%			100.0%	49.9%	34.9%	14.7%	.5%
1000-1249	N	636	607	353	242	97	13	1
	%			100.0%	68.6%	27.5%	3.7%	.3%
1250-1499	N	689	672	253	219	32	2	0
	%			100.0%	86.6%	12.6%	.8%	.0%
Total included	N	2331	2083	1279				
	%							

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)

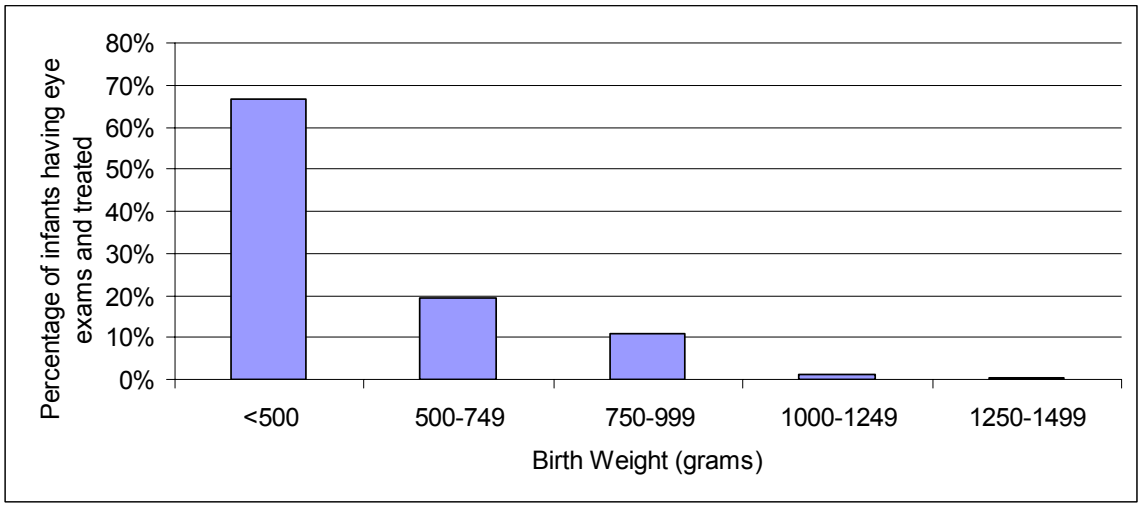


Birth gestational age (weeks)		Total number of infants	Number of infants who received eye examination	Therapy
≤24	**N**	216	104	33
	%		100.0%	31.7%
25-26	**N**	509	371	56
	%		100.0%	15.1%
27-28	**N**	629	424	13
	%		100.0%	3.1%
29-30	**N**	798	335	0
	%		100.0%	.0%
31-32	**N**	1057	143	0
	%		100.0%	.0%
Total included	**N**	3209	1377	102
	%			

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)

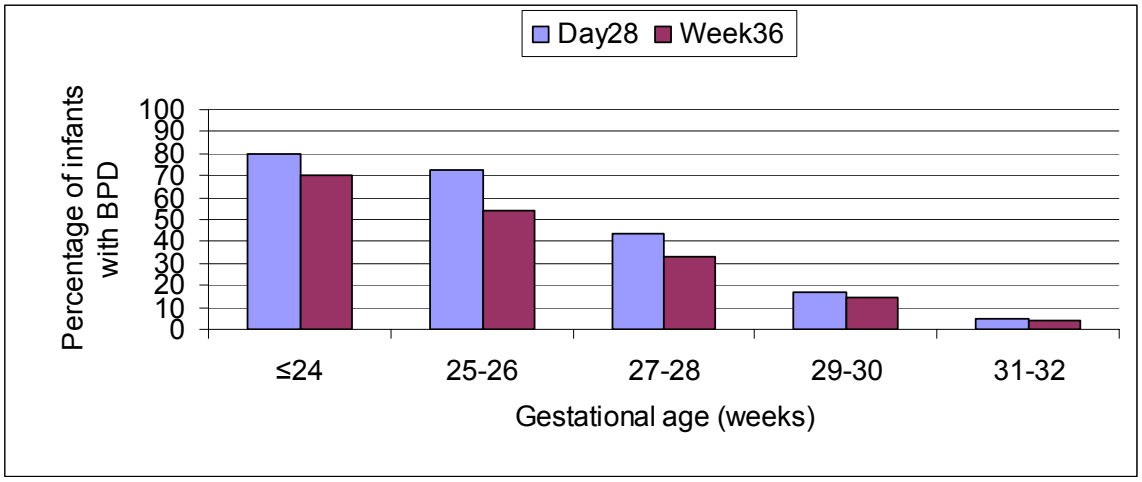


Birth weight (grams)		Total number of infants	Number of infants who received eye examination	Therapy
<500	N	27	6	4
	%		100.0%	66.7%
500-749	N	369	226	44
	%		100.0%	19.5%
750-999	N	610	441	48
	%		100.0%	10.9%
1000-1249	N	636	353	4
	%		100.0%	1.1%
1250-1499	N	689	253	1
	%		100.0%	.4%
Total included	N	2331	1279	101
	%			

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 ≤32 weeks

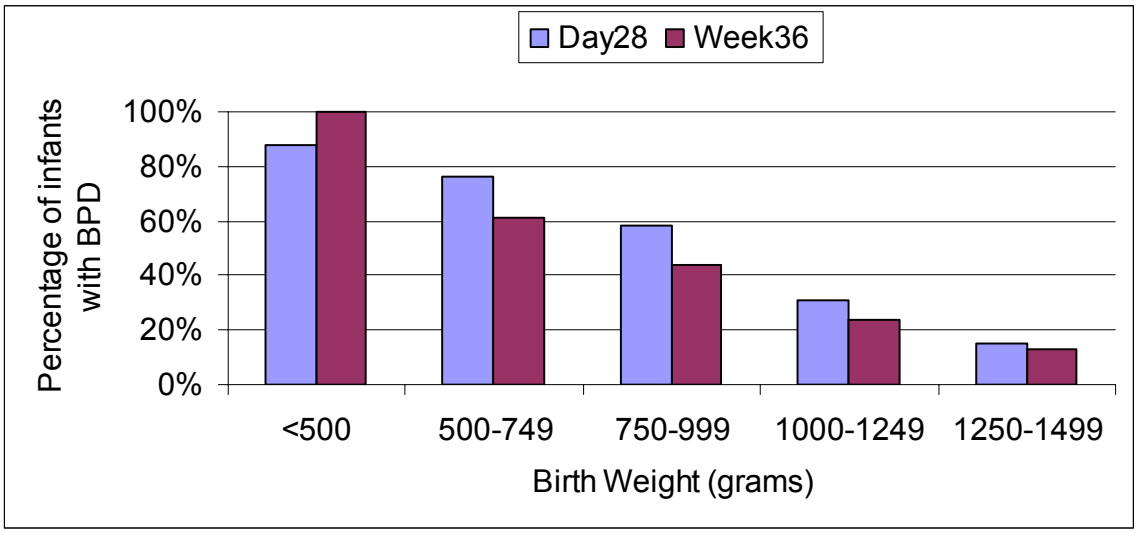


Birth gestational age (weeks)	Day 28				Week 36			
	Total number of infants	Number of infants who survived beyond day 28 after birth	Number of infants with BPD	% of infants who survived with BPD	Total number of infants	Number of infants who survived beyond 36 weeks PMA	Number of infants with BPD	% of infants who survived with BPD
≤24	216	120	96	80.0	216	111	78	70.3
25-26	509	443	322	72.7	509	425	231	54.4
27-28	629	593	256	43.2	629	584	191	32.7
29-30	798	779	133	17.1	798	777	112	14.4
31-32	1057	1040	54	5.2	1057	1040	43	4.1
Total included	3209	2975	861	28.9	3209	2937	655	22.3
Missing (GA)	0	0	0		0	0	0	
Total # of infants	**3209**	**2975**	**861**		**3209**	**2937**	655	

COMMENTS: Infants were classified as having BPD as follows: a) receiving supplemental oxygen on day 28 of age or week 36 postmenstrual age or b) discharged prior to day 28 of age or postmenstrual age (PMA) of 36 weeks and receiving supplemental oxygen at discharge. Infants were excluded from analysis if they died prior to day 28 after birth or week 36 postmenstrual age. The information is for infants with gestational age ≤32 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 (g)	Day 28				Week 36			
	Total number of infants	Number of infants who survived beyond day 28 after birth	Number of infants with BPD	% survived with BPD	Total number of infants	Number of infants who survived beyond 36 weeks PMA	Number of infants with BPD	% of infants who survived with BPD
<500	27	8	7	87.5%	27	6	6	100.0%
500-749	369	271	207	76.4%	369	257	158	61.5%
750-999	610	546	314	57.5%	610	532	237	44.5%
1000-1249	636	612	184	30.1%	636	605	142	23.5%
1250-1499	689	674	93	13.8%	689	674	75	11.1%
Total	2331	2111	805	38.1%	2331	2074	618	29.8%
Missing (BW)	0	0	0		0	0	0	
Total # of infants	**2331**				**2331**			

COMMENTS: Infants were classified as having BPD as follows: a) receiving supplemental oxygen on day 28 of age or week 36 postmenstrual age or b) discharged prior to day 28 of age or postmenstrual age (PMA) of 36 weeks and receiving supplemental oxygen at discharge. Infants were excluded from analysis if they died prior to day 28 after birth or week 36 postmenstrual age. There were no requirements for chest radiographs at the time of diagnosis.

Presentation #25

Gestational age specific mortality or significant morbidity

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 (%)	Any three morbidities prior to discharge (%)	Any four morbidities prior to discharge (%)	Any five morbidities prior to discharge (%)	Any six morbidities prior to discharge (%)	Without any of the six morbidities (%)
≤23	51	8 (15.7)	1	0	0	0	0	100.0	0	0
24	132	81 (61.4)	24	8.3	33.3	25.0	16.7	8.3	0	8.3
25	205	161 (78.5)	62	17.7	25.8	25.8	9.7	3.2	0	17.7
26	218	186 (85.3)	55	40.0	21.8	12.7	3.6	0	0	21.8
27	239	212 (88.7)	76	35.5	19.7	9.2	5.3	0	0	30.3
28	305	288 (94.4)	90	33.3	13.3	4.4	0	0	0	48.9
29	324	312 (96.3)	100	28.0	6.0	2.0	0	0	0	64.0
30	445	436 (98.0)	136	20.6	2.9	2.2	0.7	0	0	73.5
31	440	429 (97.5)	169	9.5	4.7	0	0	0	0	85.8
32	602	588 (97.7)	247	7.7	1.2	0.4	0	0	0	90.7
Total	**2961**	**2701(91.2)**	**960**	**19.1**	**8.8**	**4.8**	**1.8**	**0.5**	**0**	**65.1**

Inclusion criteria for these analyses:

1. Infant born at ≤ 32 weeks GA
2. Infant discharged home from participating network hospital
3. The hospital contributed complete data on all admissions to network

COMMENTS:

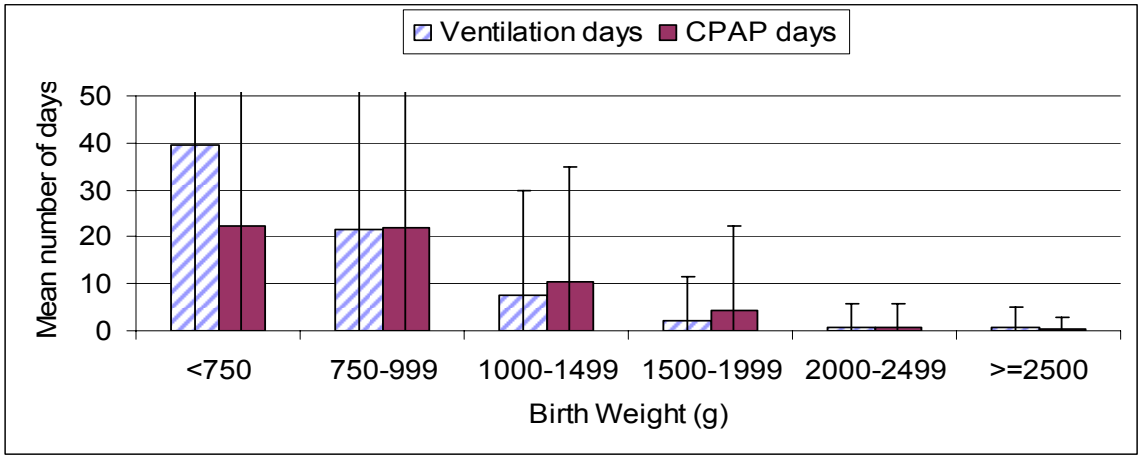
Morbidities were counted as score of one for each of the following

i. Grade 3 or 4 IVH or VE or 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. Surgical ligation of PDA

Section D.4

Analyses based on number of infants discharged home from network hospitals. This includes 5034 eligible neonates.

Presentation #26
Days on assisted ventilation (by birth weight) for infants discharged home



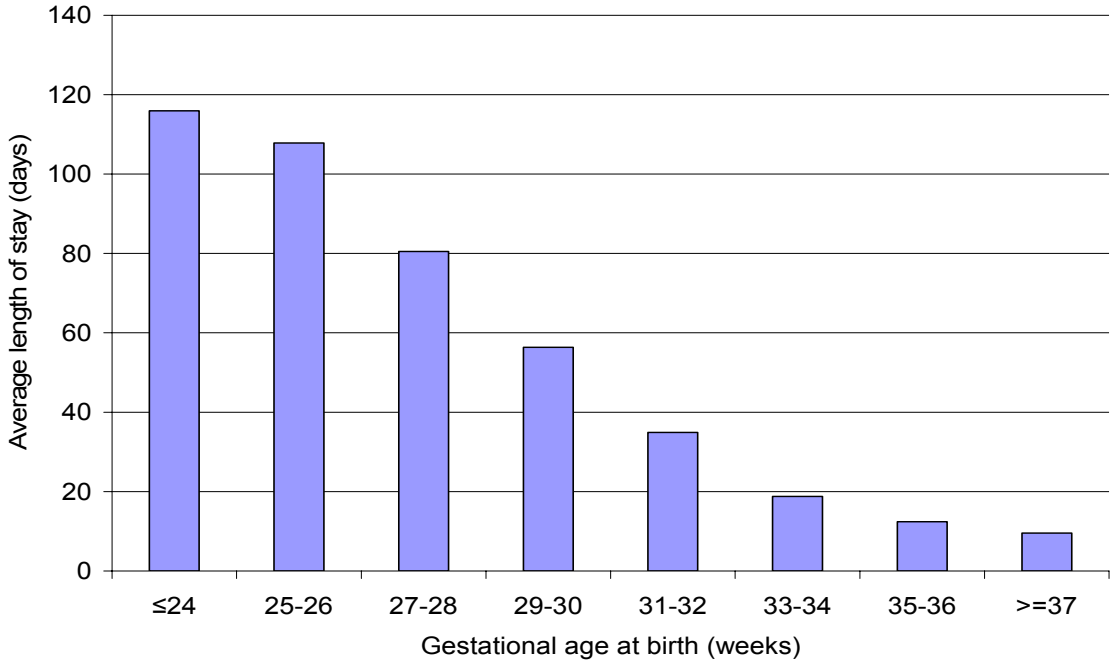
		Birth Weight (g)								
		<750	**750-999**	**1000-1249**	**1250-1499**	**1500-2499**	**≥2500**	**Total # of infants included**	**# of missing data (BW)**	**Total # of infants discharged home**
Ventilation days*	**N**	87	186	212	240	1792	2508	5025	9	5034
	Mean	39.7	21.5	7.7	2.2	0.7	0.6	2.5		
	SEM	2.7	1.4	0.8	0.3	0.1	0.0	0.1		
	Median	41	16.5	2	0	0	0	0		
CPAP days*	**N**	87	186	212	240	1792	2508	5025	9	5034
	Mean	22.5	21.8	10.4	4.2	0.7	0.3	2.2		
	SEM	1.8	1.2	0.9	0.6	0.1	0.0	0.1		
	Median	18	20	4.5	1	0	0	0		

GA	Total number of infants discharged home	# of infants intubated	Percentage of infants intubated
23	2	2	100.0%
24	36	36	100.0%
25	79	78	98.7%
26	79	76	97.4%
27	95	92	96.8%
28	116	111	96.5%
29	105	87	83.7%
30	137	108	79.4%
31	172	127	73.8%
Total	821	717	87.8%

COMMENTS: This presentation represents respiratory support information collected at time of discharge where only the highest form of support is recorded for each day (please see Appendix A on CD for specific criteria). The information is for all infants discharged home directly from network hospitals.

Presentation #27

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



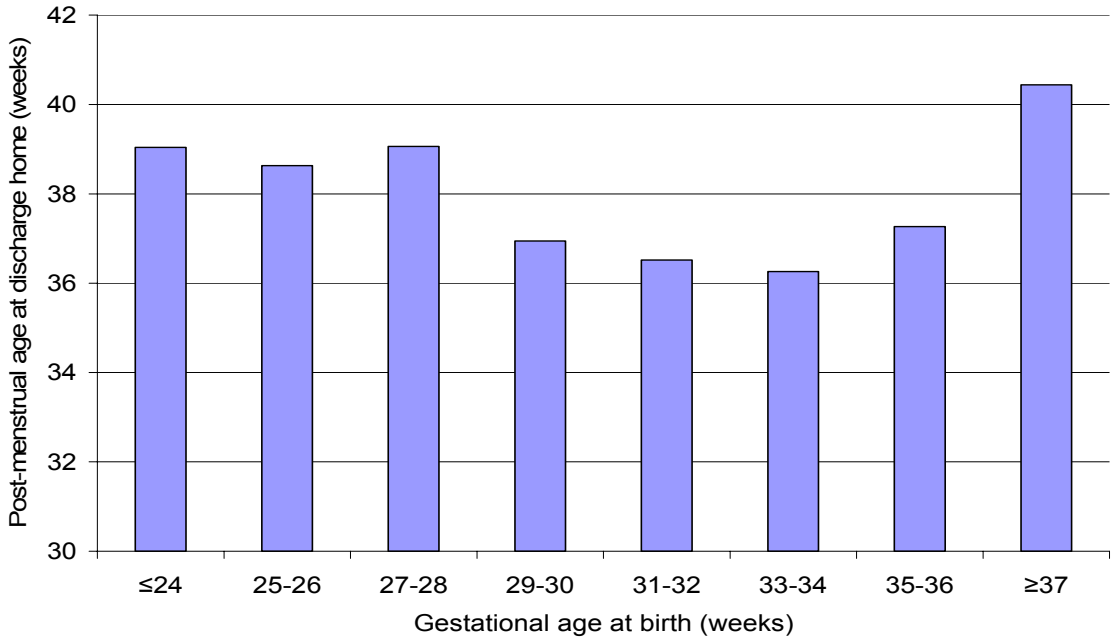
Gestational age at birth	# of infants	Mean	SEM	Median
≤24	38	115.9	4.4	114.5
25-26	158	107.8	3.0	100
27-28	211	80.5	1.8	75
29-30	242	56.3	1.9	53
31-32	422	34.9	0.7	33
33-34	910	18.8	0.3	17
35-36	977	12.4	0.3	11
≥37	2073	9.6	0.2	7
Total included	5031	23.0	0.4	12
Missing (GA/error)	**3**			
Total # of infants discharged home from network hospitals	**5034**			
Total # of infants who died or were transferred to non-network hospitals prior to discharge home	**6052**			
Total # of infants	**11086**			

*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	38	39.0	0.7	40.0
25-26	158	38.6	0.5	39.3
27-28	211	39.1	0.4	38.1
29-30	242	36.9	0.3	36.7
31-32	423	36.5	0.1	36.1
33-34	910	36.3	0.1	36.0
35-36	977	37.3	0.0	37.1
≥37	2073	40.4	0.0	40.3
Total included	5032	38.4	0.0	38.1
Missing (GA)	**2**			
Total # of infants discharged home from network hospitals	**5034**			
Total # of infants who died or were transferred to non-network hospitals prior to discharge home	**6052**			
Total # of infants	**11086**			

*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	%
≤24	38	14	36.8%
25-26	158	35	22.2%
27-28	211	12	5.7%
29-30	242	5	2.1%
31-32	423	3	.7%
33-34	910	1	.1%
35-36	977	1	.1%
≥37	2073	6	.3%
Total included	5032	77	1.5%
Missing (GA)	**2**		
Total # of infants discharged home from network hospitals	**5034**		
Total # of infants died or transferred to non-network hospitals prior to discharge home	**6052**		
Total # of infants	**11086**		

E. Site Comparisons – Mortality

Presentation #30

Site-specific gestational age categories of infants

		Gestational age (weeks)								Total %	Criteria of data collecting
		≤24	25-26	27-28	29-30	31-32	33-34	35-36	≥37		
Infants per site (%)	1	1.8	4.4	5.2	8.6	10.7	14.4	18.7	36.3	100	Complete
	2	1.8	6.8	8.5	9.4	15.2	13.7	12.8	31.8	100	Complete
	3	2.1	6.8	6.2	5.1	6.4	6.2	12.8	54.6	100	Complete
	4	0.4	2.0	3.7	4.8	9.5	13.6	17.3	48.7	100	Complete
	5	1.3	2.6	5.8	11.0	9.7	20.0	21.6	28.1	100	Complete
	6	3.4	17.2	25.3	32.2	16.1	4.6	1.1	NA	100	Partial
	7	0.6	1.3	2.0	3.5	5.8	14.7	19.5	52.8	100	Complete
	8	0.5	1.6	0.5	4.7	13.2	11.1	15.3	53.2	100	Complete
	9	4.7	10.3	11.2	13.4	12.0	14.6	17.3	16.4	100	Complete
	10	18.1	29.2	52.8	NA	NA	NA	NA	NA	100	Partial
	11	0.3	4.5	2.3	3.5	7.7	14.8	22.2	44.7	100	Complete
	12	0.5	1.9	1.3	4.8	4.6	15.4	21.0	50.6	100	Complete
	13	1.6	0.8	2.5	3.8	7.4	14.5	18.3	51.1	100	Complete
	14	2.2	4.6	6.9	6.1	10.8	21.0	14.8	33.6	100	Complete
	15	8.0	52.0	24.0	4.0	NA	4.0	NA	8.0	100	Partial
	16	0.9	3.9	8.8	9.8	13.1	18.8	14.7	30.0	100	Complete
	17	1.2	6.1	4.3	8.1	11.9	26.4	17.4	24.6	100	Complete
	18	4.5	5.1	6.9	10.4	12.9	17.3	14.5	28.4	100	Complete
	19	1.7	1.7	1.1	5.1	4.5	9.7	30.1	46.0	100	Complete
	20	1.8	3.9	6.9	6.7	12.6	18.4	15.9	33.7	100	Complete
	21	17.2	42.5	21.8	NA	1.1	4.6	1.1	11.5	100	Partial
	22	3.0	5.1	7.1	12.1	10.4	16.0	14.1	32.2	100	Complete
	23	0.6	0.8	0.8	2.3	6.8	13.1	17.5	58.0	100	Complete
	24	0.6	1.6	2.9	4.1	8.0	20.2	21.0	41.6	100	Complete
	25	1.2	1.2	1.2	3.7	6.1	11.7	25.2	49.7	100	Complete
Total		1.9	4.6	5.7	7.2	9.5	15.3	17.0	38.7	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	NA	3.8	5.6	5.5	6.2	39.0	39.9	100	Complete
	2	0.4	4.6	5.4	8.9	9.8	32.2	38.8	100	Complete
	3	0.2	4.7	7.1	4.5	4.7	18.2	60.7	100	Complete
	4	0.1	1.1	2.9	3.5	4.8	32.7	55.0	100	Complete
	5	NA	1.6	4.2	9.7	7.1	38.7	38.7	100	Complete
	6	2.3	10.5	25.6	23.3	36.0	2.3	NA	100	Partial
	7	NA	0.8	1.7	3.2	2.0	30.0	62.3	100	Complete
	8	NA	1.6	2.6	3.2	3.7	28.4	60.5	100	Complete
	9	0.2	8.0	10.3	12.2	9.8	36.9	22.5	100	Complete
	10	1.4	19.4	40.3	27.8	9.7	1.4	NA	100	Partial
	11	NA	0.6	5.4	1.6	3.8	30.8	57.7	100	Complete
	12	0.1	1.3	1.6	2.0	3.9	32.3	58.7	100	Complete
	13	0.5	1.4	1.6	1.9	4.4	24.3	65.8	100	Complete
	14	NA	3.0	5.4	7.4	6.1	39.9	38.2	100	Complete
	15	NA	24.0	40.0	20.0	4.0	8.0	4.0	100	Partial
	16	NA	3.1	6.1	8.1	7.0	38.9	36.8	100	Complete
	17	0.6	2.0	5.8	7.2	5.8	47.2	31.3	100	Complete
	18	2.0	5.7	5.9	6.3	9.6	36.3	34.1	100	Complete
	19	NA	3.4	1.7	1.1	2.3	28.7	62.6	100	Complete
	20	NA	3.4	5.4	6.1	7.4	32.0	45.7	100	Complete
	21	NA	27.1	38.8	9.4	5.9	9.4	9.4	100	Partial
	22	0.4	4.5	8.3	8.1	9.2	32.4	37.1	100	Complete
	23	NA	0.4	0.8	1.1	3.0	28.9	65.8	100	Complete
	24	NA	0.6	2.9	2.7	3.9	34.9	55.1	100	Complete
	25	NA	1.2	2.5	1.2	3.1	39.3	52.8	100	Complete
Total		0.2	3.3	5.5	5.7	6.2	32.7	46.3	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

Part A: Hospitals that contributed data on all eligible admissions (n=21 hospitals, 10809 infants, 6 infants had missing data for GA)

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	0.0	93.3	85.0	100.0	93.5	97.4	95.8	100	97.1	96.9
B	NA	50.0	100.0	75.0	87.5	87.9	96.3	88.2	87.9	96.4	93.6
C	NA	33.3	100.0	76.2	93.8	93.5	98	98.8	95.9	97.9	96.1
D	NA	50.0	84.6	73.3	94.1	92.9	98.2	100	98.7	97.8	97.1
F	NA	NA	33.3	100.0	100.0	100	100	100	94.1	99.3	97.7
G	NA	0.0	50.0	100.0	66.7	100	100	96.9	98.4	99.7	98.7
I	NA	NA	75.0	92.3	87.5	93.3	92.9	97.6	98.9	97.9	96.8
J	NA	NA	40.0	100.0	71.4	90.6	100	98	100	99.1	96.5
L	NA	0.0	NA	NA	33.3	100	100	96	100	99.2	97.4
M	NA	NA	100.0	100.0	100.0	100	100	100	100	99.0	99.4
N	0.0	0.0	25.0	50.0	100.0	77.8	100	100	100	97.6	96.2
O	NA	0.0	0.0	75.0	80.0	100	100	100	99	99.6	98.7
P	NA	0.0	0.0	66.7	60.0	100	100	96.7	98.4	99.4	96.8
R	NA	NA	50.0	100.0	100.0	100	100	100	100	99.2	98.8
S	NA	50.0	0.0	71.4	87.5	88.9	100	100	100	99.8	98.8
T	0.0	13.3	30.8	83.3	83.9	89.7	95.7	96	98.7	97.5	93.8
U	NA	NA	50.0	42.9	75.0	90	94.7	97.3	100	99.0	97.7
V	0.0	0.0	63.6	82.4	87.5	82.4	92.2	96.8	100	97.6	92.7
W	NA	NA	50.0	90.9	85.7	95	100	100	100	100.0	98.7
X	0.0	40.0	54.5	66.7	83.8	93.9	97.5	97.2	100	100.0	93.9
Y	NA	0.0	50.0	50.0	75.0	92.9	95	94.9	98	99.7	97.6
Overall**	0.0	20.0	61.4	78.5	85.3	91.9	97.3	97.6	98.9	98.6	96.6

Part B: Hospitals that contributed data on selected eligible admissions (n=4 hospitals, 271 infants)

Site			Percentage survival for each gestational age (weeks)						
	<23	**23-24**	**25-26**	**27-28**	**29-30**	**31-32**	**33-34**	**≥35**	**Overall***
E	NA	73.3	91.9	100	NA	100	75	90.9	89.7
H	NA	23.1	71.4	92.1	NA	NA	NA	NA	73.6
K	NA	66.7	80.0	90.9	89.3	100	100	100	89.7
Q	NA	50.0	84.6	100	100	NA	100	100	88
Overall**	NA	48.5	83.7	94.1	89.7	100	88.9	92.3	85.2

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

Part A: Hospitals that contributed data on all eligible admissions (n=21hospitals, 10808 infants, 7 missing data of BW)

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	88.2	96.0	91.8	98.2	97.4	98.0	85.7	96.9
B	NA	84.0	84.2	91.7	100.0	91.8	96.2	88.9	93.6
C	100.0	72.0	86.2	97.9	98.1	99.4	96.6	100.0	96.1
D	NA	82.1	86.4	100.0	95.0	98.9	98.3	90.0	97.1
F	NA	66.7	100.0	100.0	100.0	98.0	99.0	100.0	97.7
G	NA	50.0	75.0	80.0	100.0	98.5	99.7	100.0	98.7
I	50.0	85.7	95.0	88.0	100.0	98.8	97.2	100.0	96.8
J	NA	64.3	76.0	100.0	92.9	99.5	98.8	100.0	96.5
L	NA	33.3	80.0	100.0	100.0	98.1	99.1	100.0	97.4
M	NA	100.0	100.0	100.0	100.0	100.0	98.9	100.0	99.4
N	NA	40.0	66.7	85.7	100.0	98.9	97.8	100.0	96.2
O	NA	50.0	75.0	100.0	100.0	100.0	99.3	100.0	98.7
P	NA	40.0	76.9	96.7	90.9	100.0	99.1	100.0	96.8
R	NA	100.0	75.0	100.0	100.0	98.4	100.0	100.0	98.8
S	NA	75.0	85.7	92.3	100.0	100.0	99.7	100.0	98.8
T	NA	48.8	87.5	91.0	98.9	97.7	97.7	100.0	93.9
U	NA	50.0	92.3	81.3	100.0	98.8	98.9	100.0	97.7
V	30.0	46.4	86.2	100.0	93.6	98.3	98.1	83.3	92.7
W	NA	78.6	89.3	100.0	100.0	100.0	100.0	100.0	98.7
X	NA	61.7	83.6	95.8	94.8	99.5	100.0	100.0	93.9
Y	NA	NA	85.7	92.3	100.0	98.2	98.8	100.0	97.6
Overall**	25.0	65.9	86.6	95.0	97.5	98.7	98.6	97.8	96.7

Part B: Hospitals that contributed data on selected eligible admissions (n=4 hospitals, 268 infants, 3 missing data of BW)

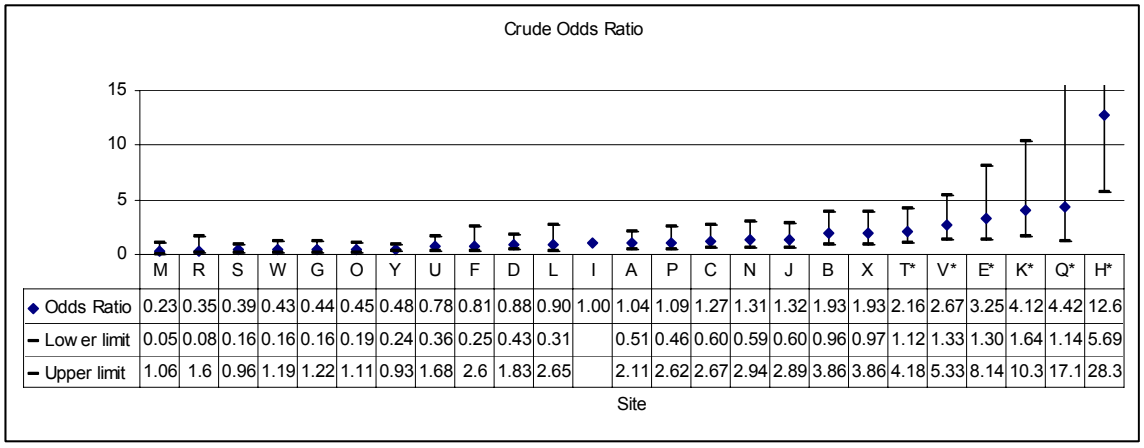
Site	Percentage survival for each birth weight (g) category								
	<500	500-749	750-999	1000-1249	1250-1499	1500-2499	2500-4499	>4499	Overall*
E	NA	87.0	87.9	100.0	100.0	87.5	87.5	NA	89.4
H	0	57.1	65.5	95.0	85.7	100.0	NA	NA	73.6
K	0	88.9	86.4	90.0	96.8	100.0	NA	NA	89.5
Q	NA	66.7	90.0	100.0	100.0	100.0	100.0	NA	88.0
Overall**	0	76.9	80.9	94.3	95.5	92.3	88.9	NA	85.1

Overall* = (number of infants survived for site / total number of infants for site)*100
Overall** = (number of infants survived for gestational category / total number of infants in gestational category)*100
NA = no data available

Presentation#34

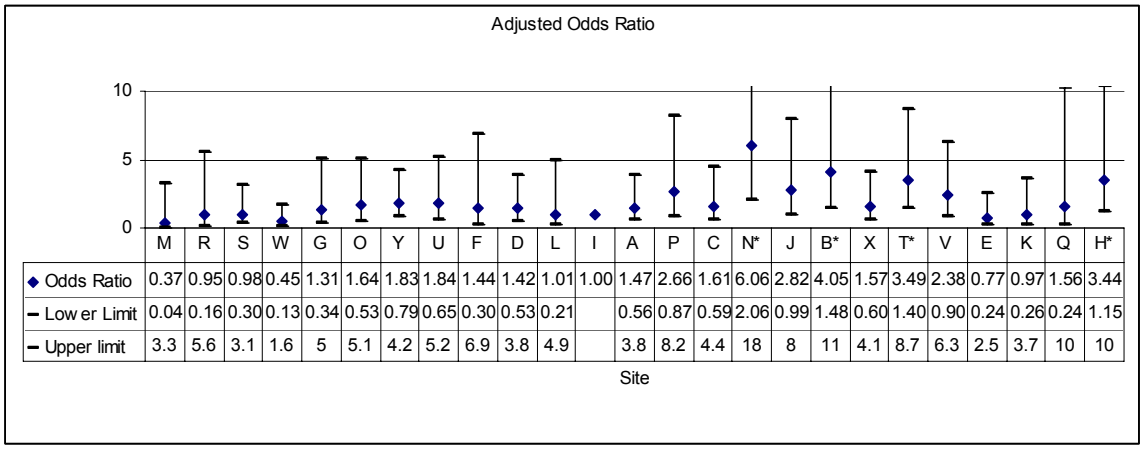
Site comparison of mortality (adjusted for congenital anomalies)

Figure1: Crude Odds Ratio



	M	R	S	W	G	O	Y	U	F	D	L	I	A	P	C	N	J	B	X	T*	V*	E*	K*	Q*	H*
Odds Ratio	0.23	0.35	0.39	0.43	0.44	0.45	0.48	0.78	0.81	0.88	0.90	1.00	1.04	1.09	1.27	1.31	1.32	1.93	1.93	2.16	2.67	3.25	4.12	4.42	12.6
Lower limit	0.05	0.08	0.16	0.16	0.16	0.19	0.24	0.36	0.25	0.43	0.31		0.51	0.46	0.60	0.59	0.60	0.96	0.97	1.12	1.33	1.30	1.64	1.14	5.69
Upper limit	1.06	1.6	0.96	1.19	1.22	1.11	0.93	1.68	2.6	1.83	2.65		2.11	2.62	2.67	2.94	2.89	3.86	3.86	4.18	5.33	8.14	10.3	17.1	28.3

Figure2: Adjusted Odds Ratio



	M	R	S	W	G	O	Y	U	F	D	L	I	A	P	C	N*	J	B*	X	T*	V	E	K	Q	H*
Odds Ratio	0.37	0.95	0.98	0.45	1.31	1.64	1.83	1.84	1.44	1.42	1.01	1.00	1.47	2.66	1.61	6.06	2.82	4.05	1.57	3.49	2.38	0.77	0.97	1.56	3.44
Lower Limit	0.04	0.16	0.30	0.13	0.34	0.53	0.79	0.65	0.30	0.53	0.21		0.56	0.87	0.59	2.06	0.99	1.48	0.60	1.40	0.90	0.24	0.26	0.24	1.15
Upper limit	3.3	5.6	3.1	1.6	5	5.1	4.2	5.2	6.9	3.8	4.9		3.8	8.2	4.4	18	8	11	4.1	8.7	6.3	2.5	3.7	10	10

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

Inclusion criteria:
All infants included

Mortality is attributed to the Network hospital of first admission.

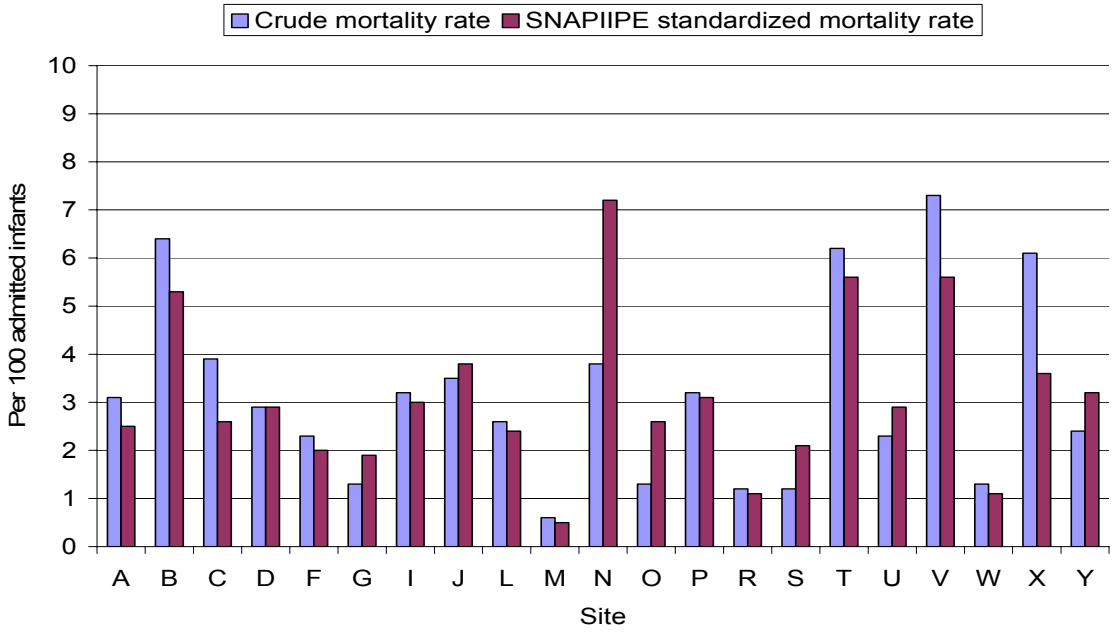
Significant predictors identified by multivariate analysis and adjusted for:

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

Presentation #35

SNAP-II PE adjusted site mortality rates

Part A: Hospitals that contributed data on all eligible admissions (n=21 hospitals, 10775 infants, 40 missing SNAP score)



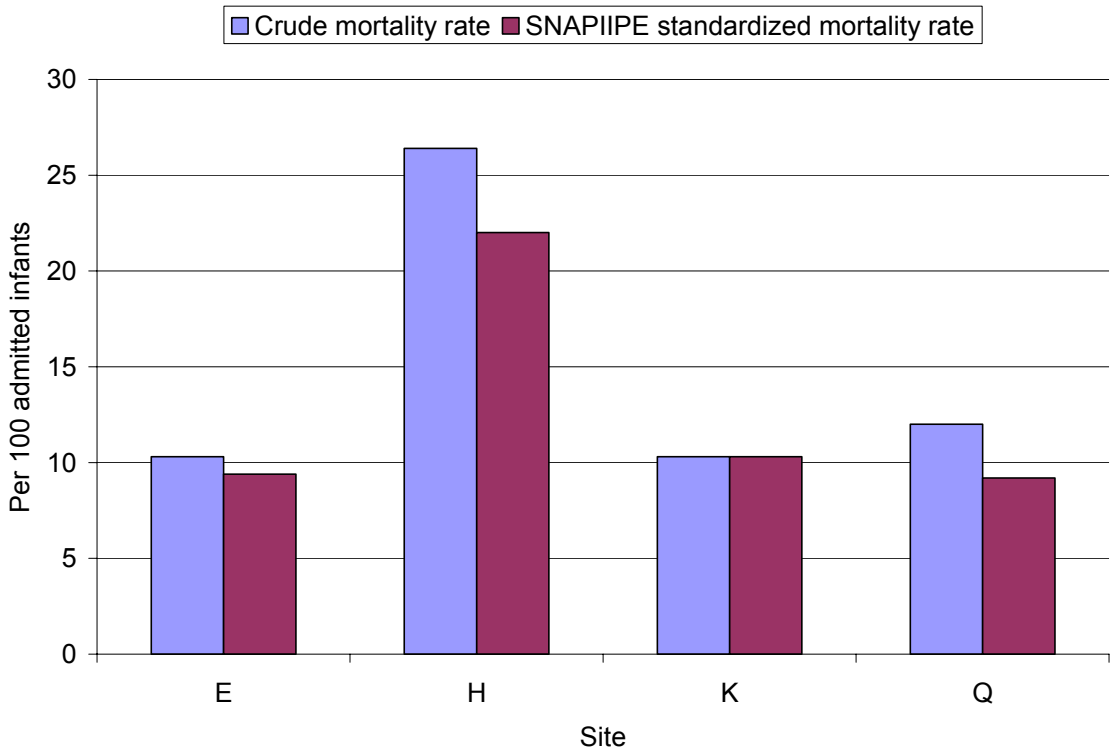
Site	Mortality rate (%)	SNAP-II PE Standardized rate (%)
A	3.1	2.5
B	6.4	5.3
C	3.9	2.6
D	2.9	2.9
F	2.3	2.0
G	1.3	1.9
I	3.2	3.0
J	3.5	3.8
L	2.6	2.4
M	0.6	0.5
N	3.8	7.2
O	1.3	2.6
P	3.2	3.1
R	1.2	1.1
S	1.2	2.1
T	6.2	5.6
U	2.3	2.9
V	7.3	5.6
W	1.3	1.1
X	6.1	3.6
Y	2.4	3.2
Mean	3.4	3.4

COMMENTS: SNAP-II PE standardized mortality rates were calculated by adjusting mortality for illness severity. Mortality is attributed to the hospital of first admission.

Presentation #35 *(continued)*

SNAP-II PE adjusted site mortality rates

Part B: Hospitals that contributed data on selected eligible admissions (n=4 hospitals, 269 infants, 2 missing data of SNAP score)



Site	Mortality rate (%)	SNAP-II PE Standardized rate (%)
E	10.3	9.4
H	26.4	22.0
K	10.3	10.3
Q	12.0	9.2
Mean	14.8	14.8

* Please note different scale compared to previous chart. These centers reported on select eligible admissions only.

COMMENTS: SNAP-II PE standardized mortality rates were calculated by adjusting mortality for illness severity. Mortality is attributed to the hospital of first admission. Please 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 each other.

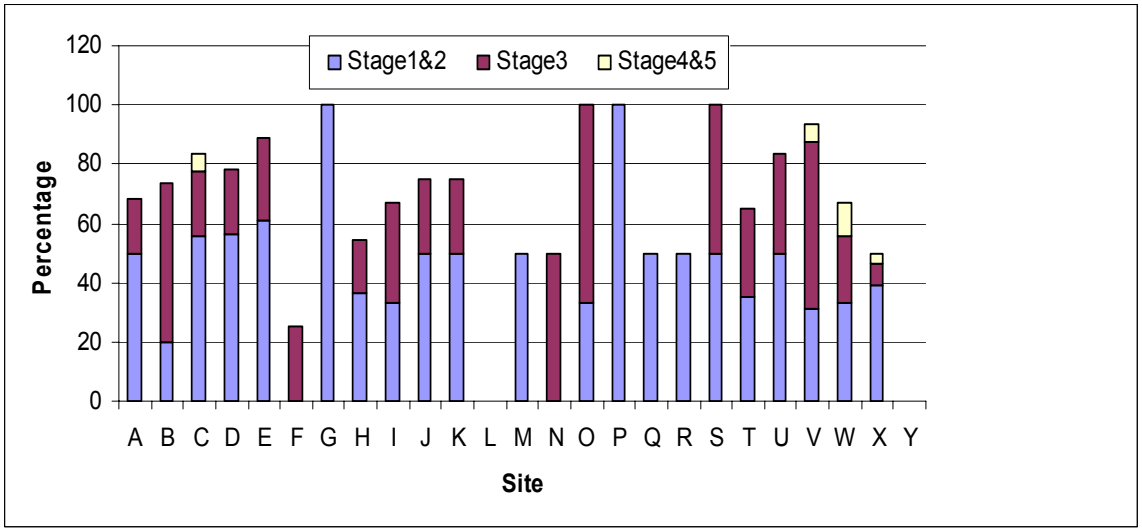
F. Site Comparisons – Morbidity Outcomes

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

Presentation #36

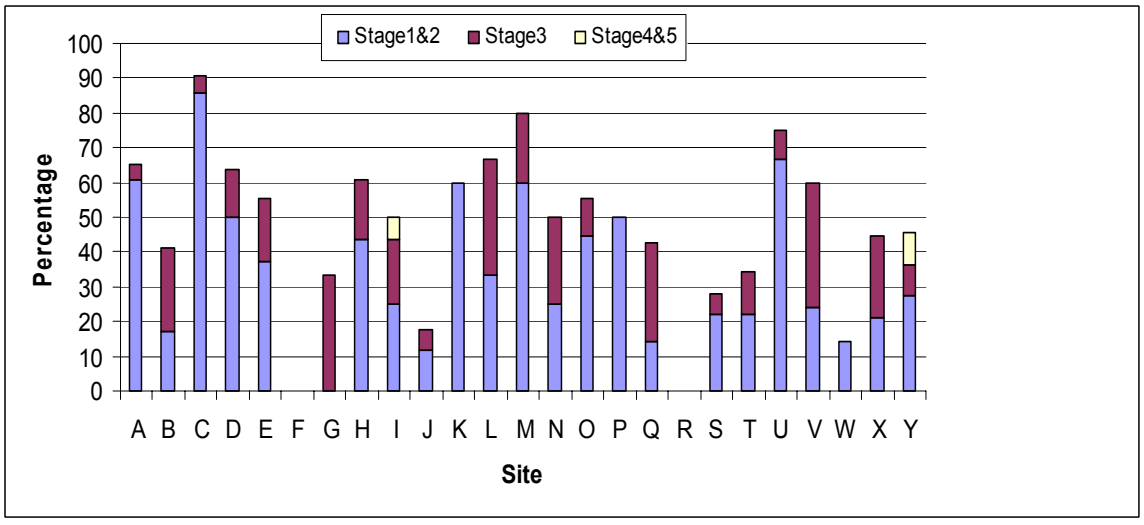
Incidence of Retinopathy of Prematurity among infants with eye exams with birth weight <1500g

A. <750g



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

B. 750-999g

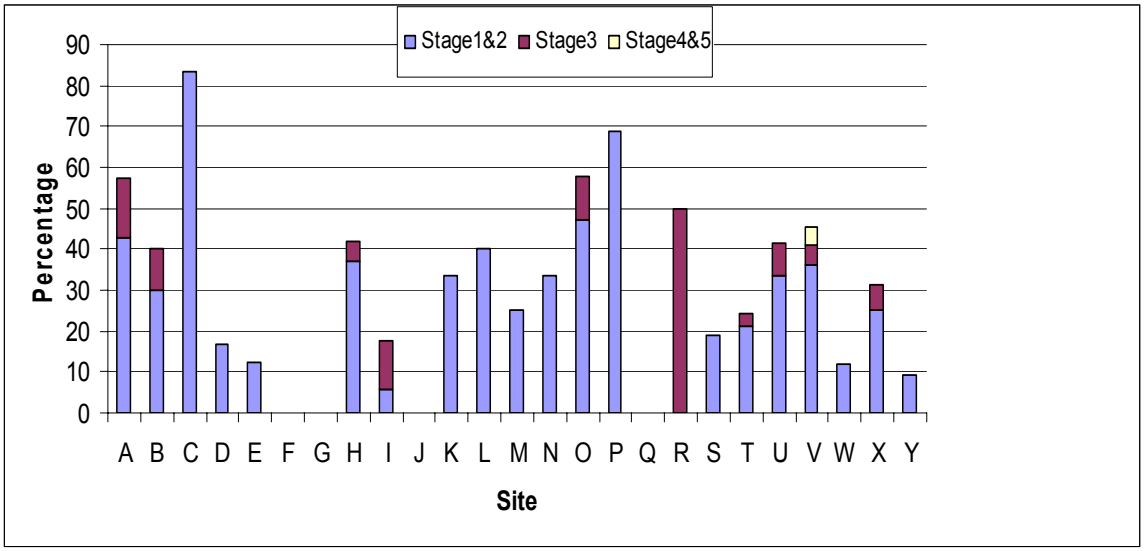


Note that for site F and R, among those infants with eye exams, none was diagnosed with ROP, so the incidence rate is zero.

Presentation #36 (*continued*)

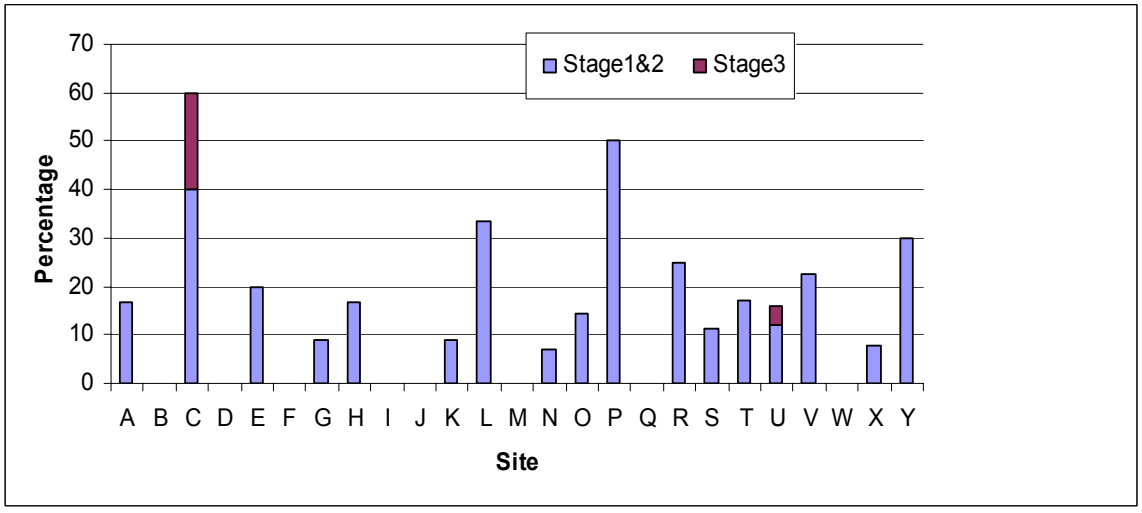
Incidence of Retinopathy of Prematurity among infants with eye exams with birth weight <1500g

C. 1000-1249g



Note that for site F, G J and Q, among those infants with eye exams, none was diagnosed with ROP, so the incidence rate is zero.

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



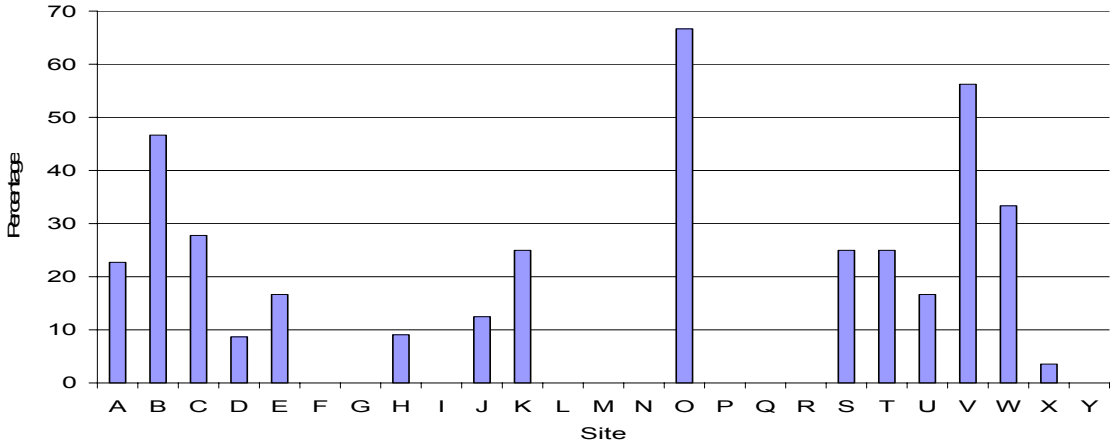
Note that for site B, D, F, I, J, M, Q and W, among those infants with eye exams, none were diagnosed with ROP, so the incidence rate is zero.

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

Presentation #37

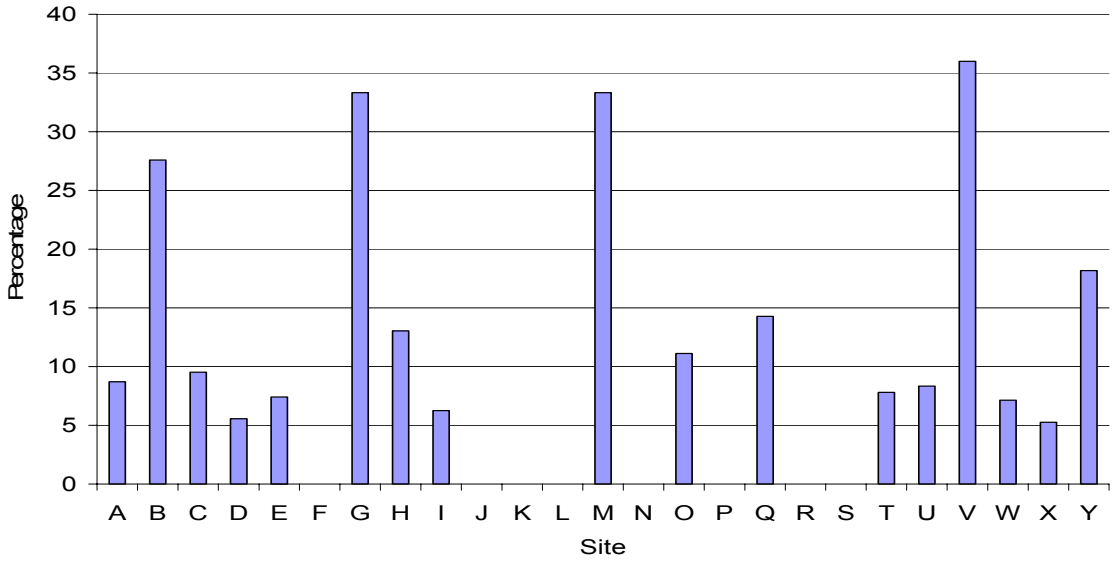
Treatment for Retinopathy of Prematurity among infants with eye exams with birth weight <1500g

A. <750g



Note that for site L and Y, no infants diagnosed with ROP for this BW subgroup. For sites F, G, I, M, N, P, Q, and R, none of the infants received treatment.

B. 750-999g



Note that for site F and R, there were no infants diagnosed with ROP. For sites J, K, L, N, P, and S, no infants required treatment.

C. 1000-1249 g: Only 5.3% of infants in Center H, 8.3% in Center U and 9.1% in Center V required therapy in this group.

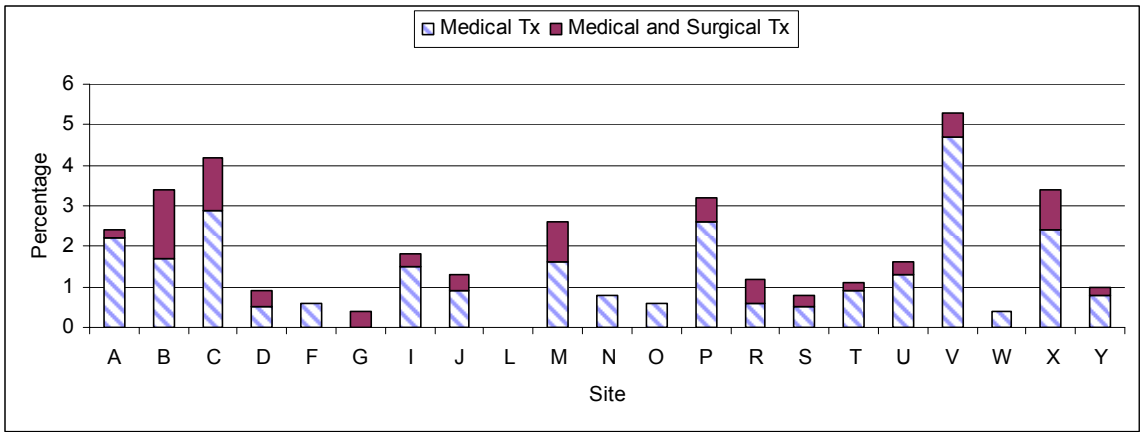
D. 1250-1499 g: Only 20% of infants in Center C required treatment in this group from entire network.

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

Presentation #38

Incidence of Necrotizing Enterocolitis

Part A: Hospitals that contributed data on all eligible admissions (n=21 hospitals, 10735 infants, 80 missing data on NEC)

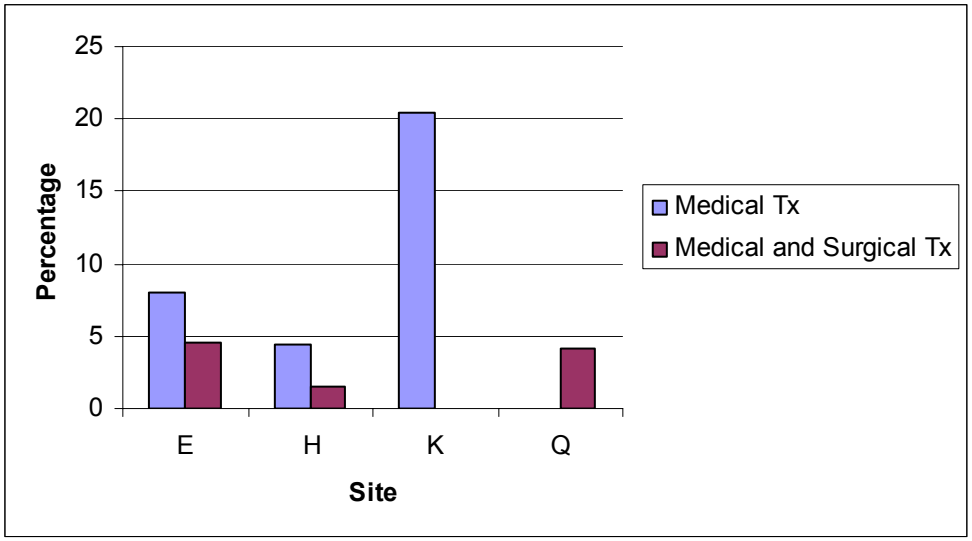


Site	Treatment (%)		
	Medical Tx	Medical and Surgical Tx	Any
A	2.2	0.2	2.5
B	1.7	1.7	3.4
C	2.9	1.3	4.2
D	0.5	0.4	0.9
F	0.6	0.0	0.6
G	0.0	0.4	0.4
I	1.5	0.3	1.8
J	0.9	0.4	1.3
L	0.0	0.0	0.0
M	1.6	1.0	2.6
N	0.8	0.0	0.8
O	0.6	0.0	0.6
P	2.6	0.6	3.2
R	0.6	0.6	1.2
S	0.5	0.3	0.8
T	0.9	0.2	1.1
U	1.3	0.3	1.5
V	4.7	0.6	5.4
W	0.4	0.0	0.4
X	2.4	1.0	3.4
Y	0.8	0.2	1.0
Total	1.3	0.4	1.7

Presentation #38 (*continued*)

Incidence of Necrotizing Enterocolitis

Part B: Hospitals that contributed data on selected eligible admissions (n=4 hospitals, 262 infants, 9 missing data on NEC)



Site	Treatment (%)		
	Medical Tx	Medical and Surgical Tx	Any
E	8.0	4.6	12.6
H	4.4	1.5	5.9
K	20.5	0.0	20.5
Q	0.0	4.2	4.2
Total	10.3	2.3	12.6

*****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 each other.

Presentation #39

Positive blood and CSF cultures by admissions

Part A: Hospitals that contributed data on all eligible admissions (n=21 hospitals, 11418 admissions)

Site	Blood culture			CSF culture		
	Cultures per 100 admission	Positive cultures per 100 admission	% positive cultures	Cultures per 100 admission	Positive cultures per 100 admission	% positive cultures
A	69.10	10.99	15.9%	14.15	0.33	2.3%
B	104.58	16.74	16.0%	34.91	0.43	1.2%
C	149.74	14.38	9.6%	25.30	0.52	2.1%
D	87.78	12.10	13.8%	20.88	0.24	1.1%
F	45.36	2.73	6.0%	1.09	0.00	0.0%
G	91.55	4.74	5.2%	2.68	0.21	7.7%
I	63.64	5.61	8.8%	5.08	0.00	0.0%
J	94.79	12.29	13.0%	4.79	0.21	4.3%
L	121.78	2.97	2.4%	3.47	0.00	0.0%
M	63.66	2.70	4.2%	3.00	0.00	0.0%
N	83.07	8.85	10.7%	8.59	0.00	0.0%
O	88.84	6.89	7.8%	7.02	0.00	0.0%
P	55.70	7.59	13.6%	5.70	0.00	0.0%
R	39.89	2.81	7.0%	1.69	0.00	0.0%
S	72.27	5.26	7.3%	12.07	1.16	9.6%
T	113.07	7.19	6.4%	20.77	0.61	2.9%
U	89.83	4.90	5.5%	6.10	0.24	3.9%
V	107.47	12.93	12.0%	23.23	0.00	0.0%
W	98.80	10.16	10.3%	9.36	0.00	0.0%
X	114.65	22.87	19.9%	28.50	1.45	5.1%
Y	82.97	5.61	6.8%	6.61	0.00	0.0%

Part B: Hospitals that contributed data on selected eligible admissions (n=4 hospitals, 316 admissions)

Site	Blood culture			CSF culture		
	Cultures per 100 admission	Positive cultures per 100 admission	% positive cultures	Cultures per 100 admission	Positive cultures per 100 admission	% positive cultures
E	322.47	19.10	5.9%	16.85	0.00	0.0%
H	241.10	30.14	12.5%	26.03	1.37	5.3%
K	235.23	38.64	16.4%	23.86	0.00	0.0%
Q	281.82	30.30	10.8%	43.94	1.52	3.4%

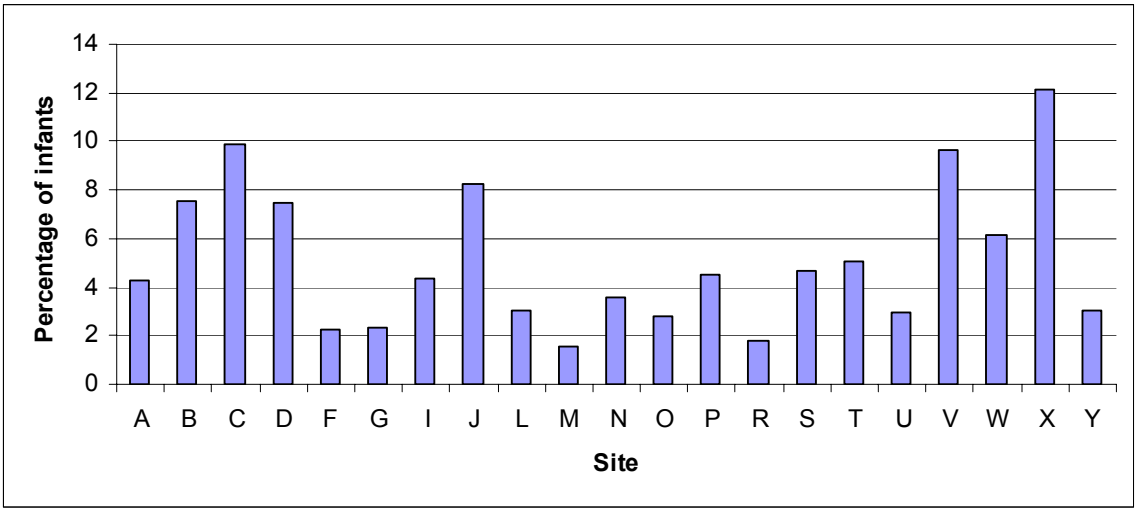
*Note that the criteria for entering infants in the CNN dataset are not same for these four hospitals and thus, the rates may not be comparable with each other.

COMMENTS: Percentage of positive cultures of blood or cerebrospinal fluid for bacteria or fungi at any time during hospital stay varied among sites. This does not include cultures that may have been taken in hospitals of birth prior to transfer.

Presentation #40

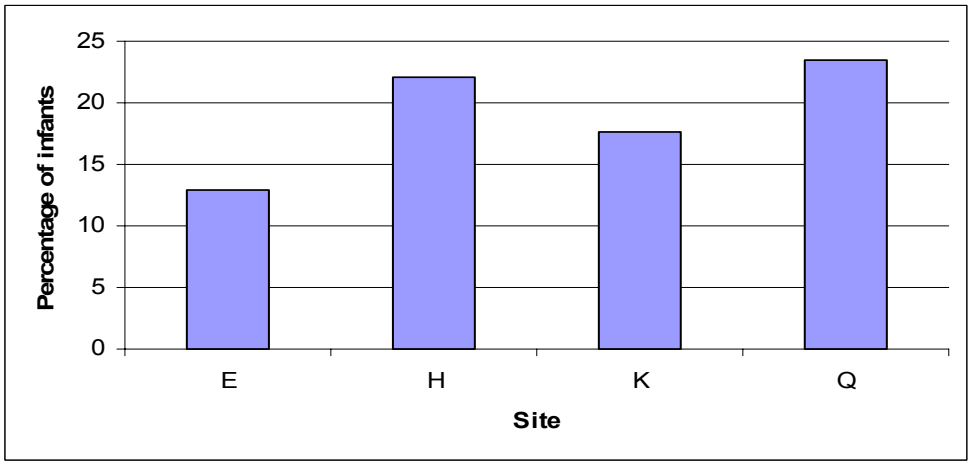
Incidence of Nosocomial Infection*

Part A: Hospitals that contributed data on all eligible admissions (n=21hospitals, 10999 infants, 110 excluded due to the death less than 3 days)



Site	A	B	C	D	F	G	I	J	L	M	N	O	P	R	S	T	U	V	W	X	Y	Mean
%	4.3	7.5	9.9	7.5	2.3	2.3	4.4	8.2	3.0	1.5	3.6	2.8	4.5	1.8	4.6	5.1	3.0	9.6	6.1	12.1	3.1	5.5

Part B: Hospitals that contributed data on selected eligible admissions (n=4 hospitals, 289 infants, 10 excluded due to the death less than 3 days)



Site	E	H	K	Q	Mean
%	12.9	22.1	17.6	23.5	18.3

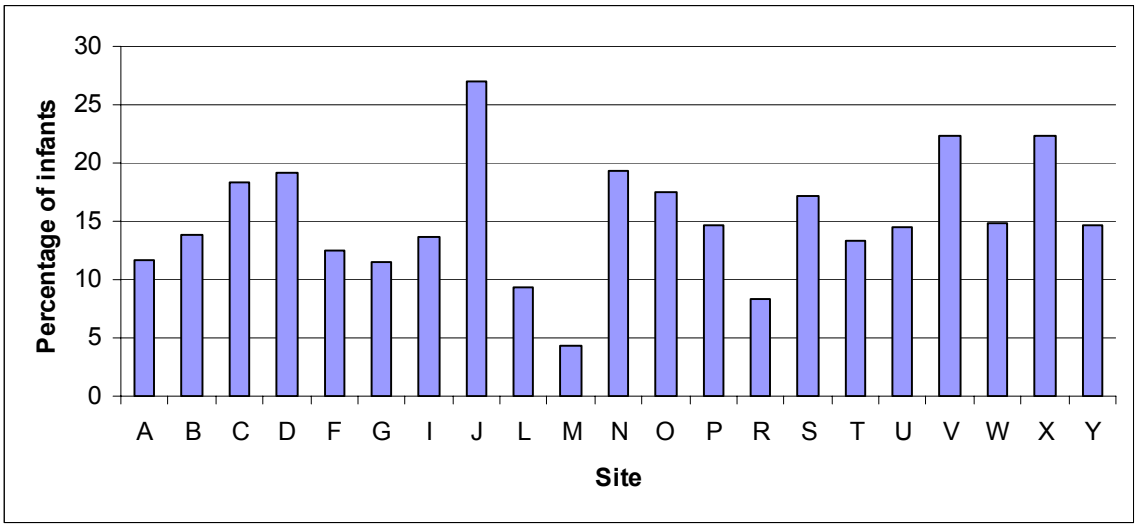
Note that the criteria for entering infants in the CNN dataset are not the same for these four hospitals and thus, the rates may not be comparable with each other.

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 #40a

Incidence of Nosocomial Infection* for infants ≤32 weeks gestational age

a. Hospitals that contributed data on all eligible admissions (n=21 hospitals, 3058 infants, 78 excluded due to death before 3 days of age)



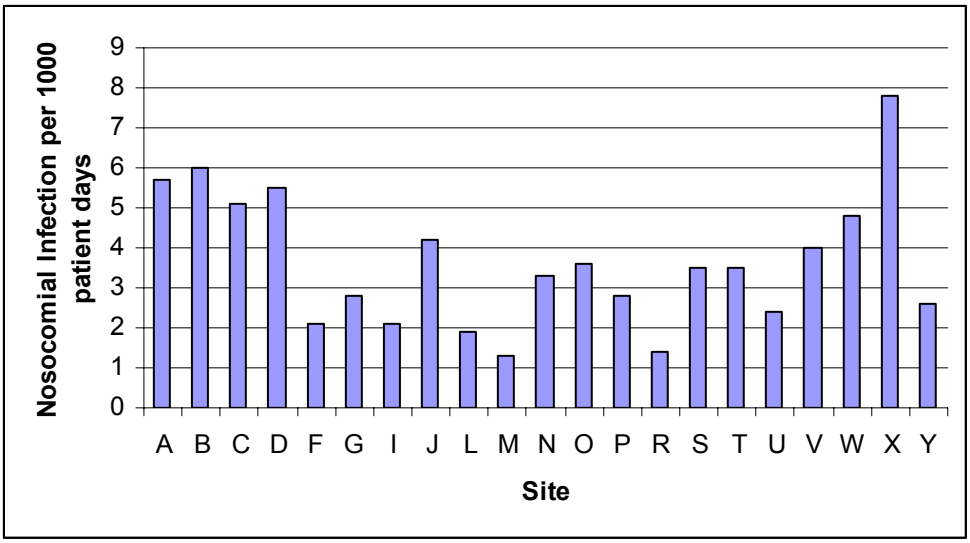
Site	A	B	C	D	F	G	I	J	L	M	N	O	P	R	S	T	U	V	W	X	Y	Mean
%	11.6	13.8	18.3	19.1	12.5	11.5	13.6	27.0	9.3	4.4	19.3	17.5	14.7	8.3	17.2	13.3	14.4	22.3	14.9	22.3	14.6	16.4

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

Presentation #41

Nosocomial Infection per 1000 Patient days*

Part A: Hospitals that contributed data on all eligible admissions (n=21 hospitals, 10815 infants)

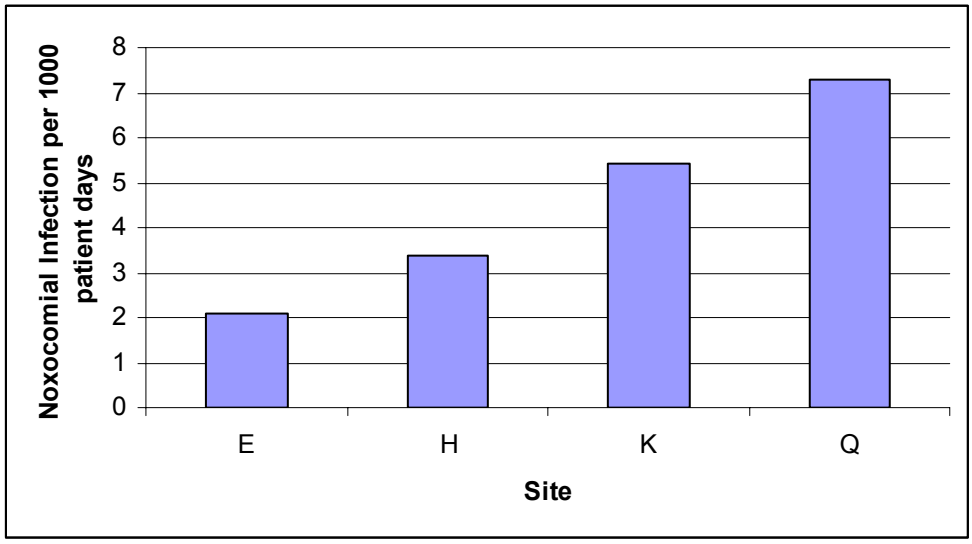


Site	Infections per 1000 patient days
A	5.7
B	6.0
C	5.1
D	5.5
F	2.1
G	2.8
I	2.1
J	4.2
L	1.9
M	1.3
N	3.3
O	3.6
P	2.8
R	1.4
S	3.5
T	3.5
U	2.4
V	4.0
W	4.8
X	7.8
Y	2.6
Total	4.0

Presentation #41 *(continued)*

Nosocomial Infection per 1000 patient days*

Part B: Hospitals that contributed data on selected eligible admissions (n=4 hospitals, 271 infants)



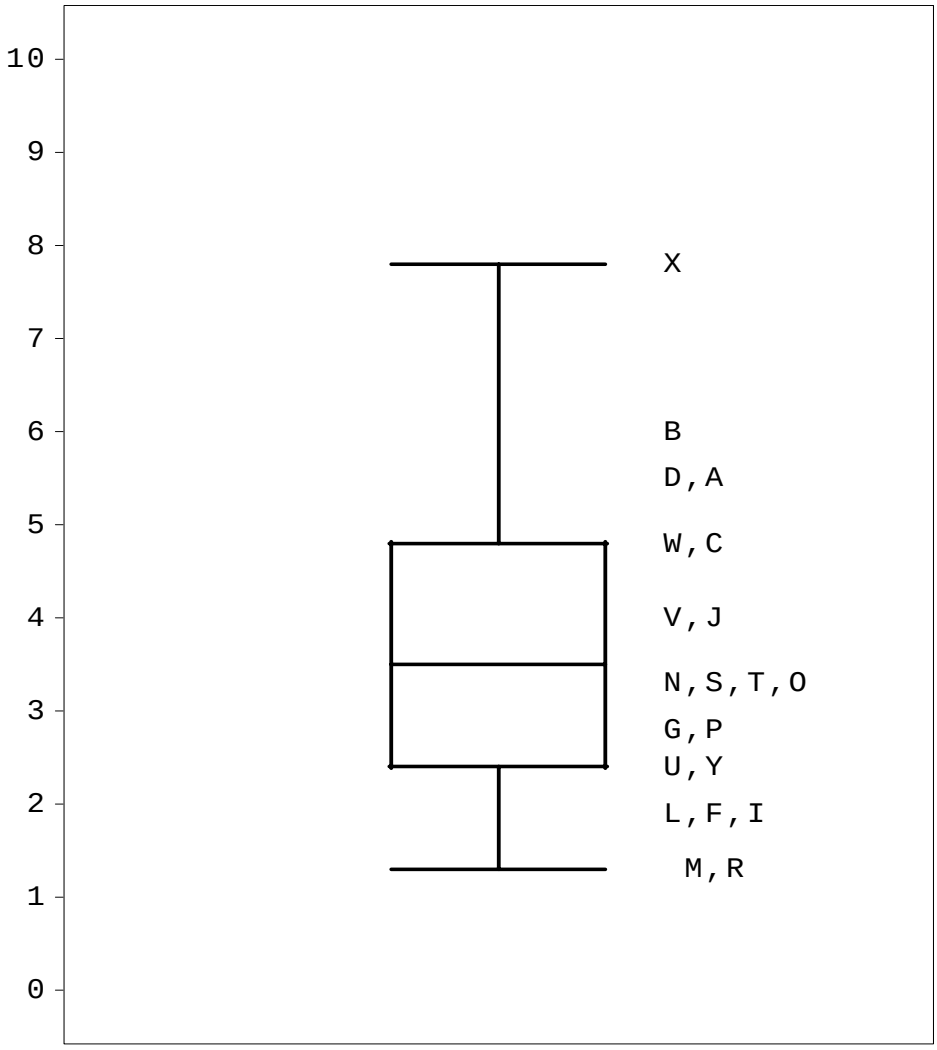
Site	Infections per 1000 patient days
E	2.1
H	3.4
K	5.4
Q	7.3
Total	3.7

*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 each other.

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.

Presentation #42
Nosocomial infection per 1000 patient days among sites

Hospitals that contributed data on all eligible admissions (n=21 hospitals, 10815 infants)



This box plot shows the smallest observation, 25th percentile, median, 75th percentile and largest observation. It also indicates which observations, if any, might be considered outliers.

Presentation #43

Incidence of Bronchopulmonary Dysplasia (28 days) in infants with gestational age ≤32 weeks at birth

Part A: Hospitals that contributed data on all eligible admissions (n=21 hospitals, 2758 infants, 203 excluded due to death prior to day 28 of life)

	Gestational age at birth					
Site	**≤24**	**25-26**	**27-28**	**29-30**	**31-32**	**Overall***
A	80.0	83.3	64.4	26.7	16.1	40.2
B	20.0	40.6	44.8	26.9	30.3	34.6
C	88.9	72.7	34.1	18.0	1.2	26.3
D	50.0	70.4	30.2	10.9	1.0	19.2
F	100.0	100.0	0.0	0.0	0.0	17.4
G	100.0	100.0	100.0	27.3	0.0	22.0
I	100.0	84.2	46.7	3.8	0.0	26.2
J	100.0	82.4	30.0	7.1	0.0	23.3
L	NA	100.0	100.0	33.3	0.0	14.3
M	100.0	92.9	85.7	27.3	4.2	42.1
N	100.0	66.7	28.6	14.3	0.0	15.1
O	NA	87.5	71.4	40.0	7.3	34.1
P	100.0	28.6	44.4	17.6	3.3	20.0
R	100.0	100.0	50.0	16.7	0.0	23.8
S		69.2	46.2	20.0	1.4	20.0
T	90.0	79.1	41.9	16.1	12.4	30.6
U	66.7	54.5	44.4	10.8	5.6	18.8
V	100.0	90.9	86.2	25.0	1.6	38.9
W	100.0	68.8	33.3	11.1	0.0	19.1
X	86.7	57.7	27.4	9.1	1.4	24.7
Y	0.0	100.0	50.0	10.5	7.9	24.1
Overall**	76.0	72.1	43.9	17.0	5.1	27.1

Part B: Hospitals that contributed data on selected eligible admissions (n=4 hospitals, 217 infants, 31 excluded due to death prior to day 28 of life)

	Gestational age at birth					
Site	**≤24**	**25-26**	**27-28**	**29-30**	**31-32**	**Overall***
E	100.0	85.3	63.2	NA	100.0	81.5
H	100.0	70.6	19.4	NA	NA	41.4
K	100.0	83.3	45.0	19.2	7.1	36.5
Q	100.0	45.5	50.0	0.0	NA	50.0
Overall**	100.0	75.7	38.3	18.5	13.3	52.5

*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 each other.
*Note that outcomes are attributed to the hospital of first admission.

NA = no data available

Presentation #44

Incidence of Bronchopulmonary Dysplasia (36 weeks) in infants with gestational age ≤32 weeks at birth

Part A: Hospitals that contributed data on all eligible admissions **(**n=21 hospitals, 2726 infants, 235 excluded due to death prior to week 36)

	Gestational age at birth					
Site	**23-24**	**25-26**	**27-28**	**29-30**	**31-32**	**Overall***
A	85.7	75.0	45.5	28.0	15.1	35.9
B	60.0	54.8	44.8	26.9	21.2	38.8
C	62.5	51.6	27.3	10.0	1.2	18.2
D	50.0	25.9	18.9	9.1	1.0	11.6
F	100.0	33.3	0.0	0.0	0.0	8.7
G	100.0	66.7	100.0	27.3	0.0	20.0
I	66.7	78.9	42.9	3.8	0.0	23.5
J	75.0	47.1	6.9	3.6	0.0	11.0
L	NA	100.0	100.0	33.3	0.0	14.3
M	100.0	64.3	42.9	27.3	8.3	31.6
N	100.0	0.0	14.3	14.3	0.0	7.8
O	NA	57.1	7.1	16.0	2.4	11.5
P	NA	66.7	44.4	14.7	3.3	20.5
R	0.0	100.0	0.0	16.7	0.0	14.3
S	0.0	41.7	37.5	20.0	0.0	14.8
T	87.5	56.1	39.3	16.1	9.3	25.4
U	33.3	33.3	22.2	8.1	2.8	10.6
V	85.7	86.4	75.9	10.6	1.6	31.9
W	100.0	43.8	23.7	8.9	0.0	13.7
X	60.0	47.9	30.6	14.3	1.4	23.2
Y	0.0	16.7	15.4	0.0	7.9	7.8
Overall**	67.7	55.0	33.3	14.5	4.1	21.1

Part B: Hospitals that contributed data on selected eligible admissions (n=4 hospitals, 211 infants, 37 excluded due to death prior to week 36)

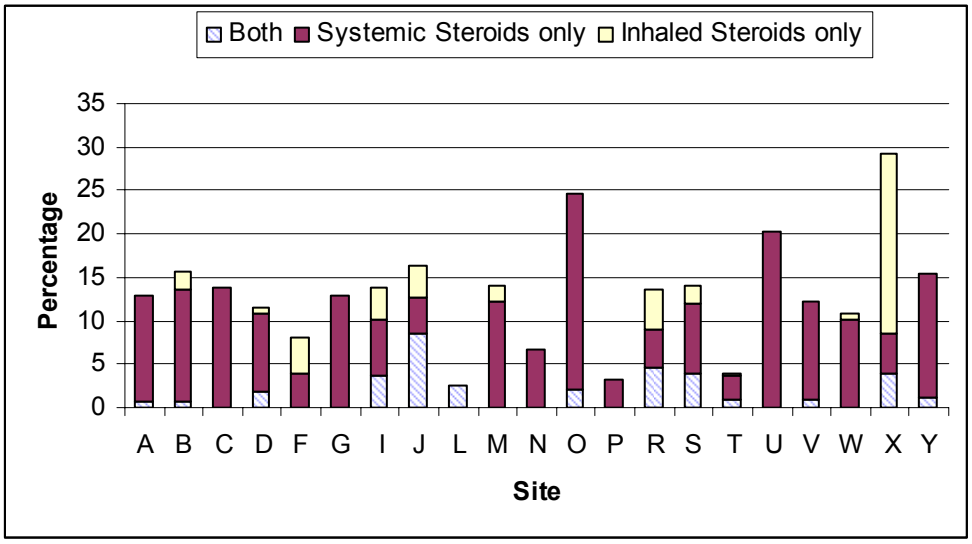
	Gestational age at birth					
Site	**23-24**	**25-26**	**27-28**	**29-30**	**31-32**	**Overall***
E	90.9	61.8	42.1	NA	0.0	60.0
H	50.0	33.3	17.1	NA	NA	24.1
K	100.0	33.3	30.0	12.0	7.1	21.9
Q	100.0	63.6	50.0	0.0	NA	57.9
Overall**	83.3	51.4	28.8	11.5	6.7	37.4

*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 each other.
*Note that outcomes are attributed to the hospital of first admission.
NA = no data available

Presentation #45

Percentage of infants with gestational age ≤32 weeks at birth with postnatal use of steroids for any indication*

Part A: Hospitals that contributed data on all eligible admissions (n=21 hospitals, 2961 infants)

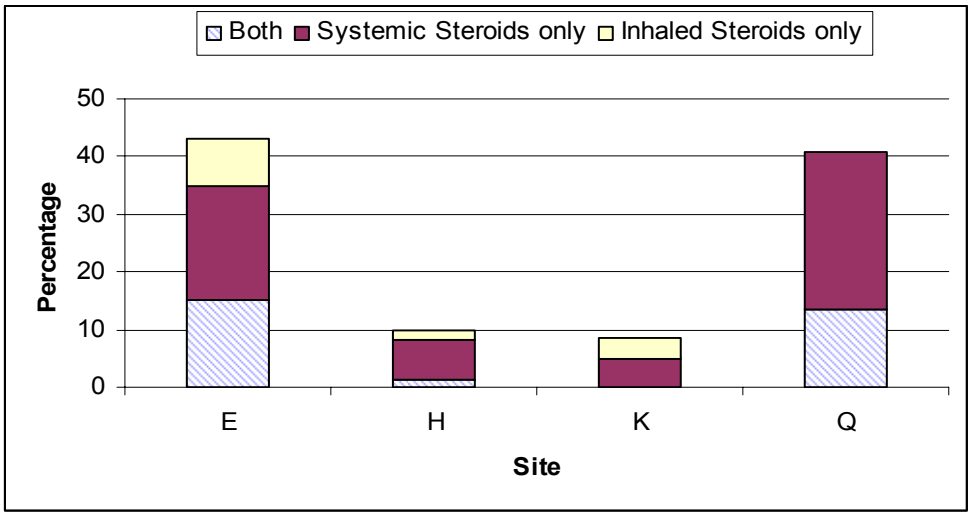


Postnatal steroid use (%)	Site																					
	A	B	C	D	F	G	I	J	L	M	N	O	P	R	S	T	U	V	W	X	Y	Total
Inhaled steroids only	0.0	2.1	0.0	0.8	4	0.0	3.7	3.5	0.0	1.8	0.0	0.0	0.0	4.5	2	0.3	0.0	0.0	0.6	20.7	0.0	2.9
Systemic steroids only	12.1	12.8	13.7	8.8	4	13	6.4	4.3	0.0	12.3	6.8	22.6	3.2	4.5	8	2.8	20.2	11.3	10.2	4.6	14.3	9.1
Both	0.7	0.7	0.0	1.9	0.0	0.0	3.7	8.5	2.6	0.0	0.0	2.2	0.0	4.5	4	0.8	0.0	1	0.0	3.9	1.2	1.8

Presentation #45 *(continued)*

Percentage of infants with gestational age ≤32 weeks at birth with postnatal use of steroids for any indication*

Part B: Hospitals that contributed data on selected eligible admissions (n=4 hospitals, 248 infants)



Postnatal steroid use (%)	Site				
	E	H	K	Q	Total
Inhaled steroids only	8.3	1.4	3.7	0.0	4.0
Systemic steroids only	19.4	6.9	4.9	27.3	11.7
Both	15.3	1.4	0.0	13.6	6.0

*Percentage of infants to each network NICU and result is attributed to original hospital.

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

Presentation #46

Use of narcotics on Day 1 (by birth weight)*

Part A: Hospitals that contributed data on all eligible admissions (n=21 hospitals, 10808 infants, 7 missing data)

Site	<1000		1000-1499		1500-1999		2000-2499		≥2500		Total	
	Bolus	Infusion	Bolus	Infusion	Bolus	Infusion	Bolus	Infusion	Bolus	Infusion	Bolus	Infusion
A	15.8	10.5	7.3	9.2	7.4	4.9	3.1	2.1	7.3	8.1	7.3	6.6
B	51.4	57.8	34.2	35.4	25.4	37.3	17.4	39.1	28.6	46.2	31.4	45.3
C	21.1	22.5	14.4	8.7	15.0	9.3	17.7	11.4	26.4	23.1	20.3	16.3
D	20.8	7.8	15.5	6.9	8.2	3.4	13.9	7.4	12.7	10.3	13.2	8.0
F	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	1.1	0.0
G	28.6	14.3	14.3	4.8	6.3	1.6	6.7	1.3	11.7	1.6	10.5	1.9
I	21.7	17.4	15.7	3.9	5.4	0.0	9.6	0.0	14.7	0.9	12.6	2.9
J	14.6	16.7	11.9	0.0	1.1	0.0	3.1	2.1	4.0	6.2	5.4	4.4
L	21.4	0.0	7.7	0.0	12.0	0.0	3.0	0.0	12.0	0.0	10.9	NA
M	4.5	4.5	0.0	0.0	0.0	0.0	0.0	0.0	3.9	4.4	2.4	2.7
N	38.5	15.4	37.5	0.0	8.8	0.0	11.7	3.3	11.5	5.5	13.8	4.7
O	26.3	10.5	23.1	0.0	20.0	1.3	9.3	2.1	13.6	1.8	14.2	1.9
P	0.0	5.0	7.4	0.0	0.0	0.0	1.5	1.5	4.9	4.1	3.5	2.2
R	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.6	0.0
S	15.0	15.0	18.8	1.4	9.2	2.0	4.7	2.7	6.4	5.2	8.0	4.5
T	3.6	5.1	8.1	5.8	4.0	2.7	3.2	1.9	7.5	6.9	5.8	4.9
U	29.2	20.8	10.2	6.1	8.1	2.3	5.7	4.5	12.3	7.9	11.0	6.9
V	2.9	2.9	12.5	11.3	2.2	6.7	0.0	4.5	7.1	8.9	5.3	7.3
W	11.7	16.7	11.3	3.8	3.2	2.1	1.1	0.0	5.8	4.1	6.0	4.4
X	9.4	16.5	5.8	8.0	2.7	0.9	1.0	0.0	3.0	4.5	4.6	6.3
Y	5.9	11.8	3.0	0.0	4.1	1.4	2.0	5.0	4.4	5.1	3.8	4.4
Total	**16.9**	16.5	12.7	7.1	7.1	3.9	5.6	4.0	10.9	9.0	10.1	7.8

Part B: Hospitals that contributed data on selected eligible admissions (n=4 hospitals, 268 infants, 3 missing data)

Site	<1000		1000-1499		1500-1999		2000-2499		≥2500		Total	
	Bolus	Infusion	Bolus	Infusion	Bolus	Infusion	Bolus	Infusion	Bolus	Infusion	Bolus	Infusion
E	15.5	8.6	23.1	7.7	40.0	40.0	66.7	100.0	75.0	75.0	25.8	20.2
H	4.4	2.2	0.0	0.0	NA	NA	NA	NA	NA	NA	2.7	1.4
K	15.2	6.1	5.9	5.9	0.0	0.0	0.0	0.0	NA	NA	9.2	5.7
Q	37.8	44.4	18.8	31.3	NA	100.0	100.0	100.0	0.0	100.0	32.8	43.8
Total	18.2	15.5	8.4	8.4	22.2	33.3	75.0	100.0	66.7	77.8	17.3	16.6

*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 each other.

* Percentage of admissions in each birth weight category of each site receiving treatment

COMMENT: Please note that use of narcotics on Day 1 was for any indication.

Presentation #47

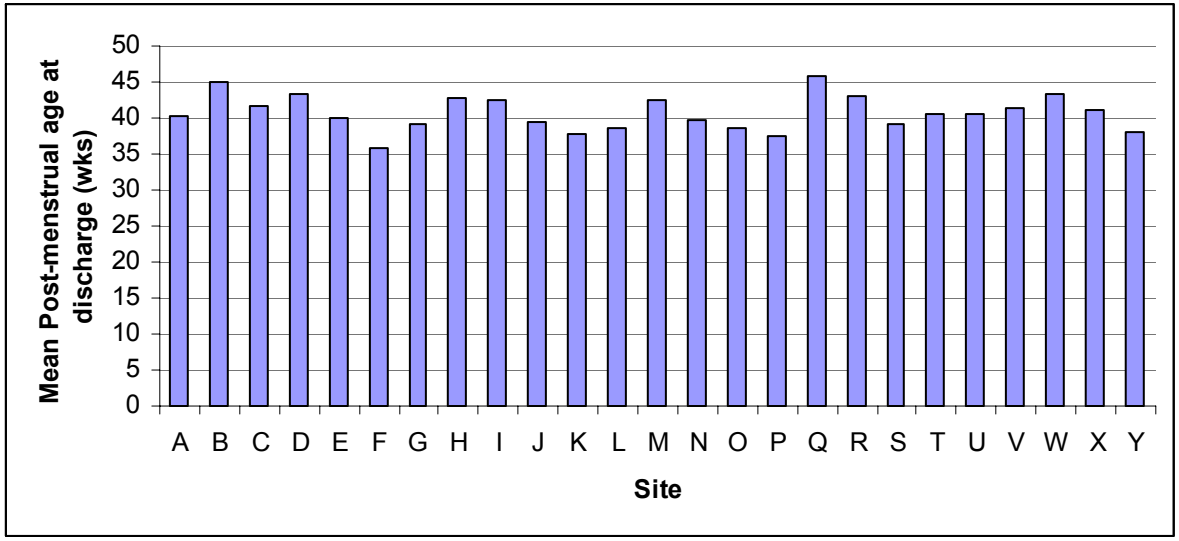
Discharge destination of infants ≤32 weeks (n=2910, Data for 298 infants excluded due to death, Data for one infant missing)

	Home %	Level 1 %	Level 2 %	Level 3 %	Other/unknown %
A	5.8	0.0	90.0	4.2	0.0
B	3.2	0.0	70.2	26.6	0.0
C	13.1	5.6	62.4	18.8	0.0
D	8.5	0.0	87.1	2.8	1.6
E	76.9	10.8	3.1	7.7	1.5
F	73.9	0.0	17.4	8.7	0.0
G	92.0	6.0	0.0	2.0	0.0
H	50.9	34.0	13.2	1.9	0.0
I	54.9	26.5	2.9	15.7	0.0
J	92.1	0.0	3.9	3.9	0.0
K	36.1	0.0	58.3	2.8	2.8
L	68.6	2.9	22.9	5.7	0.0
M	66.7	10.5	19.3	3.5	0.0
N	96.1	0.0	0.0	0.0	3.9
O	85.1	2.3	8.0	1.1	3.4
P	40.7	0.0	52.3	5.8	1.2
Q	47.4	0.0	0.0	47.4	5.3
R	90.5	0.0	0.0	9.5	0.0
S	71.1	0.0	17.6	10.6	0.7
T	11.7	0.0	84.1	4.1	0.0
U	78.3	13.0	7.6	1.1	0.0
V	50.6	0.0	46.3	3.0	0.0
W	19.9	26.1	50.3	3.7	0.0
X	8.9	0.0	86.2	4.8	0.0
Y	89.3	4.0	5.3	1.3	0.0
Total	36.8	4.6	51.3	6.8	0.5

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 #48

Post-menstrual age at discharge home directly from NICU for infants <29 weeks who were discharged home from participating network sites (n=407)



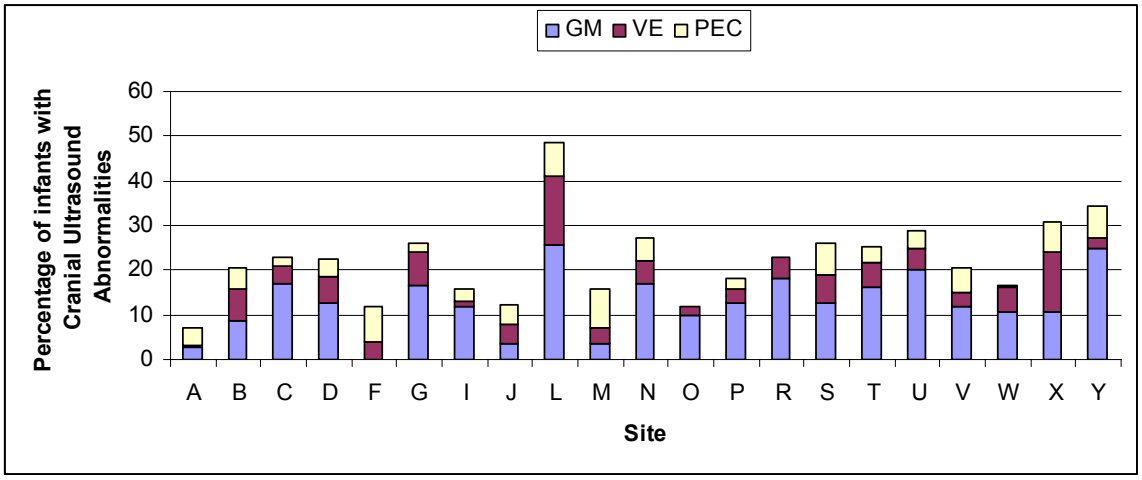
Site	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Mean
Mean	40.4	44.9	41.7	43.4	40.0	35.9	39.3	42.9	42.5	39.4	37.7	38.7	42.5	39.7	38.5	37.5	45.9	43.0	39.2	40.5	40.5	41.3	43.2	41.2	38.1	40.5
Std. Error of Mean	0.9	1.0	1.0	1.8	0.4	0.2	0.6	2.4	1.2	0.7	0.6	0.0	1.4	0.8	0.6	1.1	3.2	2.0	0.5	0.5	0.9	0.4	5.4	1.0	0.7	0.3
Median	40.7	44.9	41.0	40.9	39.4	35.9	38.9	39.6	41.4	37.5	38.7	38.7	41.5	38.6	38.0	38.0	43.9	43.4	38.9	40.1	40.7	41.3	38.6	41.1	37.0	39.6

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

Presentation #49

Incidence of cranial ultrasound abnormalities among infants ≤32 weeks of gestational age

Part A: Hospitals that contributed data on all eligible admissions (n=21 hospitals, 2953 infants, 8 missing data)

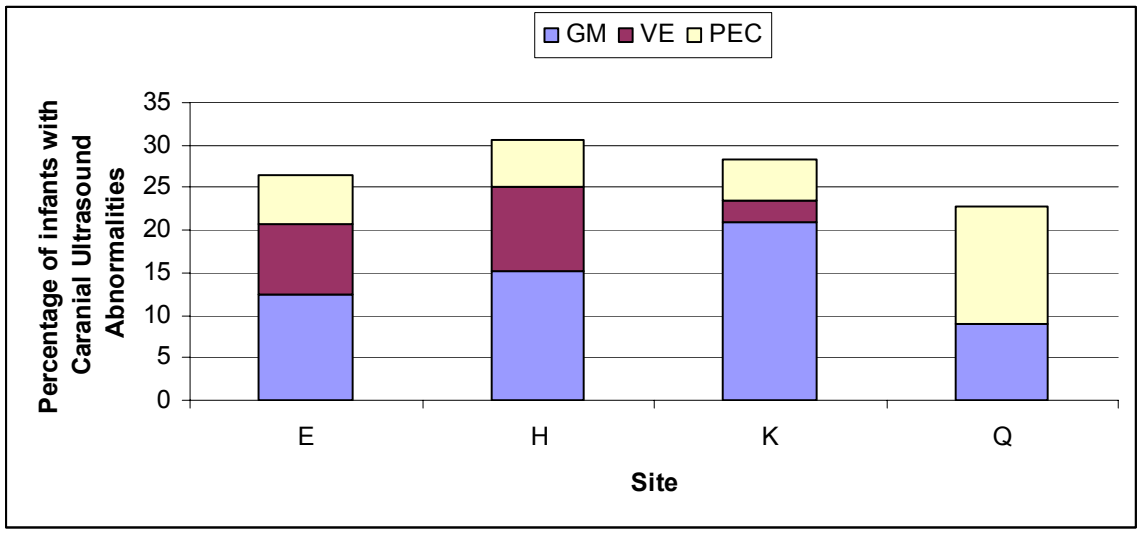


Site	≤24	25-26	27-28	29-30	31-32	Overall %*
A	25.0	15.8	6.5	5.2	2.1	7.0
B	18.2	19.4	30.3	33.3	2.9	20.6
C	60.0	37.8	35.6	16.3	7.6	22.7
D	40.0	43.8	33.9	20.0	8.7	22.6
F	33.3	66.7	0.0	0.0	0.0	12.0
G	33.3	25.0	50.0	45.5	15.6	25.9
I	75.0	23.8	6.7	21.4	4.9	15.6
J	50.0	28.6	3.1	10.7	4.0	12.1
L	100.0	66.7	0.0	77.8	36.0	48.7
M	0.0	28.6	14.3	9.1	12.5	15.8
N	66.7	33.3	33.3	28.6	14.8	27.1
O	75.0	22.2	21.4	8.0	2.4	11.8
P	25.0	50.0	22.2	20.6	3.3	18.1
R	50.0	0.0	50.0	16.7	20.0	22.7
S	50.0	53.3	37.0	34.3	11.4	26.2
T	48.3	38.8	36.8	16.4	14.0	25.1
U	75.0	40.0	20.0	28.9	21.6	28.8
V	13.6	52.0	23.5	21.6	7.9	20.5
W	25.0	22.2	27.5	8.9	13.3	16.8
X	57.1	49.2	39.4	21.5	7.0	30.8
Y	33.3	62.5	78.6	30.0	15.4	34.5
Overall %**	42.3	36.3	28.9	19.3	9.7	21.5

Presentation #49 (*continued*)

Incidence of cranial ultrasound abnormalities among infants ≤32 weeks of gestational age

Part B: Hospitals that contributed data on selected eligible admissions (n=4 hospitals, 247 infants, 1 missing data)



Site	≤24	25-26	27-28	29-30	31-32	Overall %*
E	53.3	24.3	10.5	NA	0.0	26.4
H	46.2	42.9	18.4	NA	NA	30.6
K	50.0	40.0	27.3	21.4	28.6	28.4
Q	50.0	23.1	16.7	NA	NA	22.7
Overall %**	50.0	31.4	18.8	20.7	26.7	27.9

*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 each other.

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.

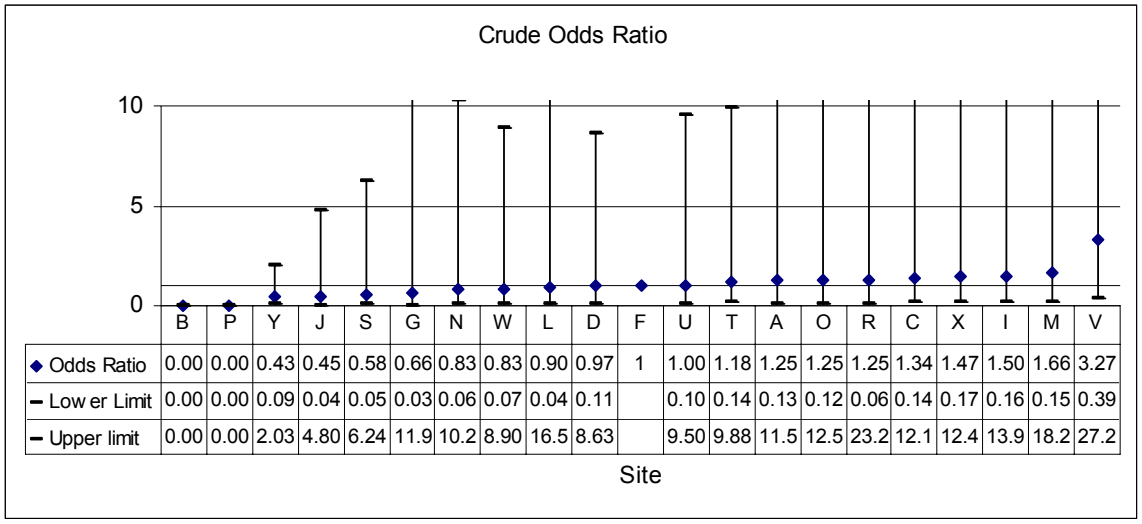
The goal of logistic regression is to find the best fitting (yet biologically reasonable) model to describe the relationship between the dichotomous characteristic of interest (dependent variable = response or outcome variable) and a set of independent (predictor or explanatory) variables. Logistic regression 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:

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

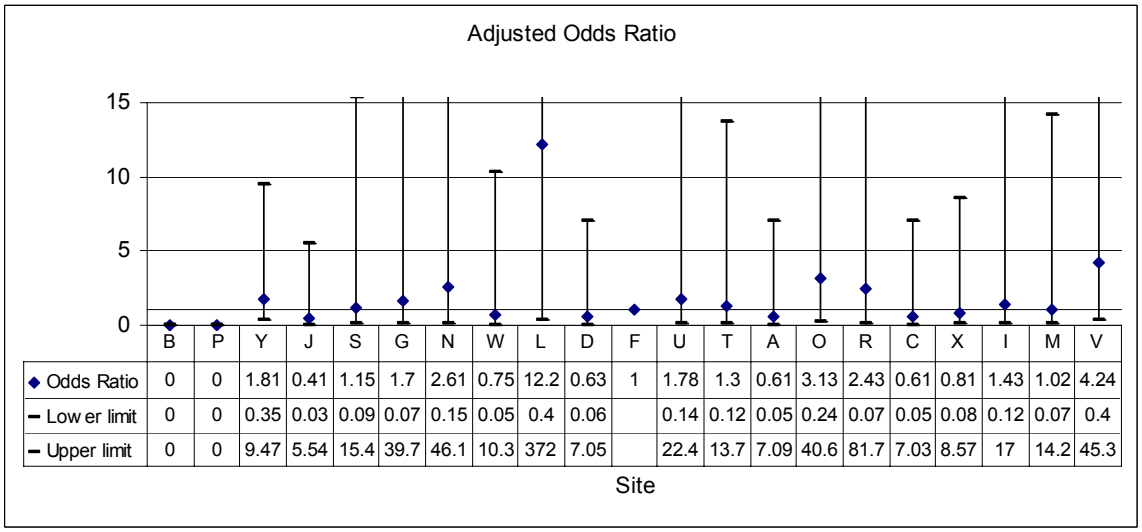
where p is the probability of presence of the characteristic of interest

Presentation #50
Site comparison of retinopathy of prematurity stage 3 and higher

Part A: Hospitals that contributed data on all eligible admissions **(n=21 hospitals, 1022 infants[#])**



	B	P	Y	J	S	G	N	W	L	D	F	U	T	A	O	R	C	X	I	M	V
◆ Odds Ratio	0.00	0.00	0.43	0.45	0.58	0.66	0.83	0.83	0.90	0.97	1	1.00	1.18	1.25	1.25	1.25	1.34	1.47	1.50	1.66	3.27
– Low er Limit	0.00	0.00	0.09	0.04	0.05	0.03	0.06	0.07	0.04	0.11		0.10	0.14	0.13	0.12	0.06	0.14	0.17	0.16	0.15	0.39
– Upper limit	0.00	0.00	2.03	4.80	6.24	11.9	10.2	8.90	16.5	8.63		9.50	9.88	11.5	12.5	23.2	12.1	12.4	13.9	18.2	27.2



	B	P	Y	J	S	G	N	W	L	D	F	U	T	A	O	R	C	X	I	M	V
◆ Odds Ratio	0	0	1.81	0.41	1.15	1.7	2.61	0.75	12.2	0.63	1	1.78	1.3	0.61	3.13	2.43	0.61	0.81	1.43	1.02	4.24
– Low er limit	0	0	0.35	0.03	0.09	0.07	0.15	0.05	0.4	0.06		0.14	0.12	0.05	0.24	0.07	0.05	0.08	0.12	0.07	0.4
– Upper limit	0	0	9.47	5.54	15.4	39.7	46.1	10.3	372	7.05		22.4	13.7	7.09	40.6	81.7	7.03	8.57	17	14.2	45.3

Reference site: F

[#]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.

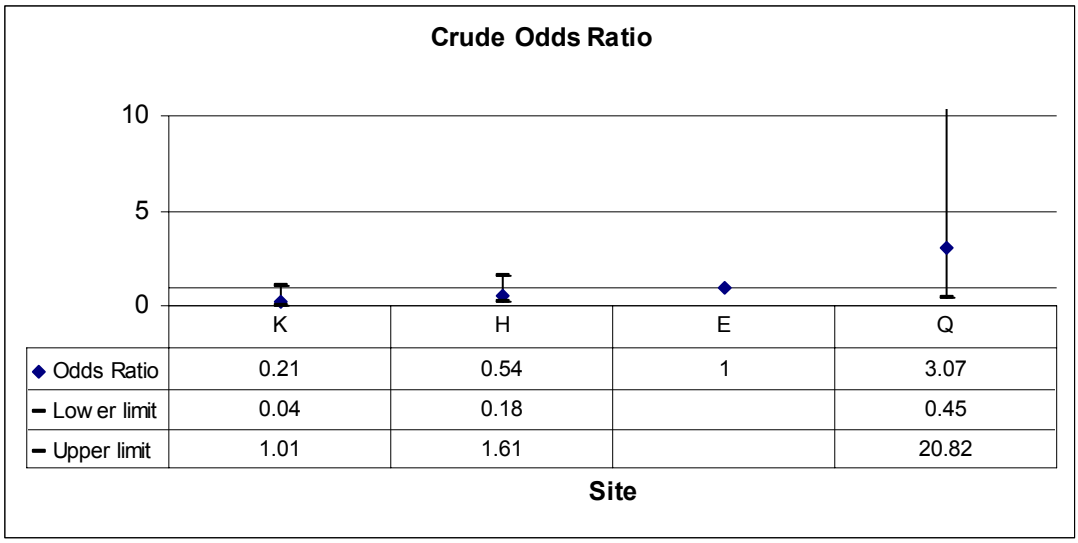
Significant predictors identified by multivariate analysis and adjusted for:

Gestational age
Multiple Gestations

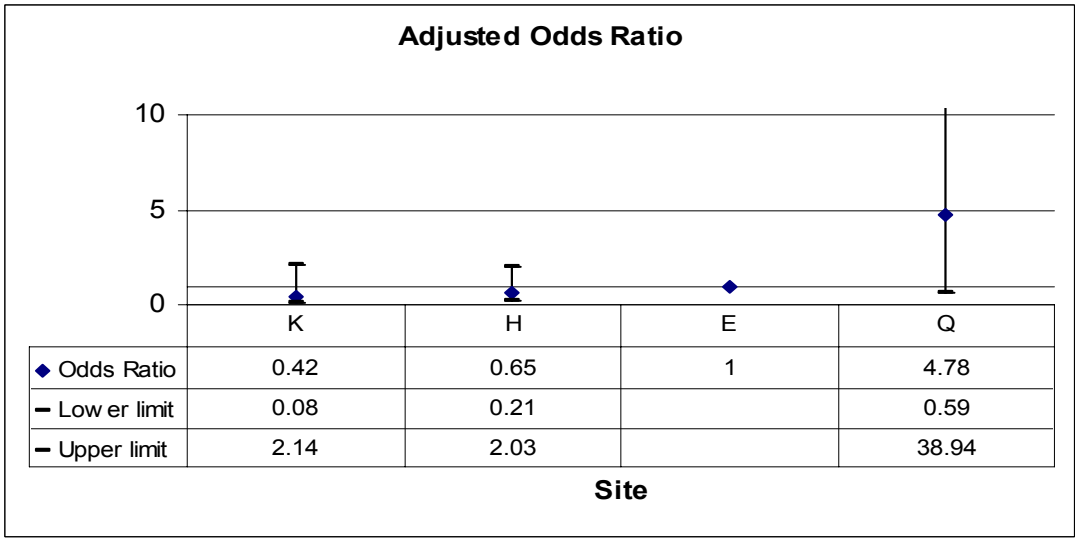
Presentation #50 (*continued*)

Site comparison of retinopathy of prematurity stage 3 and higher

Part B: Hospitals that contributed data on selected eligible admissions **(n=4 hospitals, 164 infants[#])**



	K	H	E	Q
◆ Odds Ratio	0.21	0.54	1	3.07
– Lower limit	0.04	0.18		0.45
– Upper limit	1.01	1.61		20.82



	K	H	E	Q
◆ Odds Ratio	0.42	0.65	1	4.78
– Lower limit	0.08	0.21		0.59
– Upper limit	2.14	2.03		38.94

*****Please 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 each other.

Reference site: E

[#]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.

Significant predictors identified by multivariate analysis and adjusted for:

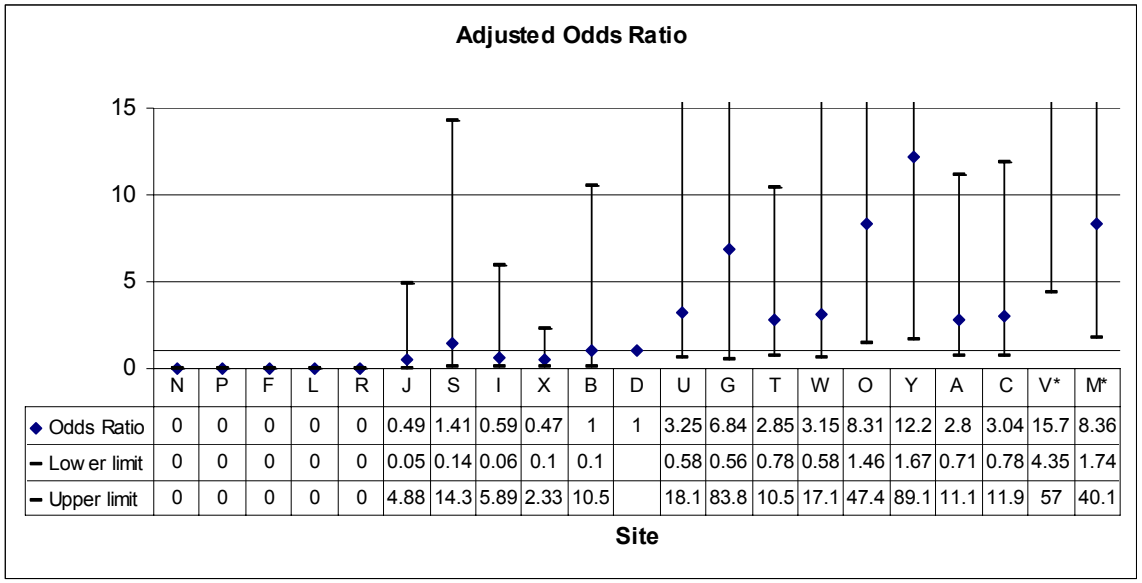
Gestational age

Note: retinopathy of prematurity refers to stage 3 and above

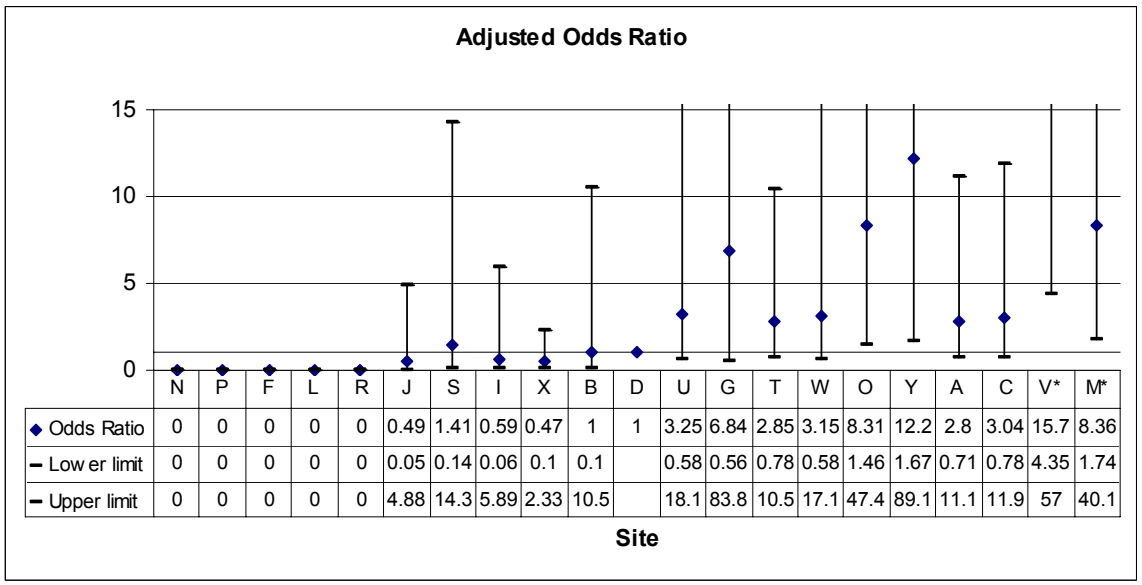
Presentation #51

Site comparison of cryo/laser therapy for retinopathy of prematurity

Part A: Hospitals that contributed data on all eligible admissions **(n=21 hospitals, 1022 infants[#])**



	N	P	F	L	R	J	S	I	X	B	D	U	G	T	W	O	Y	A	C	V*	M*
◆ Odds Ratio	0	0	0	0	0	0.49	1.41	0.59	0.47	1	1	3.25	6.84	2.85	3.15	8.31	12.2	2.8	3.04	15.7	8.36
– Lower limit	0	0	0	0	0	0.05	0.14	0.06	0.1	0.1		0.58	0.56	0.78	0.58	1.46	1.67	0.71	0.78	4.35	1.74
– Upper limit	0	0	0	0	0	4.88	14.3	5.89	2.33	10.5		18.1	83.8	10.5	17.1	47.4	89.1	11.1	11.9	57	40.1



	N	P	F	L	R	J	S	I	X	B	D	U	G	T	W	O	Y	A	C	V*	M*
◆ Odds Ratio	0	0	0	0	0	0.49	1.41	0.59	0.47	1	1	3.25	6.84	2.85	3.15	8.31	12.2	2.8	3.04	15.7	8.36
– Lower limit	0	0	0	0	0	0.05	0.14	0.06	0.1	0.1		0.58	0.56	0.78	0.58	1.46	1.67	0.71	0.78	4.35	1.74
– Upper limit	0	0	0	0	0	4.88	14.3	5.89	2.33	10.5		18.1	83.8	10.5	17.1	47.4	89.1	11.1	11.9	57	40.1

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

[#]Inclusion criteria:
Birth weight <1500g
Screened for ROP
Age at admission less than 4 days

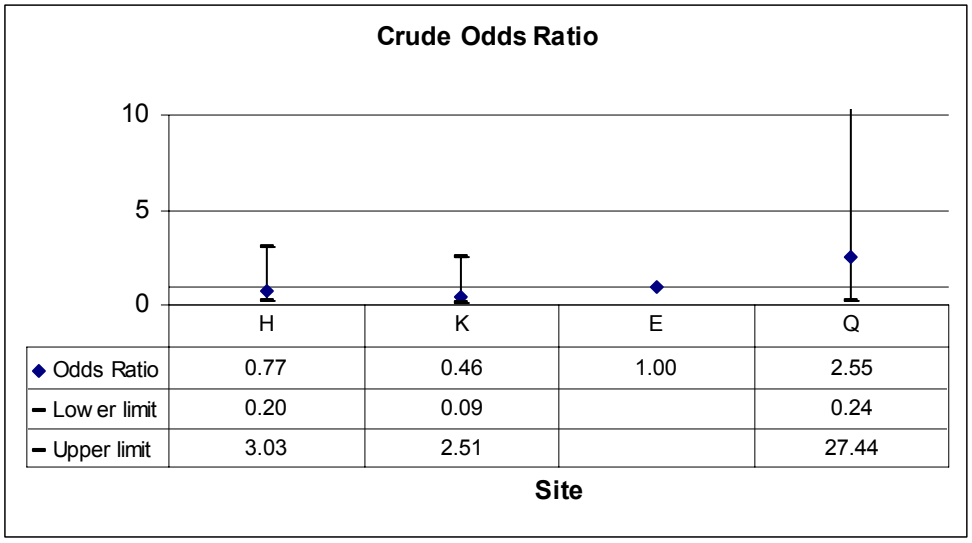
Outcome is attributed to the network hospital of first admission.

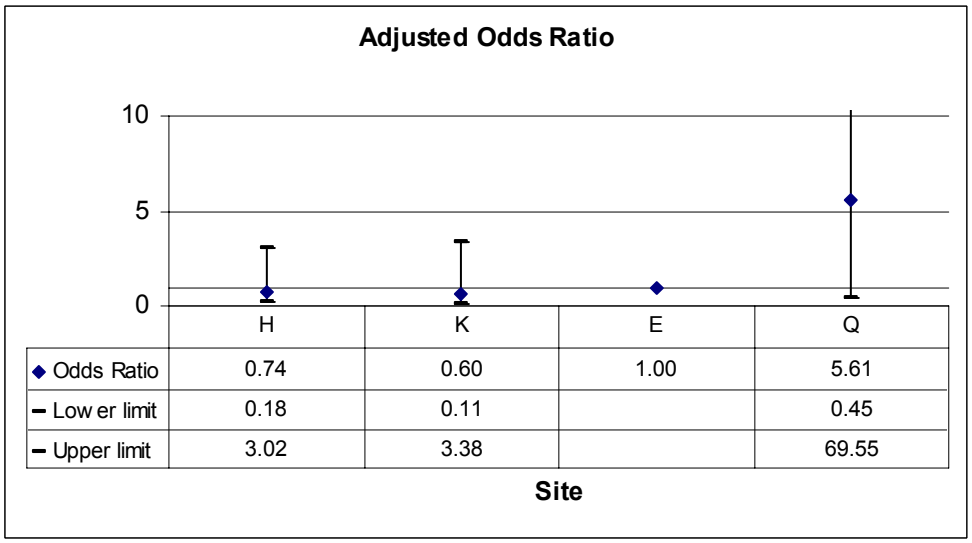
Significant predictors identified by multivariate analysis and adjusted for:

Gestational age
Gender

Presentation #51 (*continued*)
Site comparison of cryo/laser therapy for retinopathy of prematurity

Part B: Hospital with data on selected eligible admissions (n=4 hospitals, 164 infants[#])





Reference site: E

[#]Inclusion criteria:
Birth weight <1500g
Screened for ROP
Age at admission less than 4 days

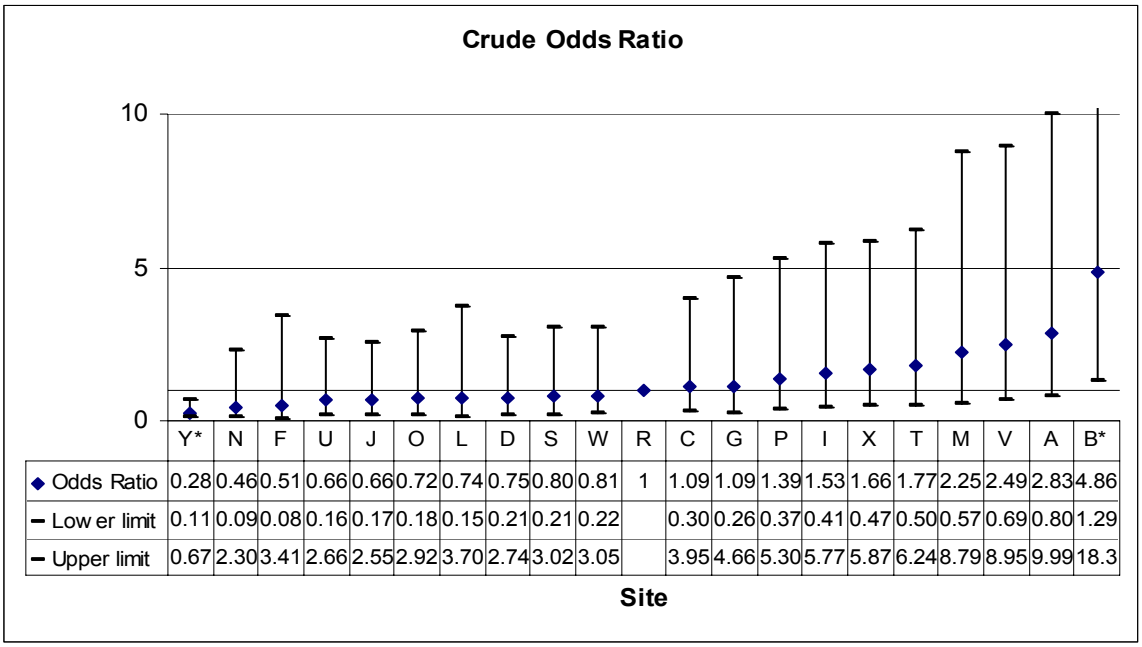
Outcome is attributed to the network hospital of first admission.

Significant predictors identified by multivariate analysis and adjusted for:

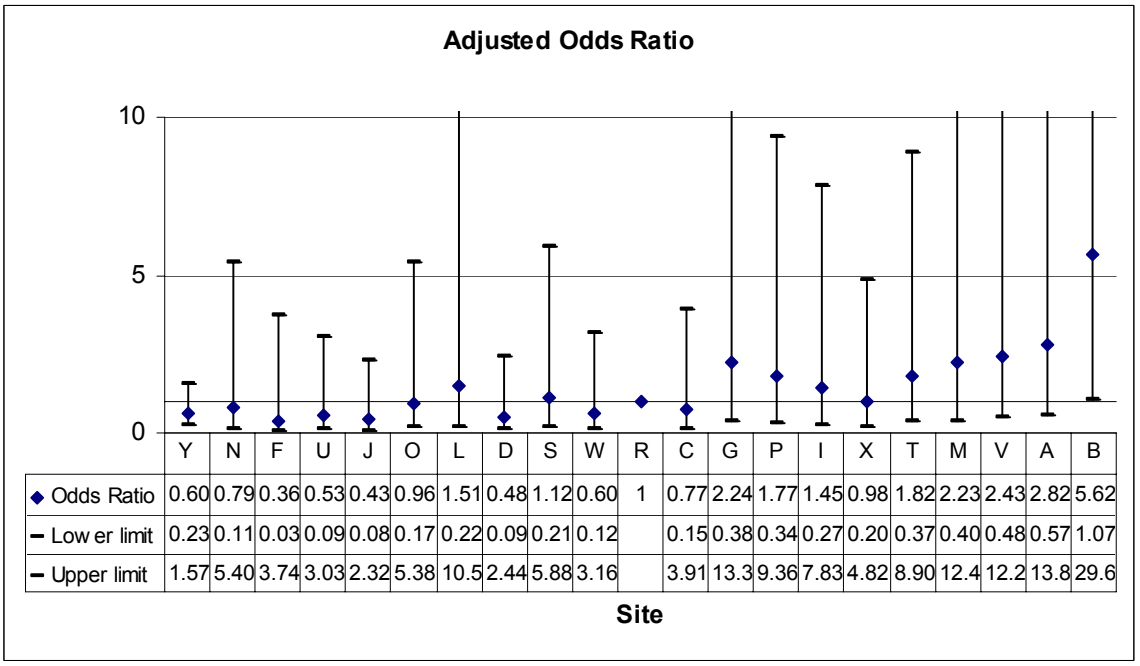
SNAP-II score

Presentation #52
Site comparison of oxygen dependency at 36 weeks post-menstrual age

Part A: Hospital with data on all eligible admissions **(n=21 hospitals, 2557 infants[#])**



	Y*	N	F	U	J	O	L	D	S	W	R	C	G	P	I	X	T	M	V	A	B*
Odds Ratio	0.28	0.46	0.51	0.66	0.66	0.72	0.74	0.75	0.80	0.81	1	1.09	1.09	1.39	1.53	1.66	1.77	2.25	2.49	2.83	4.86
Lower limit	0.11	0.09	0.08	0.16	0.17	0.18	0.15	0.21	0.21	0.22		0.30	0.26	0.37	0.41	0.47	0.50	0.57	0.69	0.80	1.29
Upper limit	0.67	2.30	3.41	2.66	2.55	2.92	3.70	2.74	3.02	3.05		3.95	4.66	5.30	5.77	5.87	6.24	8.79	8.95	9.99	18.3



	Y	N	F	U	J	O	L	D	S	W	R	C	G	P	I	X	T	M	V	A	B
Odds Ratio	0.60	0.79	0.36	0.53	0.43	0.96	1.51	0.48	1.12	0.60	1	0.77	2.24	1.77	1.45	0.98	1.82	2.23	2.43	2.82	5.62
Lower limit	0.23	0.11	0.03	0.09	0.08	0.17	0.22	0.09	0.21	0.12		0.15	0.38	0.34	0.27	0.20	0.37	0.40	0.48	0.57	1.07
Upper limit	1.57	5.40	3.74	3.03	2.32	5.38	10.5	2.44	5.88	3.16		3.91	13.3	9.36	7.83	4.82	8.90	12.4	12.2	13.8	29.6

Reference site: R

[#]Inclusion criteria:
Gestational age <33 weeks
Age at admission less than 4 days
Survival to 36 weeks post-menstrual age

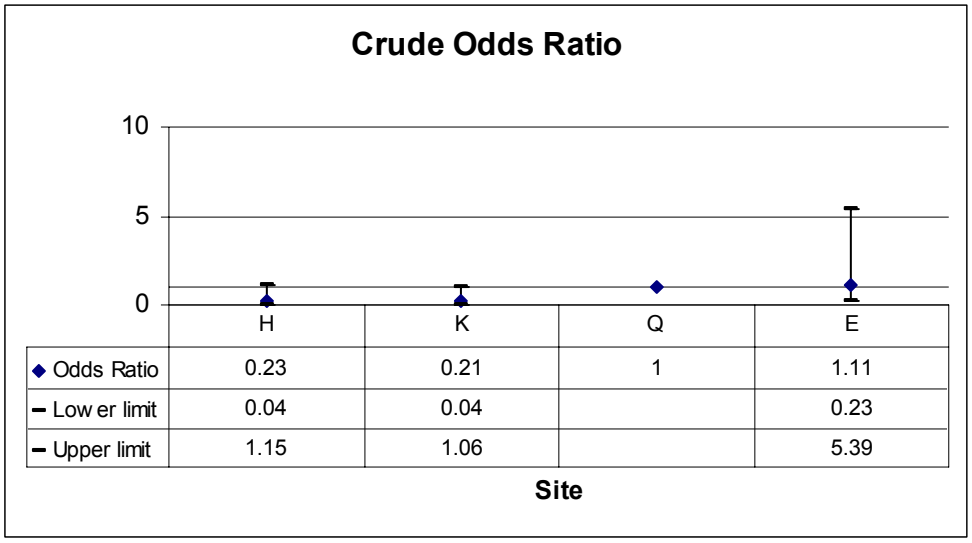
Outcome is attributed to the network hospital of first admission.

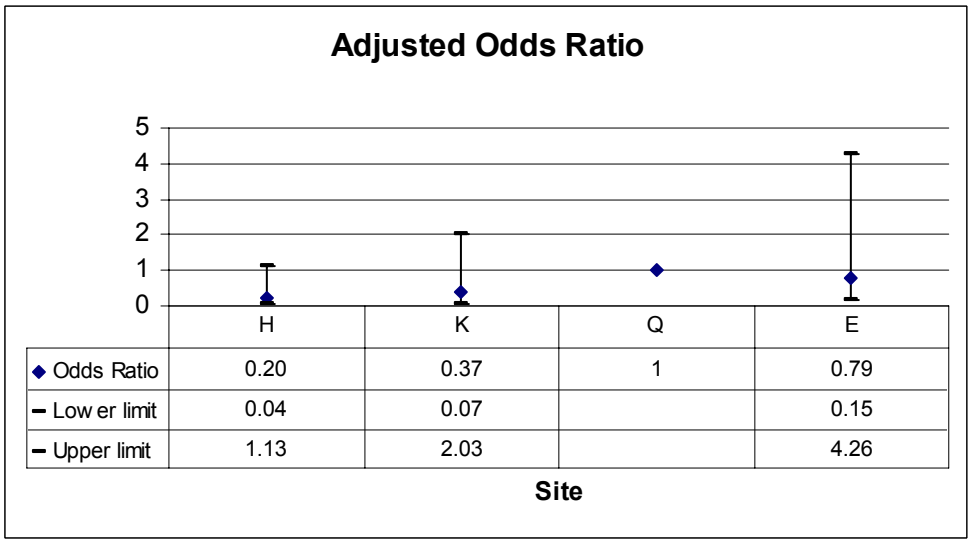
Significant predictors identified by multivariate analysis and adjusted for:

SNAP-II score
Gestational age
Gender
SGA

Presentation #52 (*continued*)
Site comparison of oxygen dependency at 36 weeks post-menstrual age

Part B: Hospitals with data on selected eligible admissions (n=4 hospitals, 193 infants[#])





Reference site: Q

[#]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.

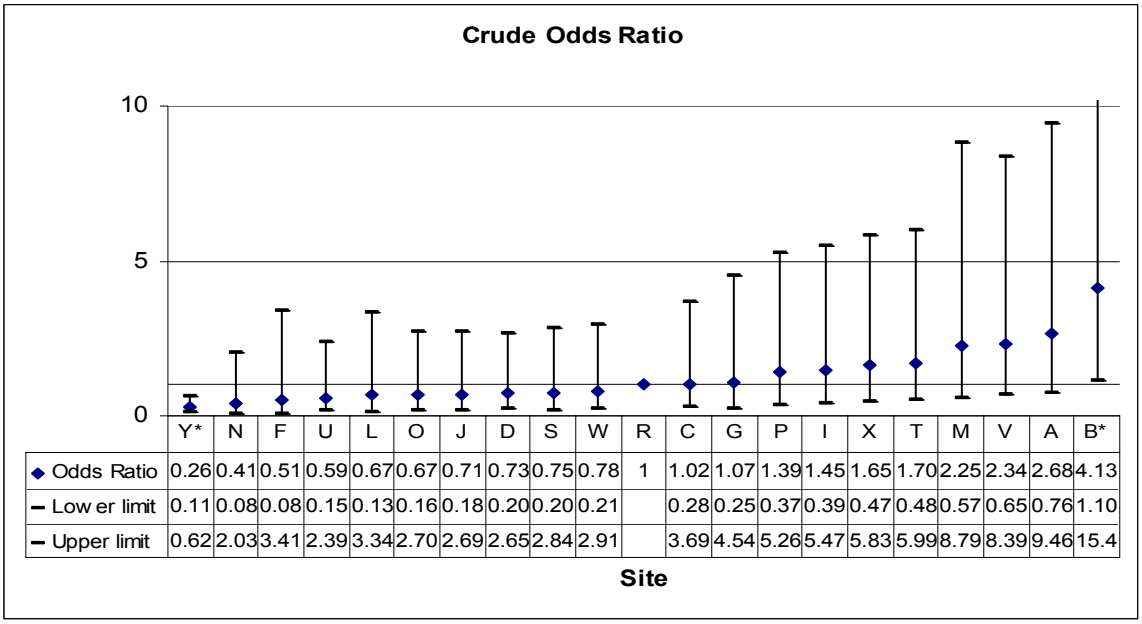
Significant predictors identified by multivariate analysis and adjusted for:

Gestational age

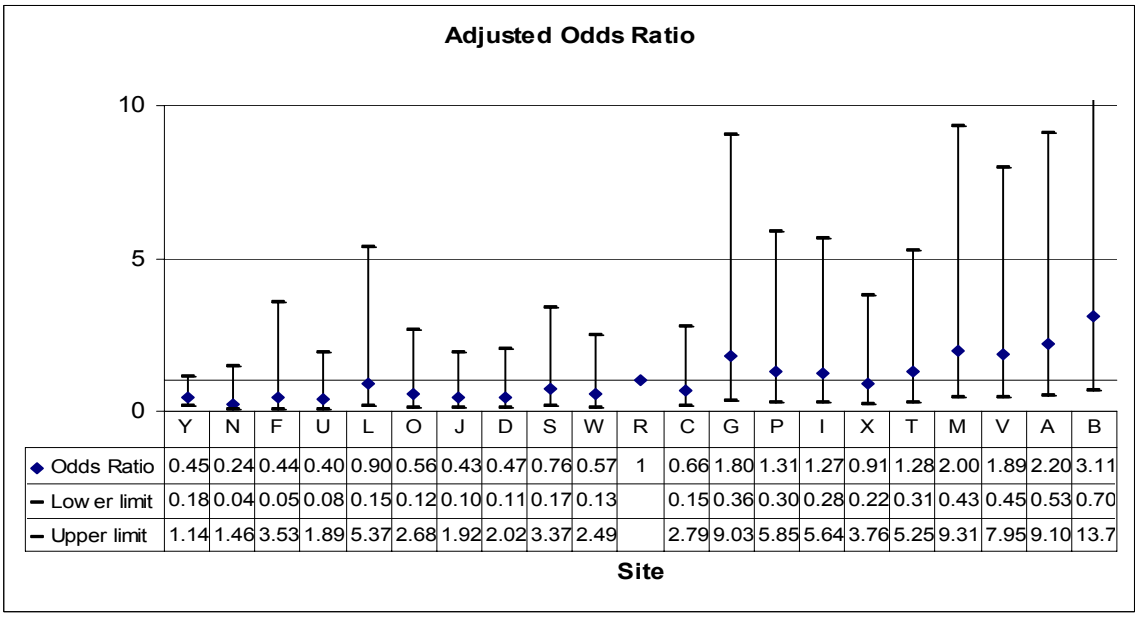
Please note that the criteria for entering infants in the CNN dataset are not same for these four hospitals and thus, the rates may not be comparable with each other.

Presentation #53
Site comparison of oxygen dependency at 36 weeks post-menstrual age or death

Part A: Hospitals that contributed data on all eligible admissions **(n=21 hospitals, 2708 infants[#])**



	Y*	N	F	U	L	O	J	D	S	W	R	C	G	P	I	X	T	M	V	A	B*
Odds Ratio	0.26	0.41	0.51	0.59	0.67	0.67	0.71	0.73	0.75	0.78	1	1.02	1.07	1.39	1.45	1.65	1.70	2.25	2.34	2.68	4.13
Lower limit	0.11	0.08	0.08	0.15	0.13	0.16	0.18	0.20	0.20	0.21		0.28	0.25	0.37	0.39	0.47	0.48	0.57	0.65	0.76	1.10
Upper limit	0.62	2.03	3.41	2.39	3.34	2.70	2.69	2.65	2.84	2.91		3.69	4.54	5.26	5.47	5.83	5.99	8.79	8.39	9.46	15.4



	Y	N	F	U	L	O	J	D	S	W	R	C	G	P	I	X	T	M	V	A	B
Odds Ratio	0.45	0.24	0.44	0.40	0.90	0.56	0.43	0.47	0.76	0.57	1	0.66	1.80	1.31	1.27	0.91	1.28	2.00	1.89	2.20	3.11
Lower limit	0.18	0.04	0.05	0.08	0.15	0.12	0.10	0.11	0.17	0.13		0.15	0.36	0.30	0.28	0.22	0.31	0.43	0.45	0.53	0.70
Upper limit	1.14	1.46	3.53	1.89	5.37	2.68	1.92	2.02	3.37	2.49		2.79	9.03	5.85	5.64	3.76	5.25	9.31	7.95	9.10	13.7

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

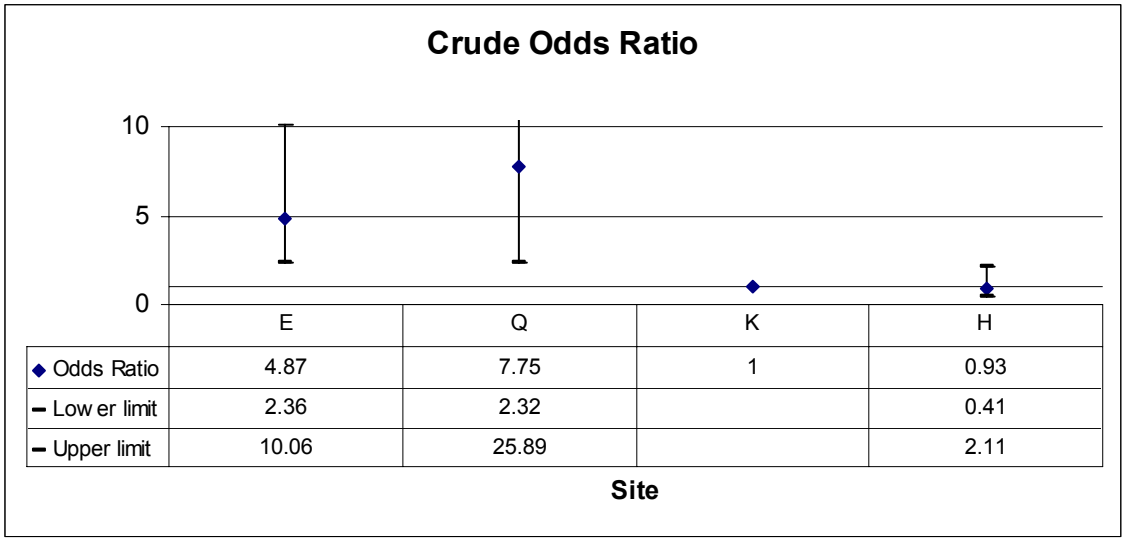
[#]Inclusion criteria:
Gestational age <33 weeks
Age at admission less than 4 days
Survival to 36 weeks post-menstrual age or death before 36 weeks post-menstrual age and beyond 3 days of age
Outcome is attributed to the network hospital of first admission.

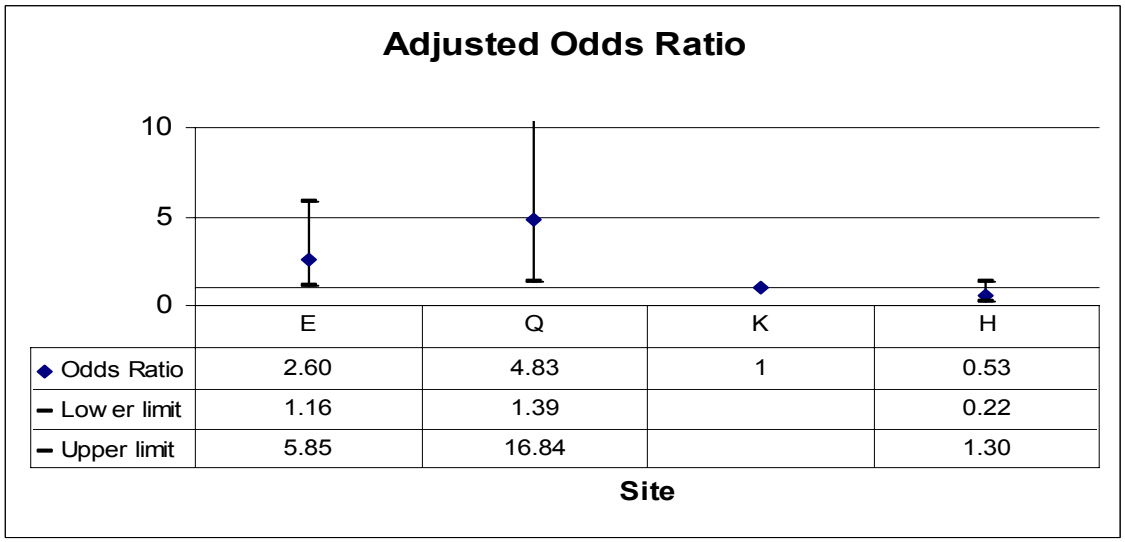
Significant predictors identified by multivariate analysis and adjusted for:

Gender
Gestational age
SNAP-II score
SGA

Presentation #53 (*continued*)
Site comparison of oxygen dependency at 36 weeks post-menstrual age or death

Part B: Hospitals that contributed data on selected eligible admissions **(n=4 hospitals, 230 infants[#])**





Reference site: K

[#]Inclusion criteria:
Gestational age <33 weeks
Age at admission less than 4 days
Survival to 36 weeks post-menstrual age or death before 36 weeks post-menstrual age and beyond 3 days of life

Outcome is attributed to the network hospital of first admission.

Significant predictors identified by multivariate analysis and adjusted for:

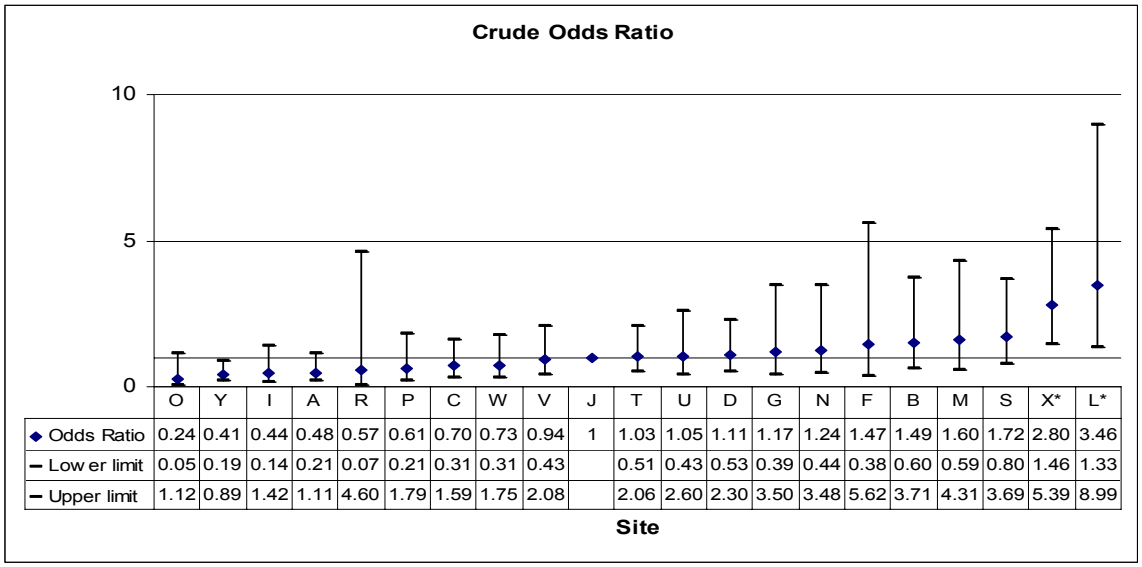
Gestational age

*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 each other.

Presentation #54

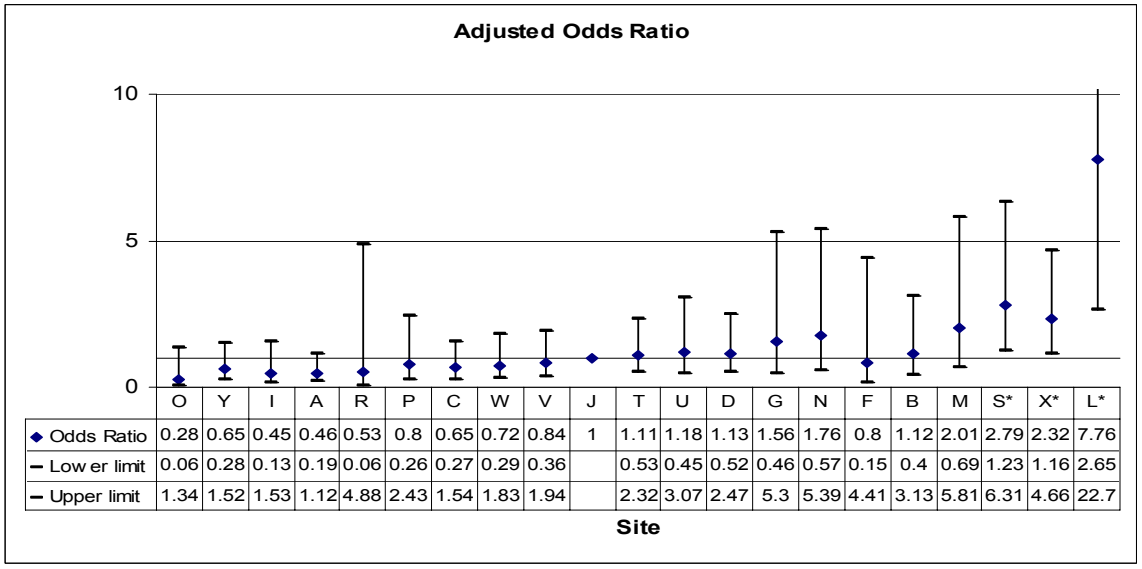
Site comparison of Significant cranial ultrasound abnormality (VE or PEC) among infants <33 weeks gestational age

Part A: Hospitals that contributed data on all eligible admissions **(n=21 hospitals, 2781 infants[#])**



	O	Y	I	A	R	P	C	W	V	J	T	U	D	G	N	F	B	M	S	X*	L*
◆ Odds Ratio	0.24	0.41	0.44	0.48	0.57	0.61	0.70	0.73	0.94	1	1.03	1.05	1.11	1.17	1.24	1.47	1.49	1.60	1.72	2.80	3.46
– Lower limit	0.05	0.19	0.14	0.21	0.07	0.21	0.31	0.31	0.43		0.51	0.43	0.53	0.39	0.44	0.38	0.60	0.59	0.80	1.46	1.33
– Upper limit	1.12	0.89	1.42	1.11	4.60	1.79	1.59	1.75	2.08		2.06	2.60	2.30	3.50	3.48	5.62	3.71	4.31	3.69	5.39	8.99

Site



	O	Y	I	A	R	P	C	W	V	J	T	U	D	G	N	F	B	M	S*	X*	L*
◆ Odds Ratio	0.28	0.65	0.45	0.46	0.53	0.8	0.65	0.72	0.84	1	1.11	1.18	1.13	1.56	1.76	0.8	1.12	2.01	2.79	2.32	7.76
– Lower limit	0.06	0.28	0.13	0.19	0.06	0.26	0.27	0.29	0.36		0.53	0.45	0.52	0.46	0.57	0.15	0.4	0.69	1.23	1.16	2.65
– Upper limit	1.34	1.52	1.53	1.12	4.88	2.43	1.54	1.83	1.94		2.32	3.07	2.47	5.3	5.39	4.41	3.13	5.81	6.31	4.66	22.7

Site

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

[#]Inclusion criteria:
Gestational age <33 weeks
Age at admission less than 4 days
Ultrasound reports in the first two weeks of life

Outcome is attributed to the network hospital of first admission.

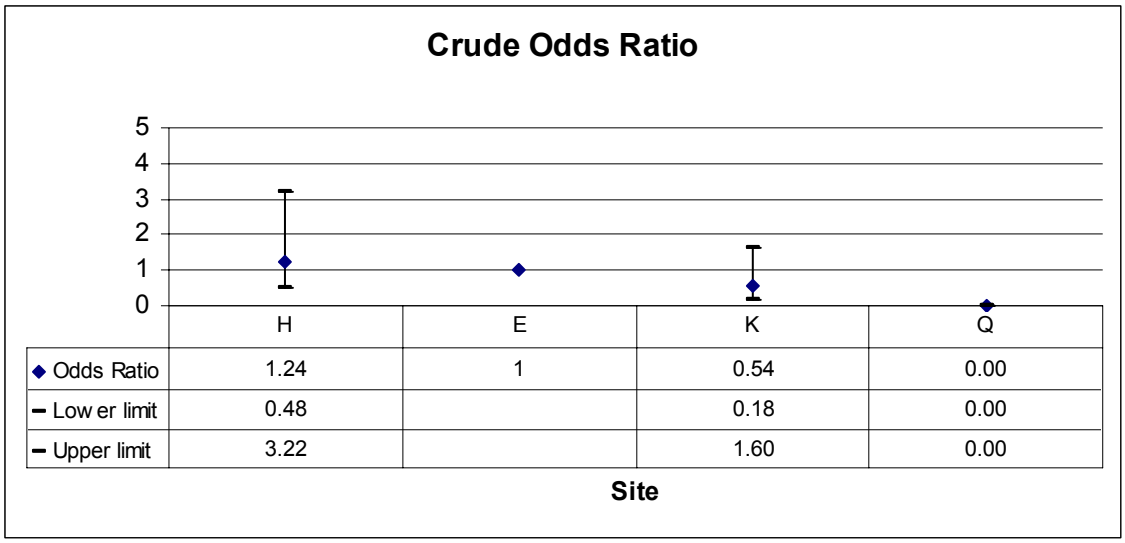
Significant predictors identified by multivariate analysis and adjusted for:

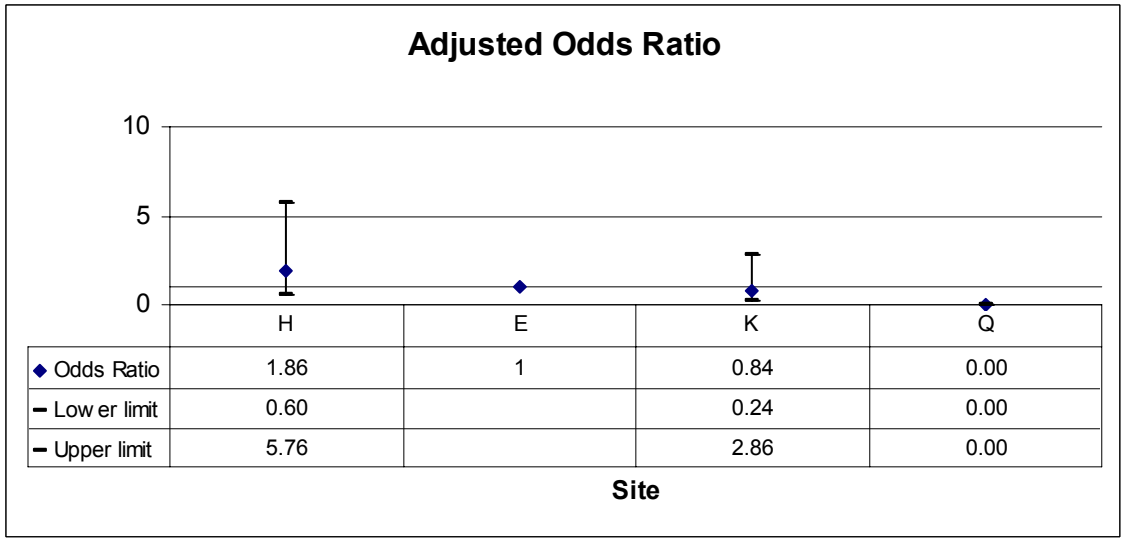
Admission SNAP-II score
Gestational age
Apgar at 5 minutes
Cesarean section
Antenatal corticosteroid use
Outborn

Presentation #54 (*continued*)

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

Part B: Hospitals that contributed data on selected eligible admissions **(n=4 hospitals, 227 infants[#])**





*****Please 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 each other.

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

Outcome is attributed to the network hospital of first admission.

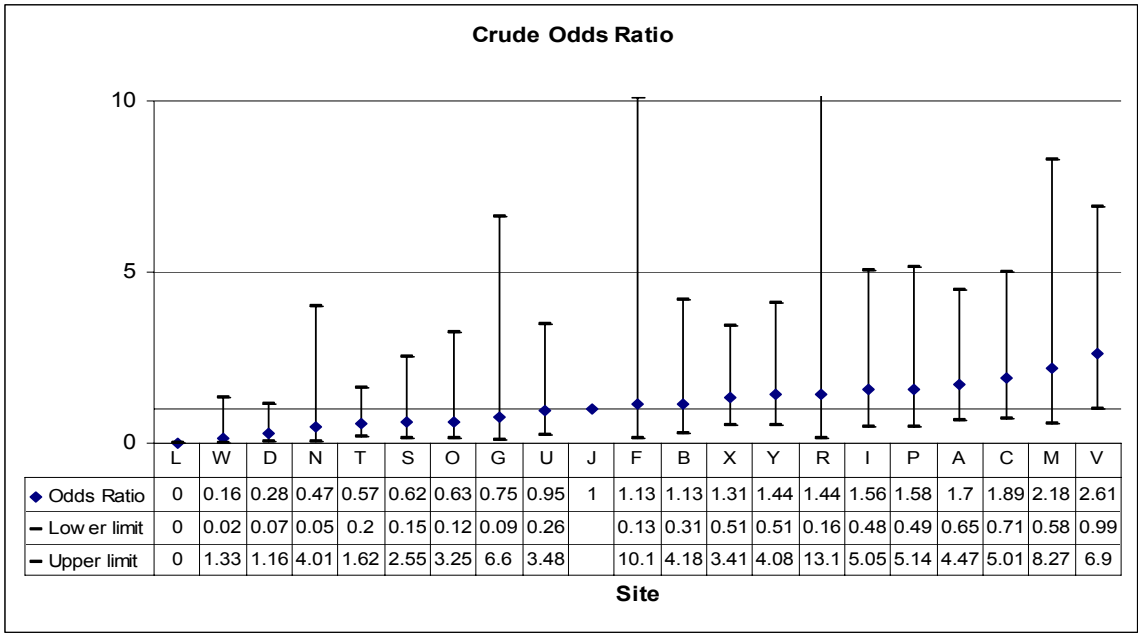
Significant predictors identified by multivariate analysis and adjusted for:

Admission SNAP-II score
Apgar at 5 minutes
Cesarean section

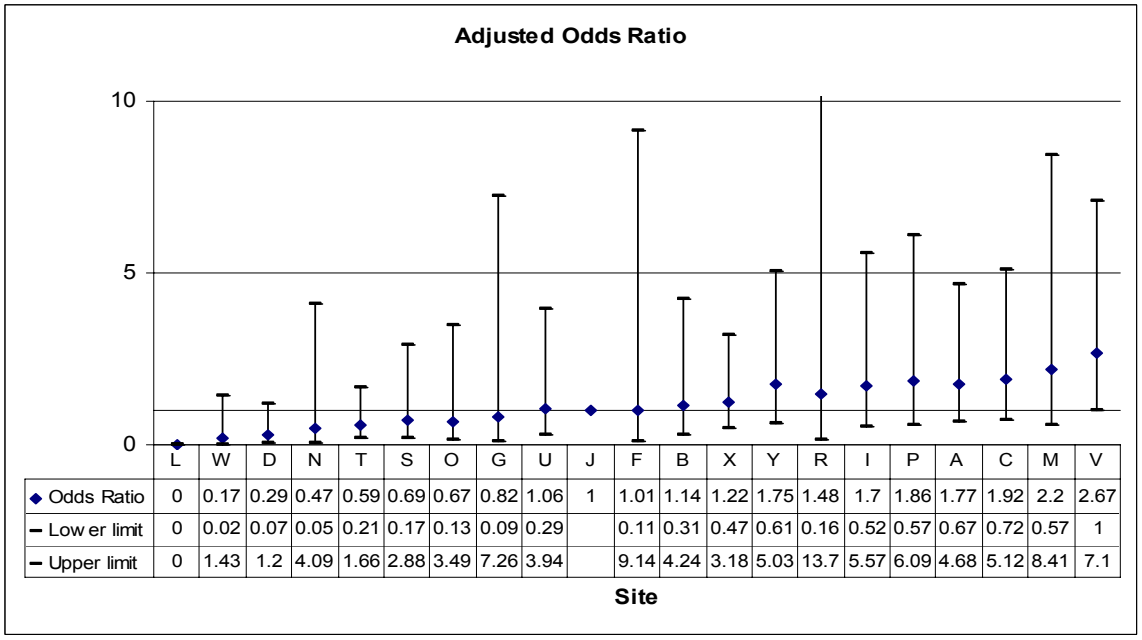
Presentation #55

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

Part A: Hospitals that contributed data on all eligible admissions **(n=21 hospitals, 1948 infants[#])**



	L	W	D	N	T	S	O	G	U	J	F	B	X	Y	R	I	P	A	C	M	V
◆ Odds Ratio	0	0.16	0.28	0.47	0.57	0.62	0.63	0.75	0.95	1	1.13	1.13	1.31	1.44	1.44	1.56	1.58	1.7	1.89	2.18	2.61
– Lower limit	0	0.02	0.07	0.05	0.2	0.15	0.12	0.09	0.26		0.13	0.31	0.51	0.51	0.16	0.48	0.49	0.65	0.71	0.58	0.99
– Upper limit	0	1.33	1.16	4.01	1.62	2.55	3.25	6.6	3.48		10.1	4.18	3.41	4.08	13.1	5.05	5.14	4.47	5.01	8.27	6.9



	L	W	D	N	T	S	O	G	U	J	F	B	X	Y	R	I	P	A	C	M	V
◆ Odds Ratio	0	0.17	0.29	0.47	0.59	0.69	0.67	0.82	1.06	1	1.01	1.14	1.22	1.75	1.48	1.7	1.86	1.77	1.92	2.2	2.67
– Lower limit	0	0.02	0.07	0.05	0.21	0.17	0.13	0.09	0.29		0.11	0.31	0.47	0.61	0.16	0.52	0.57	0.67	0.72	0.57	1
– Upper limit	0	1.43	1.2	4.09	1.66	2.88	3.49	7.26	3.94		9.14	4.24	3.18	5.03	13.7	5.57	6.09	4.68	5.12	8.41	7.1

Reference site: J

[#]Inclusion criteria:
Birth weight <1500g
Age at admission less than 4 days

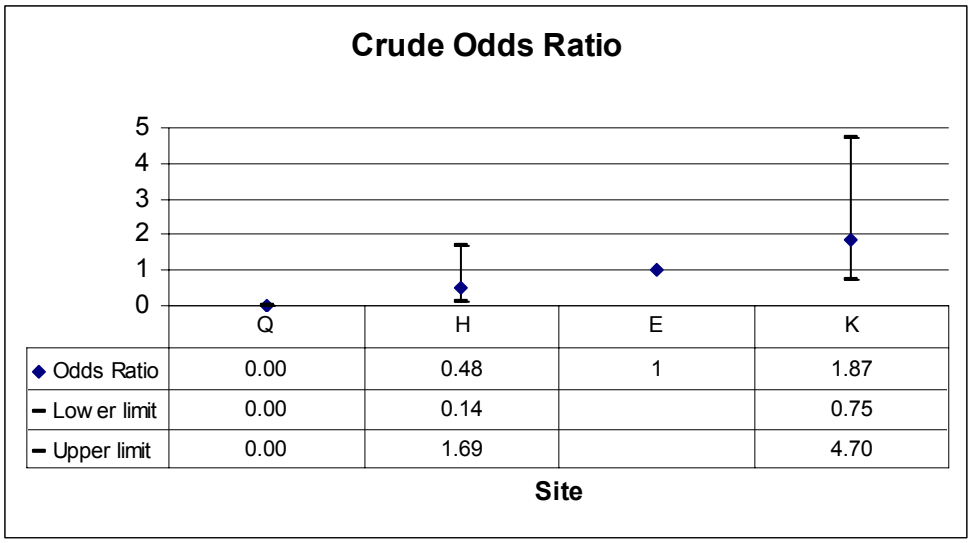
Outcome is attributed to the network hospital of first admission.

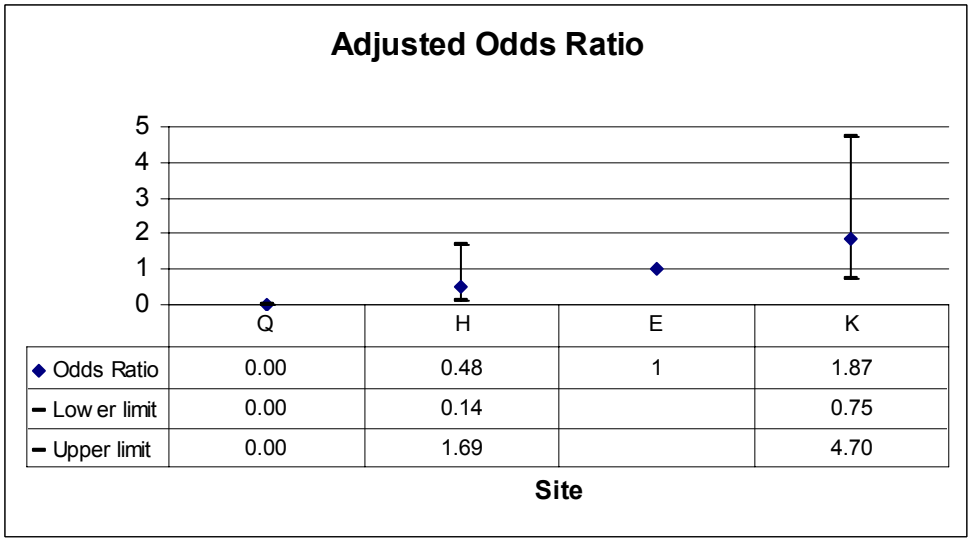
Significant predictors identified by multivariate analysis and adjusted for:

Gestational age

Presentation #55 (*continued*)
Site comparison of necrotizing enterocolitis among infants <1500g at birth

Part B: Hospitals that contributed data on selected eligible admissions **(n=4 hospitals, 218 infants[#])**





*Please 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 each other.

Reference site: E

[#]Inclusion criteria:
Birth weight <1500g
Age at admission less than 4 days

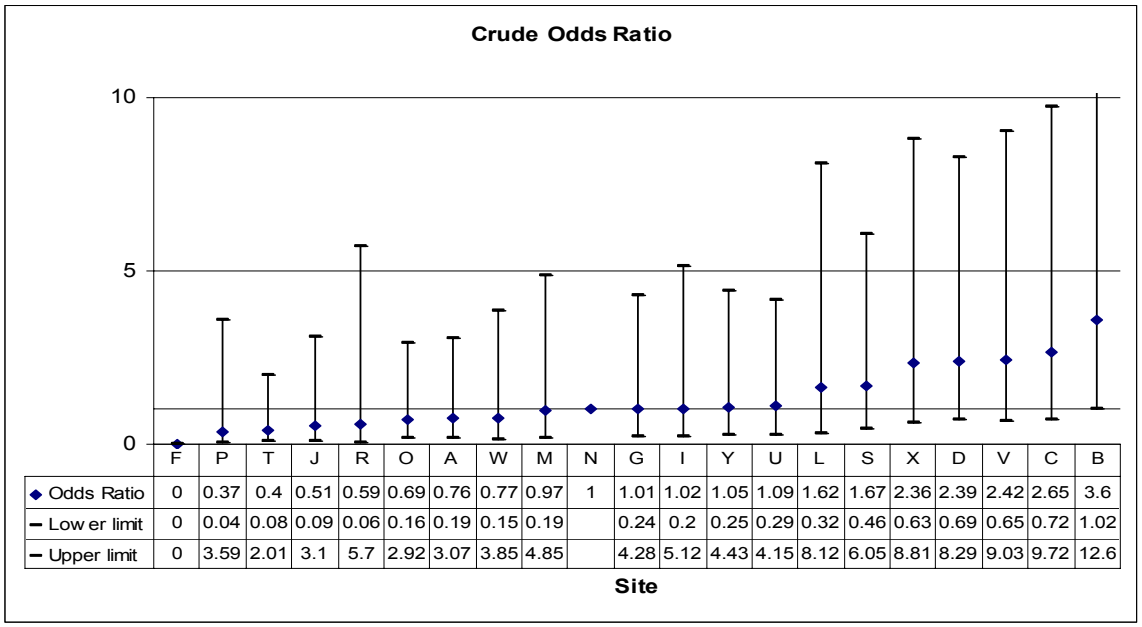
Outcome is attributed to the network hospital of first admission.

No Significant predictors identified by multivariate analysis. Therefore, the adjusted Odds Ratio is the same as the Crude Odds Ratio.

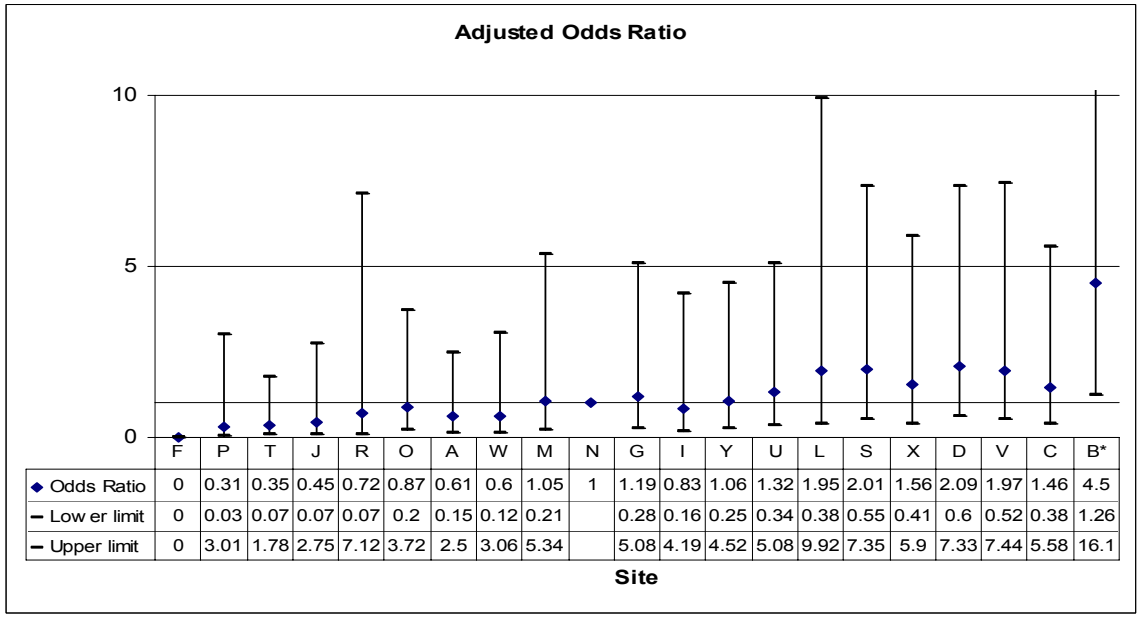
Note: Necrotizing enterocolitis is based on clinical diagnosis (using Bell's criteria, stage 2 or higher) and the presence of pneumatosis on abdominal radiographs and/or compatible surgical/pathological findings.

Presentation #56
Site comparison of nosocomial infection among infants ≥1500g at birth

A. Hospitals that contributed data on all eligible admissions **(n=21 hospitals, 9935 infants[#])**



	F	P	T	J	R	O	A	W	M	N	G	I	Y	U	L	S	X	D	V	C	B
Odds Ratio	0	0.37	0.4	0.51	0.59	0.69	0.76	0.77	0.97	1	1.01	1.02	1.05	1.09	1.62	1.67	2.36	2.39	2.42	2.65	3.6
Lower limit	0	0.04	0.08	0.09	0.06	0.16	0.19	0.15	0.19		0.24	0.2	0.25	0.29	0.32	0.46	0.63	0.69	0.65	0.72	1.02
Upper limit	0	3.59	2.01	3.1	5.7	2.92	3.07	3.85	4.85		4.28	5.12	4.43	4.15	8.12	6.05	8.81	8.29	9.03	9.72	12.6



	F	P	T	J	R	O	A	W	M	N	G	I	Y	U	L	S	X	D	V	C	B*
Odds Ratio	0	0.31	0.35	0.45	0.72	0.87	0.61	0.6	1.05	1	1.19	0.83	1.06	1.32	1.95	2.01	1.56	2.09	1.97	1.46	4.5
Lower limit	0	0.03	0.07	0.07	0.07	0.2	0.15	0.12	0.21		0.28	0.16	0.25	0.34	0.38	0.55	0.41	0.6	0.52	0.38	1.26
Upper limit	0	3.01	1.78	2.75	7.12	3.72	2.5	3.06	5.34		5.08	4.19	4.52	5.08	9.92	7.35	5.9	7.33	7.44	5.58	16.1

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

[#]Inclusion criteria:
Birth weight ≥1500g
Age at admission less than 4 days
Remained hospitalized beyond 2 days after birth

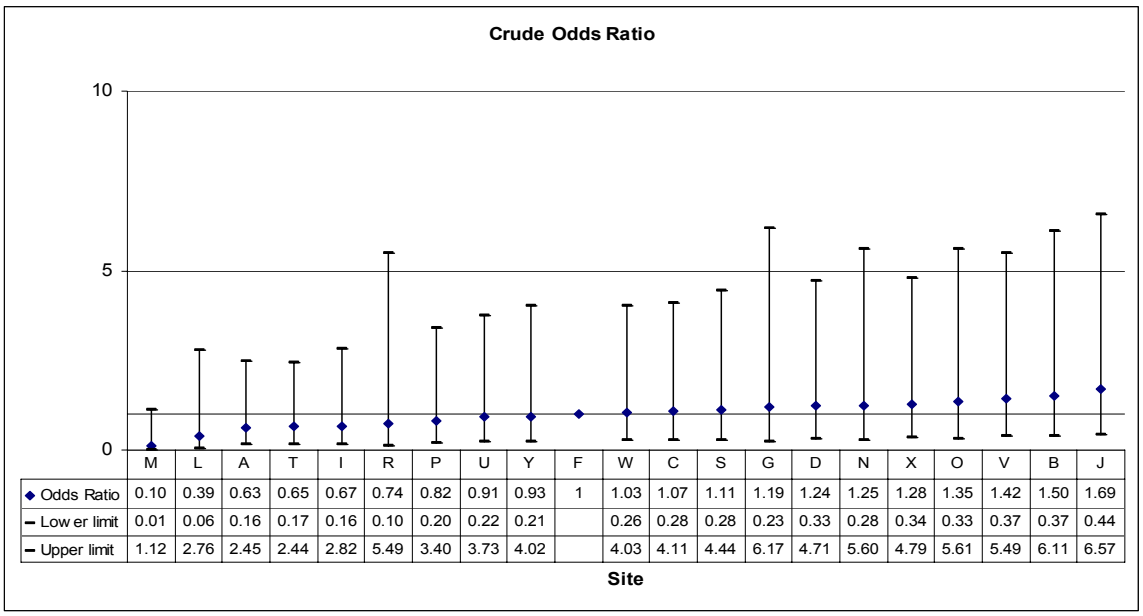
Outcome is attributed to the hospital in which the infection occurred (adjusted for transfer).

Significant predictors identified by multivariate analysis and adjusted for:

Gestational age
SNAP_II score

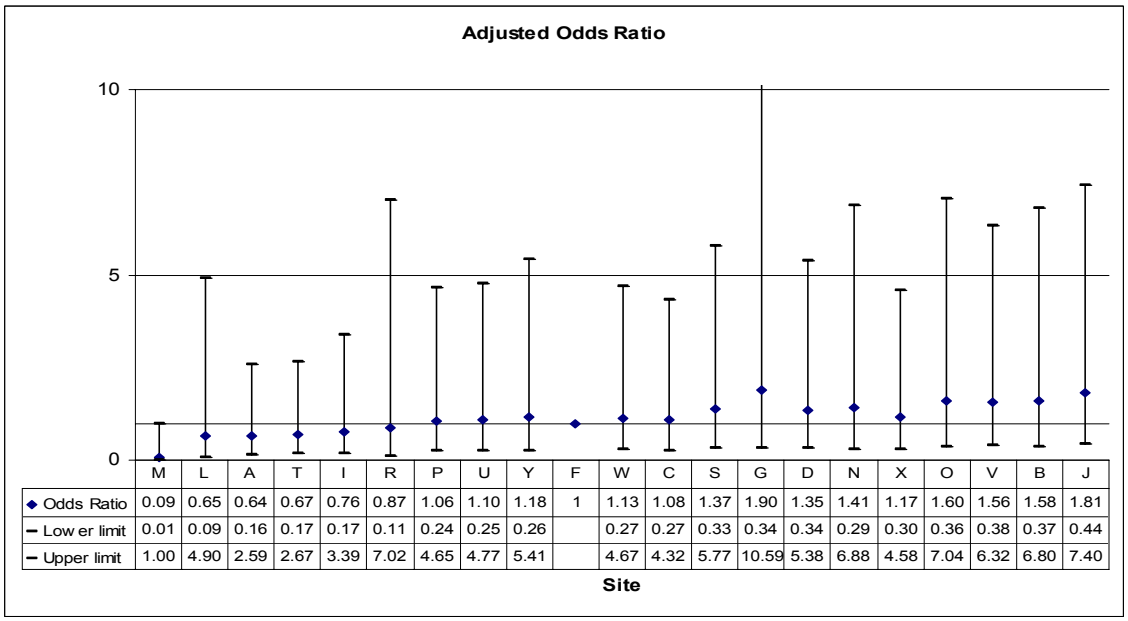
Presentation #57
Site comparison of nosocomial infection among infants <1500g at birth

Part A: Hospitals that contributed data on all eligible admissions **(n=21 hospitals, 1887 infants[#])**



	M	L	A	T	I	R	P	U	Y	F	W	C	S	G	D	N	X	O	V	B	J
◆ Odds Ratio	0.10	0.39	0.63	0.65	0.67	0.74	0.82	0.91	0.93	1	1.03	1.07	1.11	1.19	1.24	1.25	1.28	1.35	1.42	1.50	1.69
– Low er limit	0.01	0.06	0.16	0.17	0.16	0.10	0.20	0.22	0.21		0.26	0.28	0.28	0.23	0.33	0.28	0.34	0.33	0.37	0.37	0.44
– Upper limit	1.12	2.76	2.45	2.44	2.82	5.49	3.40	3.73	4.02		4.03	4.11	4.44	6.17	4.71	5.60	4.79	5.61	5.49	6.11	6.57

Site



	M	L	A	T	I	R	P	U	Y	F	W	C	S	G	D	N	X	O	V	B	J
◆ Odds Ratio	0.09	0.65	0.64	0.67	0.76	0.87	1.06	1.10	1.18	1	1.13	1.08	1.37	1.90	1.35	1.41	1.17	1.60	1.56	1.58	1.81
– Low er limit	0.01	0.09	0.16	0.17	0.17	0.11	0.24	0.25	0.26		0.27	0.27	0.33	0.34	0.34	0.29	0.30	0.36	0.38	0.37	0.44
– Upper limit	1.00	4.90	2.59	2.67	3.39	7.02	4.65	4.77	5.41		4.67	4.32	5.77	10.59	5.38	6.88	4.58	7.04	6.32	6.80	7.40

Site

Reference site: F

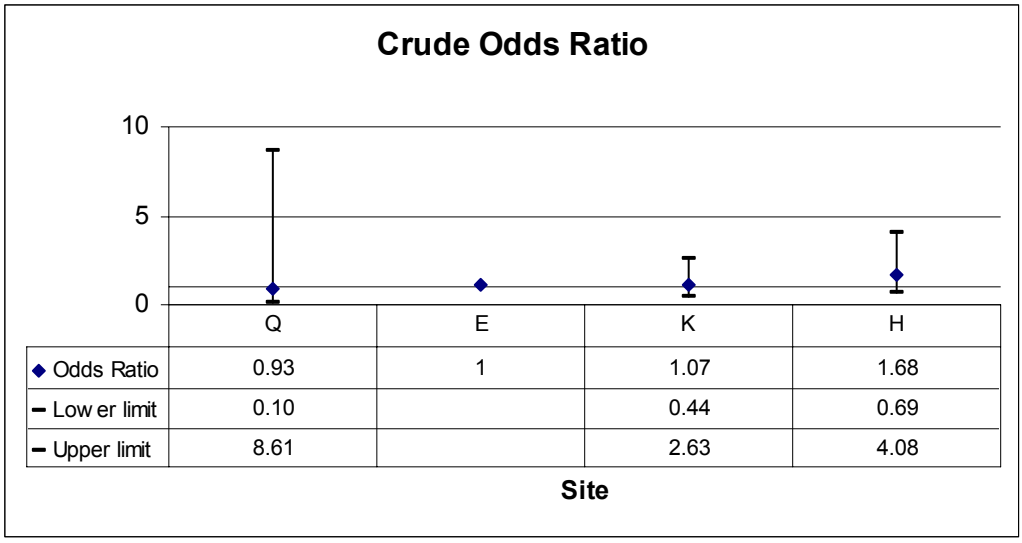
[#]Inclusion criteria:
Birth weight <1500g
Age at admission less than 4 days
Remained hospitalized beyond 2 days after birth

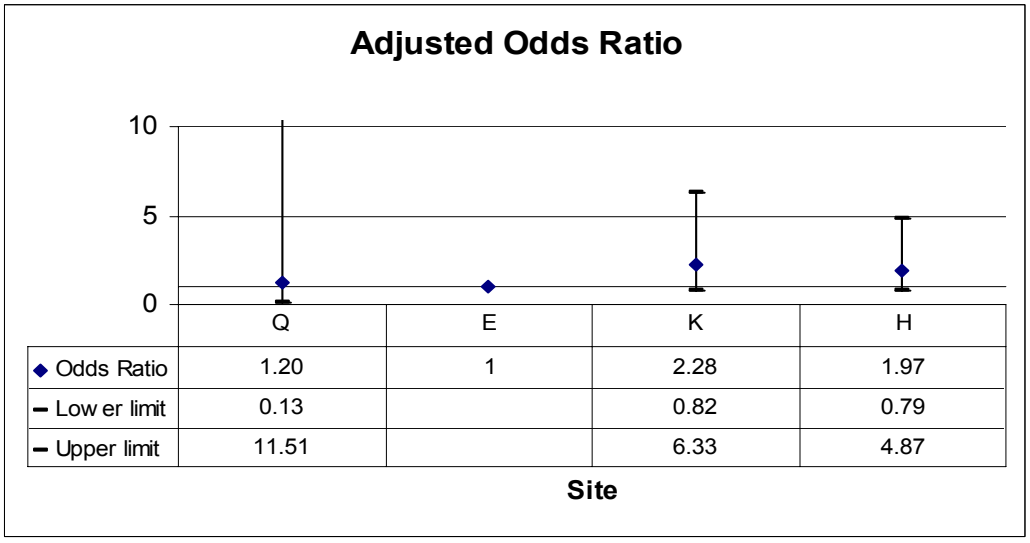
Outcome is attributed to the hospital in which the infection occurred (adjusted for transfer).

Significant predictors identified by multivariate analysis and adjusted for:

Gestational age
Cesarean section

Part B: Hospitals that contributed data on selected eligible admissions **(n=4 hospitals, 219 infants[#])**





Reference site: E

[#]Inclusion criteria:
Birth weight <1500g
Age at admission less than 4 days
Remained hospitalized beyond 2 days after birth

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

Presentation 58a

Benchmarking sites which contribute all eligible admissions

Parameter / Site rank	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11 Median**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**
Adverse Outcome Incidence	**Lowest**																				**Highest**
According to total number of infants																					
SNAPII-PE adjusted mortality rates	M	W	R	G	F	S	L	A	O	C	U	D	I	P	Y	X	J	B	V	T	N
Primary infection rate	L	B	X	R	A	W	M	J	O	G	T	Y	I	F	C	N	S	D	P	U	V
Nosocomial infection rate (SNAPII-PE adjusted)	M	R	G	F	Y	I	U	A	P	O	T	L	N	W	S	D	C	V	J	B	X
Nosocomial infection/1000 patient days	M	R	L	I	F	U	Y	P	G	N	T	S	O	V	J	W	C	D	A	B	X
Among infants ≤32 weeks																					
Non-receipt of AN steroid	B	R	V	L	O	N	U	Y	M	X	D	F	G	J	P	I	S	W	T	A	C
Surgical ligation of PDA	R	P	N	G	X	T	W	D	U	F	J	O	I	L	Y	S	A	M	B	V	C
Stage 2 or 3 NEC (adjusted odds ratio)	L	W	D	T	O	N	S	B	F	J*	G	X	U	R	I	Y	A	C	M	P	V
Stage 3-5 ROP (adjusted odds ratio)	B	P	J	A	C	D	W	X	F*	M	S	T	I	G	U	Y	R	N	O	V	L
BPD at 36 weeks (adjusted odds ratio)	F	J	D	U	Y	W	C	N	O	X	R*	S	I	L	P	T	M	G	V	A	B
VE or PEC (adjusted odds ratio)	O	I	A	R	Y	C	W	P	F	V	J*	T	B	D	U	G	N	M	X	S	L
Use of systemic steroids	L	P	T	F	N	X	R	I	W	D	S	V	M	A	J	G	B	C	Y	U	O
SNAPII-PE adjusted mortality for ≤ 32 weeks GA	M	R	F	W	A	D	C	I	G	S	O	L	X	U	P	J	B	V	T	N	Y
Among infants < 1500g																					
Non-receipt of AN steroid	L	V	G	B	U	O	N	M	P	R	S	X	Y	D	I	T	W	J	A	C	F
Surgical ligation of PDA	R	P	N	G	X	T	D	W	U	J	F	I	O	Y	L	S	B	A	V	M	C
Stage 2 or 3 NEC (adjusted odds ratio)	L	W	D	N	T	O	S	G	J*	F	U	B	X	R	I	Y	A	P	C	M	V
Stage 3-5 ROP (adjusted odds ratio)	B	P	J	A	C	D	W	X	F*	M	S	T	I	G	U	Y	R	N	O	V	L
BPD at 36 weeks (adjusted odds ratio)	Y	F	D	J	U	W	C	X	N	O	I*	S	R	M	T	P	L	G	V	A	B
VE or PEC (adjusted odds ratio)	O	I	A	R	V	B	Y	C	W	G	T	J*	P	N	U	D	F	M	X	S	L
Use of systemic steroids	T	L	P	F	X	N	I	D	W	R	B	V	A	J	M	C	S	G	Y	U	O
SNAPII-PE adjusted mortality for <1500g	M	R	F	W	A	I	G	L	D	C	S	O	U	X	J	P	B	T	V	Y	N

*Indicates reference site in logistic regression analysis.

Presentation 58b

Benchmarking all sites that contribute data for infants ≤ 28 weeks GA

Parameter / Site rank	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13 Median**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
Adverse Outcome Incidence	**Lowest**																								**Highest**
According to number of infants																									
Non-receipt of AN steroid	L	G	V	N	U	B	S	R	X	W	P	E	T	I	K	F	M	D	O	J	H	A	C	Y	Q
Surgical ligation of PDA	P	L	J	K	S	W	Y	H	G	D	A	C	T	X	M	F	E	Q	U	N	I	R	O	B	V
Stage 2 or 3 NEC (adjusted odds ratio)	Q	W	R	L	D	B	T	N	H	I	J	S*	O	X	G	U	C	F	E	P	A	Y	K	V	M
Stage 3-5 ROP (adjusted odds ratio)	B	L	P	J	K	A	H	C	D	W	X	E	M	S*	T	F	U	Y	G	I	R	N	O	V	Q
BPD at 36 weeks (adjusted odds ratio)	L	Y	H	D	U	J	N	F	O	W	C	K	R	X*	S	T	E	M	P	A	I	B	Q	V	G
VE or PEC (adjusted odds ratio)	Q	O	G	I	W	K	E	V	R	A	C	H	J*	T	F	B	Y	D	U	M	N	P	X	S	L
Use of systemic steroids	L	K	P	T	H	F	X	R	B	W	D	N	I	V	J	M	A	S	C	Y	E	Q	G	U	O
SNAPII-PE adjusted mortality	M	R	F	I	E	Q	A	W	K	G	D	C	L	S	X	H	O	B	J	P	V	T	Y	U	N

*Indicates reference site in logistic regression analysis.

I. Conclusions

The Canadian Neonatal Network™ was established in 1995. The number of NICUs participating in the national database has continued to increase, now with 25 sites participating in data collection for this report. Currently (as of September 2008) 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 2008, we anticipate that the CNN will strive to produce NICU population-based data on outcomes and practices, and apply quality improvement strategies.

J. 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.

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[1]Richardson DK, Corcoran JD, Escobar GJ, and Lee SK and the Canadian NICU Network. SNAP-II and SNAPPE-II: simplified newborn illness severity and mortality risk scores. J Pediatr 2001; Jan (138)1: 92-100.

[2]Gray JE, Richardson DK, McCormick MC, Workman-Daniels K, and Goldmann DA. Neonatal therapeutic intervention scoring system: a therapy-based severity-of-illness index. J Pediatr 1992; Oct (90)4: 561-7.

[3]Lee SK, Zupancic JA, Pendray M, Thiessen P, Schmidt B, Whyte R, Shorten D, Stewart S and the Canadian Neonatal Network. Transport risk index of physiologic stability: a practical system for assessing infant transport care. J Pediatr 2001; Aug(139)2: 220-6.