THE CANADIAN NEONATAL NETWORK™

LE RÉSEAU NÉONATAL CANADIEN™

Annual Report *Rapport Annuel*

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Acknowledgements

This report is based upon data collected from 24 individual hospitals from across Canada that are members of the Canadian Neonatal Network™ (CNN). In addition to all investigators and funding agencies acknowledged below, we would also 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 CNN Data Abstractors.

Structure of the CNN

The Canadian Neonatal Network™ is a group of Canadian researchers who collaborate on research issues relating to neonatal care. The Network was founded in 1995 by Shoo Lee, MBBS, FRCPC, PhD and now includes members from 30 hospitals and 17 universities across Canada. The Network maintains a standardized NICU database and provides a unique opportunity for researchers to participate in collaborative projects on a national and international scale. Health care professionals, health services researchers and health 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.

Objectives

To be a network of Canadian researchers who conduct leading multi-disciplinary, collaborative research dedicated to the improvement of neonatal-perinatal health and health care in Canada and internationally. The network's specific goals include:

- Establishing and maintaining a truly national neonatal-perinatal database and providing the infrastructure to facilitate collaborative research.

- Longitudinal study of outcomes and variation in medical care that increases costs but does not improve outcomes. This is important because NICU care is one of the largest components of child health expenditures and exhibits large variations in mortality, morbidity and costs.

- Developing innovative research methods that can result in improvement of health and quality of healthcare.

Principal Funding

The CNN infrastructure is funded by the Canadian Institutes of Health Research and the Michael Smith Foundation for Health Research.

Additional Funding

BC Children's Hospital Foundation
Division of Neonatology, BC Children's Hospital
Woman and Child Program, St. Boniface Hospital
IWK Health Centre
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Newfoundland and Labrador Centre for Applied Health Research
Children's Hospital Foundation of Manitoba
Children's Hospital of Eastern Ontario
Neonatal Research Fund of the University of Saskatchewan
Department of Pediatrics, Mount Sinai Hospital

Coordinating Centre of the CNN

The Integrated Centre for Care Advancement through Research (iCARE), University of Alberta, Edmonton, Alberta:

Network Director:	Dr. S.K. Lee, University of Alberta
Steering Committee:	Dr. A. Allen, Dalhousie University
	Dr. K. Aziz, Memorial University of Newfoundland
	Dr. C. Cronin, University of Manitoba
	Dr. M. Dunn, University of Toronto
	Dr. A. Ohlsson, University of Toronto
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	Dr. C. Cronin, University of Manitoba
	Dr. A. Ohlsson, University of Toronto
	Dr. M. Seshia, University of Manitoba
	Dr. J. Van Aerde, University of Alberta

Participating CNN Sites for the 2005 Report

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Dr. A. Synnes	BC Children's Hospital, Vancouver, British Columbia
Dr. T. Sorokan	Royal Columbian Hospital, New Westminster, British Columbia
Dr. N. Singhal	Foothills Medical Centre, Calgary, Alberta
Dr. A. Ninan	Regina General Hospital, Regina, Saskatchewan
Dr. K. Sankaran	Royal University Hospital, Saskatoon, Saskatchewan
Dr. M. Seshia	Winnipeg Health Sciences Centre, Winnipeg, Manitoba
Dr. C. Cronin	St. Boniface General Hospital, Winnipeg, Manitoba
Dr. K. Tan	Hamilton Health Sciences Centre, Hamilton, Ontario
Dr. D. Lee	St. Joseph's Health Centre, London, Ontario
Dr. A. James	Hospital for Sick Children, Toronto, Ontario
Dr. A. Ohlsson	Mount Sinai Hospital, Toronto, Ontario
Dr. M. Dunn	Sunnybrook & Women's College Health Sciences Centre, Toronto, Ontario
Dr. M. Clarke	Kingston General Hospital, Kingston, Ontario
Dr. L. Kovacs	Jewish General Hospital, Montréal, Québec
Dr. F. Lefebvre	Hôpital Sainte-Justine, Montréal, Québec
Dr. B. Piedboeuf	Centre Hospitalier Universitaire de Québec, Sainte Foy, Québec
Dr. P. Riley	Montréal Children's Hospital, Montréal, Québec
Dr. S. Nadeau	Royal Victoria Hospital, Montréal, Québec
Dr. D. McMillan	IWK Health Centre, Halifax, Nova Scotia
Dr. R. Canning	Moncton Hospital, Moncton, New Brunswick
Dr. B. Bulleid	Dr. Everett Chalmers Hospital, Fredericton, New Brunswick
Dr. C. Ojah	St. John Regional Hospital, Saint John, New Brunswick
Dr. K. Aziz	Janeway Children's Health and Rehabilitation Centre, St. John's, Newfoundland

Population Definition

Patients included in the report are those who were admitted to a CNN participating NICU between January 1st, 2005 and December 31st, 2005 and were discharged by March 31st, 2006. To be eligible for inclusion in the data, the patients must: (a) have had a length of stay in a NICU of one of the CNN participating sites for greater than or equal to 24 hours, (b) died within 24 hours, or (c) were transferred to another level 2 or 3 facility within 24 hours.

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A. Executive Summary

The Canadian Neonatal Network™ is comprised of 29 tertiary neonatal intensive care units (NICUs) across Canada. This report is based on data from 24 of these tertiary NICUs. 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 national researchers interested in neonatal-perinatal research.
- Maintain a national neonatal-perinatal database and provide the infrastructure to facilitate collaborative research.
- Study longitudinal outcomes and variations in medical care that increase costs but do not improve outcomes.
- 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 can lead to improvement in health and quality of health care.

Summary of Results/Methodology

Canadian Neonatal Network™ Database: Between January 1st, 2005 and December 31st, 2005, 11,004 infants (11,424 admissions including transfers between NICUs and re-admissions) received care from the 24 NICUs included in this report. Infants who were transferred to a "normal newborn care area" (level 1 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, Integrated Centre for Care Advancement through Research (iCARE) where the data were verified and analyzed.

Results presented in this report are comprised of the following categories: (1) population demographics, (2) population incidence of common neonatal complications, and (3) descriptive and risk-adjusted analyses of survival and outcomes by site.

B. Background and Objectives

NICUs utilize the combined abilities of health care team members in expanding knowledge and advancing the technology to provide effectively the care of newborn infants. To support continuous improvement in outcomes of Canadian NICUs, the Canadian Neonatal Network™ Database provides continuous 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 and areas of improvement. The results also 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 at NICUs across Canada.

The Evidence-based Practice Identification and Change (EPIC) 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, EPIC uses multidisciplinary teams at CNN sites, who work collaboratively to implement best practice changes and monitor outcomes. The EPIC Study concluded at the end of 2005; analyses are underway on these results. We are embarking on the next phase of EPIC, the Partnership for Health Systems Improvement (PHSI) project beginning Fall 2006. The aim of EPIC/PHSI is to: (1) test the ability of the EPIC model to generalize to all Canadian NICUs, (2) determine whether quality improvement gains using the EPIC model are sustainable over time, and (3) establish and evaluate a national system that will last beyond the first EPIC study, to support NICU quality improvement efforts based on the EPIC model.

Studies conducted by Canadian Neonatal Network™ researchers are supported by the Neonatal-perinatal Interdisciplinary Capacity Enhancement (NICE) Team, comprising leading researchers from across Canada. The NICE Team is funded by CIHR to build capacity for neonatal-perinatal research and to facilitate research projects and training of inter-disciplinary researchers.

C. Information Systems

Patients included in the report are those who were admitted to a CNN participating site between January 1st, 2005 and December 31st, 2005, and were discharged by March 31st, 2006. The patients must have had a length of stay in the tertiary 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 11,004 patients accounted for 11,424 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 (iCARE) in Edmonton, Alberta. Individual data items are summarized in Appendix A. 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. 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. 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 was grouped to maintain anonymity.

At each participating NICU, data is stored in a secured database in the NICU or 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 will be stored in a secured computer database located on a server that is maintained and secured by the Capital Health Information Systems department. A back-up database is also maintained and secured by Capital Health with off-site back-up.

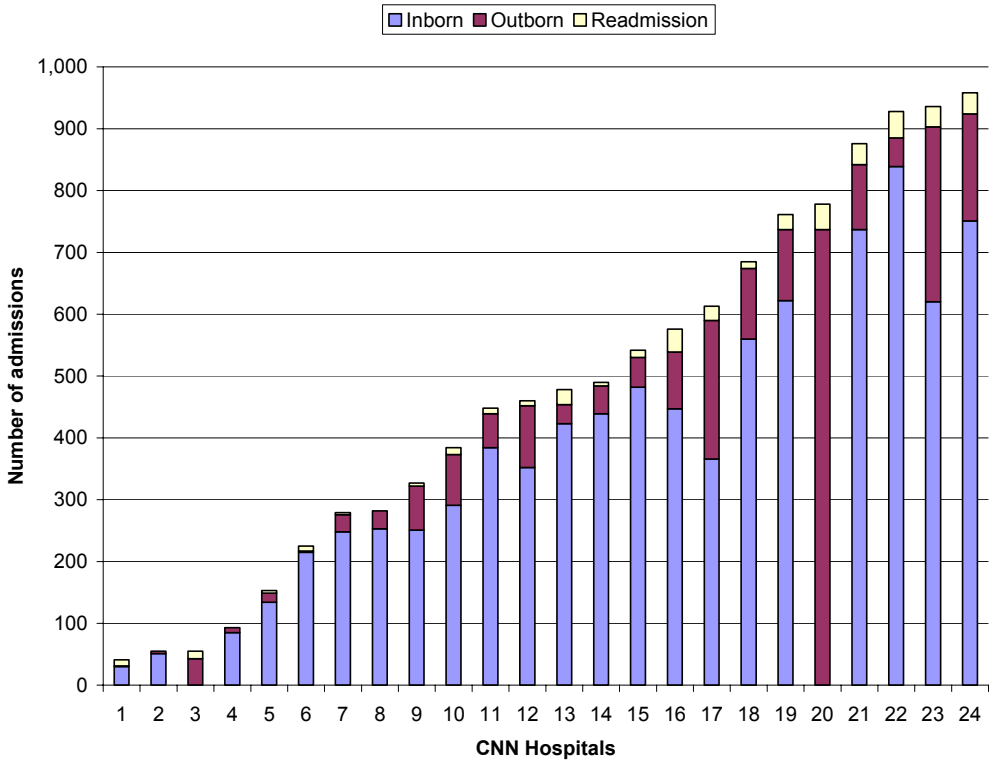
At the Coordinating Centre, information was verified for completeness and was reviewed for accuracy by looking for “unusual” and missing values on individual data items and by comparison with other information which might be related (e.g. gestational age and birthweight). However, the principal accuracy 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.

C. Information Systems 4

In the Coordinating Centre, analysis was 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 curves by gestational age and birthweight 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 Analysis – Canadian Population

Presentation A
Admissions to Canadian NICU Network participants



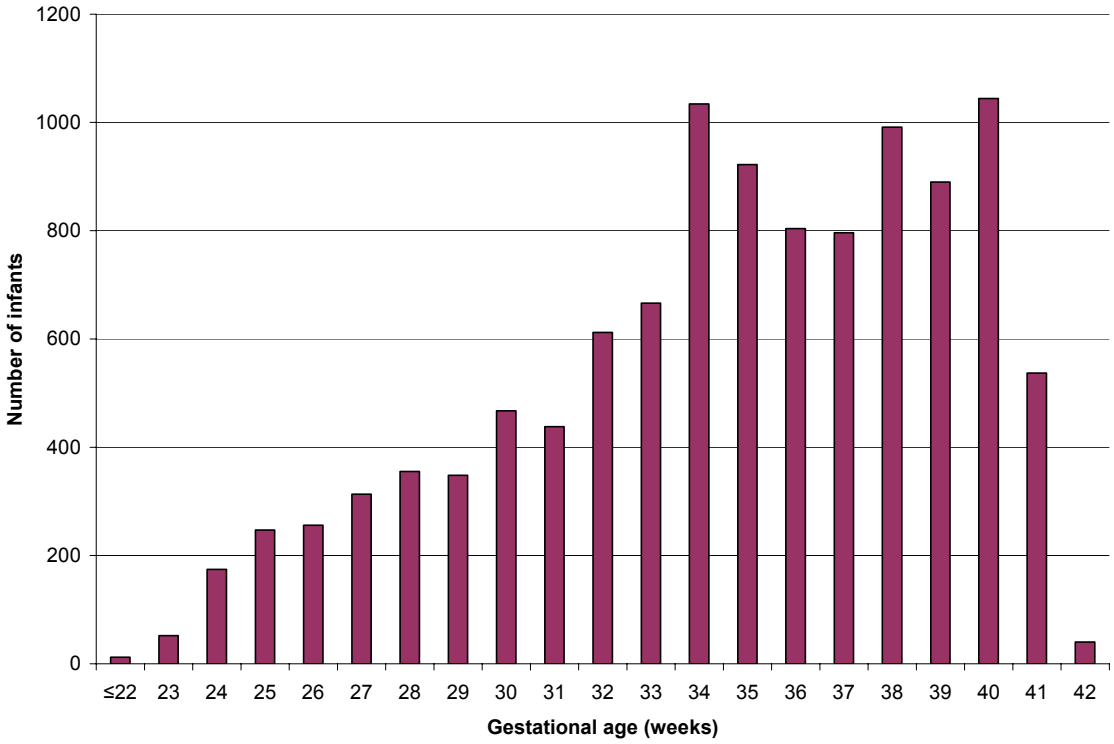
Presentation A (*continued*)
Admissions to Canadian NICU Network participants

Hospitals		Admission Status			Total
		Inborn	Outborn	Readmission	
1	Count	30	1	10	41
	% within site	73.2%	2.4%	24.4%	100.0%
2	Count	51	4	0	55
	% within site	92.7%	7.3%	0.0%	100.0%
3	Count	0	43	12	55
	% within site	0.0%	78.2%	21.8%	100.0%
4	Count	85	8	0	93
	% within site	91.4%	8.6%	0.0%	100.0%
5	Count	134	15	4	153
	% within site	87.6%	9.8%	2.6%	100.0%
6	Count	215	2	8	225
	% within site	95.6%	0.9%	3.6%	100.0%
7	Count	248	28	3	279
	% within site	88.9%	10.0%	1.1%	100.0%
8	Count	253	29	0	282
	% within site	89.7%	10.3%	0.0%	100.0%
9	Count	251	71	5	327
	% within site	76.8%	21.7%	1.5%	100.0%
10	Count	291	82	11	384
	% within site	75.8%	21.4%	2.9%	100.0%
11	Count	384	55	9	448
	% within site	85.7%	12.3%	2.0%	100.0%
12	Count	352	100	8	460
	% within site	76.5%	21.7%	1.7%	100.0%
13	Count	423	31	24	478
	% within site	88.5%	6.5%	5.0%	100.0%
14	Count	439	45	6	490
	% within site	89.6%	9.2%	1.2%	100.0%
15	Count	482	48	12	542
	% within site	88.9%	8.9%	2.2%	100.0%
16	Count	447	92	37	576
	% within site	77.6%	16.0%	6.4%	100.0%
17	Count	366	224	23	613
	% within site	59.7%	36.5%	3.8%	100.0%
18	Count	560	114	11	685
	% within site	81.8%	16.6%	1.6%	100.0%
19	Count	622	115	24	761
	% within site	81.7%	15.1%	3.2%	100.0%

20	Count	0	737	41	778
	% within site	0.0%	94.7%	5.3%	100.0%
21	Count	737	105	34	876
	% within site	84.1%	12.0%	3.9%	100.0%
22	Count	839	46	43	928
	% within site	90.4%	5.0%	4.6%	100.0%
23	Count	620	283	33	936
	% within site	66.2%	30.2%	3.5%	100.0%
24	Count	751	173	34	958
	% within site	78.4%	18.1%	3.5%	100.0%
Total included	Count	8,580	2,451	392	11,423
	% within sites	75.1%	21.5%	3.4%	100.0%
Missing					**1**
Total # of admissions					**11424**

COMMENTS:
During the period of January 1, 2005 to December 31, 2005 data from 24 participating Canadian NICUs were collected. Analysis of available data produced 11,424 admissions. Adjusting for readmission and transfers, this represents 11,004 infants.

Presentation B
Gestational age at birth



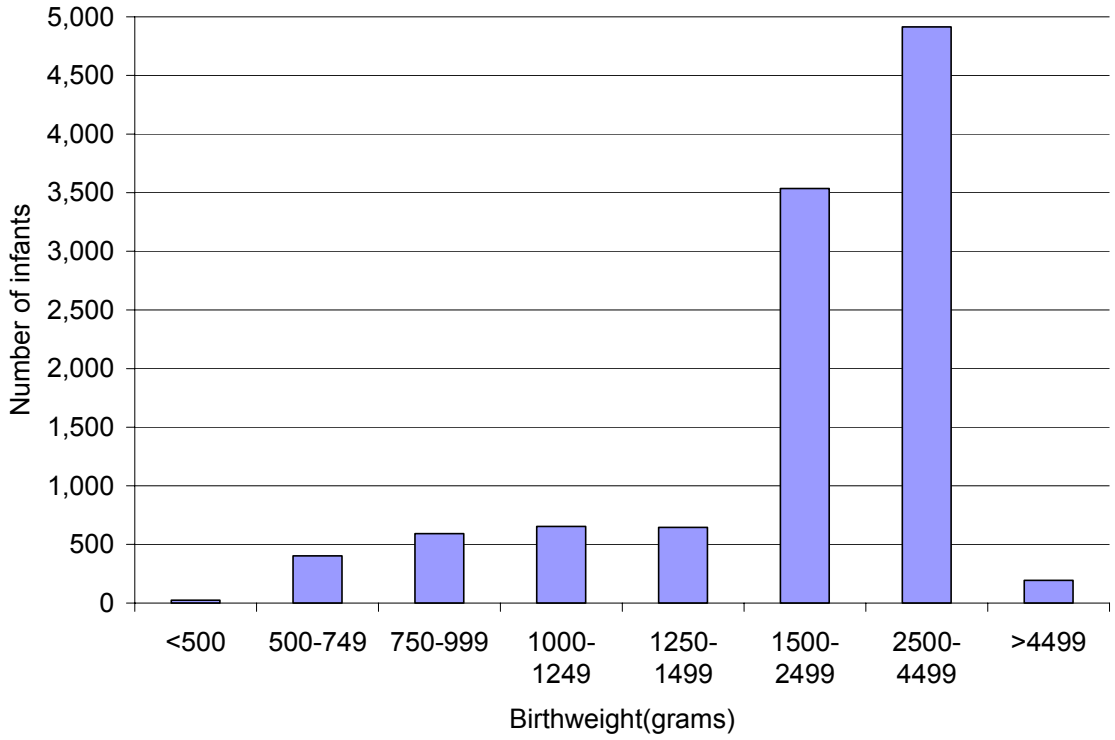
Presentation B (*continued*)
Gestational age at birth

Gestational age at birth	Frequency	Percent	Cumulative Percent
≤22	10	0.1	0.1
23	52	0.5	0.6
24	174	1.6	2.2
25	247	2.2	4.4
26	256	2.3	6.7
27	313	2.8	9.6
28	355	3.2	12.8
29	349	3.2	16.0
30	467	4.2	20.2
31	438	4.0	24.2
32	613	5.6	29.8
33	666	6.1	35.8
34	1034	9.4	45.2
35	922	8.4	53.6
36	804	7.3	60.9
37	796	7.2	68.2
38	991	9.0	77.2
39	890	8.1	85.3
40	1044	9.5	94.8
41	537	4.9	99.6
42	40	.4	100.0
Total included	**10998**	**100.0**	
Missing	**6**		
Total # of infants	**11004**		

COMMENTS:
The gestational age distribution of infants is shown here. Term babies (≥37 weeks) represent about 39% of the total.

D. Descriptive Analysis 12

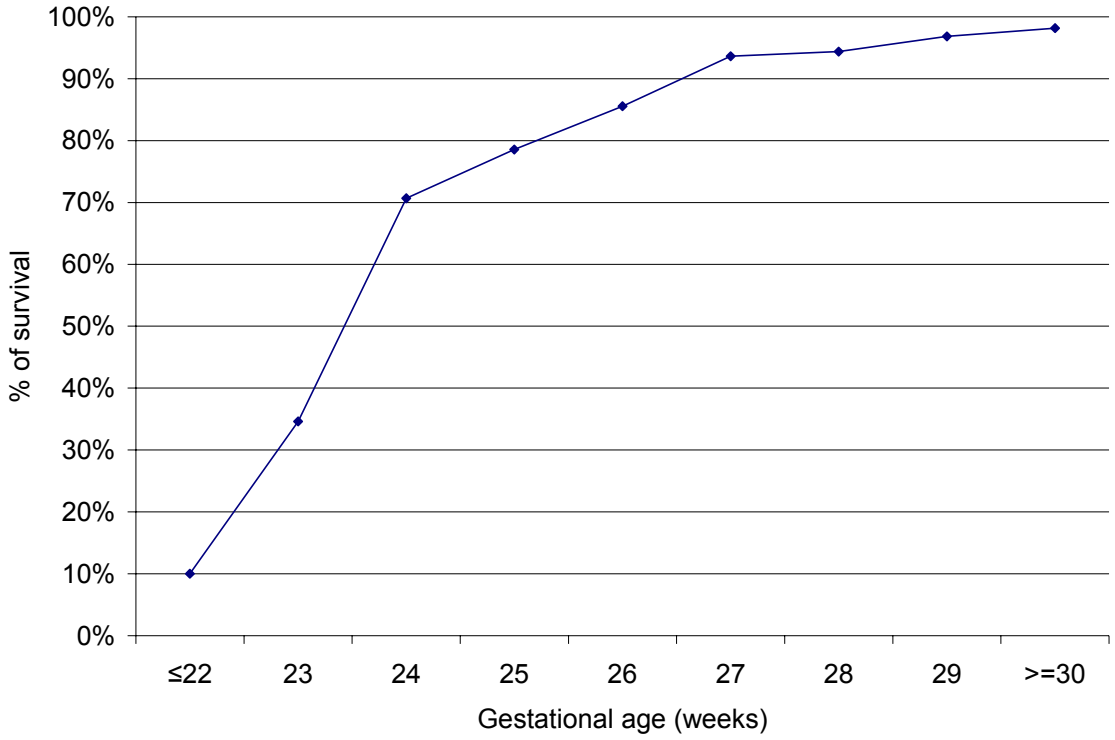
Presentation C
Birthweight



Birthweight	Frequency	Percent	Cumulative Percent
<500	25	.2	.2
500-749	402	3.7	3.9
750-999	592	5.4	9.3
1000-1249	654	6.0	15.3
1250-1499	646	5.9	21.2
1500-2499	3536	32.3	53.4
2500-4499	4914	44.8	98.2
>4499	194	1.8	100.0
Total included	**10963**	100.0	
Missing	**41**		
Total # of infants	**11004**		

COMMENTS:
The birthweight distribution of infants admitted to NICUs. About 79% weighed over 1500g at birth and 47% weighed over 2500g.

Presentation # 1
Gestational age at birth and survival to NICU discharge

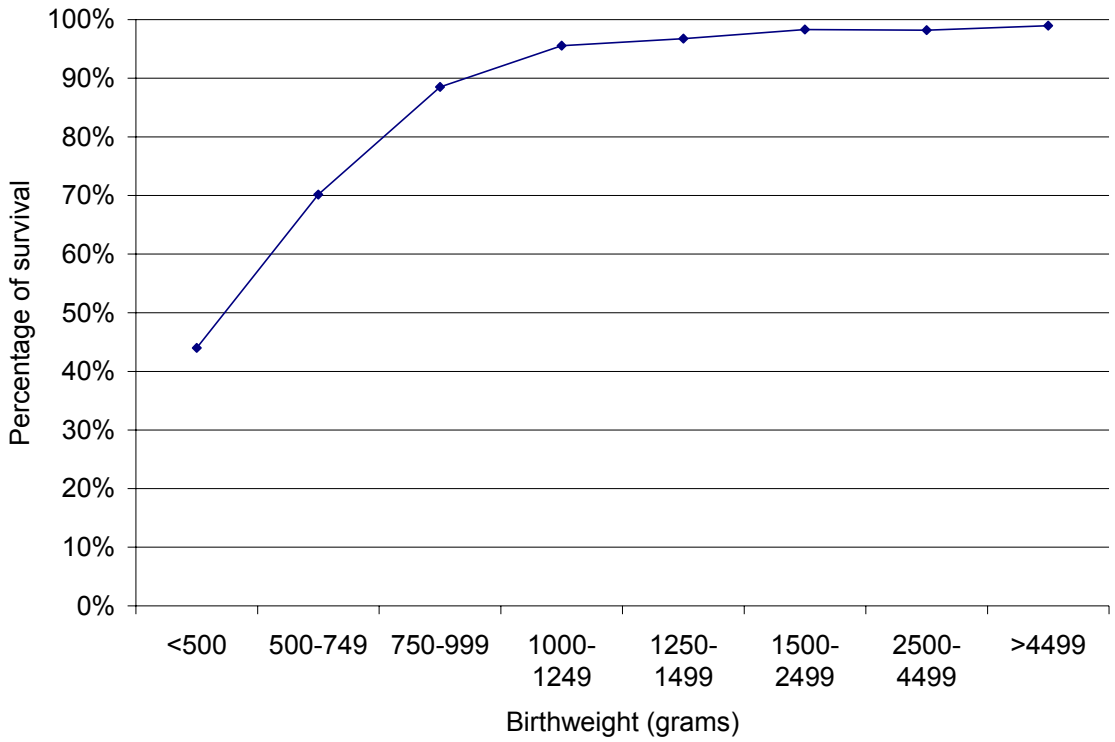


Gestational age (weeks)	Number of infants	Number of survivors
≤22	10	1
23	52	18
24	174	123
25	247	194
26	256	219
27	313	293
28	355	335
29	349	338
≥30	9242	9073
Total included	**10998**	**10594**
Missing	**6**	
Total # of infants	**11004**	

Caveat: The survival rates only refer to infants admitted to the NICU and should not be used for antenatal counseling.

COMMENTS:
Survival to NICU discharge related to gestational age and birthweight are illustrated in Presentation #1 and #2. The survival rate is based upon the final discharge from the participating neonatal site. Note that this only includes infants admitted to the NICUy and thus, is not reflective of the Canadian population. Figures do not represent infants (especially those at very low gestational ages) who die prior to admission to the NICU. Survival rate for infants ≥ 27 weeks gestation exceeded 90%.

Presentation #2
Birth weight and survival to NICU discharge



Birthweight(g)	Number of infants	Number of survivors
<500	25	11
500-749	402	282
750-999	592	524
1000-1249	654	625
1250-1499	646	625
1500-2499	3536	3476
2500-4499	4914	4826
>4499	194	192
Total included	**10963**	**10561**
Missing	**41**	
Total # of infants	**11004**	

Caveat: The survival rates refer only to infants admitted to the NICU, and should not be used for antenatal counseling.

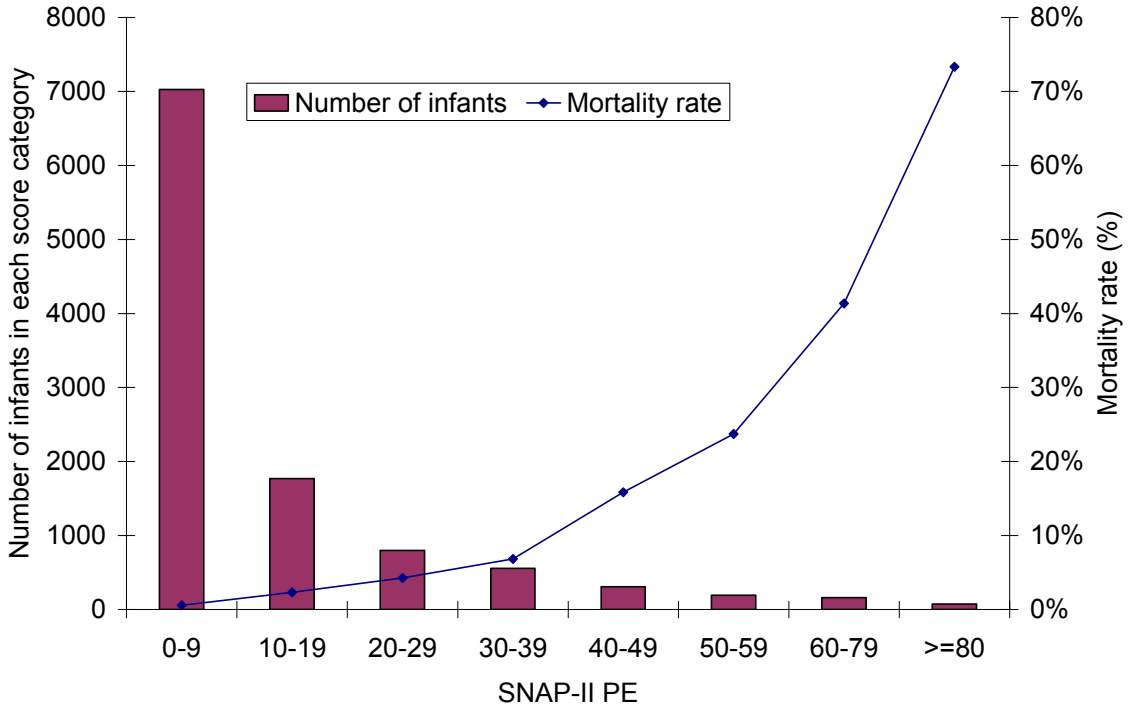
COMMENTS:
Survival rate for infants whose birthweight is ≥1 kg is above 95%.

Presentation #3
SNAP-II PE[1] component scores

SNAP-II PE[1] Components	Score	Day 1	
		Frequency	Percent
Blood Pressure			
30 mmHg	0	9107	79.7
20-29 mmHg	9	2147	18.8
<20 mmHg	19	170	1.5
Temperature			
35.6 C	0	10741	94.0
35.0-35.5 C	8	361	3.2
<35.0 C	15	322	2.8
PaO2/FiO2			
2.5	0	9352	81.9
1.00-2.49	8	1483	13.0
0.30-0.99	16	528	4.6
<0.30	28	61	.5
Serum pH			
7.2	0	10278	90.0
7.10-7.19	7	822	7.2
<7.10	16	324	2.8
Seizures			
none or single episode	0	11307	99.0
multiple	19	117	1.0
Urine output			
>0.91 cc/kg/hr	0	9196	80.5
0.10-0.90 cc/kg/hr	5	1433	12.5
<0.10 cc/kg/hr	18	713	6.2
Birthweight			
≥1000g	0	10176	89.1
750-999g	10	681	6.0
<750g	17	526	4.6
SGA			
no	0	11021	96.5
yes	8	361	3.2
Apgar at 5 minutes			
7 to 10	0	9856	86.3
<7	18	1568	13.7
SNAP-II PE[1]			
	0-9	7211	63.1
	10-19	1891	16.6
	20-29	844	7.4
	30-39	597	5.2
	40-49	322	2.8
	50-59	200	1.8
	60-69	106	.9
	70-79	59	.5
	80-89	38	.3
	≥90	37	.3

COMMENTS:
Please see Presentation #3a.

Presentation #3a
Mortality rates related to Day 1 SNAP-II PE[1]



SNAP-II PE[1] Score	0-9	10-19	20-29	30-39	40-49	50-59	60-79	≥80	Total included	Missing	Total # of infants
Number of infants	7028	1768	799	557	309	194	162	75	10892	112	11004
% in category	64.5	16.2	7.3	5.1	2.8	1.8	1.5	0.7	100		
Deaths	40	41	34	38	49	46	67	55	370		
Mortality	.6%	2.3%	4.3%	6.8%	15.9%	23.7%	41.4%	73.3%	3.4%		
95% C.I. for Mortality	(0.39-0.75)	(1.62-3.02)	(2.9-5.7)	(4.7-8.9)	(11.8-19.9)	(17.7-29.7)	(33.8-48.9)	(63.3-83.3)	(3.1-3.7)		

[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 of Peds 2001; Jan (138)1: 92-100.

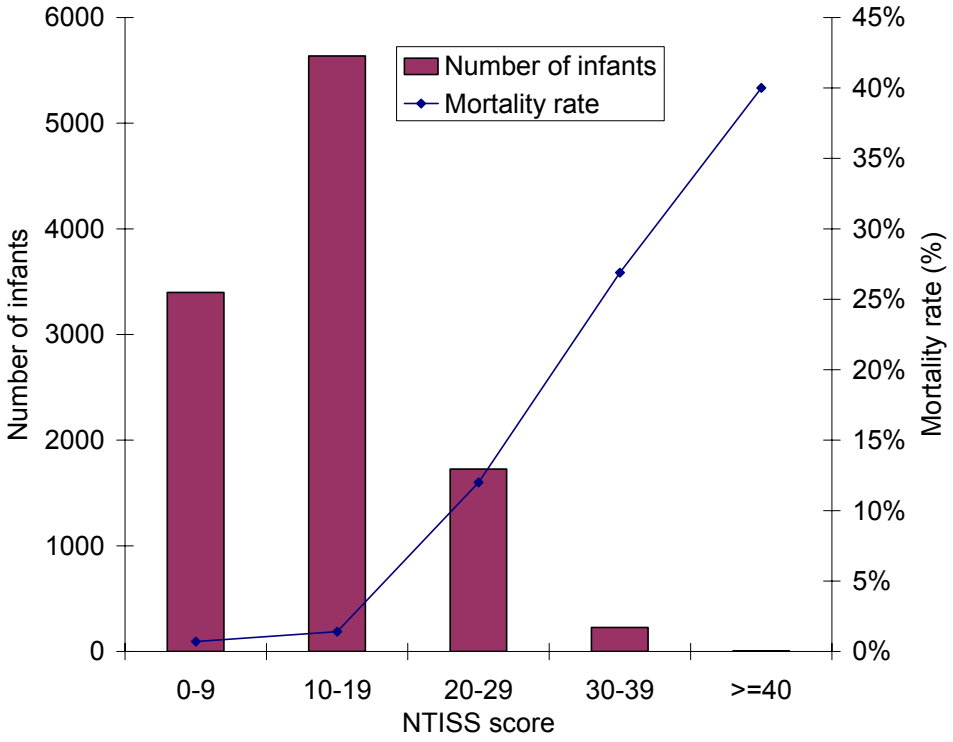
COMMENTS:
As has been demonstrated in the past[1], the increasing SNAP-II PE score (on average for the population of infants admitted to the NICU who meet the inclusion criteria for entry into the CNN database), is associated with increasing mortality rate.

Presentation #3b
NTISS[2] Day 1 component scores

	Total # of infants	Minimum	Median	Maximum	Mean	Std. Deviation
Respiratory	10980	0	1	9	1.8	2.2
Cardiovascular	10980	1	1	10	1.5	1.1
Metabolic/nutrition	10980	0	1	9	1.0	1.1
Drug therapy	10980	0	5	10	4.7	1.7
Monitoring	10980	0	0	4	0.5	0.6
Transfusion	10980	2	2	10	2.1	0.5
Procedural	10980	0	0	9	0.2	0.9
Vascular access	10980	0	1	5	1.6	1.5
NTISS[2] score	**10980**	**3**	**12**	**42**	**13.4**	**6.2**

[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 of Peds 1992 Oct (90)4: 561-7.

Presentation #3c
Mortality rates related to NTISS[2] Day 1 score



NTISS[2] Day 1 Score	0-9	10-19	20-29	30-39	≥40	Total included	Missing	Total # of infants
Number of infants	3399	5646	1727	227	5	11004	0	11004
% in category	30.9	51.3	15.7	2.1	0.0	100.0		
Deaths	24	84	207	61	2	378		
Mortality	0.7	1.4	12.0	26.9	40.0	3.4		
95% C.I. for Mortality	0.4-1.0	1.1-1.7	10.5-13.5	21.1-32.7	0.0-82.9	3.1-3.7		

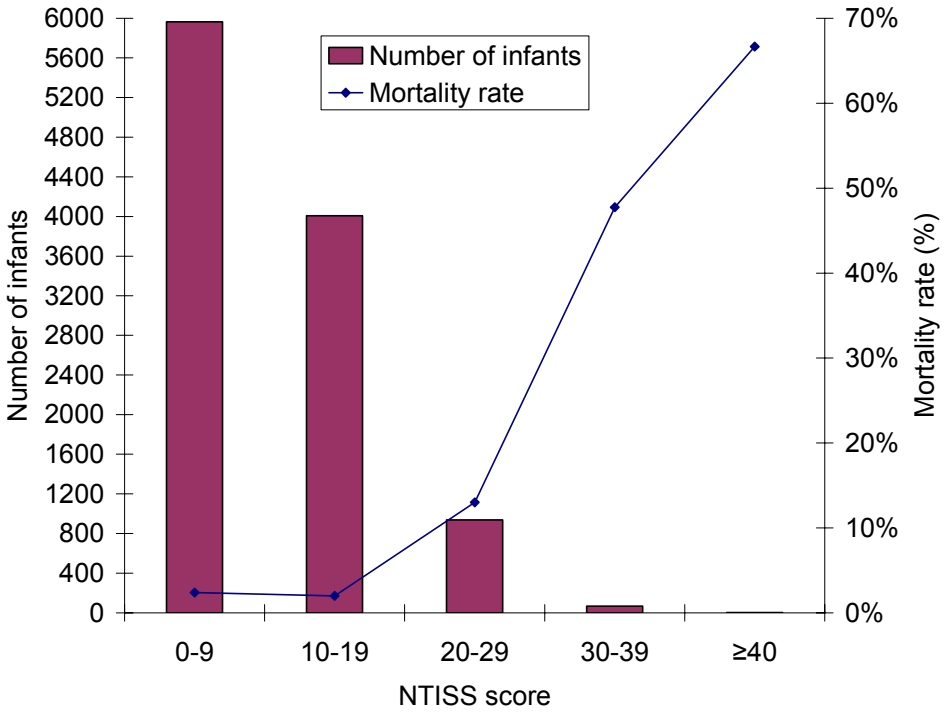
[2]Gray JE, Richardson DK, McCormick MC, Workman-Daniels K, and Goldmann DA. Neonatal therapeutic intervention scoring system: a therapy-based severity-of-illness index. J of Peds 1992 Oct (90)4: 561-7.

Presentation #3d
NTISS[2] Day 3 component scores

	Total # of infants	Minimum	Median	Maximum	Mean	Std. Deviation
Respiratory	10980	0	0	8	0.8	1.4
Cardiovascular	10980	1	1	10	1.1	0.6
Metabolic/nutrition	10980	0	1	9	0.7	1.0
Drug therapy	10980	0	3	10	3.1	2.2
Monitoring	10980	0	1	5	0.9	1.0
Transfusion	10980	2	2	9	2.0	0.3
Procedural	10980	0	0	8	0.1	0.5
Vascular access	10980	0	1	5	1.2	1.4
NTISS[2] score	**10980**	**3**	**9**	**47**	**10.0**	**6.2**

[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 of Peds 1992 Oct (90)4: 561-7.

Presentation #3e
Mortality rates related to NTISS[2] Day 3 score



NTISS[2] Day 3 Score	0-9	10-19	20-29	30-39	≥40	Total included	Missing	Total # of infants
Number of infants	5964	4008	938	67	3	10980	0	10980
% in category	54.3	36.5	8.5	0.6	0.0	100		
Deaths	142	80	122	32	2	378		
Mortality	2.4	2.4	13.0	47.8	66.7	3.4		
95% C.I. for Mortality	2.0-2.8	1.6-2.4	10.9-15.2	35.8-59.7	13.3-100	3.1-3.8		

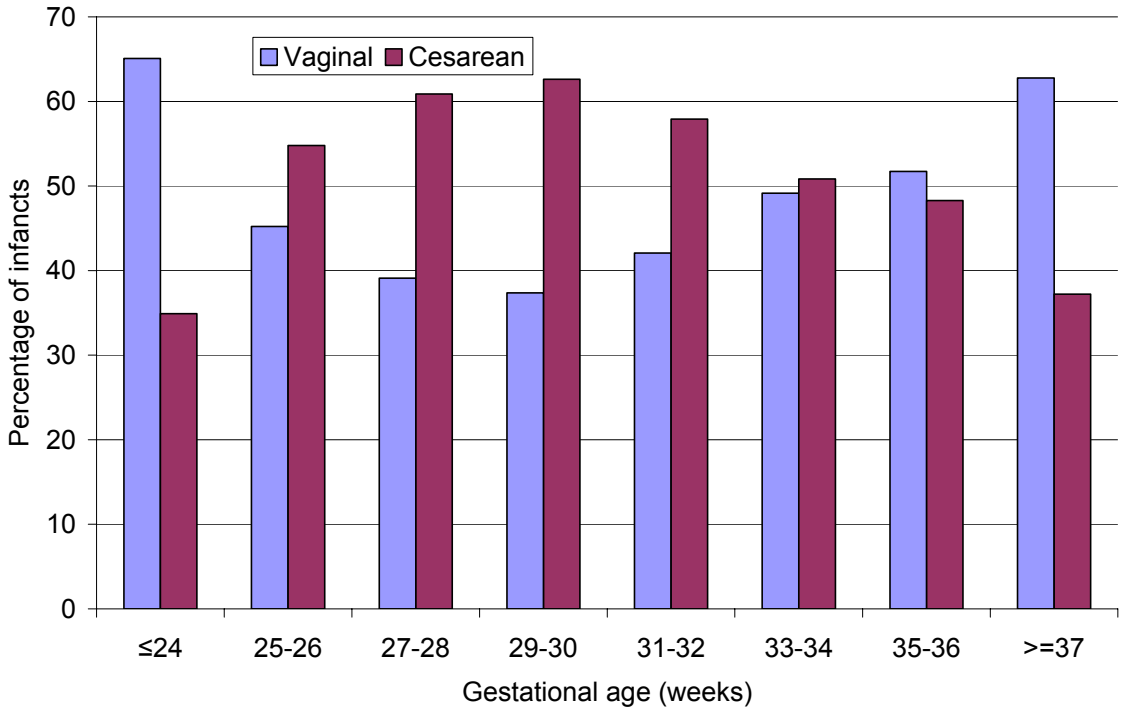
[2]Gray JE, Richardson DK, McCormick MC, Workman-Daniels K, and Goldmann DA. Neonatal therapeutic intervention scoring system: a therapy-based severity-of-illness index. J of Peds 1992 Oct (90)4: 561-7.

Presentation #4
Cesarean or vaginal birth according to fetal presentation (by gestational age)

Delivery mode	Gestational age (birth)		Presentation				
			Vertex	Breech	Other*	Unknown**	Total
Vaginal	≤24	N	90	43	4	11	148
		%	61.1%	28.9%	2.7%	7.4%	100.0%
	25-26	N	178	28	3	13	222
		%	80.2%	12.6%	1.4%	5.9%	100.0%
	27-28	N	213	28	5	11	257
		%	82.9%	10.9%	1.9%	4.3%	100.0%
	29-30	N	264	27	2	9	302
		%	87.4%	8.9%	.7%	3.0%	100.0%
	31-32	N	393	18	8	21	440
		%	89.3%	4.1%	1.8%	4.8%	100.0%
	33-34	N	760	33	13	27	833
		%	91.2%	4.0%	1.6%	3.2%	100.0%
	35-36	N	832	25	8	25	890
		%	93.5%	2.8%	.9%	2.8%	100.0%
	>=37	N	2559	20	39	69	2687
		%	95.2%	.7%	1.5%	2.6%	100.0%
	Total included	**N**	**5289**	**222**	**82**	**186**	**5779**
		%	91.5%	3.8%	1.4%	3.2%	100.0%
	Missing(Pres/GA)	**N**					**1**
Cesarean	≤24	N	15	38	3	23	80
		%	18.8%	47.5%	5%	28.8%	100.0%
	25-26	N	84	134	12	39	269
		%	31.2%	49.8%	4.5%	14.5%	100.0%
	27-28	N	149	172	17	61	399
		%	37.3%	43.1%	4.3%	15.3%	100.0%
	29-30	N	216	203	30	58	506
		%	42.7%	40.1%	5.7%	11.5%	100.0%
	31-32	N	292	183	22	107	604
		%	48.3%	30.3%	3.6%	17.7%	100.0%
	33-34	N	430	285	35	111	861
		%	49.9%	33.1%	4.1%	12.9%	100.0%
	35-36	N	454	224	38	114	830
		%	54.7%	27.0%	4.6%	13.7%	100.0%
	>=37	N	1128	185	45	235	1593
		%	70.8%	11.6%	2.8%	14.8%	100.0%
	Total included	**N**	**2768**	**1424**	**202**	**748**	**5142**
		%	53.8%	27.7%	3.9%	14.5%	100.0%
	Missing(Pres/GA)	**N**					**2**
Total							**10921**
Missing(Pres/GA)							**3**
Missing(mode)							**80**
Total # of infants							**11004**

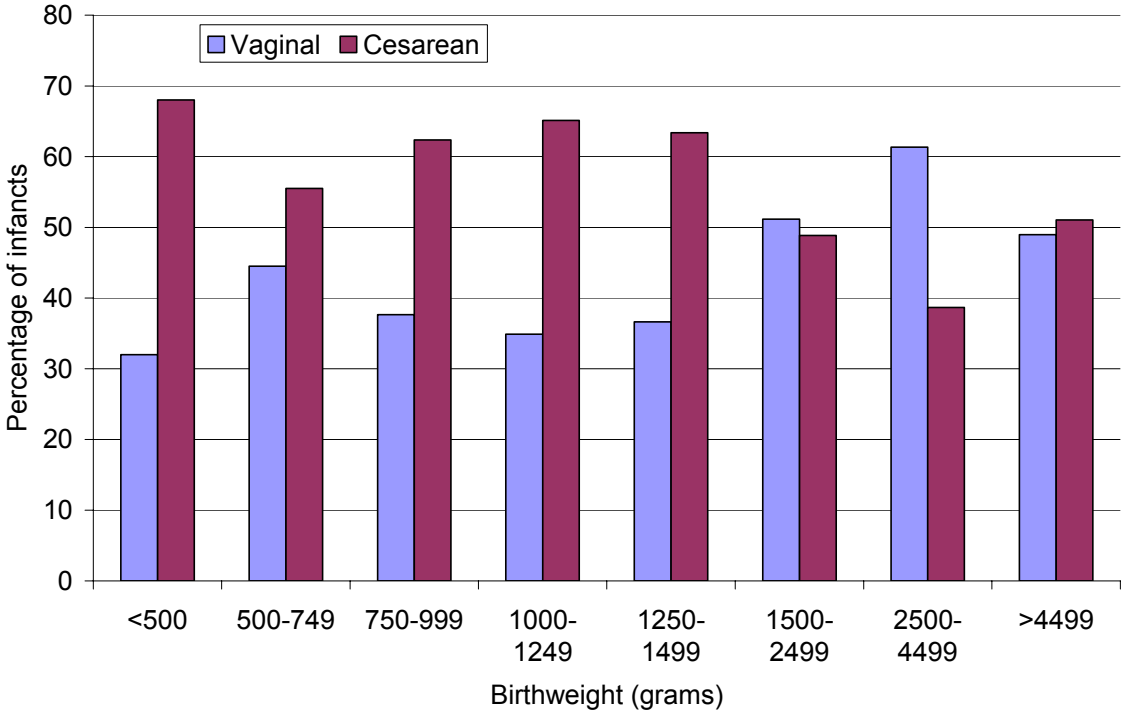
*Other includes: shoulder, transverse, brow, face, oblique vertex, compound presentation
**Unknown: no mention of presentation, may include multiple pregnancies

Presentation #5
Vaginal or cesarean birth in relation to gestational age



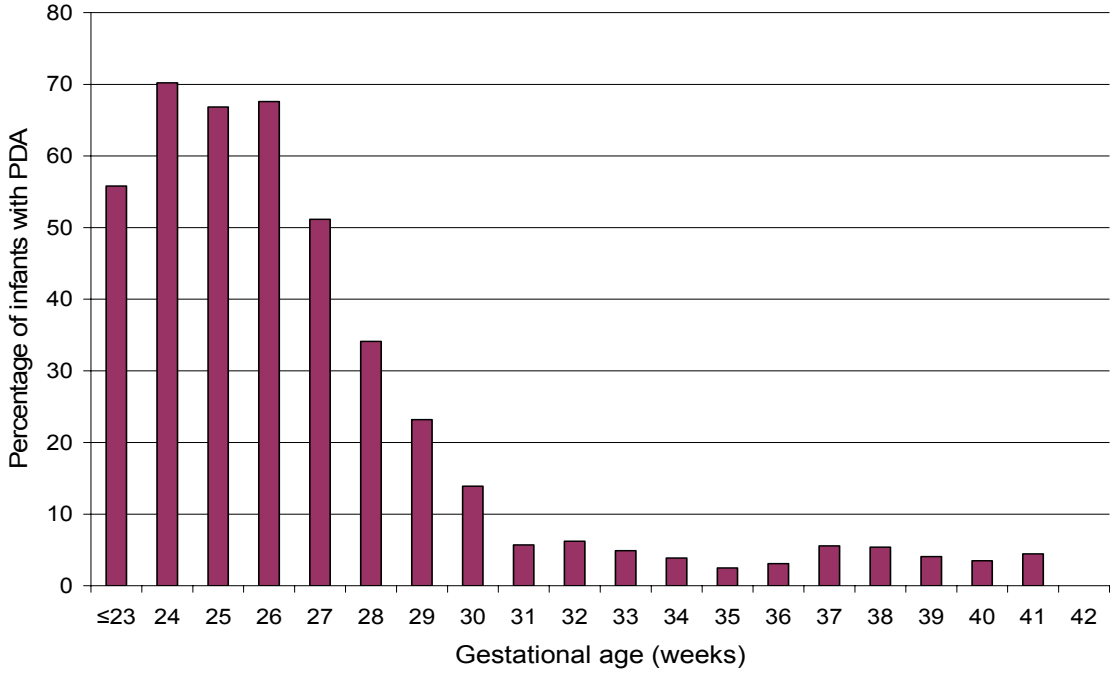
Birth gestational age (weeks)	Delivery type				Total
	Vaginal		Cesarean		
	Number	%	Number	%	
≤24	148	65.1%	79	34.9%	227
25-26	222	45.2%	269	54.8%	491
27-28	257	39.1%	400	60.9%	657
29-30	302	37.4%	507	62.6%	809
31-32	440	42.1%	604	57.9%	1044
33-34	833	49.2%	861	50.8%	1694
35-36	890	51.7%	831	48.3%	1721
≥37	2687	62.8%	1593	37.2%	4280
Total included	**5779**		**5144**		**10923**
Missing					**81**
Total # of infants					**11004**

Presentation #6
Vaginal or cesarean birth in relation to birthweight



Birthweight (g)	Delivery type				Total
	Vaginal		Cesarean		
	Number	%	Number	%	
<500	8	32.0%	17	68.0%	25
500-749	174	44.5%	217	55.5%	391
750-999	218	37.7%	361	62.3%	579
1000-1249	225	34.9%	420	65.1%	645
1250-1499	234	36.6%	405	63.4%	639
1500-2499	1800	51.2%	1718	48.8%	3518
2500-4499	3007	61.4%	1894	38.6%	4901
>4499	95	49.0%	99	51.0%	194
Total included	**5761**		**5131**		**10892**
Missing					**112**
Total # of infants					**11004**

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

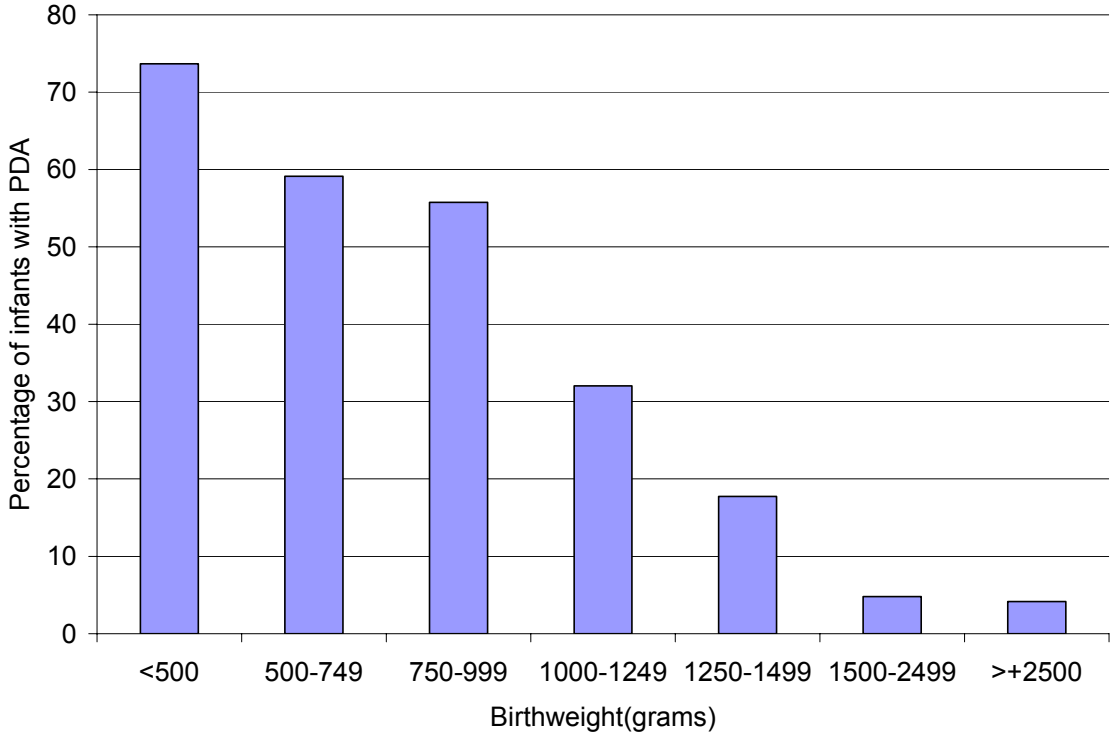


Presentation #7 (*continued*)
Incidence of patent ductus arteriosus (by gestational age)

Gestational age(birth)	Number of infants	with PDA	%
≤23	43	24	55.8%
24	161	113	70.2%
25	232	155	66.8%
26	250	169	67.6%
27	305	156	51.1%
28	343	117	34.1%
29	341	79	23.2%
30	453	63	13.9%
31	422	24	5.7%
32	585	36	6.2%
33	635	31	4.9%
34	985	38	3.9%
35	894	22	2.5%
36	774	24	3.1%
37	775	43	5.5%
38	967	52	5.4%
39	861	35	4.1%
40	1010	35	3.5%
41	516	23	4.5%
42	35	0	0%
Total included	**10587**	**1239**	**11.7%**
Missing	**417**		
Total # of infants	**11004**		

COMMENTS:
Incidence of clinically diagnosed patent ductus arteriosus (PDA) in relation to gestational age and birthweight is shown in Presentation #7 and #8. Diagnosis was made by a physician and did not require cardiac ultrasound confirmation.

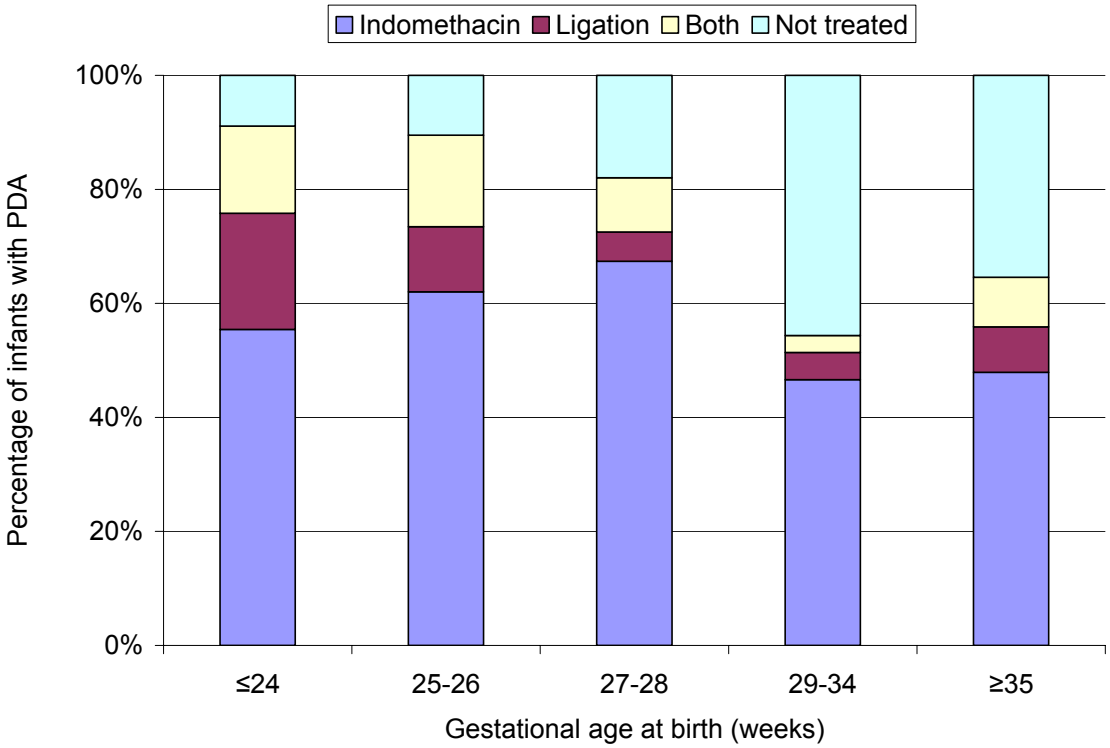
Presentation #8
Incidence of patent ductus arteriosus (by birthweight)



Birthweight(g)	Number of infants	with PDA	%
<500	19	14	73.7%
500-749	367	217	59.1%
750-999	574	320	55.7%
1000-1249	640	205	32.0%
1250-1499	626	111	17.7%
1500-2499	3405	163	4.8%
≥2500	4926	205	4.2%
Total included	**10557**	**1235**	**11.7%**
Missing	**447**		
Total	**11004**		

COMMENTS:
See comments for Presentation #7.

Presentation #9
Treatment of patent ductus arteriosus (by gestational age)

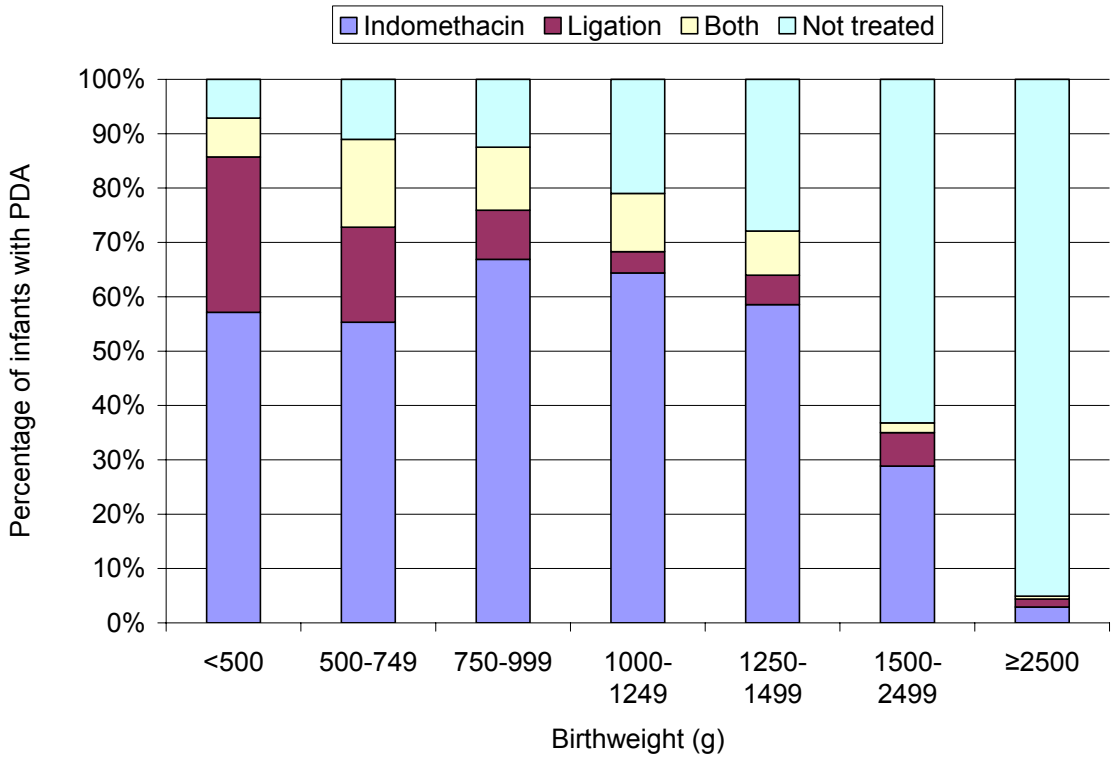


Presentation #9 (*continued*)
Treatment of patent ductus arteriosus (by gestational age)

Birth gestational age (weeks)		Infants with PDA	Treatment			Not treated
			Indomethacin	Ligation	Both	
≤24	**N**	137	76	28	21	12
	%	100.0%	54.7%	20.1%	15.1%	8.8%
25-26	**N**	324	201	37	52	34
	%	100.0%	62.0%	11.4%	16.0%	10.5%
27-28	**N**	273	184	14	26	49
	%	100.0%	67.4%	5.1%	9.5%	17.9%
29-34	**N**	271	126	13	8	124
	%	100.0%	46.8%	4.8%	3.0%	45.8%
≥35	**N**	234	6	7	1	220
	%	100.0%	2.6%	3.0%	0.4%	94.0%
Total included	**N**	**1239**	**593**	**99**	**108**	**439**
	%	100.0%	47.9%	8.0%	8.7%	35.4%
Missing (gestational age or treatment)		**413**				
Total # of infants without PDA		**9352**				
Total # of infants		**11004**				

COMMENTS:
Frequencies of various treatments of PDA at different gestational age at birth and birthweight are illustrated in Presentation #9 and #10. Specific reasons for treatment of indomethacin and frequency of repeat course of indomethacin were not recorded. Also excludes indomethacin prophylaxis started on first day.

Presentation #10
Treatment of patent ductus arteriosus (by birthweight)

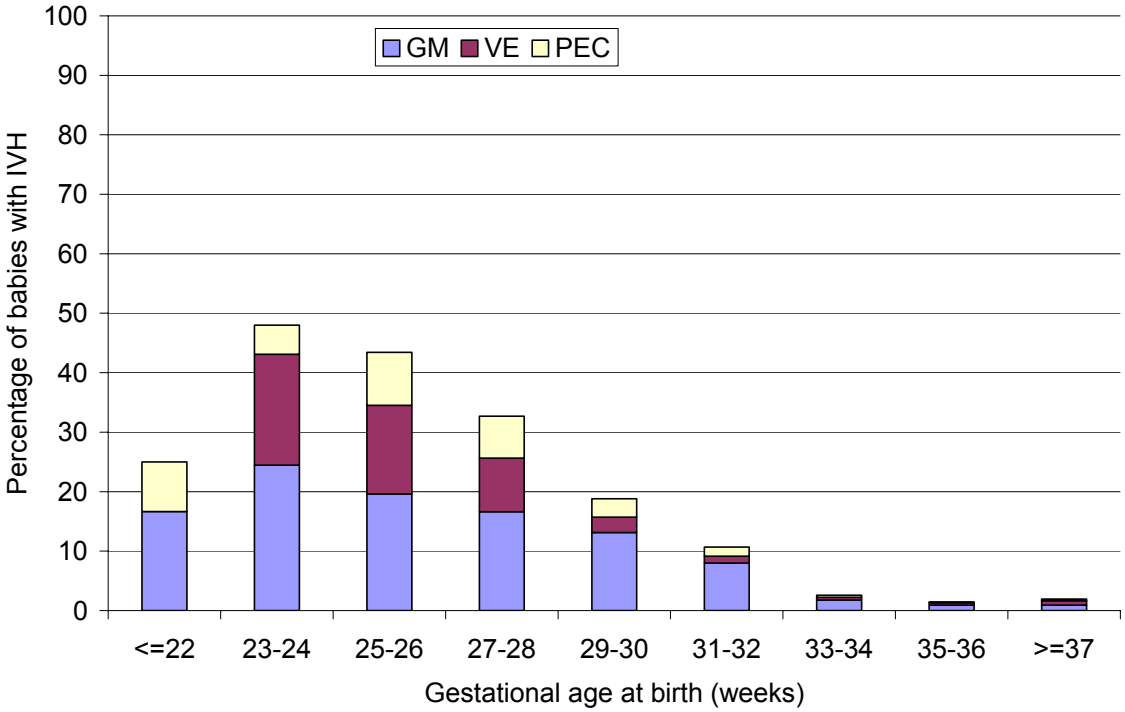


Presentation #10 (*continued*)
Treatment of patent ductus arteriosus (by birthweight)

Birthweight(g)		Infants with PDA	Treatment			Not treated
			Indomethacin	Ligation	Both	
<500	**N**	14	8	4	1	1
	%	100.0%	57.1%	28.6%	7.1%	7.1%
500-749	**N**	217	120	38	35	24
	%	100.0%	55.3%	17.5%	16.1%	11.1%
750-999	**N**	320	214	29	37	40
	%	100.0%	66.9%	9.1%	11.6%	12.5%
1000-1249	**N**	205	132	8	22	43
	%	100.0%	64.4%	3.9%	10.7%	21.0%
1250-1499	**N**	111	65	6	9	31
	%	100.0%	58.6%	5.4%	8.1%	27.9%
1500-2499	**N**	163	47	10	3	103
	%	100.0%	28.8%	6.1%	1.8%	63.2%
≥2500	**N**	205	6	3	1	195
	%	100.0%	2.9%	1.5%	0.5%	95.1%
	N	1235	592	98	108	437
Total included	**%**	100.0%	47.9%	7.9%	8.7%	35.4%
Missing (birthweight or treatment)		**417**				
Total # of infants without PDA		**9352**				
Total # of infants		**11004**				

COMMENTS:
See comments for Presentation #9.

Presentation #11
Incidence of intraventricular hemorrhage (by gestational age)



Presentation #11 (*continued*)
Incidence of intraventricular hemorrhage (by gestational age)

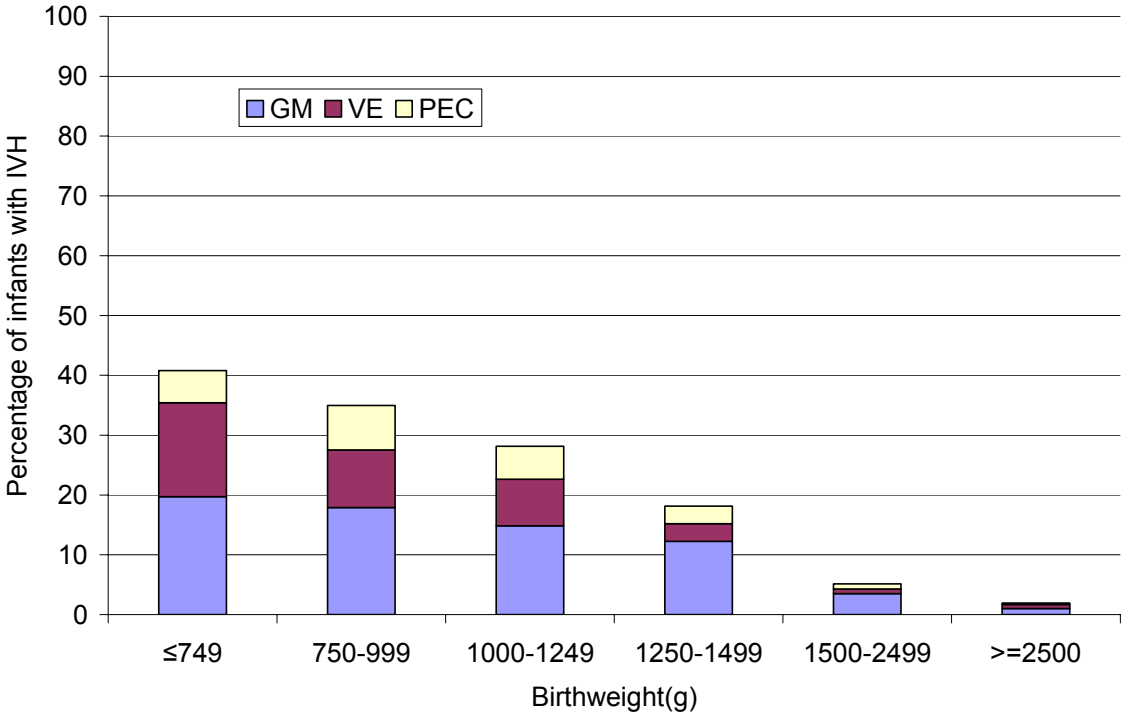
Birth gestational age (weeks)		IVH					Number of infants
		none	GM	VE	PEC	Not screened	
22	N	2	2	0	1	5	10
	%	25.0%	16.7%	.0%	8.3%	50.0%	100.0%
23-24	N	63	55	42	11	54	225
	%	28.0%	24.4%	18.7%	4.9%	24.0%	100.0%
25-26	N	215	99	75	45	70	504
	%	42.7%	19.6%	14.9%	8.9%	13.9%	100.0%
27-28	N	387	111	60	47	62	667
	%	58.0%	16.6%	9.0%	7.0%	9.3%	100.0%
29-30	N	516	107	21	25	146	815
	%	63.4%	13.1%	2.6%	3.1%	17.8%	100.0%
31-32	N	442	84	12	16	497	1051
	%	42.0%	8.0%	1.1%	1.5%	47.3%	100.0%
33-34	N	247	30	8	6	1408	1699
	%	14.5%	1.8%	.5%	.4%	82.9%	100.0%
35-36	N	255	16	7	2	1445	1725
	%	14.8%	.9%	.4%	.1%	83.8%	100.0%
≥37	N	794	40	32	12	3418	4296
	%	18.5%	.9%	.7%	.3%	79.6%	100.0%
Total included	N	**2921**	**544**	**257**	**165**	**7105**	**10992**
	%	26.6%	4.9%	2.3%	1.5%	64.6%	100.0%
Missing (GA/ IVH)							**12**
Total # of infants							**11004**

Footnote: not all infants at these gestational groups were screened.

COMMENTS:
GM = isolated germinal matrix/intraventricular hemorrhage
VE = echogenic lesion originating in the germinal matrix area and extending into the ventricles and distending the ventricles with blood (grade III hemorrhage). Also includes ventricular enlargement.
PEC = parenchymal echogenic/lucencies, this may include grade IV IVH, intraparechymal hemorrhage, intraparenchymal echodensity (IPE), periventricular cyst, cystic encephalomalacia and porencephalic cyst.

These are based on those examined (detection rate). Incidence of intraventricular hemorrhage (IVH) in relation to gestational age and birthweight are shown in Presentation #11 and #12, respectively. GM and VE diagnosis is based upon cranial ultrasound examination, CT Scans or MRIs in the first two weeks of life. PEC diagnosis is based on cranial ultrasound examination, CT Scans or MRIs after 21 days of life. These morbidities will be analyzed for a potential relationship to SNAP-II PE scores.

Presentation #12
Incidence of intraventricular hemorrhage (by birthweight)

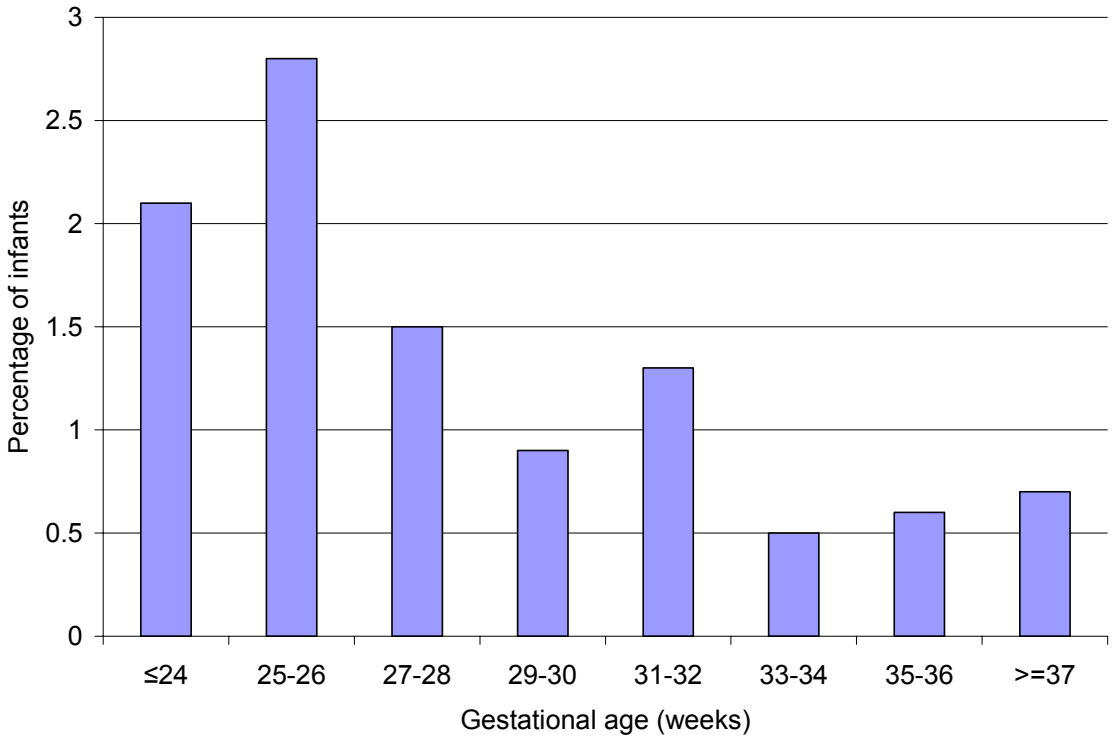


Presentation #12 (*continued*)
Incidence of intraventricular hemorrhage (by birthweight)

Birthweight (g)		IVH					Number of infants
		none	GM	VE	PEC	Not screened	
≤749	N	165	84	67	23	87	426
	%	38.7%	19.7%	15.7%	5.4%	20.4%	100.0%
750-999	N	323	106	57	44	62	592
	%	54.6%	17.9%	9.6%	7.4%	10.5%	100.0%
1000-1249	N	381	97	51	36	89	654
	%	58.3%	14.8%	7.8%	5.5%	13.6%	100.0%
1250-1499	N	388	79	19	19	141	646
	%	60.1%	12.2%	2.9%	2.9%	21.8%	100.0%
1500-2499	N	803	124	28	30	2550	3535
	%	22.7%	3.5%	.8%	.8%	72.1%	100.0%
≥2500	N	855	52	34	12	4150	5103
	%	16.8%	1.0%	.7%	.2%	81.3%	100.0%
Total included	N	**2915**	**542**	**256**	**164**	**7079**	**10956**
	%	26.6%	4.9%	2.3%	1.5%	64.6%	100.0%
Missing (birthweight or IVH)							**48**
Total # of infants							**11004**

COMMENTS:
See comments for Presentation #11.

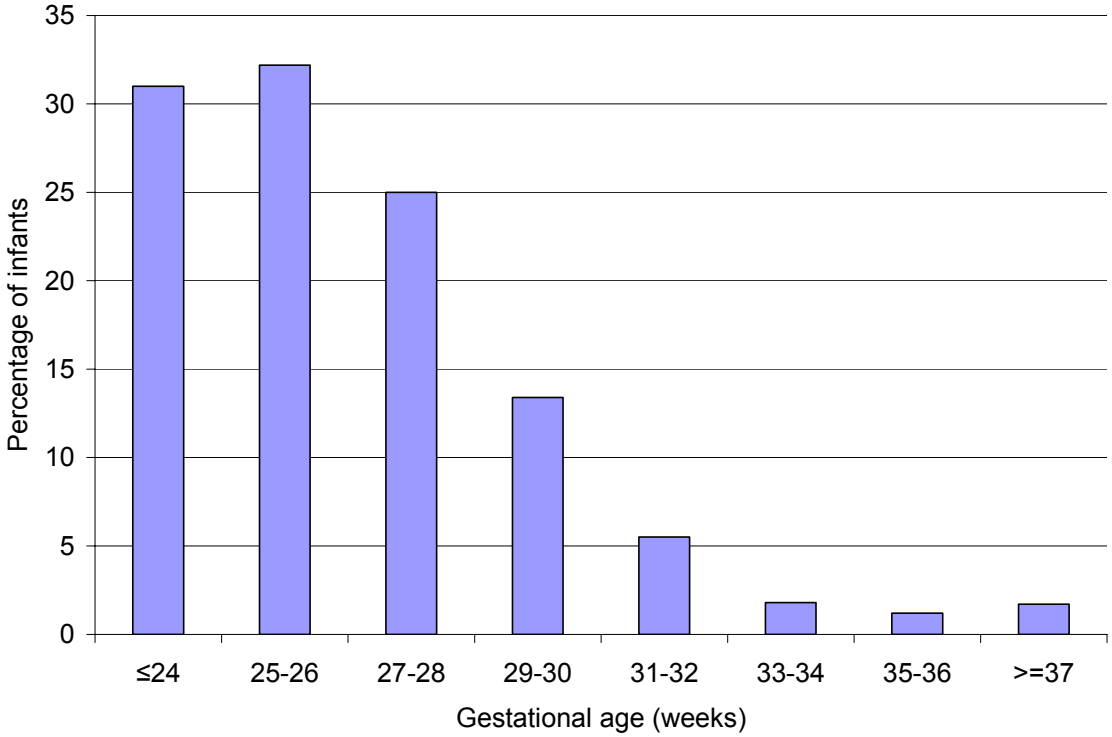
Presentation #13
Primary infection (by gestational age)



Gestational age at birth	Infants	No. of infants with infection	%
≤24	236	5	2.1
25-26	503	14	2.8
27-28	668	10	1.5
29-30	814	7	0.9
31-32	1051	14	1.3
33-34	1700	9	0.5
35-36	1726	11	0.6
≥37	4298	28	0.7
Total included	**10998**	98	**0.9**
Missing (GA)	**6**		
Total # of infants	**11004**		

COMMENTS:
Primary infection is indicated by positive blood and/or cerebrospinal fluid, bacterial or candida culture in the first two days after birth (adjusted for readmission and transfers). The infants represented in these gestational age groups did not all survive to discharge.

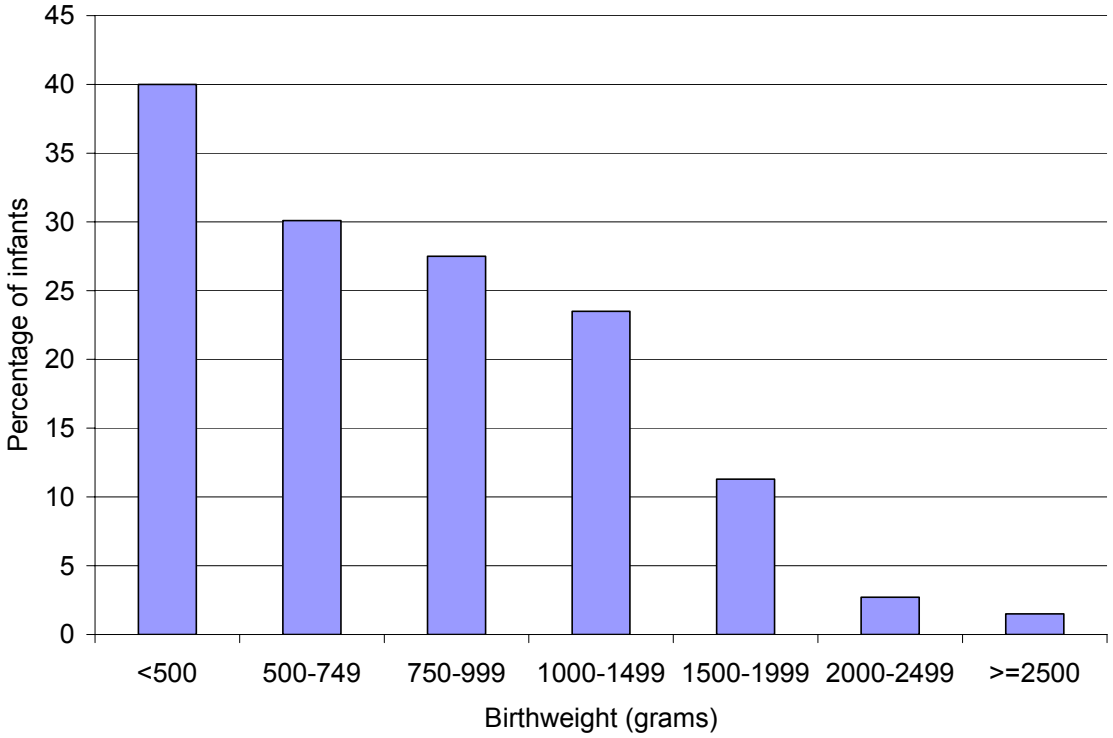
Presentation #14
Nosocomial infection (by gestational age)



Gestational age at birth	Infants	# with at least one infection	%
≤24	236	73	30.9
25-26	503	162	32.2
27-28	668	167	25.0
29-30	816	111	13.4
31-32	1051	58	5.5
33-34	1700	30	1.8
35-36	1726	20	1.2
≥37	4298	73	1.7
Total included	**10998**	**694**	**6.3**
Missing	**6**		
Total # of infants	**11004**		

COMMENTS:
Nosocomial infection (likely hospital acquired after two days of age) at varying gestational ages and birthweights is shown in Presentation #14 and #15, respectively. The number is adjusted for readmission and transfer. This includes only positive blood and/or cerebrospinal fluid, bacterial or candidal cultures, and does not include pneumonia, urinary tract infections, or skin infections.

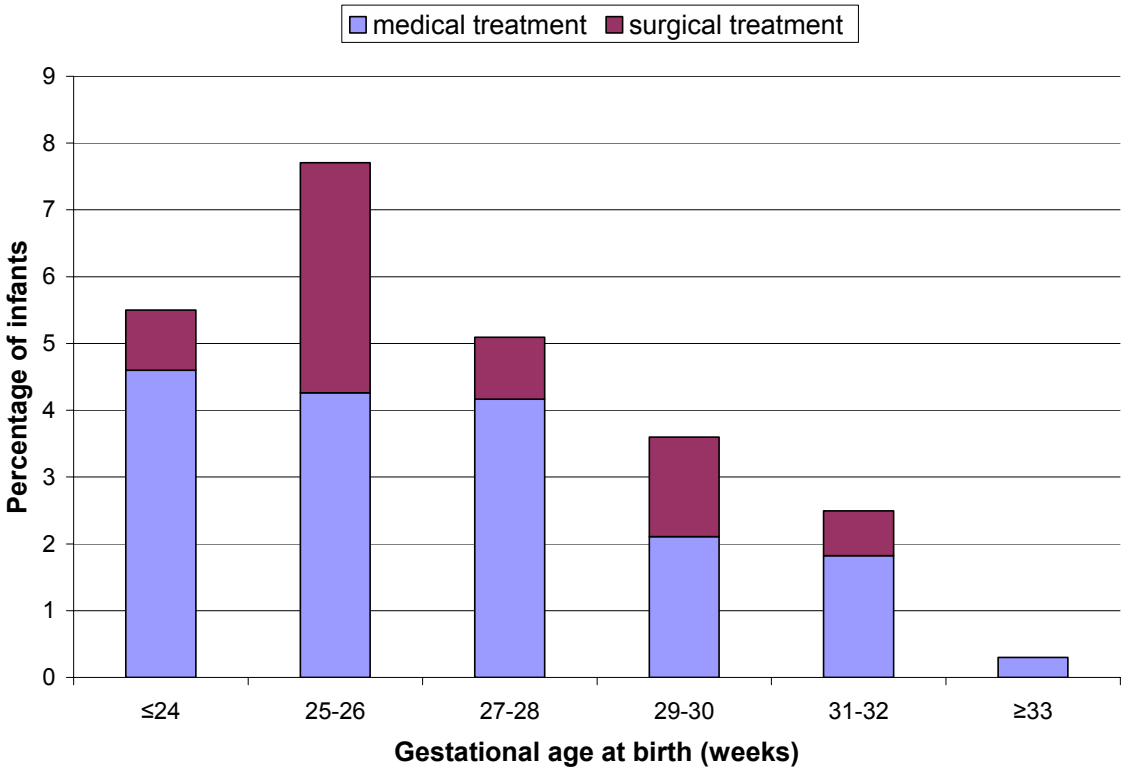
Presentation #15
Nosocomial infection (by birthweight)



Birthweight(g)	Infants	# with at least one infection	%
<500	25	10	40
500-749	402	121	30.1
750-999	592	163	27.5
1000-1499	654	154	23.5
1500-1999	646	73	11.3
2000-2499	3536	96	2.7
≥2500	5108	77	1.5
Total included	**10963**	**694**	**6.3**
Missing (birthweight)	**41**		
Total # of infants	**11004**		

COMMENTS:
See comments on Presentation #14.

Presentation #16
Incidence of necrotizing enterocolitis (by gestational age)



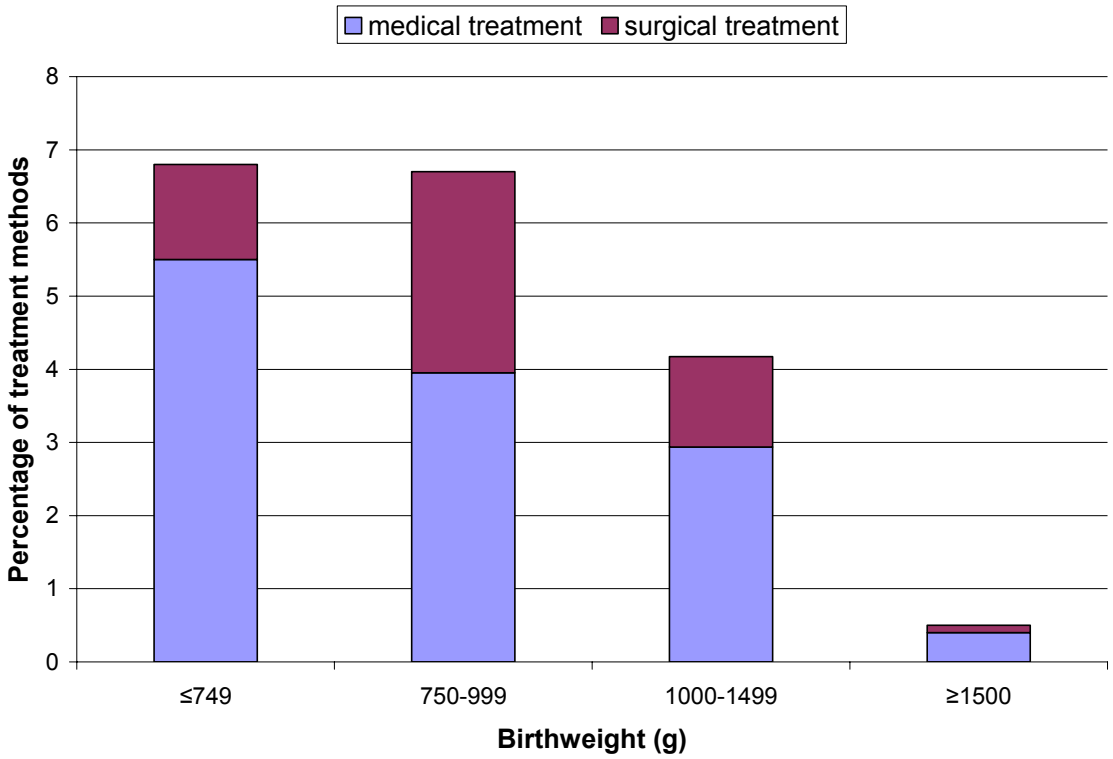
Presentation #16 (*continued*)
Incidence of necrotizing enterocolitis (by gestational age)

Birth gestational age (weeks)		Number of infants	Necrotizing Enterocolitis		
			none	medical treatment	surgical treatment
≤24	N	214	202	10	2
	%	100.0%	94.4%	4.6%	0.9%
25-26	N	493	455	21	17
	%	100.0%	92.3%	4.3%	3.4%
27-28	N	648	615	27	6
	%	100.0%	94.9%	4.2%	0.9%
29-30	N	807	778	17	12
	%	100.0%	96.4%	2.1%	1.5%
31-32	N	1043	1017	19	7
	%	100.0%	97.5%	1.8%	0.7%
≥33	N	7660	7635	20	5
	%	100.0%	99.7%	0.3%	0.0%
Total included	N	**10865**	**10702**	**114**	**49**
	%	100.0%	98.5%	1.0%	0.5%
Missing		**139**			
Total # of infants		**11004**			

COMMENTS:

Clinical diagnosis (using Bell's criteria, stage 2 or higher) of necrotizing enterocolitis and the presence of pneumatosis on abdominal radiographs and/or compatible surgical/pathological findings by gestational age and by birthweight, is illustrated for Presentation #16 and #17, respectively.

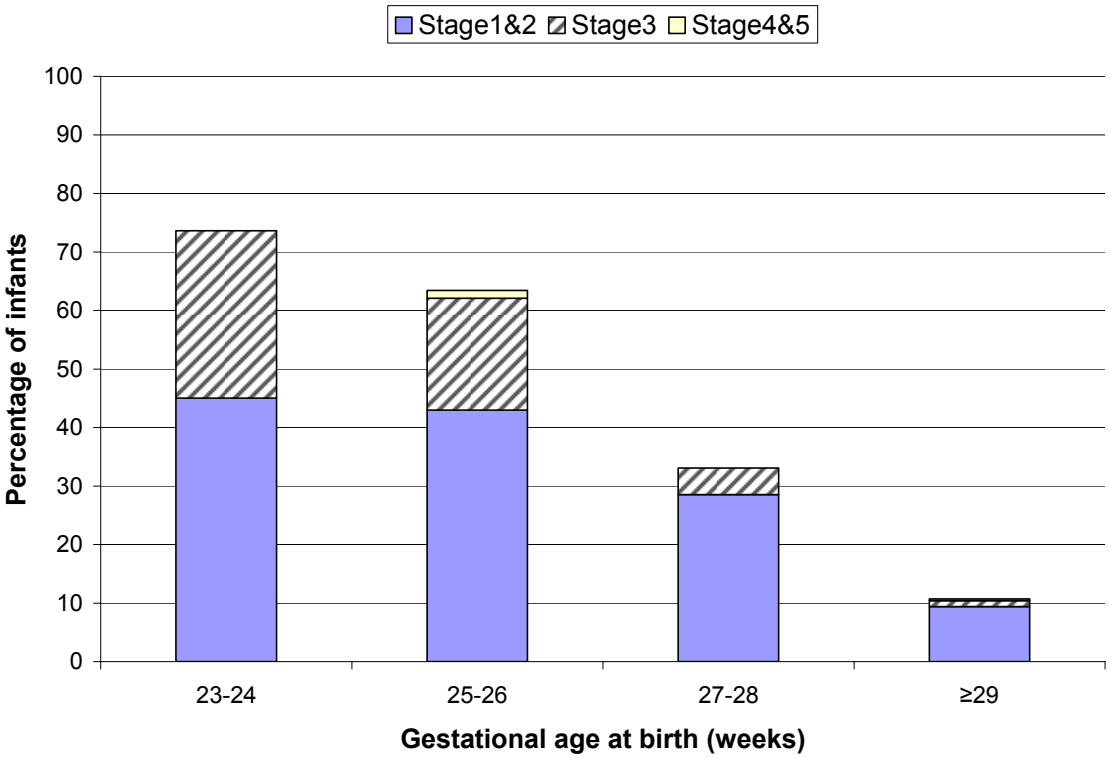
Presentation #17
Incidence of necrotizing enterocolitis (by birthweight)



Birthweight (g)		Number of infants	Necrotizing Enterocolitis		
			none	medical treatment	surgical treatment
≤749	N	398	371	22	5
	%	100.0%	93.2%	5.5%	1.3%
750-999	N	582	543	23	16
	%	100.0%	93.3%	4.0%	2.7%
1000-1249	N	647	620	19	8
	%	100.0%	95.8%	2.9%	1.2%
1250-1499	N	634	612	14	8
	%	100.0%	96.5%	2.2%	1.3%
≥1500	N	8570	8522	36	12
	%	100.0%	99.4%	0.4%	0.1%
Total included	N	**10831**	**10668**	**114**	**49**
	%	100.0%	98.5%	1.1%	0.5%
Missing		**173**			
Total # of infants		**11004**			

COMMENTS:
See comments for Presentation #16.

Presentation #18
Incidence of retinopathy of prematurity (by gestational age)

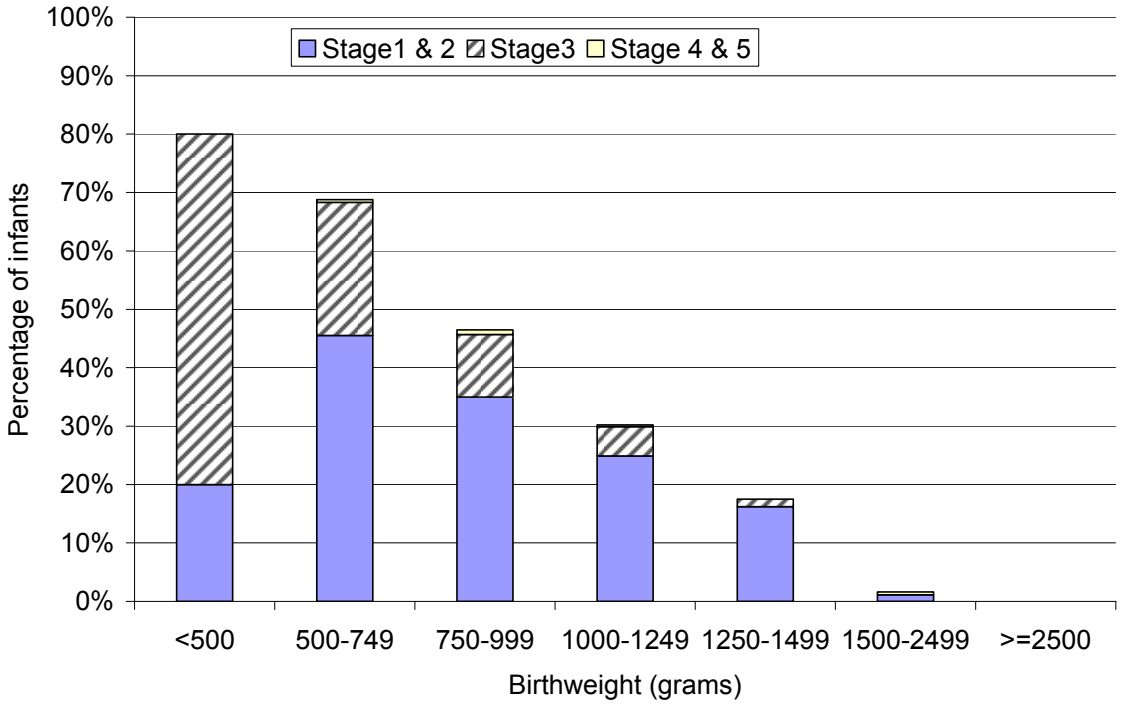


Presentation #18 (*continued*)
Incidence of retinopathy of prematurity (by gestational age)

Birth gestational age (weeks)		Retinopathy of prematurity				Number of infants received eye examination	Therapy
		none	Stages 1 & 2	Stage 3	Stage 4 & 5		
≤22	N	0	0	0	0	0	0
	%	0	0	0	0	0	0
23-24	N	24	41	26	0	91	17
	%	26.4%	45.1%	28.6%	.0%	100.0%	18.7%
25-26	N	109	128	57	4	298	46
	%	36.6%	43.0%	19.1%	1.3%	100.0%	15.4%
27-28	N	279	119	19	0	417	11
	%	66.9%	28.5%	4.6%	.0%	100.0%	2.6%
≥29	N	562	59	6	2	629	2
	%	89.3%	9.4%	1.0%	0.3%	100.0%	0.3%
Total included	**N**	974	347	108	6	1435	**76**
	%	67.9%	24.2%	7.5%	0.4%	100.0%	5.3%
Missing(GA or ROP)						**3**	
Total # of infants						**1438**	

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 this data.

Presentation #19
Incidence of retinopathy of prematurity (by birthweight)

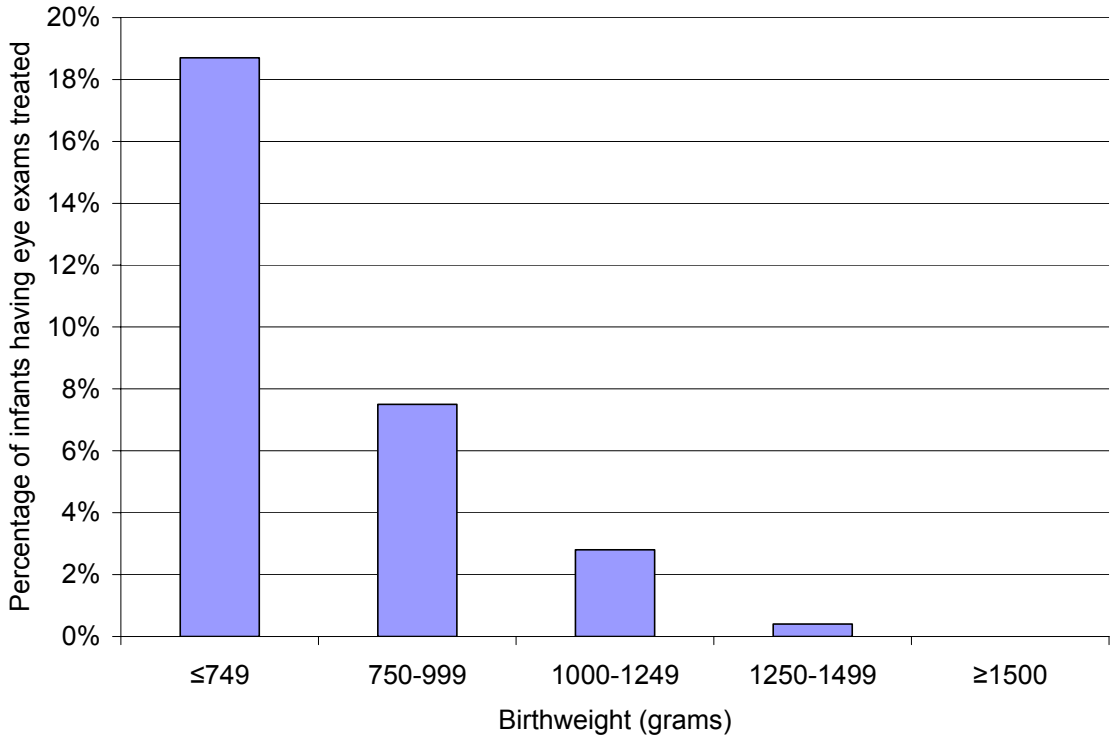


Presentation #19 (*continued*)
Incidence of retinopathy of prematurity (by birthweight)

Birthweight (grams)		Retinopathy of prematurity				Number of infants received eye examination
		none	Stages 1 & 2	Stage 3	Stage 4 & 5	
<500	N	1	1	3	0	5
	%	20.0%	20.0%	60.0%	.0%	100.0%
500-749	N	59	86	43	1	189
	%	31.2%	45.5%	22.8%	.5%	100.0%
750-999	N	200	131	40	3	374
	%	53.5%	35.0%	10.7%	.8%	100.0%
1000-1249	N	249	89	18	1	357
	%	69.7%	24.9%	5.0%	.3%	100.0%
1250-1499	N	188	37	3	0	228
	%	82.5%	16.2%	1.3%	.0%	100.0%
1500-2499	N	183	2	0	1	186
	%	98.4%	1.1%	.0%	.5%	100.0%
≥2500	N	93	0	0	0	93
	%	100.0%	.0%	.0%	.0%	100.0%
Total included	N	**973**	**346**	**107**	**6**	**1432**
	%	67.9%	24.2%	7.5%	.4%	100
Missing (birthweight or ROP)						**6**
Total # of infants						**1438**

COMMENTS:
See comments for Presentation #18.

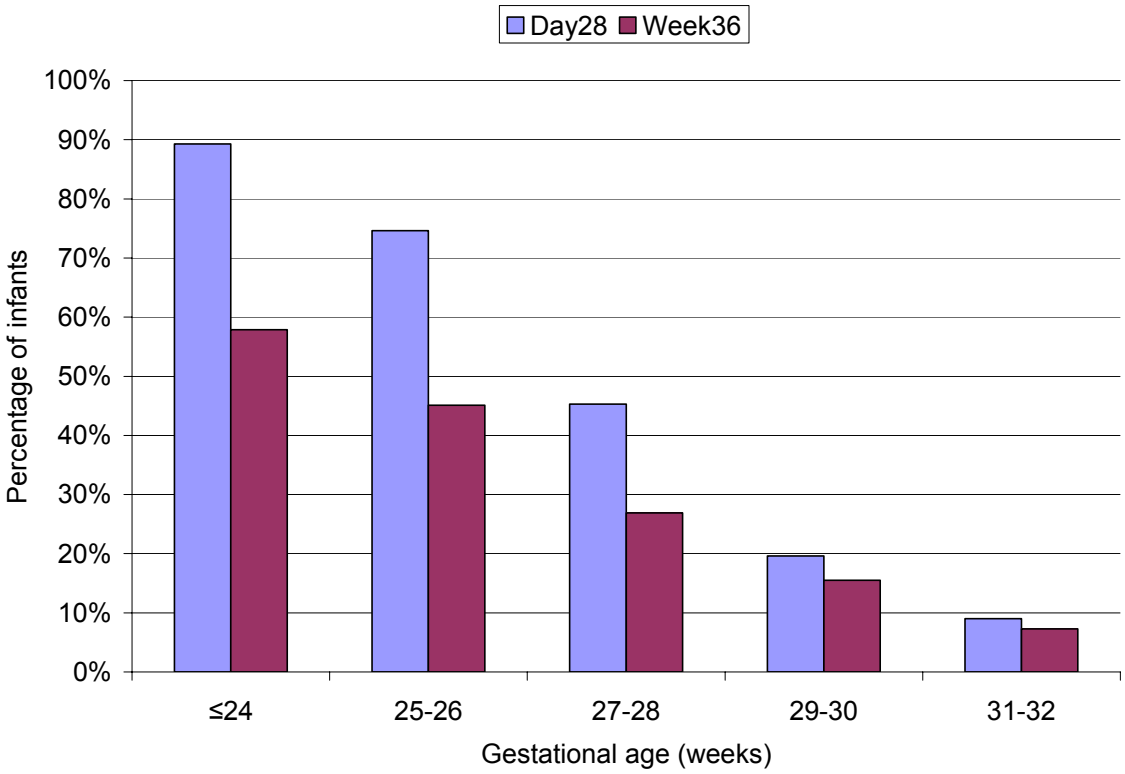
Presentation #19a
Incidence of cryo/laser therapy for infants with retinopathy of prematurity



Birthweight (grams)		Number of infants received eye examination	Therapy
≤749	N	193	36
	%		18.7%
750-999	N	374	28
	%		7.5%
1000-1249	N	357	10
	%		2.8%
1250-1499	N	228	1
	%		.4%
≥1500	N	279	0
	%		0.0%
Total included	N	**1431**	**75**
	%		5.2%
Missing		**7**	
Total # of infants		**1438**	

COMMENTS:
See comments for Presentation #18.

Presentation #20
Incidence of bronchopulmonary dysplasia (by gestational age)

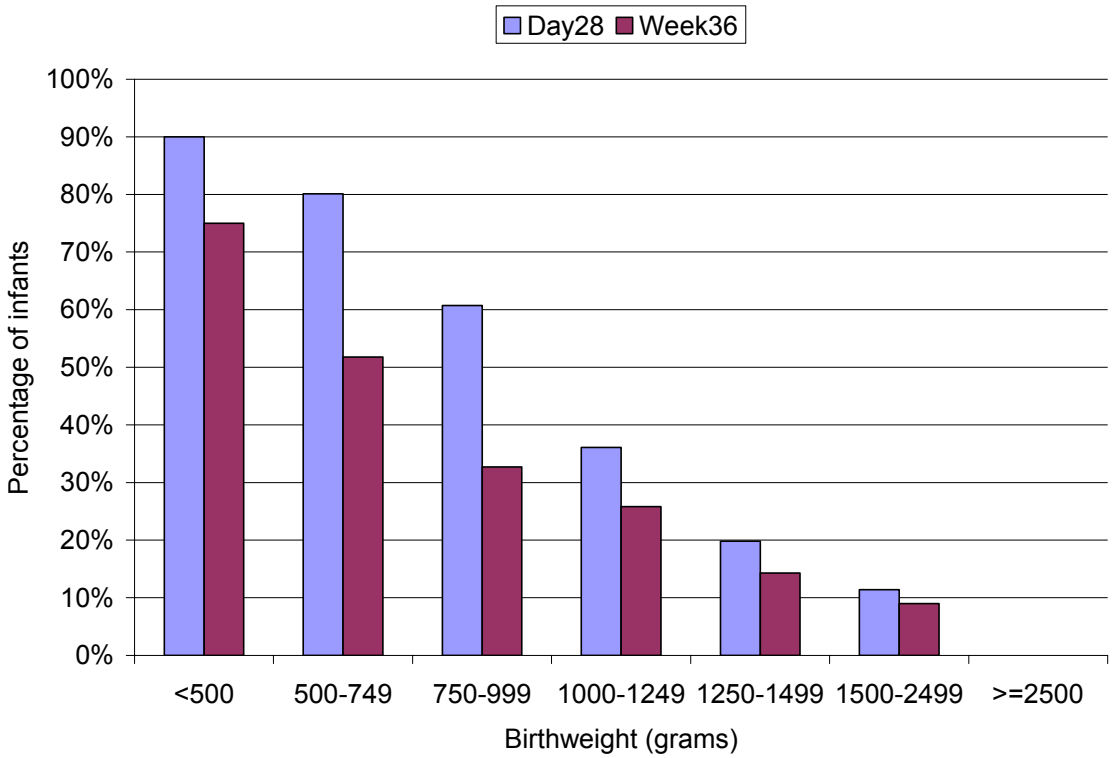


Presentation #20 (*continued*)
Incidence of bronchopulmonary dysplasia (by gestational age)

Birth gestational age (weeks)	Day 28					Week 36				
	Infants	with BPD	% with BPD	Number of infants without BPD	% Survival without BPD	Infants	with BPD	% with BPD	Number of infants without BPD	% Survival without BPD
≤24	103	92	89.3%	11	90.9%	57	33	57.9%	24	91.7%
25-26	331	247	74.6%	84	100.0%	213	96	45.1%	117	100.0%
27-28	479	217	45.3%	262	99.2%	279	75	26.9%	204	99.0%
29-30	382	75	19.6%	307	99.0%	238	37	15.5%	201	98.5%
31-32	334	30	9.0%	304	100.0%	137	10	7.3%	127	99.2%
Total included	1629	661	40.6%			924	251			
Missing	0	0				0	0			
Total # of infants	**1629**	**661**				**924**	**251**			

COMMENTS:
Bronchopulmonary dysplasia is defined as: a) having received assisted ventilation at any time in the NICU prior to day 28 or week 36, and b) receiving supplemental oxygen on day 28 or week 36. 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 #21
Incidence of bronchopulmonary dysplasia (by birthweight)



Birthweight (g)	Day 28			Week 36		
	Infants	with BPD	%	Infants	with BPD	%
<500	10	9	90.0%	4	3	75.0%
500-749	211	169	80.1%	137	71	51.8%
750-999	407	247	60.7%	245	80	32.7%
1000-1249	393	142	36.1%	236	61	25.8%
1250-1499	278	55	19.8%	154	22	14.3%
1500-2499	325	37	11.4%	145	13	9.0%
≥2500	2	0	0%	0	0	0
Total	**1626**	**659**	**40.6%**	**921**	**250**	**27.1%**
Missing	**3**	**2**		**3**	**1**	
Total # of infants	**1629**	**661**		**924**	**251**	

COMMENTS:
See comments for Presentation #20.

Presentation #22
Procedures and Treatments

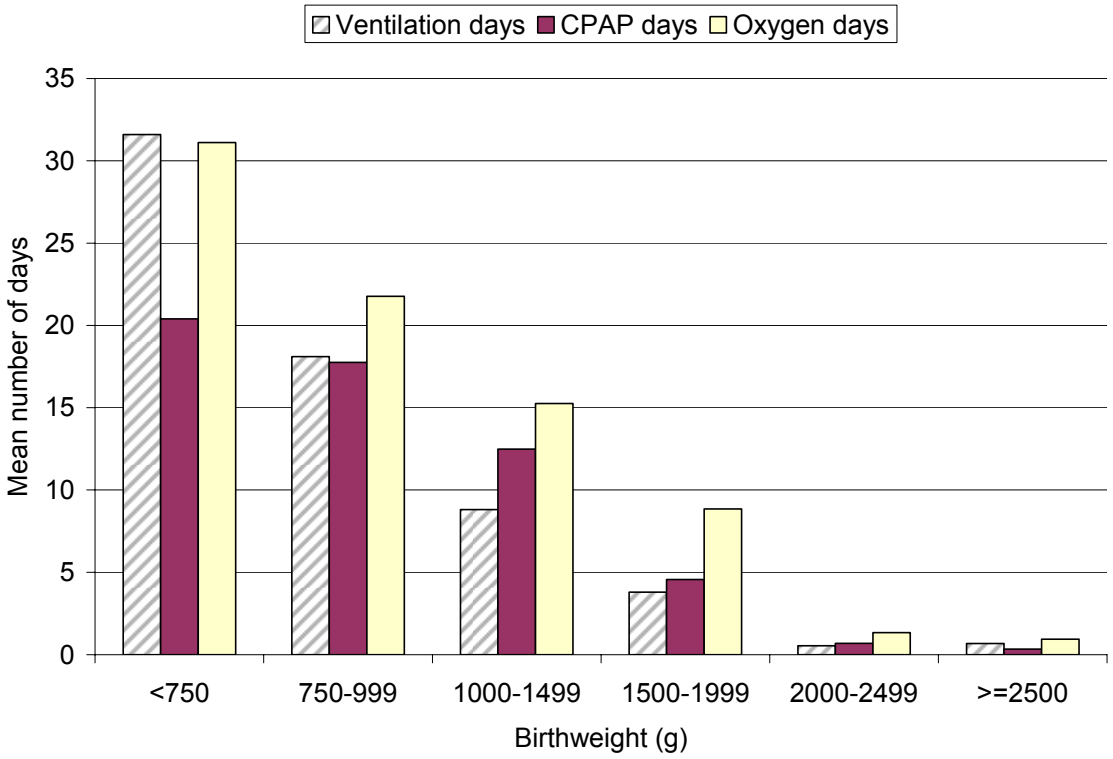
	No. of patients treated	%	Missing	Total # of infants
Nitric Oxide	141	1.3	0	**11004**
ECMO	2	0.0002	0	**11004**
Cryo/Laser	76	0.7	3	**11004**
Intraventricular shunts	46	0.4	0	**11004**

Presentation #23
Operations

Minor operations			Major operations		
No. of operations	**No. of patients**	**%**	**No. of operations**	**No. of patients**	**%**
0	10275	93.5	0	10577	96.3
1	585	5.3	1	343	3.1
2	84	.8	2	52	.5
3	21	.2	3	8	.1
4	11	.1	4	2	.0
5	9	.1	5	1	.0
6	0	0	6	2	.0
Total included	**10985**	100		**10985**	100
Missing	**19**			**19**	
Total # of infants	**11004**			**11004**	

COMMENTS:
Of the 11,004 infants admitted, about 7% received one or more minor operations and about 4% received one or more major operations. Information on specific treatment is summarized as follows: 141(1.3%) infants received nitric oxide therapy, 2(0.0002%) infants received extracorporeal membrane oxygenation, 76(0.7%) infants received cryotherapy/laser therapy and 46(0.4%) received intraventricular shunts.

Presentation #24
Days on assisted ventilation and oxygen (by birthweight)



		Birthweight (g)						
		<750	750-999	1000-1249	1250-1499	1500-2499	≥2500	Total # of infants
Ventilation days*	N	97	170	213	223	1680	2439	4822
	Mean	31.6	18.1	8.8	3.8	0.5	0.7	2.4
	SEM	2.5	1.5	0.9	0.6	0.0	0.1	0.1
	Median	29.0	10.0	3.0	1.0	0.0	0.0	0.0
CPAP days*	N	11	170	213	223	1680	2439	4822
	Mean	20.4	17.8	12.5	4.6	0.7	0.3	2.2
	SEM	1.6	1.2	0.9	0.5	0.1	0.0	0.1
	Median	17.0	14.5	7.0	2.0	0.0	0.0	0.0
Oxygen days*	N	97	168	211	223	1679	2439	4817
	Mean	31.1	21.8	15.3	8.9	1.3	0.9	3.4
	SEM	3.1	1.7	1.4	0.9	0.1	0.1	0.2
	Median	21.0	14.0	9.0	1.0	0.0	0.0	0.0

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 for criteria). The information is for all infants discharged home directly from network NICUs.

Presentation #25
Use of medication in ventilated infants

% of ventilated infants on narcotics (morphine, fentanyl or meperidine)				
Birthweight (g)	# ventilated infants	none	any 1	any 2
<500	20	25.0%	50.0%	25.0%
500-749	376	24.2%	51.9%	23.9%
750-999	568	40.7%	41.0%	18.3%
1000-1249	573	59.3%	30.7%	9.9%
1250-1499	491	65.4%	28.5%	6.1%
1500-2499	1496	69.7%	25.8%	4.5%
≥2500	1573	49.3%	41.4%	9.2%
Total included	**5097**	**55.1%**	**35.2%**	**9.8%**
Missing	**3**			
Total # of infants	**5100**			

Note: There were no infants on a combination of any of the 3 narcotics (morphine, fentanyl or meperidine).

% of ventilated infants on sedatives (diazepam, lorazepam or midazolam)					
Birthweight (g)	# ventilated infants	none	any 1	any 2	any 3
<500	20	75.0%	25.0%	0%	0%
500-749	376	84.0%	15.2%	.8%	0%
750-999	568	87.9%	11.3%	.9%	0%
1000-1249	573	91.4%	7.0%	1.6%	0%
1250-1499	491	93.7%	5.9%	.4%	0%
1500-2499	1496	95.4%	4.2%	.3%	.1%
≥2500	1573	87.1%	11.5%	1.4%	0%
Total included	**5097**	**90.5%**	**8.6%**	**.9%**	**.0%**
Missing	**3**				
Total # of infants	**5100**				

% of ventilated infants NOT on sedatives or narcotics		
Birthweight (g)	# ventilated infants	none
<500	20	15%
500-749	376	22.6%
750-999	568	39.3%
1000-1249	573	58.1%
1250-1499	491	63.7%
1500-2499	1496	68.5%
≥2500	1573	46.3%
Total included	**5097**	**53.1%**
Missing	**3**	
Total # of infants	**5100**	

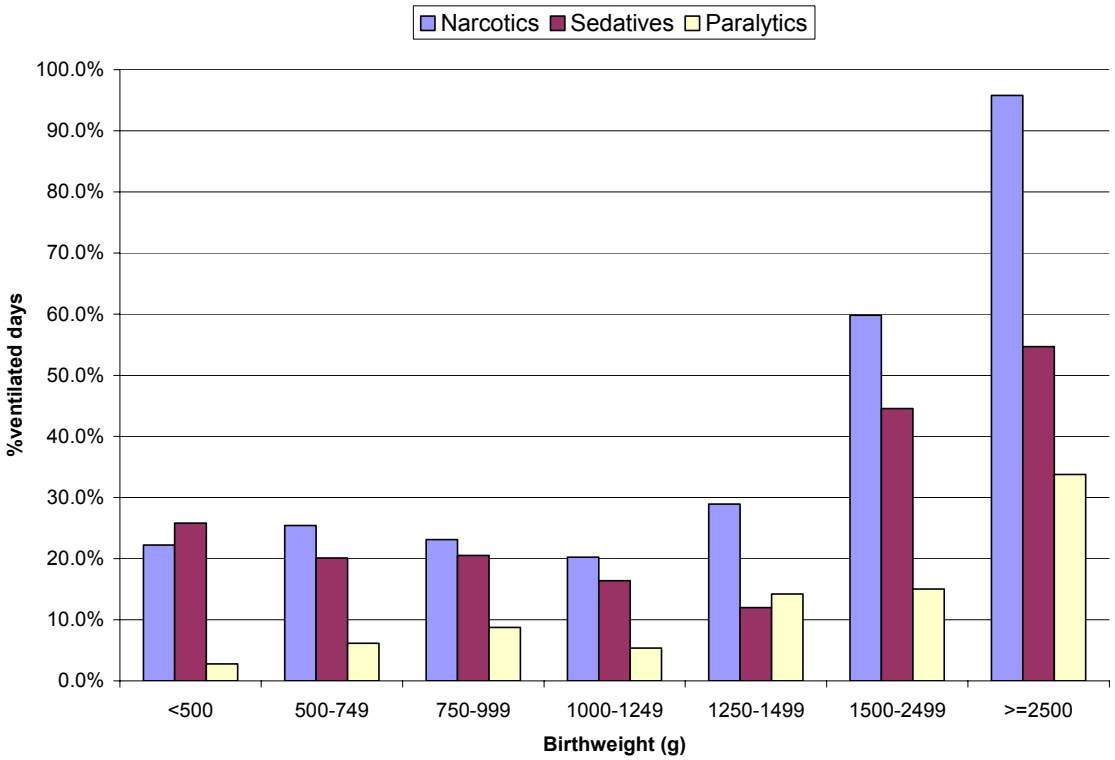
Presentation #25 (*continued*)
Use of medication in ventilated infants

% of ventilated infants on paralytic agent (pancuronium)			
Birthweight (g)	**# ventilated infants**	**none**	**any**
<500	20	85.0%	15.0%
500-749	376	91.5%	8.5%
750-999	568	95.1%	4.9%
1000-1249	573	96.5%	3.5%
1250-1499	491	98.6%	1.4%
1500-2499	1496	98.7%	1.3%
≥2500	1573	96.2%	3.8%
Total included	**5097**	**96.7%**	**3.3%**
Missing	**3**		
Total # of infants	**5100**		

Presentation #25a
Sedatives and analgesics used in ventilated infants

Medication	Frequency	Percent
None	2397	23.7
Acetaminophen/Tylenol	1362	13.5
Ativan/ Lorazepam	350	3.5
Chloral Hydrate	640	6.3
Clonidine	3	.0
Clonidine transdermal	5	.0
Codeine	30	.3
Diazepam/ Valium	6	.0
Fentanyl	1660	16.4
Ketamine	25	.2
Meperidine	3	.0
Methadone	1	.0
Midazolam	510	5.0
Morphine	2472	24.5
Nitrazepam	2	.0
Phenobarb	560	5.5
Propofol	1	.0
Sucrose	73	.7
Sufentanil	4	.0
Other	3	.0

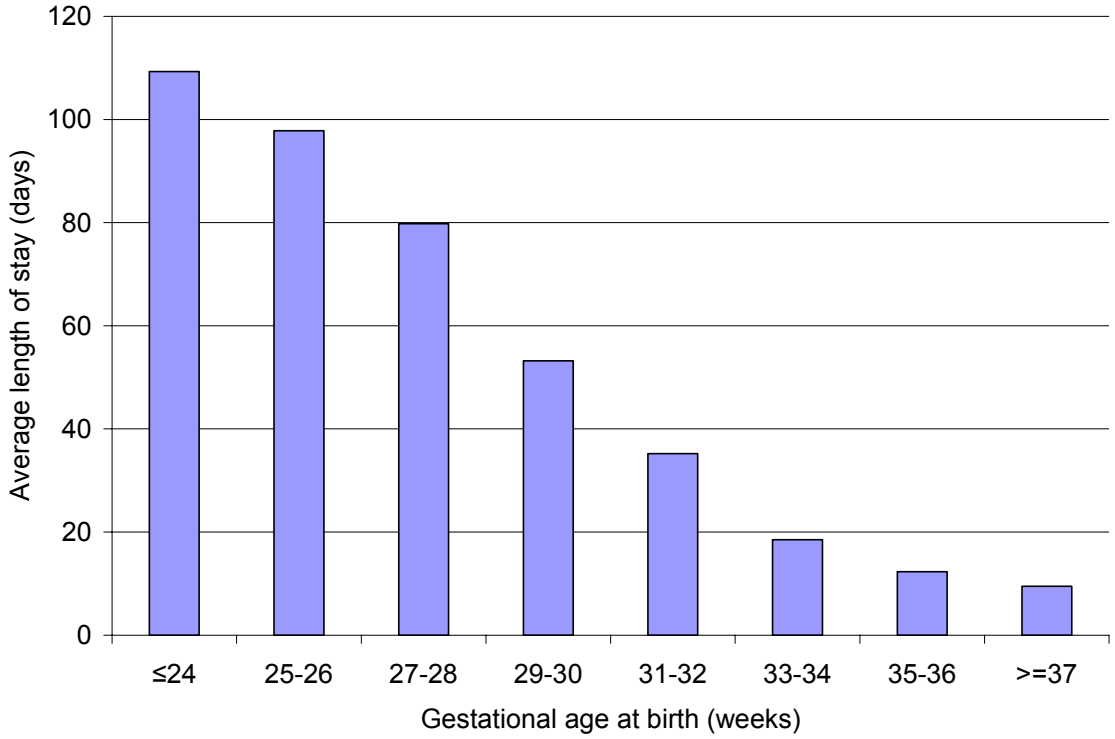
Presentation #26
Medication days and assisted ventilation



Birthweight (g)	Narcotics		Sedatives		Paralytics		Days on ventilation	
	mean %	median %	mean %	median %	mean %	median %	mean	median
<500	22.2%	14.3%	25.8%	2.7%	2.8%	4.4%	35.2	23.0
500-749	25.4%	9.1%	20.1%	5.9%	6.1%	3.8%	39.5	37.5
750-999	23.1%	7.9%	20.5%	7.0%	8.7%	5.2%	33.4	30.0
1000-1249	20.2%	8.0%	16.4%	9.1%	5.4%	2.7%	19.7	12.0
1250-1499	28.9%	21.1%	12.0%	11.8%	14.2%	25.0%	9.6	5.0
1500-2499	59.8%	50.0%	44.5%	33.3%	15.0%	33.3%	4.5	2.0
≥2500	95.8%	75.0%	54.7%	40.0%	33.8%	50.0%	4.0	2.0
Total	34.0%	50.0%	25.9%	20.0%	10.8%	13.3%	12.5	4.0

COMMENTS:
Mean % = [(mean number of days on medication) ÷ (mean number of days on assisted ventilation)]*100.
Median % = [(median (number of days on medication) ÷ (median number of days on assisted ventilation)]*100.

Presentation #27
Length of stay prior to discharge home from the Network NICU in relation to gestational age at birth*

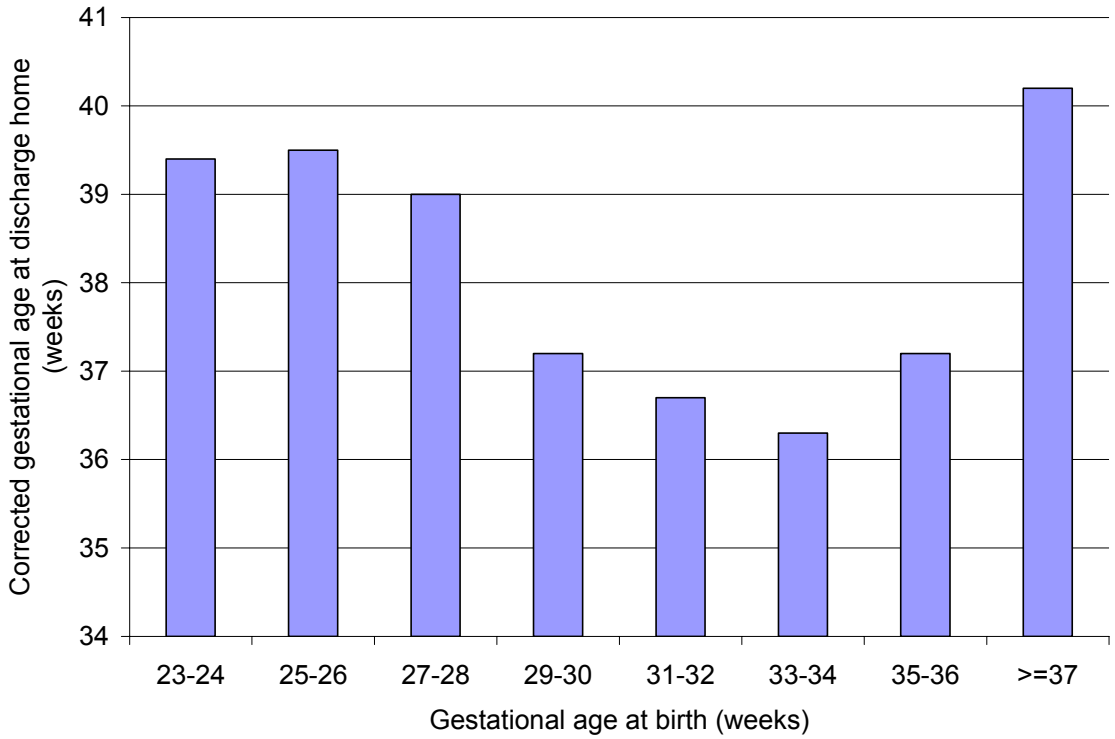


Gestational age at birth	# of infants	Mean	SEM	Median
≤24	41	109.3	6.3	117
25-26	145	97.8	2.8	94
27-28	227	79.8	2.2	78
29-30	263	53.2	1.1	50
31-32	405	35.2	0.8	33
33-34	833	18.5	0.3	16
35-36	919	12.3	0.3	11
≥37	2013	9.5	0.2	7
Total included	**4846**	**22.9**	**0.4**	**12**
Missing	**3**			
Total # of infants	**4849**			

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

COMMENTS:
For infants discharged home from a network NICU, the length of stay in hospital from the day of admission to the day when patient went home from the NICU, in relation to gestational age at birth, is illustrated. It is unclear 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	41	39.4	0.9	40.6
25-26	145	39.5	0.4	39.3
27-28	227	39.0	0.3	38.6
29-30	263	37.2	0.2	36.9
31-32	405	36.7	0.1	36.3
33-34	833	36.3	0.1	36.0
35-36	919	37.2	0.0	37.0
≥37	2013	40.2	0.0	40.0
Total included	**4846**	**38.4**	**0.0**	**38.1**
Missing	**0**			
Total # of infants	**4846**			

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

COMMENTS:
See comments for Presentation #27.

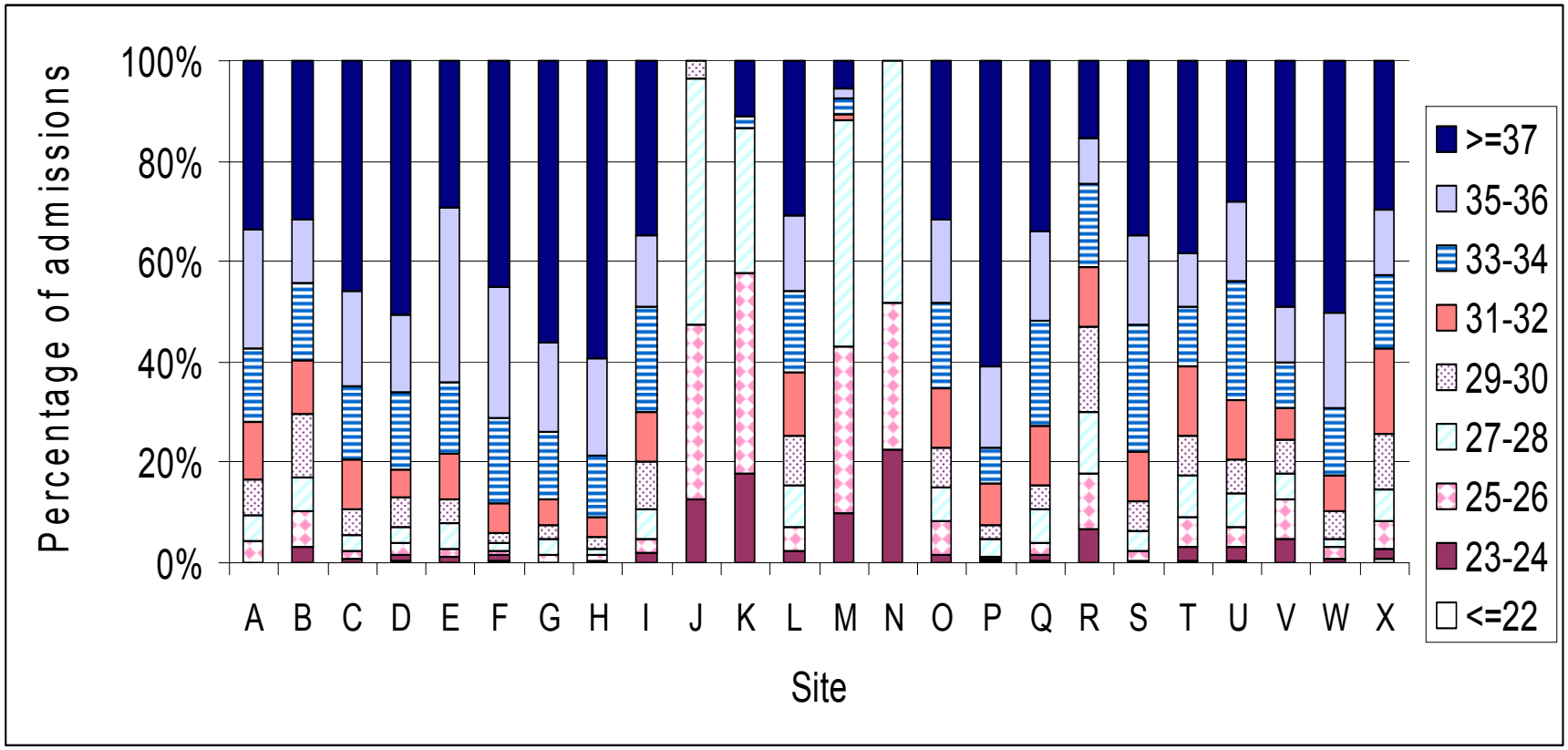
Presentation #29
Use of diuretics, theophylline or oxygen at discharge home

Gestational age (weeks)	Admissions	Diuretics		Theophylline		Oxygen		Any	
		N	%	N	%	N	%	N	%
≤22	0	0	0	0	0	0	0	0	0
23-24	53	8	15.1	0	0	19	35.8	1	1.9
25-26	166	15	9.0	1	0.6	29	17.5	0	0.0
27-28	244	14	5.7	0	0.0	22	9.0	1	0.4
29-30	270	1	0.4	0	0.0	3	1.1	0	0.0
31-32	414	2	0.5	1	0.2	6	1.4	0	0.0
33-34	837	1	0.1	1	0.1	5	0.6	2	0.2
35-36	935	1	0.1	0	0.0	1	0.1	0	0.0
≥37	2050	7	0.3	0	0.0	12	0.6	0	0.0
Total included	**4969**	**49**	**1.0**	**3**	**0.1**	**97**	**2.0**	**4**	**0.1**
Missing	**0**								
Total # of infants	**4969**								

Note: No infants were discharged home on CPAP/IMV.

E. Site Comparisons – Survival & Mortality

Presentation #30
Site specific gestational age categories of infants

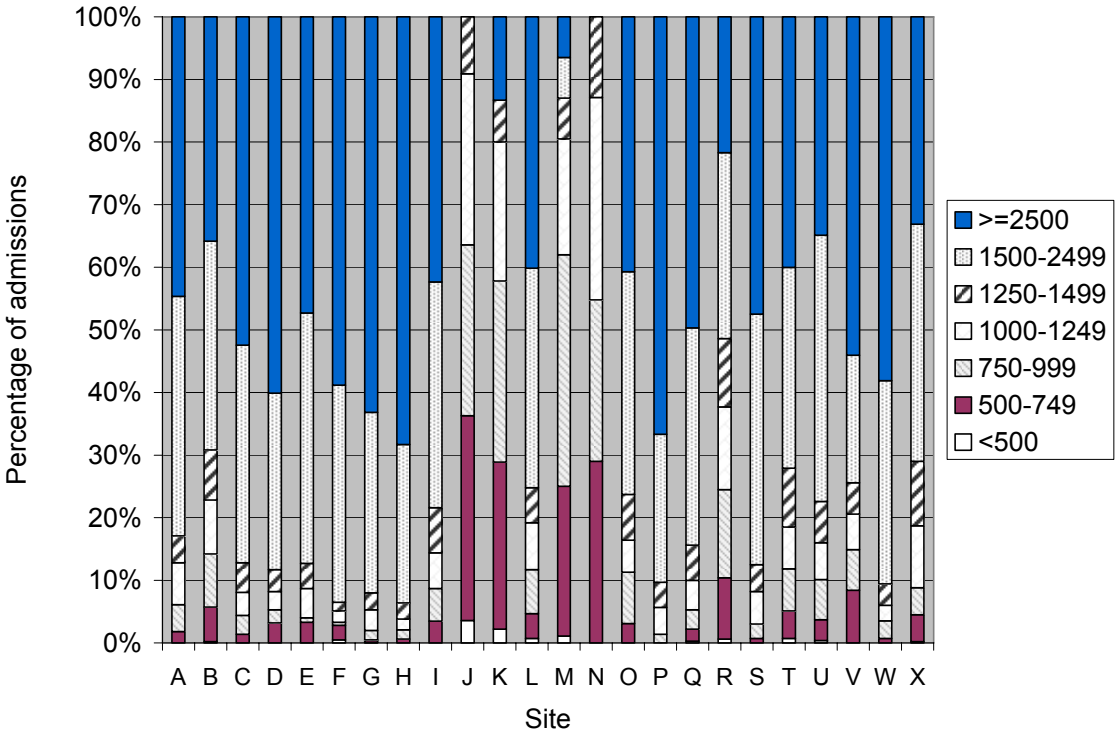


Presentation #30 (*continued*)
Site specific gestational age categories of infants

Admissions per site (%)	Gestational age (weeks) ≤22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	≥37	Total %
A	0%	0%	4.3%	5.3%	7.1%	11.3%	14.5%	23.8%	33.7%	100.0%
B	0%	3.2%	7.1%	6.8%	12.5%	10.7%	15.3%	12.8%	31.6%	100.0%
C	0%	.7%	1.5%	3.4%	5.1%	10.0%	14.6%	18.8%	45.8%	100.0%
D	.3%	1.1%	2.7%	3.2%	5.6%	5.9%	15.4%	15.2%	50.8%	100.0%
E	0%	1.3%	1.3%	5.3%	4.7%	9.3%	14.0%	34.7%	29.3%	100.0%
F	.5%	.9%	.9%	1.8%	1.8%	5.9%	16.9%	26.0%	45.2%	100.0%
G	0%	0%	1.5%	3.1%	2.8%	5.3%	13.2%	18.0%	56.0%	100.0%
H	0%	.4%	1.1%	1.1%	2.6%	3.9%	12.2%	19.3%	59.3%	100.0%
I	.1%	2.0%	2.8%	5.8%	9.4%	9.9%	20.8%	14.6%	34.6%	100.0%
J	0%	12.7%	34.5%	49.1%	3.6%	0%	0%	0%	0%	100.0%
K	0%	17.8%	40.0%	28.9%	0%	0%	2.2%	0%	11.1%	100.0%
L	.1%	2.2%	4.7%	8.3%	9.8%	12.8%	16.4%	14.9%	30.8%	100.0%
M	0%	9.7%	33.3%	45.2%	0%	1.1%	3.2%	2.2%	5.4%	100.0%
N	0%	22.6%	29.0%	48.4%	0%	0%	0%	0%	0%	100.0%
O	0%	1.5%	6.8%	6.6%	8.2%	11.5%	17.2%	16.6%	31.6%	100.0%
P	.4%	.4%	.4%	3.6%	2.9%	8.0%	7.2%	16.3%	60.9%	100.0%
Q	.3%	1.2%	2.5%	6.5%	5.0%	11.8%	20.8%	18.0%	33.9%	100.0%
R	0%	6.9%	10.9%	12.2%	17.2%	11.9%	16.3%	9.3%	15.4%	100.0%
S	0%	.2%	2.0%	4.3%	5.7%	9.8%	25.6%	17.5%	34.9%	100.0%
T	.3%	2.7%	6.1%	8.4%	7.9%	13.7%	11.8%	10.8%	38.3%	100.0%
U	.2%	2.9%	4.2%	6.4%	6.8%	11.8%	23.9%	15.8%	28.1%	100.0%
V	0%	4.7%	8.1%	4.8%	6.8%	6.4%	9.3%	10.9%	49.0%	100.0%
W	0%	.6%	2.4%	1.9%	5.5%	6.8%	13.8%	19.0%	50.0%	100.0%
X	.6%	2.1%	5.6%	6.2%	11.0%	17.1%	14.7%	13.2%	29.5%	100.0%
Total	**.1%**	**2.2%**	**4.8%**	**6.2%**	**7.4%**	**9.5%**	**15.4%**	**15.6%**	**38.9%**	**100.0%**

COMMENTS:
Proportion of the gestational age categories of infants varied considerably among sites.

Presentation #31
Site specific birthweight categories of infants

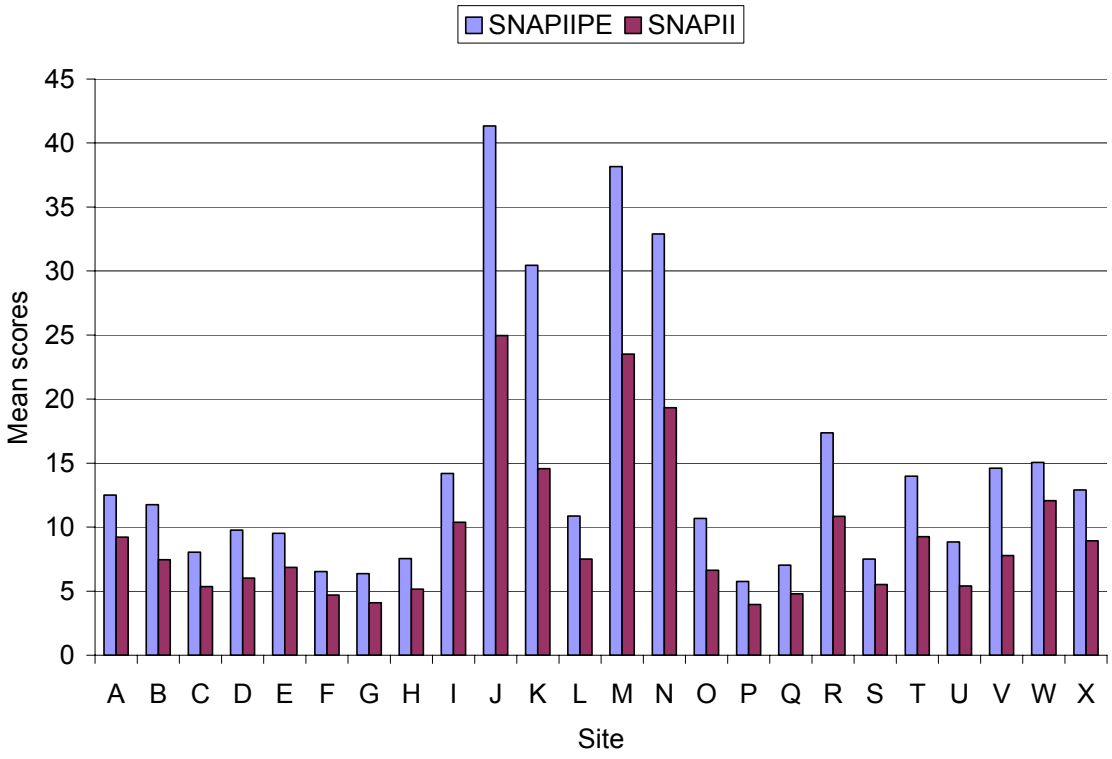


Presentation #31 (*continued*)
Site specific birthweight categories of infants

		Birthweight (g)							Total
		<500	500-749	750-999	1000-1249	1250-1499	1500-2499	≥2500	
Admissions per site (%)	A	0%	1.8%	4.3%	6.7%	4.3%	38.3%	44.7%	100.0%
	B	.2%	5.5%	8.5%	8.6%	8.0%	33.3%	35.8%	100.0%
	C	0%	1.4%	3.0%	3.7%	4.7%	34.8%	52.5%	100.0%
	D	0%	3.2%	2.1%	2.9%	3.5%	28.2%	60.1%	100.0%
	E	0%	3.3%	.7%	4.7%	4.0%	40.0%	47.3%	100.0%
	F	.5%	2.3%	.5%	1.8%	1.4%	34.7%	58.9%	100.0%
	G	.1%	.4%	1.5%	3.3%	2.7%	28.8%	63.1%	100.0%
	H	0%	.6%	1.5%	1.7%	2.6%	25.3%	68.3%	100.0%
	I	0%	3.5%	5.2%	5.7%	7.2%	36.1%	42.4%	100.0%
	J	3.6%	32.7%	27.3%	27.3%	9.1%	0%	0%	100.0%
	K	2.2%	26.7%	28.9%	22.2%	6.7%	0%	13.3%	100.0%
	L	.7%	4.0%	7.0%	7.5%	5.6%	35.1%	40.2%	100.0%
	M	1.1%	23.9%	37.0%	18.5%	6.5%	6.5%	6.5%	100.0%
	N	0%	29.0%	25.8%	32.3%	12.9%	0%	0%	100.0%
	O	0%	3.1%	8.2%	5.1%	7.3%	35.6%	40.7%	100.0%
	P	0%	0%	1.4%	4.3%	4.0%	23.6%	66.7%	100.0%
	Q	.3%	1.9%	3.1%	4.7%	5.6%	34.7%	49.7%	100.0%
	R	.6%	9.8%	14.1%	13.2%	10.9%	29.7%	21.7%	100.0%
	S	0%	.7%	2.3%	5.2%	4.3%	40.0%	47.5%	100.0%
	T	.7%	4.4%	6.7%	6.7%	9.4%	32.0%	40.0%	100.0%
	U	.4%	3.3%	6.4%	5.9%	6.6%	42.5%	34.9%	100.0%
	V	0%	8.4%	6.5%	5.7%	5.0%	20.4%	54.1%	100.0%
	W	0%	.7%	2.8%	2.5%	3.4%	32.4%	58.0%	100.0%
	X	.2%	4.3%	4.3%	9.9%	10.3%	37.8%	33.1%	100.0%
Total		**.2%**	**3.9%**	**5.6%**	**6.1%**	**5.9%**	**32.1%**	**46.3%**	**100.0%**

COMMENTS:
See comments for Presentation #30, also applicable to birthweight categories.

Presentation #32
Mean illness severity on admission by hospital

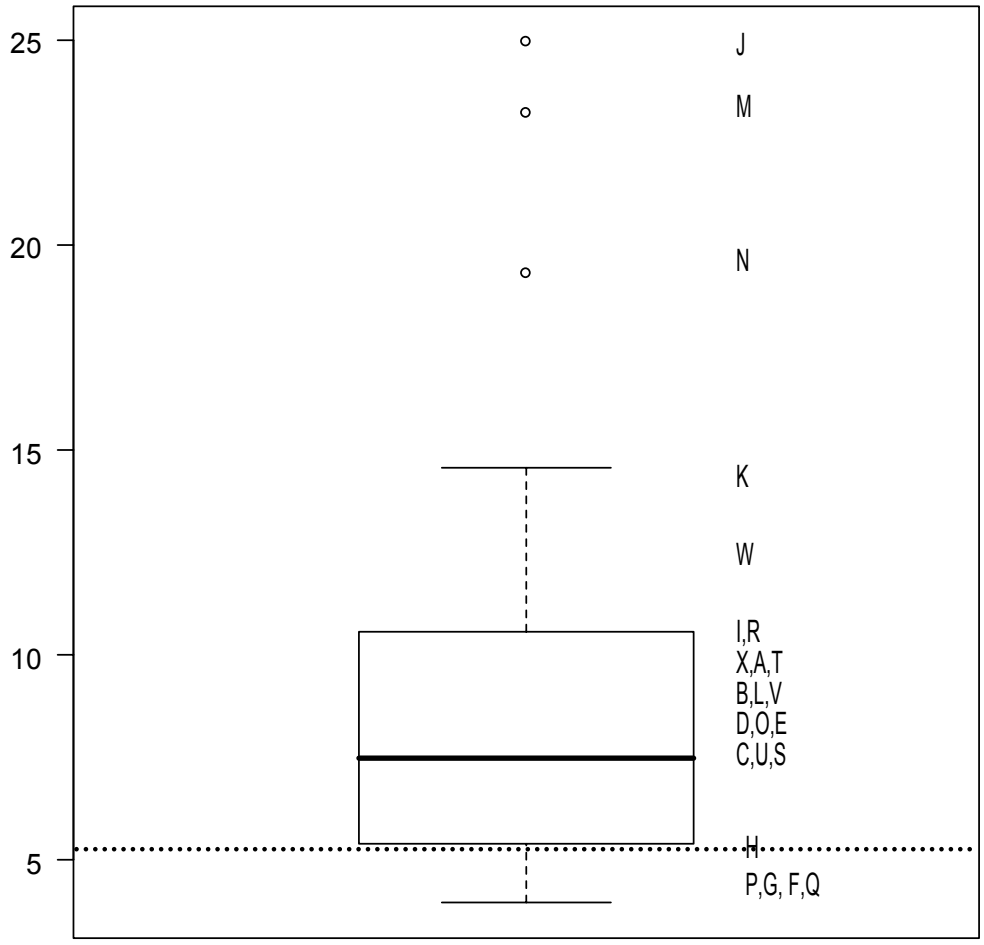


Presentation #32 (*continued*)
Mean illness severity on admission by hospital

Site		SNAPIIPE	SNAPII
A	Mean	12.5	9.2
	Std. Error of Mean	1.0	0.7
B	Mean	11.8	7.5
	Std. Error of Mean	0.6	0.4
C	Mean	8.1	5.4
	Std. Error of Mean	0.5	0.4
D	Mean	9.8	6.0
	Std. Error of Mean	0.9	0.6
E	Mean	9.5	6.9
	Std. Error of Mean	1.2	0.8
F	Mean	6.5	4.7
	Std. Error of Mean	0.9	0.6
G	Mean	6.4	4.1
	Std. Error of Mean	0.4	0.3
H	Mean	7.5	5.2
	Std. Error of Mean	0.5	0.4
I	Mean	14.2	10.4
	Std. Error of Mean	0.5	0.4
J	Mean	41.3	25.0
	Std. Error of Mean	3.2	2.3
K	Mean	30.5	14.6
	Std. Error of Mean	3.7	2.7
L	Mean	10.9	7.5
	Std. Error of Mean	0.5	0.3
M	Mean	38.2	23.5
	Std. Error of Mean	2.4	1.7
N	Mean	32.9	19.3
	Std. Error of Mean	4.8	3.1
O	Mean	10.7	6.6
	Std. Error of Mean	0.7	0.5
P	Mean	5.8	4.0
	Std. Error of Mean	0.6	0.4

Q	Mean	7.0	4.8
	Std. Error of Mean	0.7	0.5
R	Mean	17.4	10.8
	Std. Error of Mean	0.9	0.6
S	Mean	7.5	5.5
	Std. Error of Mean	0.7	0.5
T	Mean	14.0	9.3
	Std. Error of Mean	0.8	0.6
U	Mean	8.8	5.4
	Std. Error of Mean	0.8	0.5
V	Mean	14.6	7.8
	Std. Error of Mean	0.6	0.4
W	Mean	15.1	12.1
	Std. Error of Mean	0.5	0.4
X	Mean	12.9	8.9
	Std. Error of Mean	0.7	0.5
Total	**Mean**	**11.6**	**7.7**
	Std. Error of Mean	**0.2**	**0.1**

Presentation #32a
Mean illness severity on admission among sites



R – 75th percentile
H – 25th percentile
U – median
…… - a line indicating the 5 sites with the lowest rate

Presentation #33
Survival rate by gestational age in each site

Site	Percentage survival for each gestational age (weeks)							
	≤26	27-28	29-30	31-32	33-34	35-36	≥37	Mean*
A	83	87	95	100	100	100	100	**98**
B	78	97	96	96	100	98	97	**95**
C	75	96	97	99	99	99	99	**98**
D	40	92	95	100	98	100	99	**97**
E	50	88	100	100	100	100	100	**98**
F	40	75	100	100	97	100	100	**98**
G	77	89	92	100	99	99	99	**98**
H	88	100	100	100	100	99	100	**99**
I	72	93	98	100	98	97	99	**97**
J	54	74	100	N/A	N/A	N/A	N/A	**66**
K	73	77	N/A	N/A	100	N/A	100	**78**
L	84	97	98	100	99	99	98	**98**
M	80	95	N/A	100	67	100	100	**88**
N	94	100	N/A	N/A	N/A	N/A	N/A	**97**
O	90	100	100	100	100	100	100	**99**
P	67	100	100	100	95	98	100	**99**
Q	85	95	100	100	100	98	99	**98**
R	78	97	100	100	99	100	97	**95**
S	60	100	100	100	99	100	97	**98**
T	78	94	94	94	93	97	93	**92**
U	85	100	97	100	100	93	99	**97**
V	93	97	86	88	94	95	93	**93**
W	60	100	100	100	99	98	99	**98**
X	80	97	98	100	97	98	97	**97**
Mean**	**79**	**95**	**97**	**99**	**99**	**99**	**98**	**96**

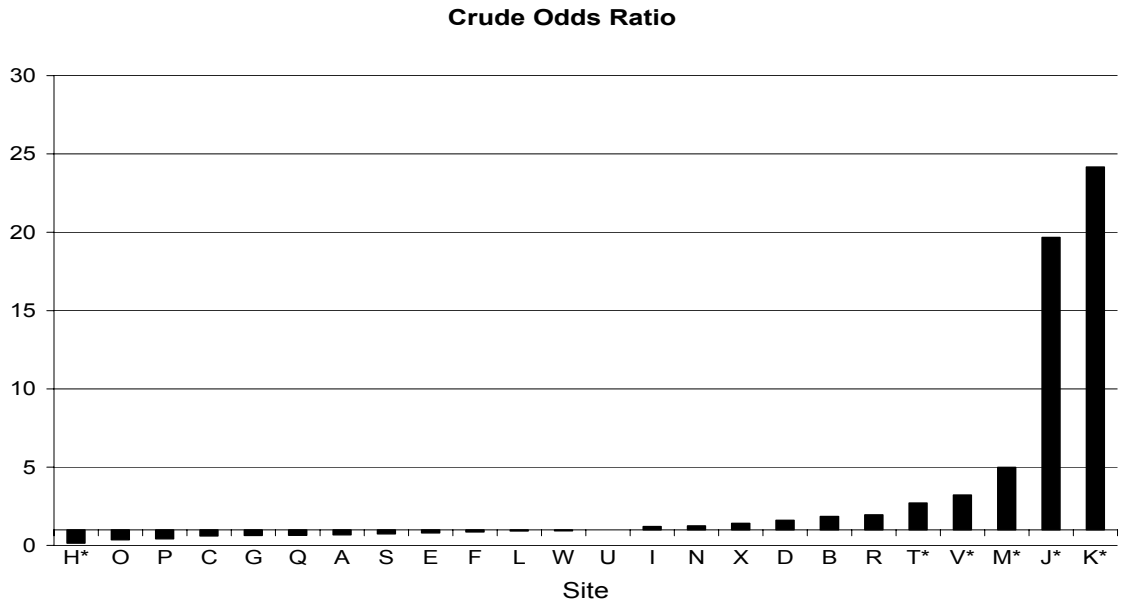
Mean* = (number of infants survived for site χ / total number of infants for site χ)*100.
Mean** = (number of infants for gestational age category χ / total number of infants in gestational age category χ)*100.
NA = non-applicable

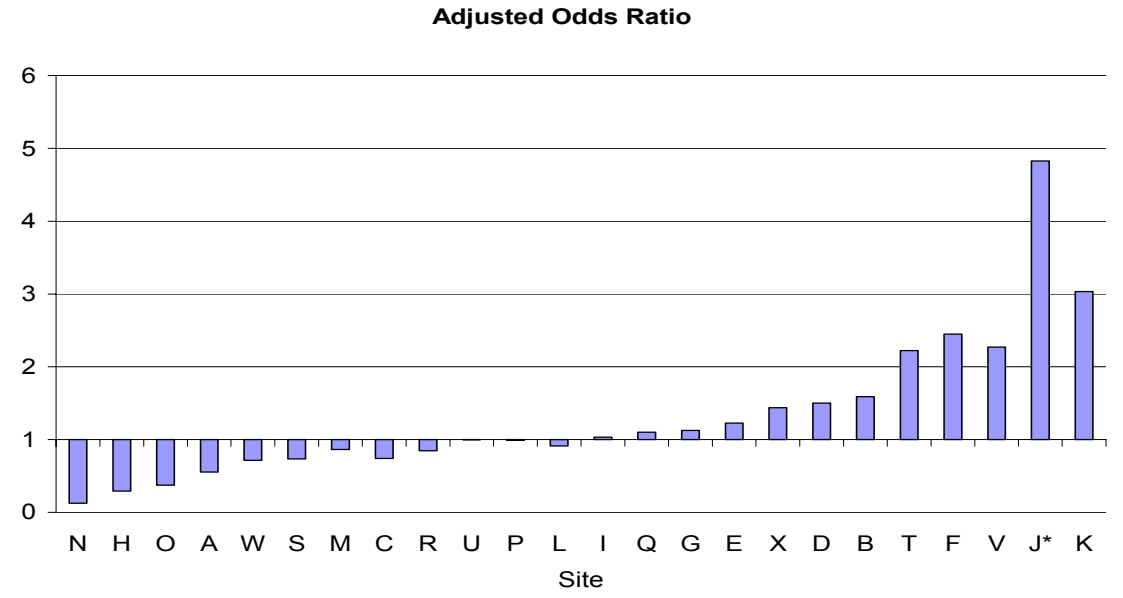
Presentation #34
Survival rate by birthweight in each site

Site	Percentage survival for each birthweight (g) category								
	<500	**500-749**	**750-999**	**1000-1249**	**1250-1499**	**1500-2499**	**2500-4499**	**>4499**	**Mean***
A	N/A	100	92	84	92	100	100	100	**98**
B	50	65	96	97	97	97	97	100	**95**
C	N/A	70	91	96	97	99	99	100	**98**
D	N/A	42	63	100	92	99	99	100	**97**
E	N/A	60	0	100	100	100	100	100	**98**
F	0	60	100	75	100	100	99	100	**98**
G	0	67	69	93	100	99	99	100	**98**
H	N/A	67	100	100	100	99	100	100	**99**
I	N/A	66	88	100	96	99	99	100	**97**
J	50	39	87	80	60	N/A	N/A	N/A	**66**
K	100	75	69	70	100	N/A	100	N/A	**78**
L	33	94	95	96	100	98	99	100	**98**
M	0	77	91	100	100	67	100	N/A	**88**
N	N/A	89	100	100	100	N/A	N/A	N/A	**97**
O	N/A	86	95	100	100	100	100	100	**99**
P	N/A	N/A	75	92	100	99	100	100	**99**
Q	100	100	80	100	100	99	99	100	**99**
R	33	77	90	99	100	100	97	100	**95**
S	N/A	33	80	100	100	99	98	100	**98**
T	75	62	85	98	95	95	94	100	**92**
U	100	67	100	96	97	99	98	100	**97**
V	N/A	90	92	95	89	93	94	91	**93**
W	N/A	80	74	88	100	99	99	95	**98**
X	100	81	86	96	98	98	98	100	**97**
Mean**	**52**	**75**	**89**	**96**	**97**	**98**	**98**	**99**	**97**

Mean* = (number of infants survived for site χ / total number of infants for site χ)*100.
Mean** = (number of infants survived for gestational category χ / total number of infants in gestational category χ)*100.
NA = non-applicable

Presentation #34 - continued
Site comparison of mortality (not adjusted for congenital anomalies)





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

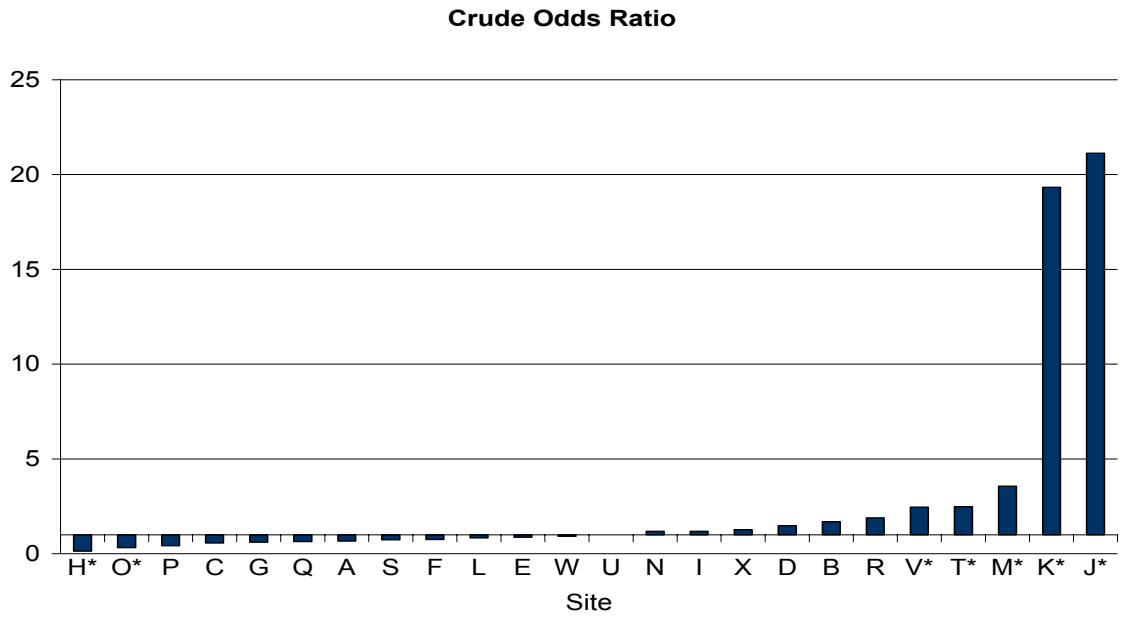
Inclusion criteria:
Age at admission less than 4 days
Not moribund on admission

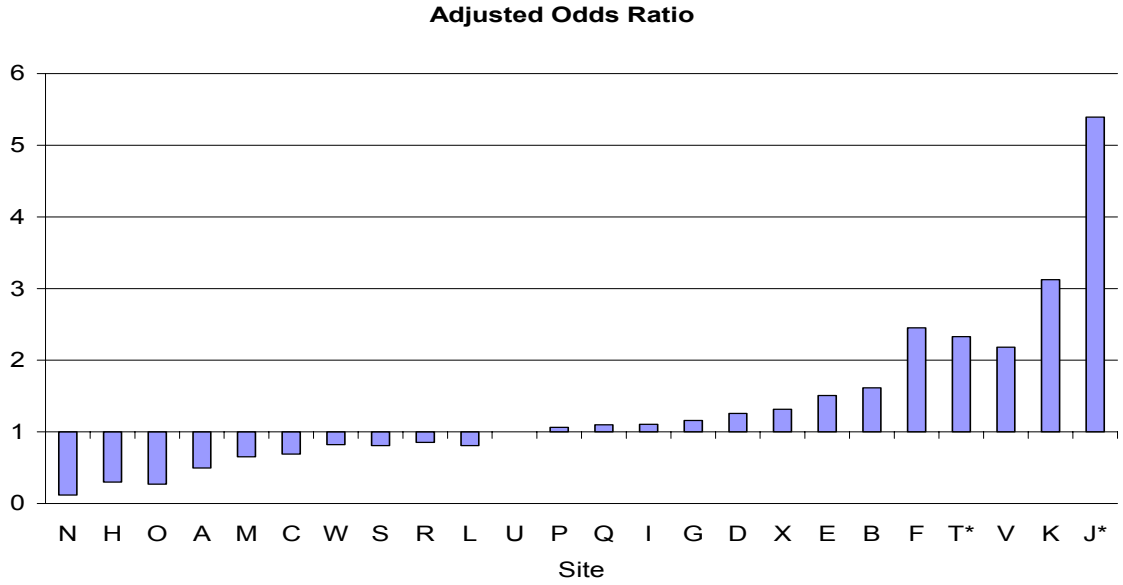
Mortality is attributed to the Network hospital of first admission.

Significant predictors identified by multivariate analysis and adjusted for:

SNAP-II
Apgar at 5 min
Cesarean section
Birthweight
Outborn
Antenatal steroids

Presentation#34 – continued
Site comparison of mortality (adjusted for congenital anomalies)





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

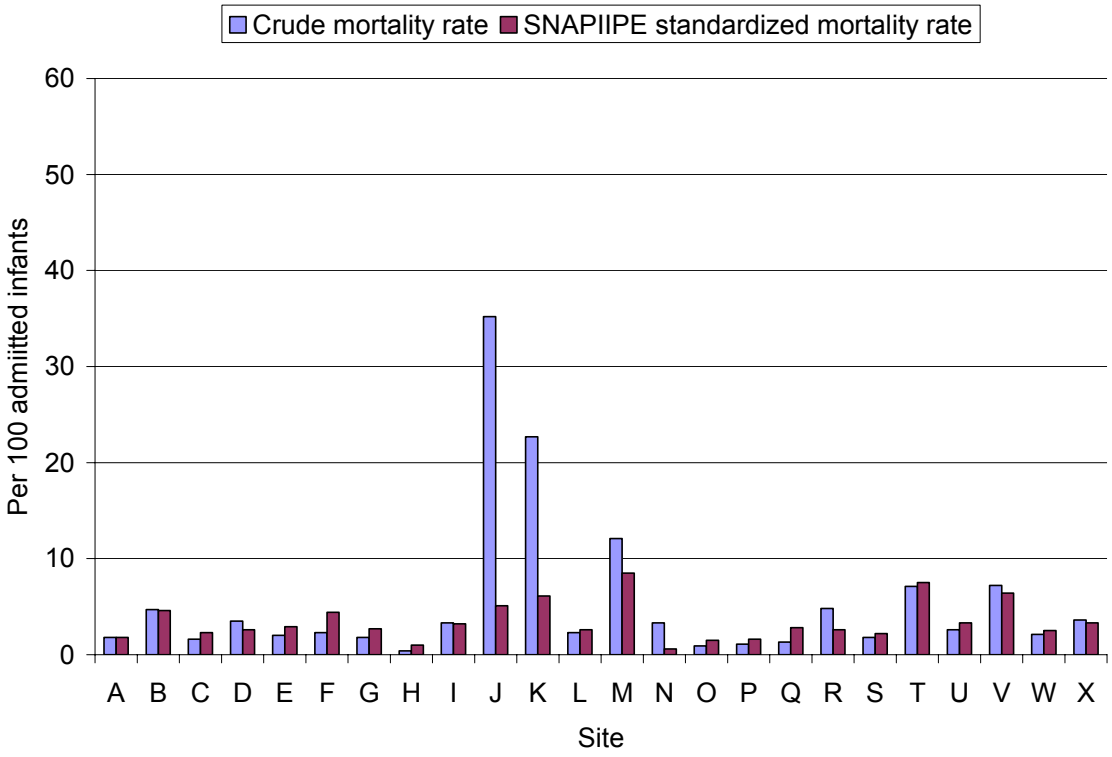
Inclusion criteria:
Age at admission less than 4 days
Not moribund on admission

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
Cesarean section
Birthweight
Outborn
Antenatal steroids
Gestational age

Presentation #35
SNAP-II PE adjusted site mortality rates

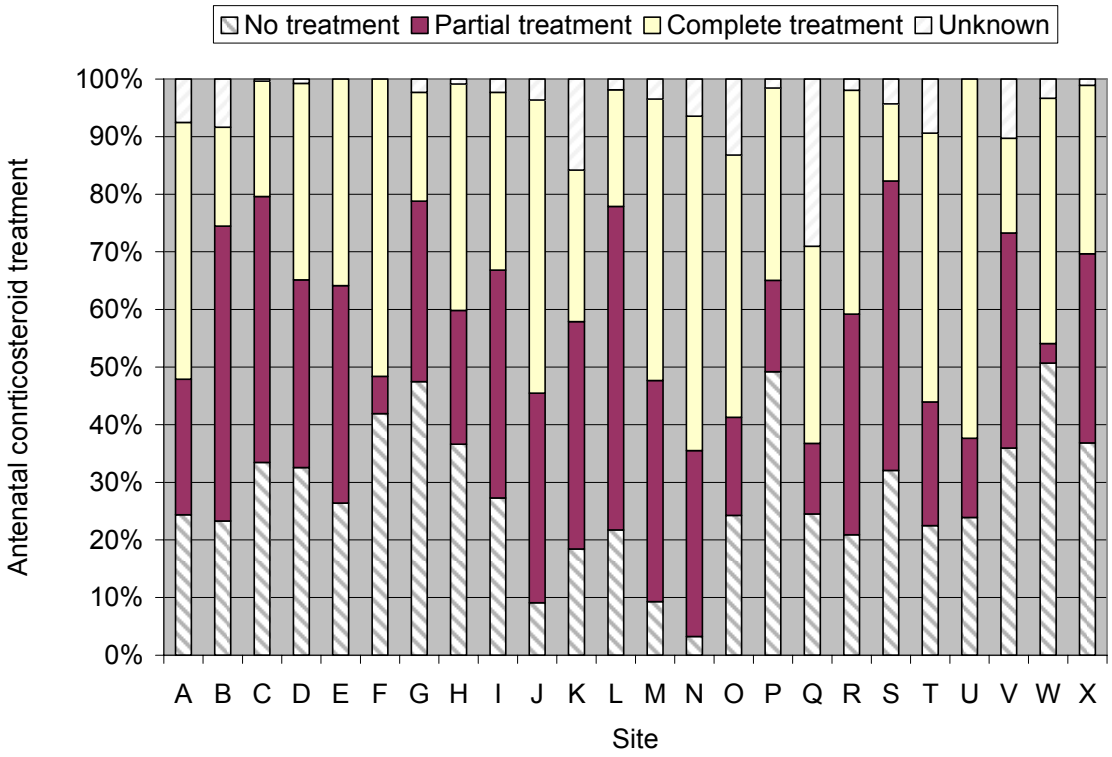


Presentation #35 (*continued*)
SNAP-II PE adjusted site mortality rates

Site	Mortality rate (%)	SNAP-II PE Standardized rate (%)
A	1.8	1.8
B	4.7	4.6
C	1.6	2.3
D	3.5	2.6
E	2.0	2.9
F	2.3	4.4
G	1.8	2.7
H	0.4	1.0
I	3.3	3.2
J	35.2	5.1
K	22.7	6.1
L	2.3	2.6
M	12.1	8.5
N	3.3	0.6
O	0.9	1.5
P	1.1	1.6
Q	1.3	2.8
R	4.8	2.6
S	1.8	2.2
T	7.1	7.5
U	2.6	3.3
V	7.2	6.4
W	2.1	2.5
X	3.6	3.3
Mean	**3.4**	**3.3**

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 #36
Antenatal corticosteroid treatment of infants ≤ 34 weeks gestational age



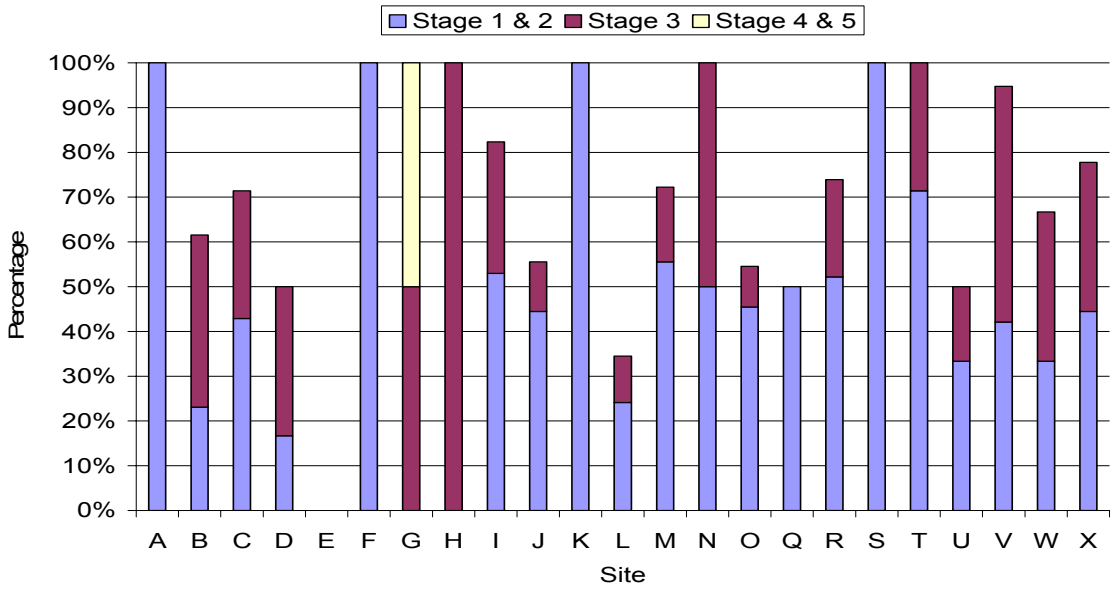
Presentation #36 (*continued*)
Antenatal corticosteroid treatment of infants ≤ 34 weeks gestational age

Site	Antenatal corticosteroid				Total
	No treatment	Partial treatment	Complete treatment	Unknown	
A	24.4%	23.5%	44.5%	7.6%	100.0%
B	23.3%	51.2%	17.1%	8.4%	100.0%
C	33.5%	46.2%	20.0%	.4%	100.0%
D	32.6%	32.6%	34.1%	.8%	100.0%
E	26.4%	37.7%	35.8%	0%	100.0%
F	41.9%	6.5%	51.6%	0%	100.0%
G	47.5%	31.3%	18.9%	2.3%	100.0%
H	36.6%	23.2%	39.3%	.9%	100.0%
I	27.3%	39.5%	30.9%	2.3%	100.0%
J	9.1%	36.4%	50.9%	3.6%	100.0%
K	18.4%	39.5%	26.3%	15.8%	100.0%
L	21.7%	56.1%	20.3%	1.8%	100.0%
M	9.3%	38.4%	48.8%	3.5%	100.0%
N	3.2%	32.3%	58.1%	6.5%	100.0%
O	24.3%	17.0%	45.5%	13.2%	100.0%
P	49.2%	15.9%	33.3%	1.6%	100.0%
Q	24.5%	12.3%	34.2%	29.0%	100.0%
R	20.9%	38.3%	38.8%	2.0%	100.0%
S	32.1%	50.2%	13.4%	4.3%	100.0%
T	22.5%	21.5%	46.6%	9.4%	100.0%
U	23.9%	13.7%	62.4%	0%	100.0%
V	36.0%	37.3%	16.4%	10.3%	100.0%
W	50.7%	3.3%	42.6%	3.3%	100.0%
X	36.8%	32.9%	29.2%	1.1%	100.0%
Mean	**28.5%**	**34.6%**	**31.8%**	**5.0%**	**100.0%**

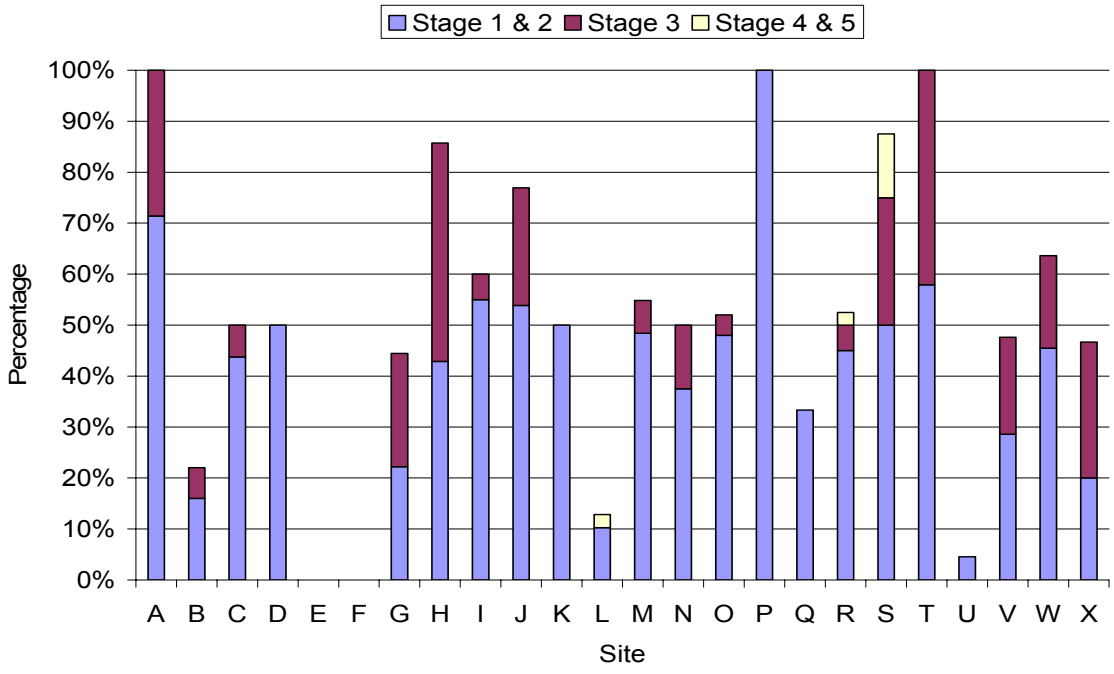
F. Site Comparisons – Morbidity Outcomes

Presentation #37
Incidence of retinopathy of prematurity among infants with eye exams with birthweight <1500g

A. <750g

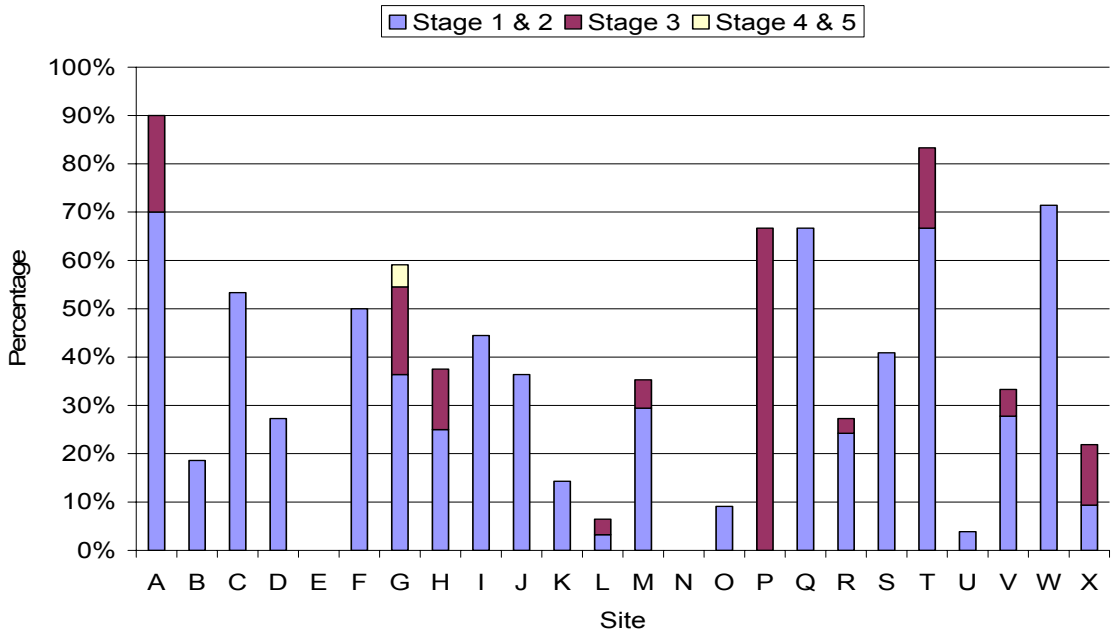


B. 750-999g

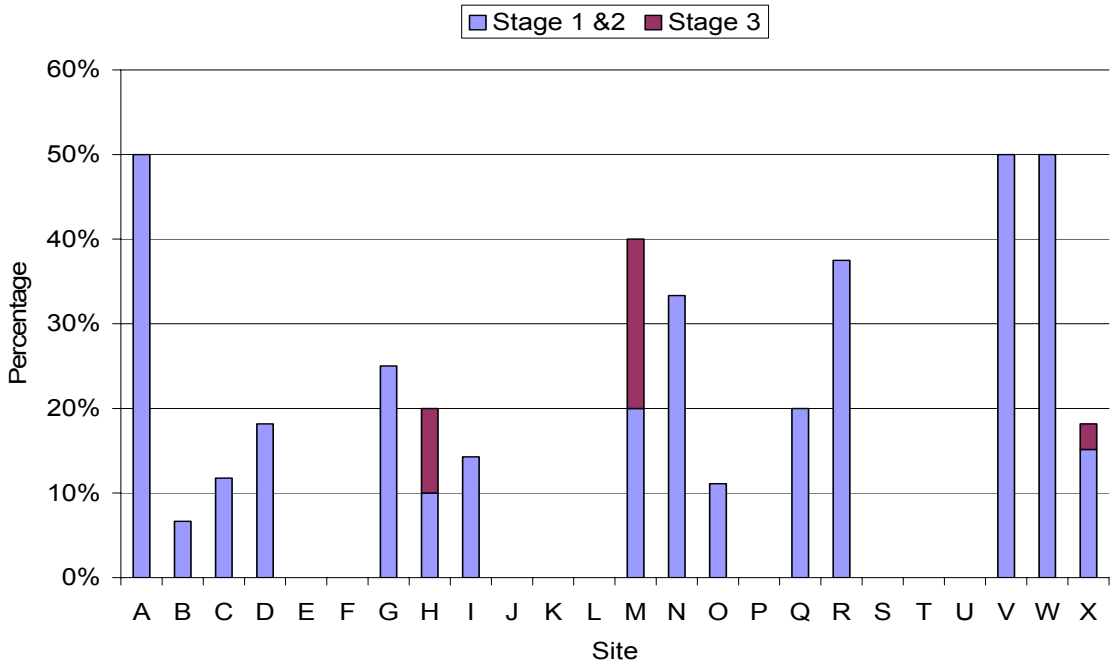


Presentation #37 (*continued*)
Incidence of retinopathy of prematurity among infants with eye exams with birthweight <1500g

C. 1000-1249g

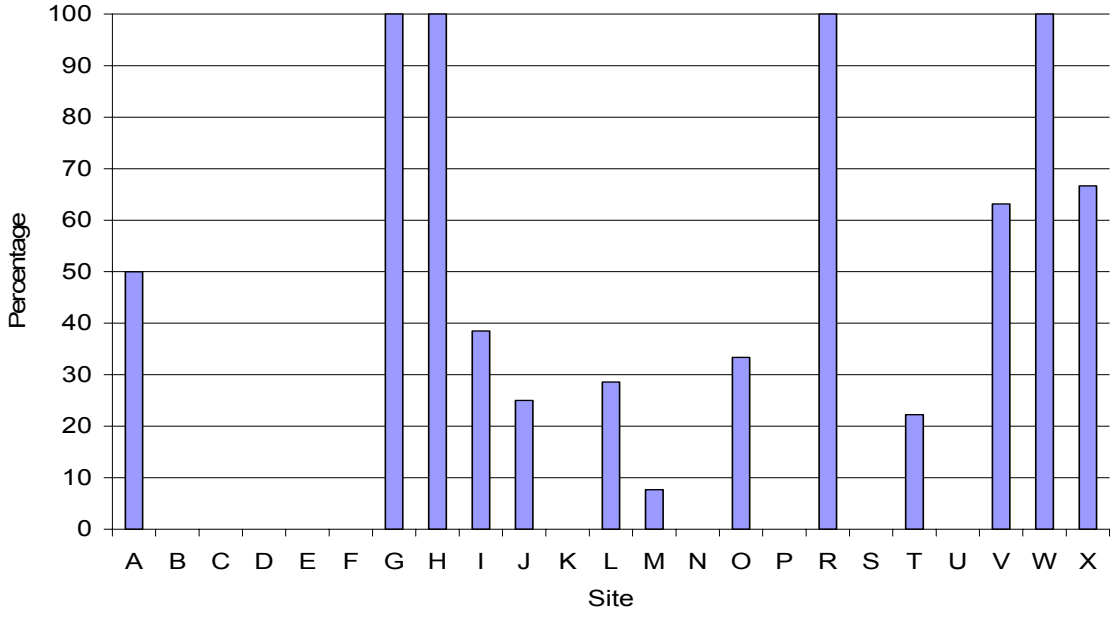


D. 1250-1499g (note: no sites in this BW category with infants diagnosed with Stage 4/5 ROP)

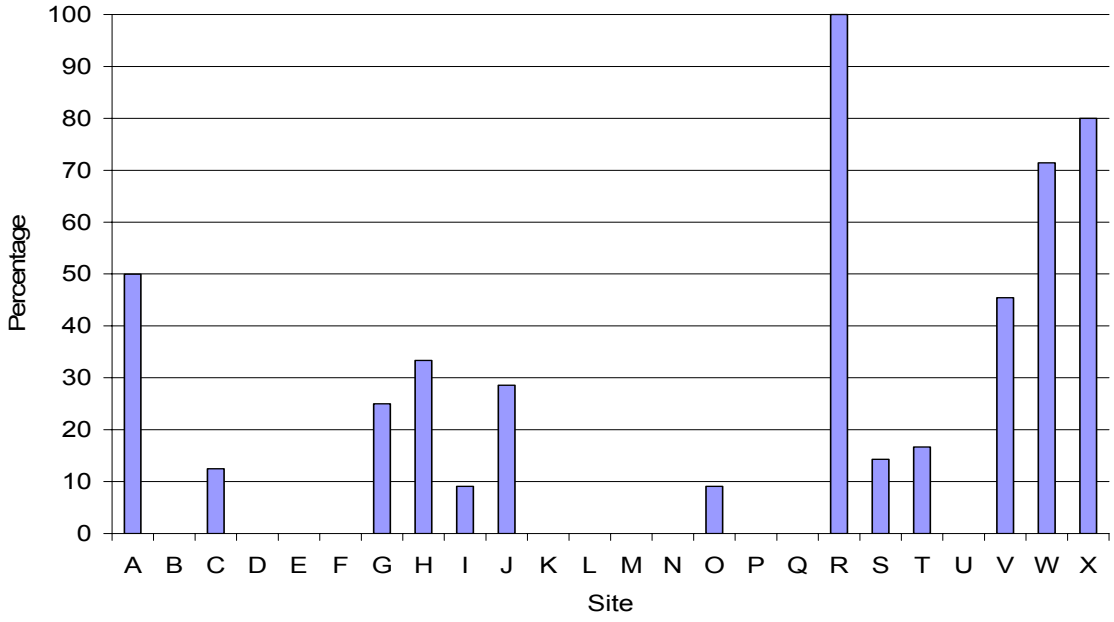


Presentation #38
Treatment for retinopathy of prematurity among infants with eye exams with birthweight <1500g

A. <750g

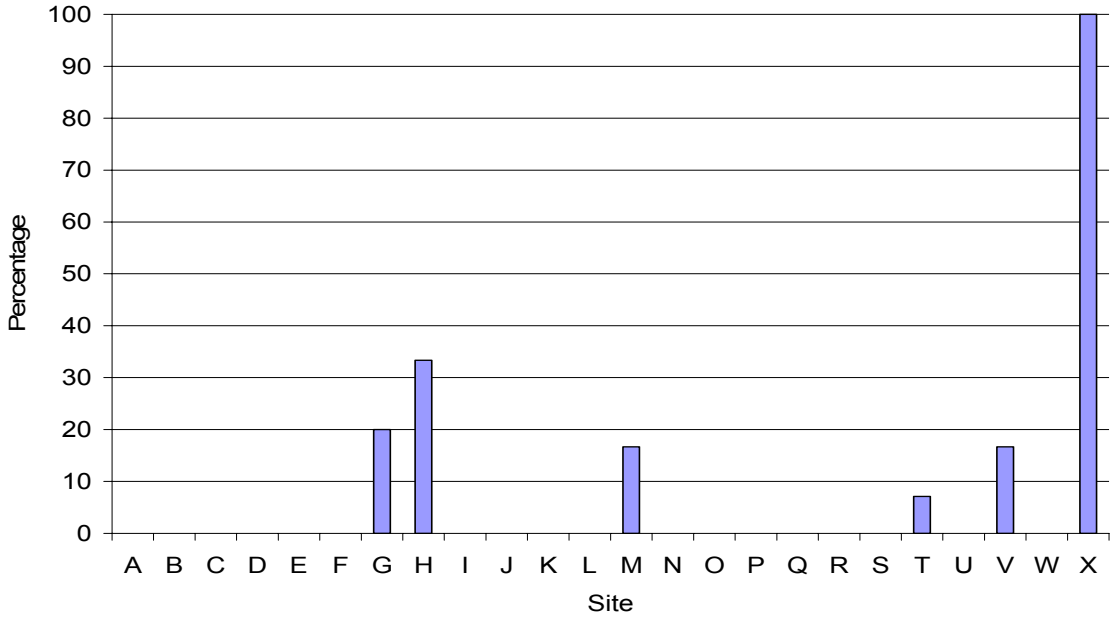


B. 750-999g

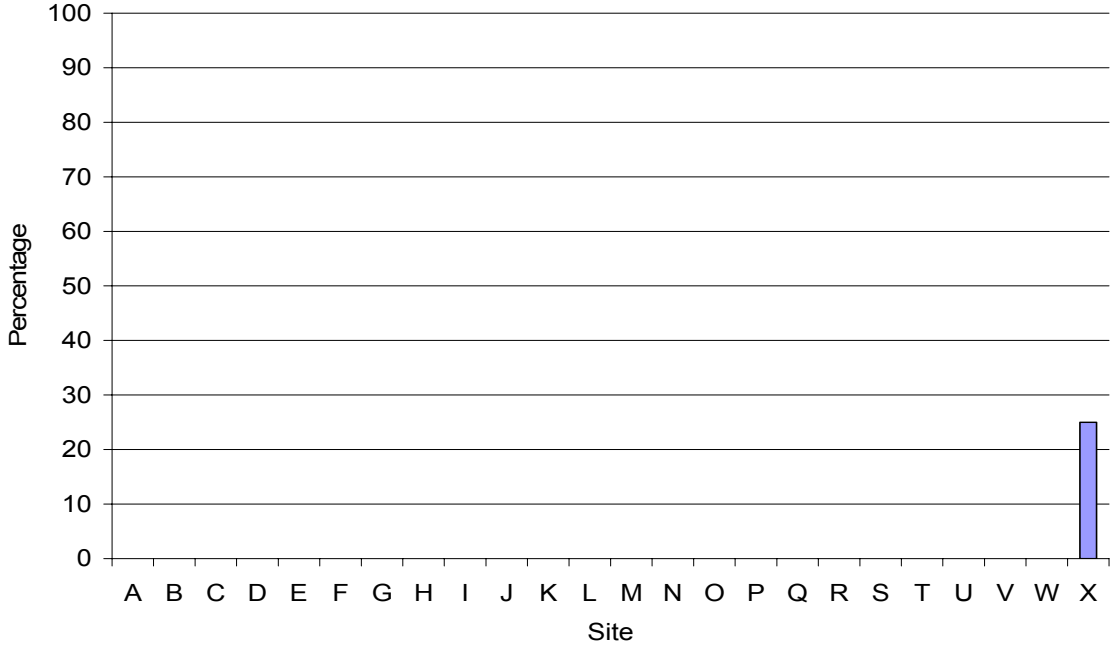


Presentation #38 (*continued*)
Treatment for retinopathy of prematurity among infants with eye exams with birthweight <1500g

C. 1000-1249g

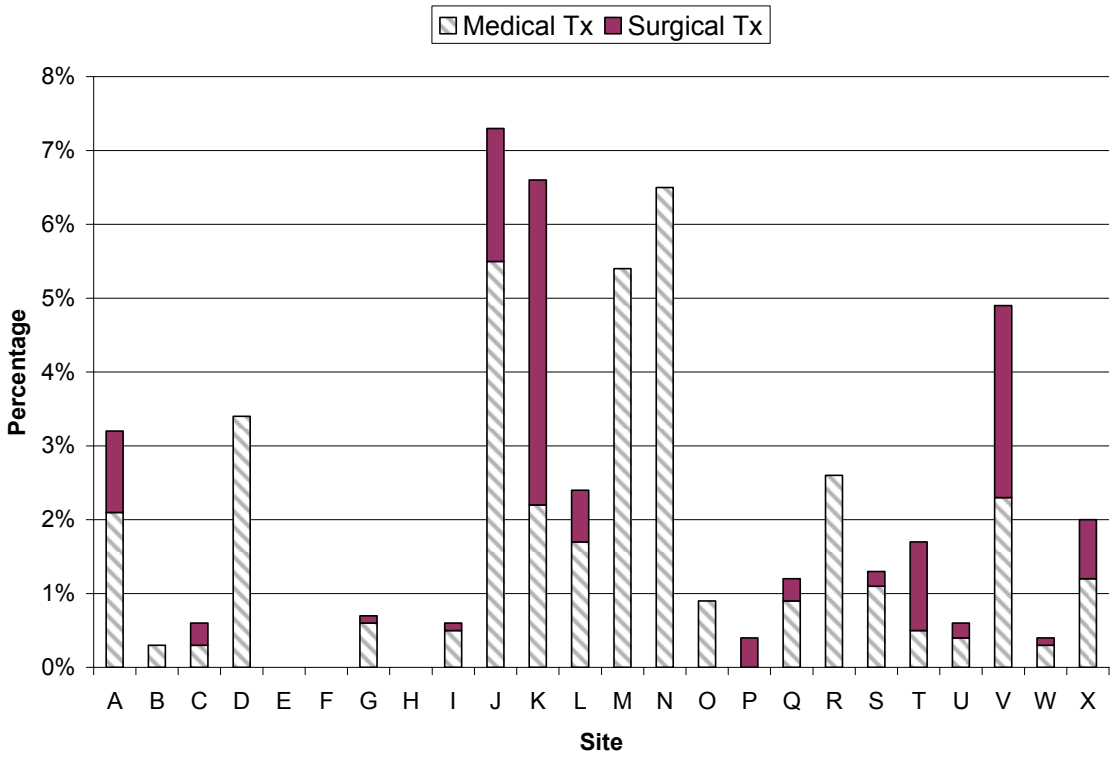


D. 1250-1499g



COMMENTS:
Not all centres have data for each birthweight category.

Presentation #39
Incidence of necrotizing enterocolitis



Presentation #39 (*continued*)
Incidence of necrotizing enterocolitis

Site	Treatment		
	Medical Tx	Surgical Tx	Any
A	2.1%	1.1%	3.2%
B	.3%	0%	.3%
C	.3%	.3%	.5%
D	3.4%	0%	3.4%
E	0%	0%	0%
F	0%	0%	0%
G	.6%	.1%	.7%
H	0%	0%	0%
I	.5%	.1%	.6%
J	5.5%	1.8%	7.3%
K	2.2%	4.4%	6.7%
L	1.7%	.7%	2.3%
M	5.4%	0%	5.4%
N	6.5%	0%	6.5%
O	.9%	0%	.9%
P	0%	.4%	.4%
Q	.9%	.3%	1.2%
R	2.6%	0%	2.6%
S	1.1%	.2%	1.4%
T	.5%	1.2%	1.7%
U	.4%	.2%	.7%
V	2.3%	2.6%	4.8%
W	.3%	.1%	.4%
X	1.2%	.8%	2.1%
Total	1.0%	.5%	1.5%

Any = received either medical or surgical treatment.

COMMENTS:
Presentation #39 represents the percentage of infants diagnosed with necrotizing enterocolitis who received either medical or surgical treatment, or both. Necrotizing enterocolitis is scored according to Bell's criteria, Stage 2 or higher (please see Appendix A for definitions).

Presentation #40
Use of antibiotics on Day 1 and primary infection rates

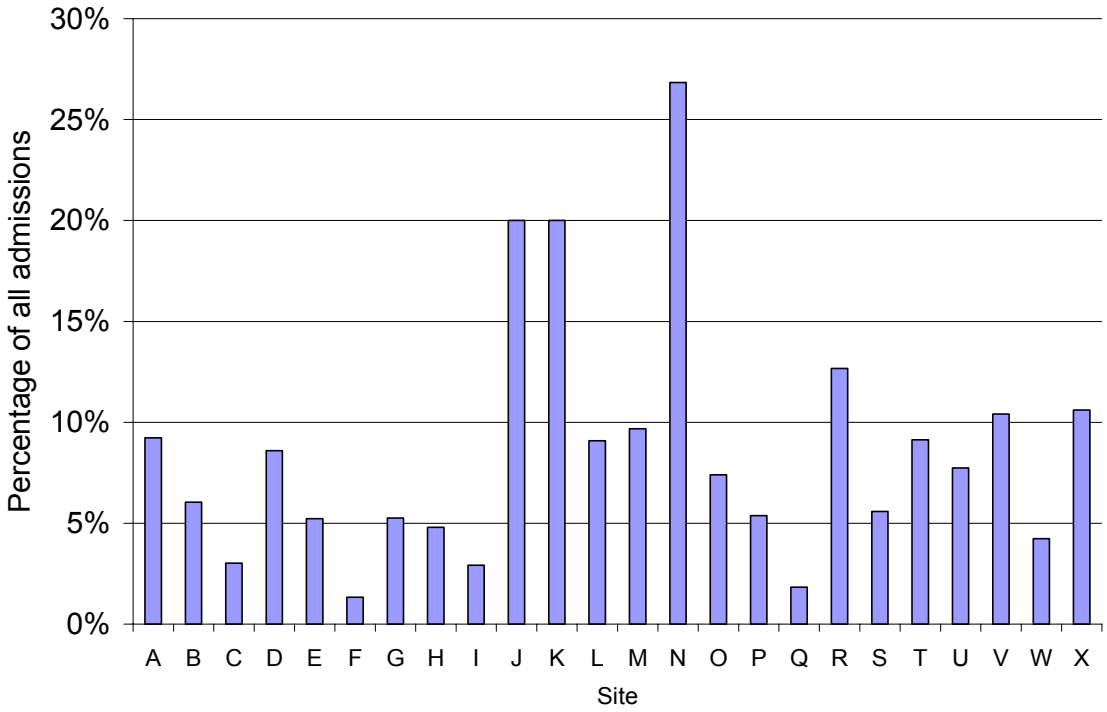
Site	Mean number of days in NICU	Antibiotic use on day 1	Primary infection	
		% of infants	infants	%
A	19.9	45.4%	2	.7%
B	16.7	76.2%	7	.8%
C	16.7	45.9%	4	.5%
D	20.0	58.4%	5	1.3%
E	18.0	28.0%	1	.7%
F	16.0	12.8%	1	.5%
G	15.1	65.8%	4	.5%
H	13.1	70.7%	12	2.3%
I	12.1	51.1%	2	.2%
J	59.7	94.5%	1	1.8%
K	28.5	66.7%	0	0%
L	16.1	73.9%	4	.4%
M	74.3	82.8%	0	0%
N	55.5	90.3%	1	3.2%
O	17.3	65.9%	4	.9%
P	13.0	38.0%	1	.4%
Q	17.9	50.0%	1	.3%
R	20.4	80.8%	8	1.5%
S	19.5	66.9%	2	.5%
T	23.0	76.4%	2	.3%
U	20.0	41.4%	2	.4%
V	14.7	84.3%	1	.1%
W	14.0	67.7%	3	.4%
X	24.2	70.0%	3	.6%
ALL	14.3	61.0%	71	.6%

Presentation #40 (*continued*)
Positive blood and CSF cultures by admission

Site	Blood culture			CSF culture		
	cultures per admission	positive per admission	% positive	cultures per admission	positive per admission	% positive
A	0.7	0.2	16.0%	0.1	0	0.3%
B	0.3	0.1	5.8%	0.2	0.01	0.7%
C	0.2	0.1	3.9%	0.1	0	0.2%
D	0.3	0.1	8.7%	0.1	0	0%
E	0.6	0.1	7.6%	0	0.01	0.6%
F	0.1	0	1.3%	0.1	0	0%
G	1.1	0.1	11.3%	0.1	0.01	0.7%
H	1.1	0.1	5.3%	0.1	0	0.2%
I	0.7	0	3.4%	0.1	0	0.2%
J	2.1	0.3	27.9%	0	0.02	1.6%
K	2.4	0.6	39.8%	1.2	0.11	7.2%
L	1.0	0.1	11.5%	0.2	0	0.2%
M	2.8	0.1	10.6%	0.4	0	0%
N	2.5	0.6	43.4%	0.1	0	0%
O	0.9	0.1	8.7%	0.1	0.01	1.1%
P	1.1	0.1	6.0%	0.1	0	0.4%
Q	0.5	0	1.8%	0.1	0	0.3%
R	1.3	0.2	14.4%	0.2	0	0.3%
S	1.0	0.1	8.4%	0.1	0.01	0.7%
T	1.2	0.3	14.4%	0.1	0.01	0.6%
U	0.9	0.1	12.2%	0	0	0%
V	0.9	0.2	13.0%	0.3	0.01	0.6%
W	1.1	0.1	9.4%	0.1	0	0.4%
X	1.2	0.2	11.7%	0.2	0.01	0.7%

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

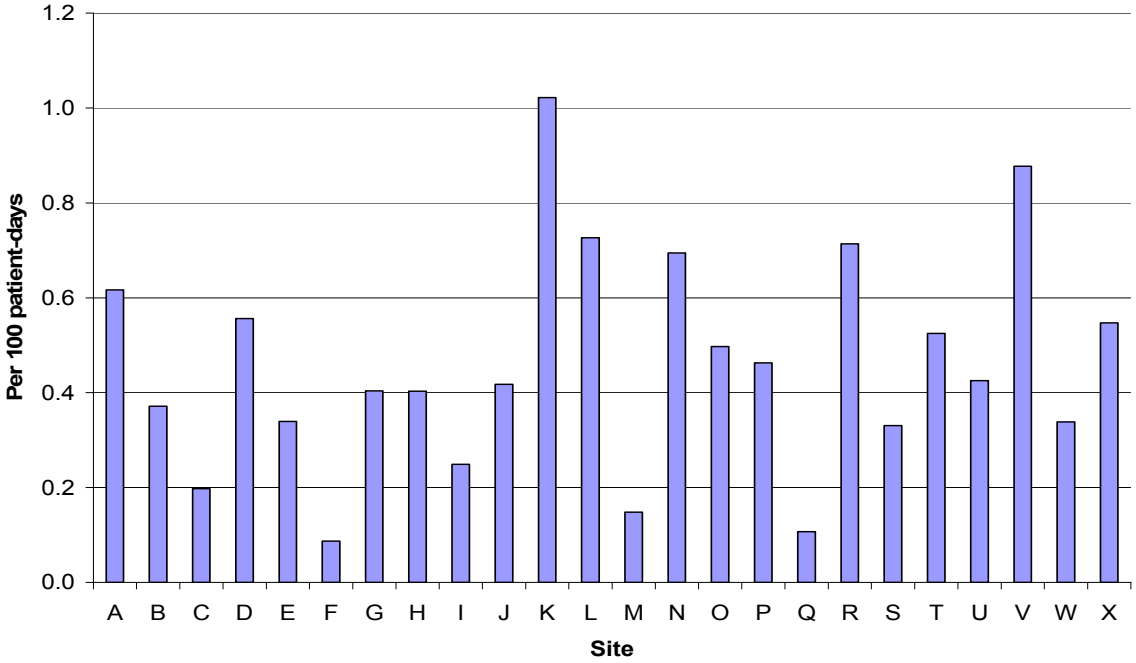
Presentation #41
Incidence of nosocomial infection*



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	Mean
%	9.2	6	3	8.6	5.2	1.3	5.3	4.8	2.9	20.0	20.0	9.1	9.7	26.8	7.4	5.4	1.8	12.7	5.6	9.1	7.7	10.4	4.2	10.6	6.9

*Nosocomial infection indicates any positive blood and/or cerebrospinal fluid culture 2 days following admission (includes all admissions).

Presentation #42
Nosocomial infection per 100 patient days*

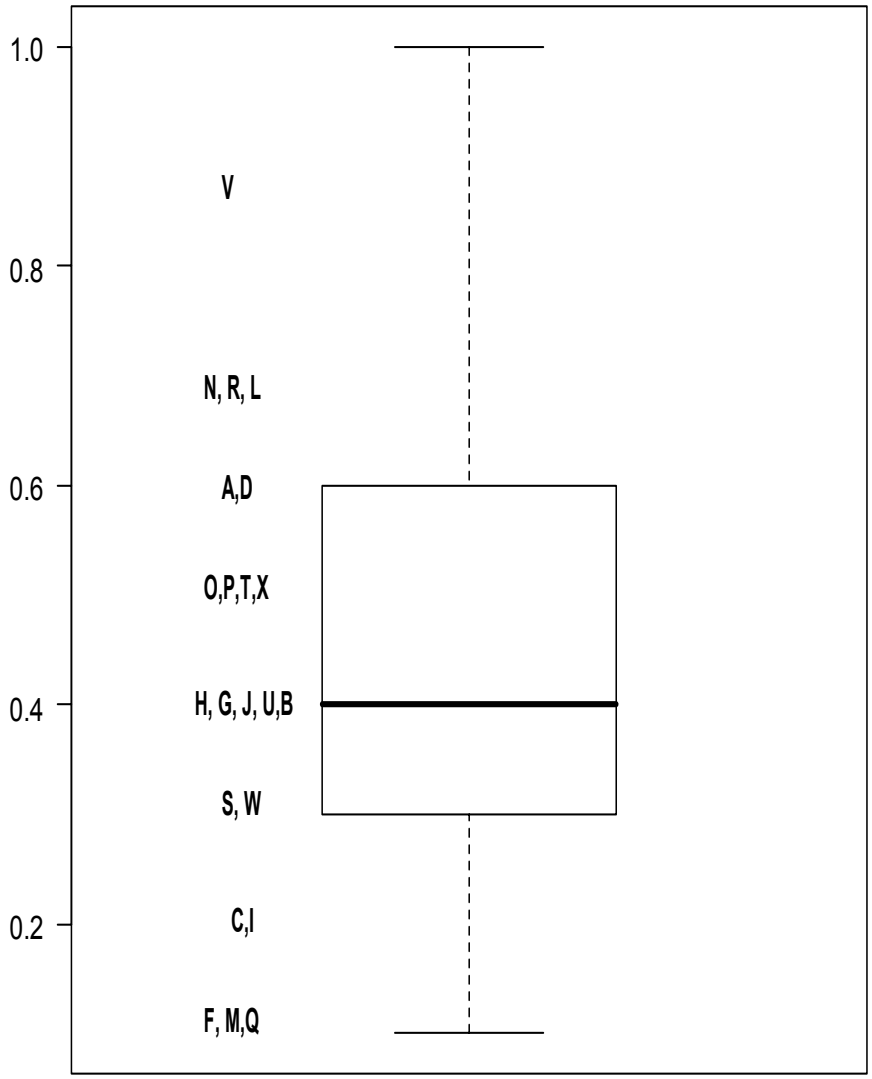


Site	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Average rate
Infections per 100 patient days	0.6	0.4	0.2	0.6	0.3	0.1	0.4	0.4	0.2	0.4	1	0.7	0.1	0.7	0.5	0.5	0.1	0.7	0.3	0.5	0.4	0.9	0.3	0.5	**0.4**

*Nosocomial infection indicates positive blood and/or cerebrospinal fluid culture 2 days following admission (includes all admissions)

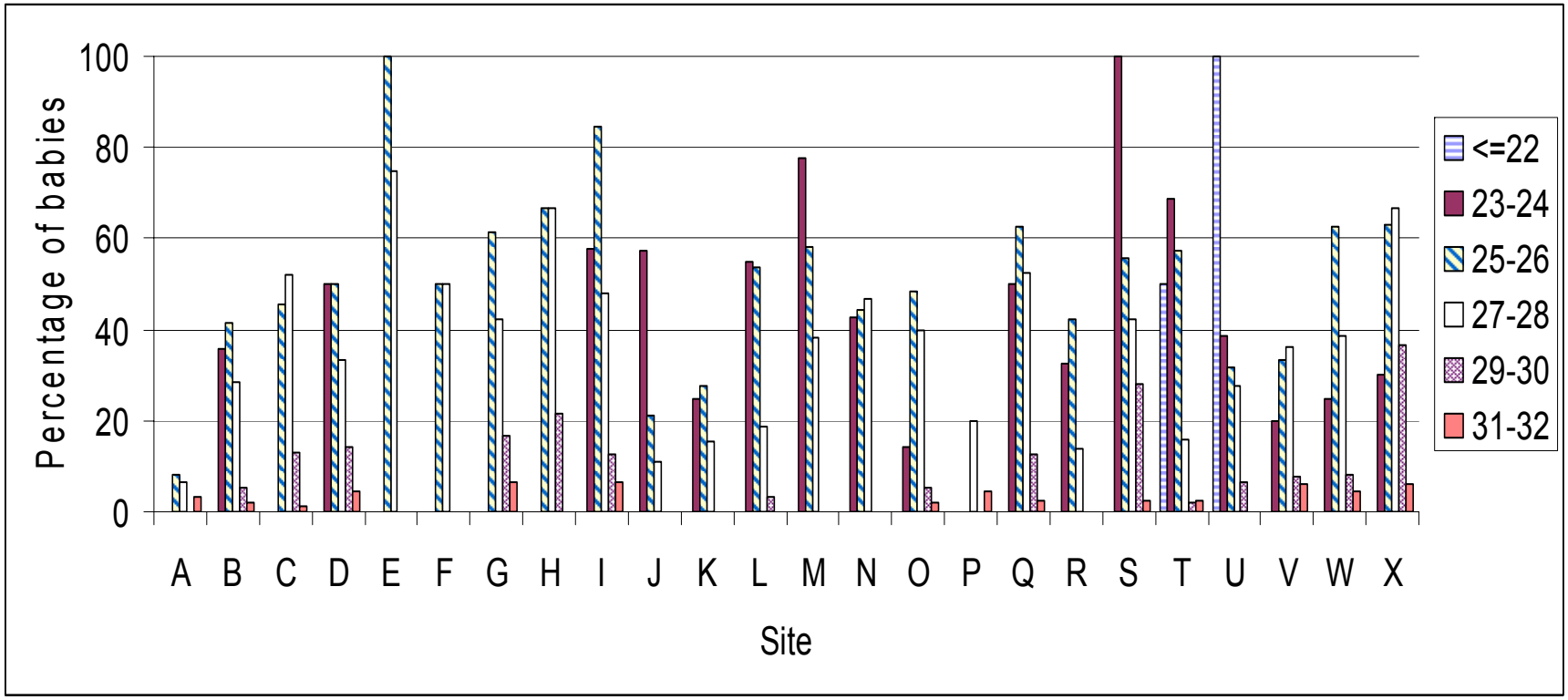
COMMENTS:
Considerable variation still persists when nosocomial infections are analyzed as infections per 100 patient days. Percentiles are shown in Presentation #43.

Presentation #43
Nosocomial infection per 100 patient days among sites



D – 75th percentile
S – 25th percentile
J – median

Presentation #44
Incidence of bronchopulmonary dysplasia in infants with gestational age ≤32 weeks at birth (28 days)*



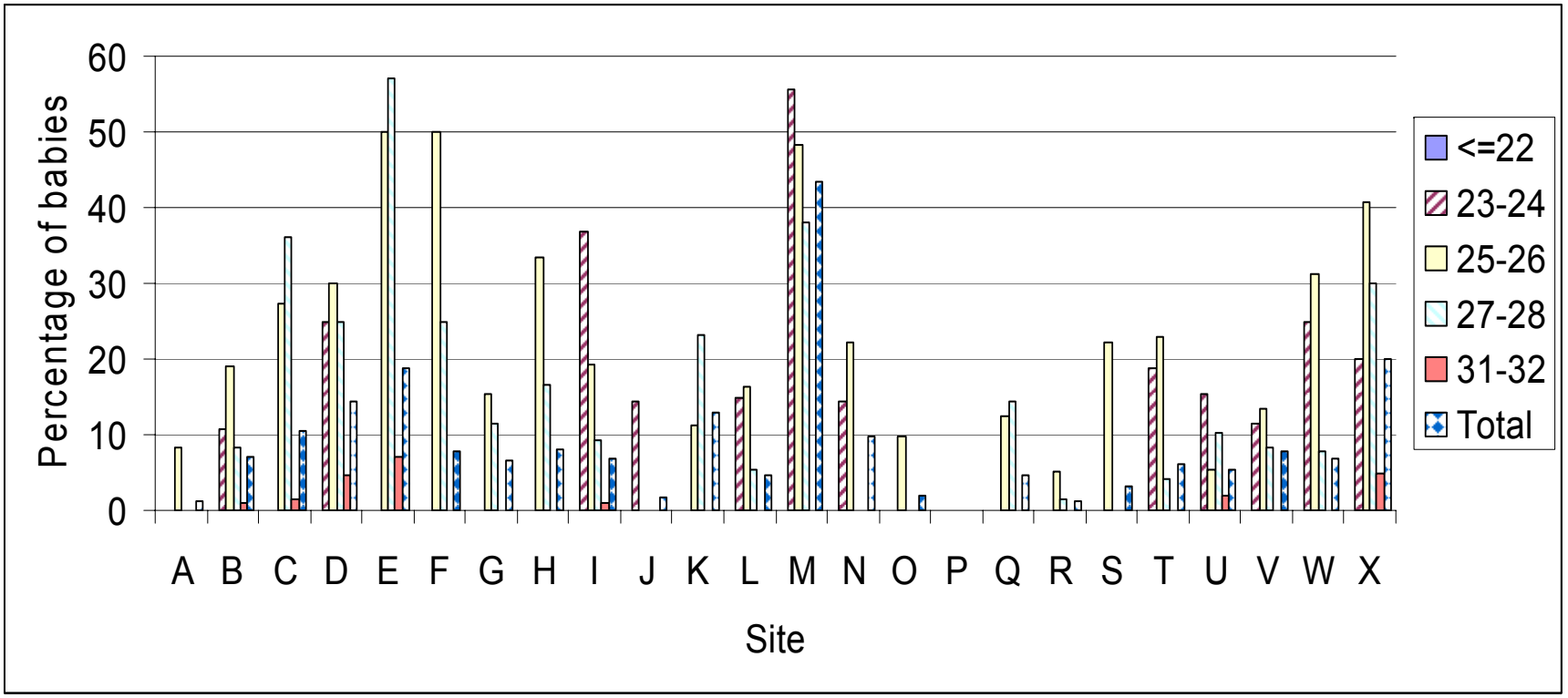
Presentation #44 (*continued*)
Incidence of bronchopulmonary dysplasia in infants with gestational age ≤32 weeks at birth (28 days)*

	Gestational age at birth						
Site	**≤22**	**23-24**	**25-26**	**27-28**	**29-30**	**31-32**	**Mean***
A	N/A	N/A	8.3	6.7	0	3.1	**3.8**
B	N/A	35.7	41.3	28.3	5.4	2.1	**17.1**
C	N/A	0	45.5	52.0	13.2	1.4	**15.7**
D	N/A	50.0	50.0	33.3	14.3	4.5	**21.4**
E	N/A	0	100.0	75.0	0	0	**24.2**
F	0	0	50.0	50.0	0	0	**11.5**
G	N/A	N/A	61.5	42.3	16.7	6.7	**24.1**
H	N/A	0	66.7	66.7	21.4	0	**22.4**
I	00	57.9	84.6	48.1	12.6	6.5	**27.2**
J	N/A	57.1	21.1	11.1	0	N/A	**20.0**
K	N/A	25.0	27.8	15.4	N/A	N/A	**23.1**
L	N/A	55.0	53.5	18.7	3.4	0	**14.8**
M	N/A	77.8	58.1	38.1	N/A	0	**49.4**
N	N/A	42.9	44.4	46.7	N/A	N/A	**45.2**
O	N/A	14.3	48.4	40.0	5.4	1.9	**19.7**
P	0	0	0	20.0	0	4.5	**7.0**
Q	0	50.0	62.5	52.4	12.5	2.6	**23.9**
R	N/A	32.4	42.4	13.6	0	0	**14.4**
S	N/A	100.0	55.6	42.1	28.0	2.3	**22.7**
T	50.0	68.8	57.1	16.0	2.1	2.5	**18.6**
U	100.0	38.5	31.6	27.6	6.5	0	**15.0**
V	N/A	20.0	33.3	36.1	7.8	6.3	**20.4**
W	N/A	25.0	62.5	38.5	8.1	4.3	**18.1**
X	0	30.0	63.0	66.7	36.5	6.0	**31.2**
Mean**	**16.7**	**40.0**	**49.1**	**32.5**	**9.2**	**2.9**	**20.2**

Mean* = (number of infants with BPD for site x / total number of infants for site x)*100
Mean** = (number of infants with BPD for gestational age category x / total number of infants in gestational category x)*100

Presentation #45

Incidence of bronchopulmonary dysplasia in infants with gestational age ≤32 weeks at birth (36 weeks)*

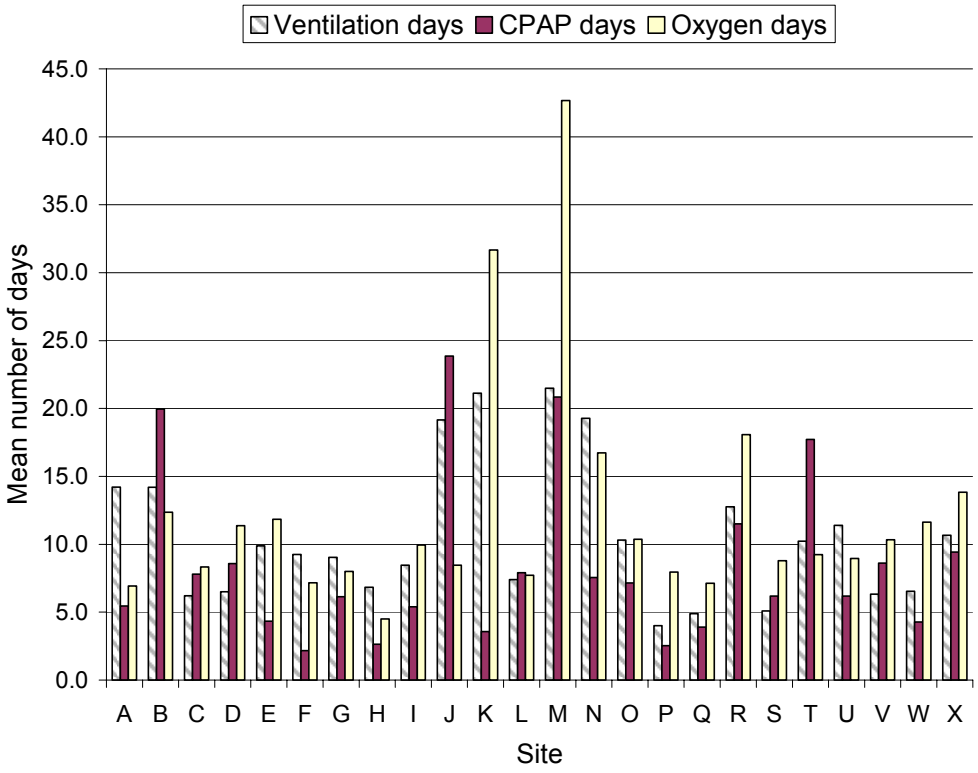


Presentation #45 (*continued*)
Incidence of bronchopulmonary dysplasia in infants with gestational age ≤32 weeks at birth (36 weeks)*

	Gestational age at birth						
Site	**≤22**	**23-24**	**25-26**	**27-28**	**29-30**	**31-32**	**Mean***
A	N/A	N/A	8.3	0	0	0	**1.3**
B	N/A	10.7	19.0	8.3	3.6	1.1	**7.0**
C	N/A	0	27.3	36.0	7.9	1.4	**10.5**
D	0	25.0	30.0	25.0	9.5	4.5	**14.3**
E	N/A	0	50.0	57.1	0	7.1	**18.8**
F	0	0	50.0	25.0	0	0	**7.7**
G	N/A	N/A	15.4	11.5	8.3	0	**6.5**
H	N/A	0	33.3	16.7	7.1	0	**8.2**
I	0	36.8	19.2	9.3	1.1	1.1	**6.8**
J	N/A	14.3	0	0	0	N/A	**1.8**
K	N/A	0	11.1	23.1	N/A	N/A	**12.8**
L	0	15.0	16.3	5.3	2.2	0	**4.7**
M	N/A	55.6	48.4	38.1	N/A	0	**43.4**
N	N/A	14.3	22.2	0	N/A	N/A	**9.7**
O	N/A	0	9.7	0	0	0	**1.9**
P	0	0	0	0	0	0	**0**
Q	0	0	12.5	14.3	0	0	**4.5**
R	N/A	0	5.1	1.5	0	0	**1.3**
S	N/A	0	22.2	0	4.0	0	**3.1**
T	0	18.8	22.9	4.1	2.1	0	**6.1**
U	0	15.4	5.3	10.3	3.2	1.9	**5.4**
V	N/A	11.4	13.3	8.3	5.9	0	**7.8**
W	N/A	25.0	31.3	7.7	2.7	0	**6.9**
X	0	20.0	40.7	30.0	28.8	4.8	**20.0**
Mean**	**0**	**14.7**	**19.1**	**11.3**	**4.5**	**1.0**	**7.7**

* Defined by ever on ventilation and need for supplemental oxygen at 36 weeks of CGA
Mean* = (number of infants with BPD for site x / total number of infants for site x)*100
Mean** = (number of infants with BPD for gestational age category x / total number of infants in gestational category x)*100
Note: Outcome is attributed to the hospital of first admission

Presentation #46
Days on assisted ventilation and oxygen



Presentation #46 (*continued*)
Days on assisted ventilation and oxygen

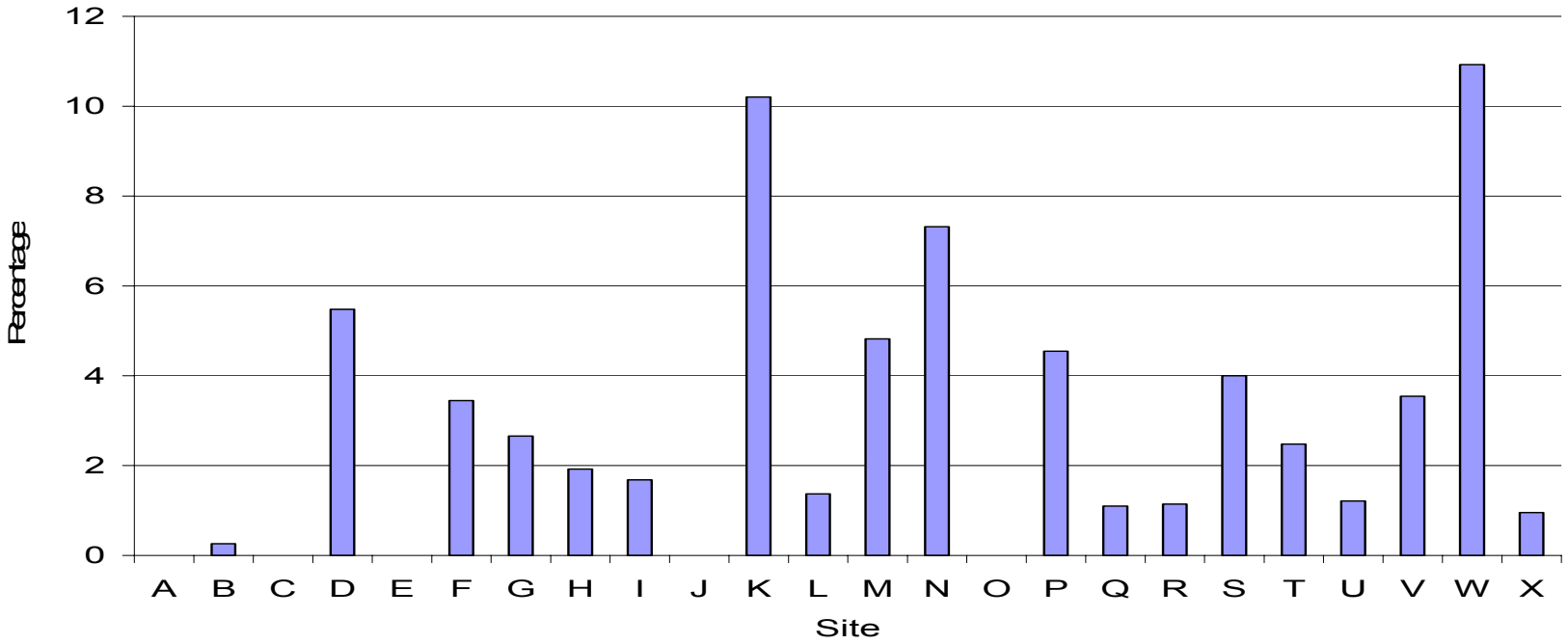
Site	Ventilation days				CPAP days				Oxygen days			
	N	Mean	SEM	Median	N	Mean	SEM	Median	N	Mean	SEM	Median
A	33	14.21	4.49	2.0	70	5.46	1.01	2.0	88	6.92	1.41	2.0
B	67	14.19	2.02	6.0	88	19.95	2.14	12.5	77	12.36	1.71	6.0
C	93	6.20	0.87	3.0	72	7.81	1.31	3.0	89	8.33	1.38	2.0
D	53	6.51	1.51	2.0	69	8.58	1.61	3.0	44	11.36	2.63	4.0
E	9	9.89	3.63	6.0	15	4.33	1.22	2.0	45	11.84	3.04	4.0
F	4	9.25	7.92	1.5	17	2.18	0.26	2.0	48	7.17	2.99	2.0
G	85	9.05	1.82	3.0	102	6.14	0.80	3.0	119	8.00	1.01	4.0
H	86	6.84	1.05	4.0	81	2.64	0.26	2.0	159	4.50	0.51	2.0
I	58	8.47	1.98	2.0	31	5.39	1.00	3.0	131	9.95	1.52	3.0
J	20	19.15	3.77	18.5	21	23.86	2.51	23.0	15	8.47	2.06	7.0
K	8	21.13	10.43	12.5	7	3.57	0.57	4.0	12	31.67	9.73	26.5
L	78	7.40	1.57	2.5	44	7.91	1.74	2.5	43	7.72	2.25	2.0
M	54	21.49	2.98	11.0	50	20.84	1.76	20.0	47	42.68	3.77	41.0
N	11	19.27	5.60	10.0	11	7.55	2.38	5.0	15	16.73	4.53	14.0
O	29	10.31	2.58	4.0	41	7.15	1.67	4.0	59	10.37	1.79	4.0
P	18	4.00	0.51	4.0	30	2.53	0.33	2.0	21	7.95	2.69	2.0
Q	28	4.89	1.09	3.0	48	3.90	0.80	2.0	70	7.13	1.37	2.0
R	63	12.76	1.86	6.0	76	11.50	1.38	9.0	49	18.06	2.58	12.0
S	103	5.10	0.58	2.0	137	6.18	0.79	2.0	115	8.79	1.22	4.0
T	60	10.23	2.11	3.5	25	17.72	3.39	11.0	42	9.24	2.28	3.0
U	41	11.39	1.97	5.0	90	6.19	0.71	4.0	70	8.96	1.77	4.0
V	46	6.33	1.38	4.0	13	8.62	3.19	3.0	18	10.33	4.00	3.0
W	117	6.54	1.27	2.0	56	4.27	0.56	2.0	175	11.64	1.57	3.0
X	94	10.66	1.45	4.0	98	9.43	1.10	4.0	89	13.83	1.45	9.0
Total	**1258**	**9.38**	**0.41**	**3.0**	**1292**	**8.49**	**0.33**	**3.0**	**1640**	**10.60**	**0.42**	**3.0**

*Mean number of days on assisted ventilation, days on Continuous Positive Airway Pressure (CPAP), and days on supplemental oxygen after assisted ventilation discontinued. Results based on admissions, only for infants ever on ventilator or oxygen were considered.

COMMENTS:
The information is for all infants sent home from network NICUs (for whom complete information is available). This includes some infants who received supplemental oxygen only.

Presentation #47

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



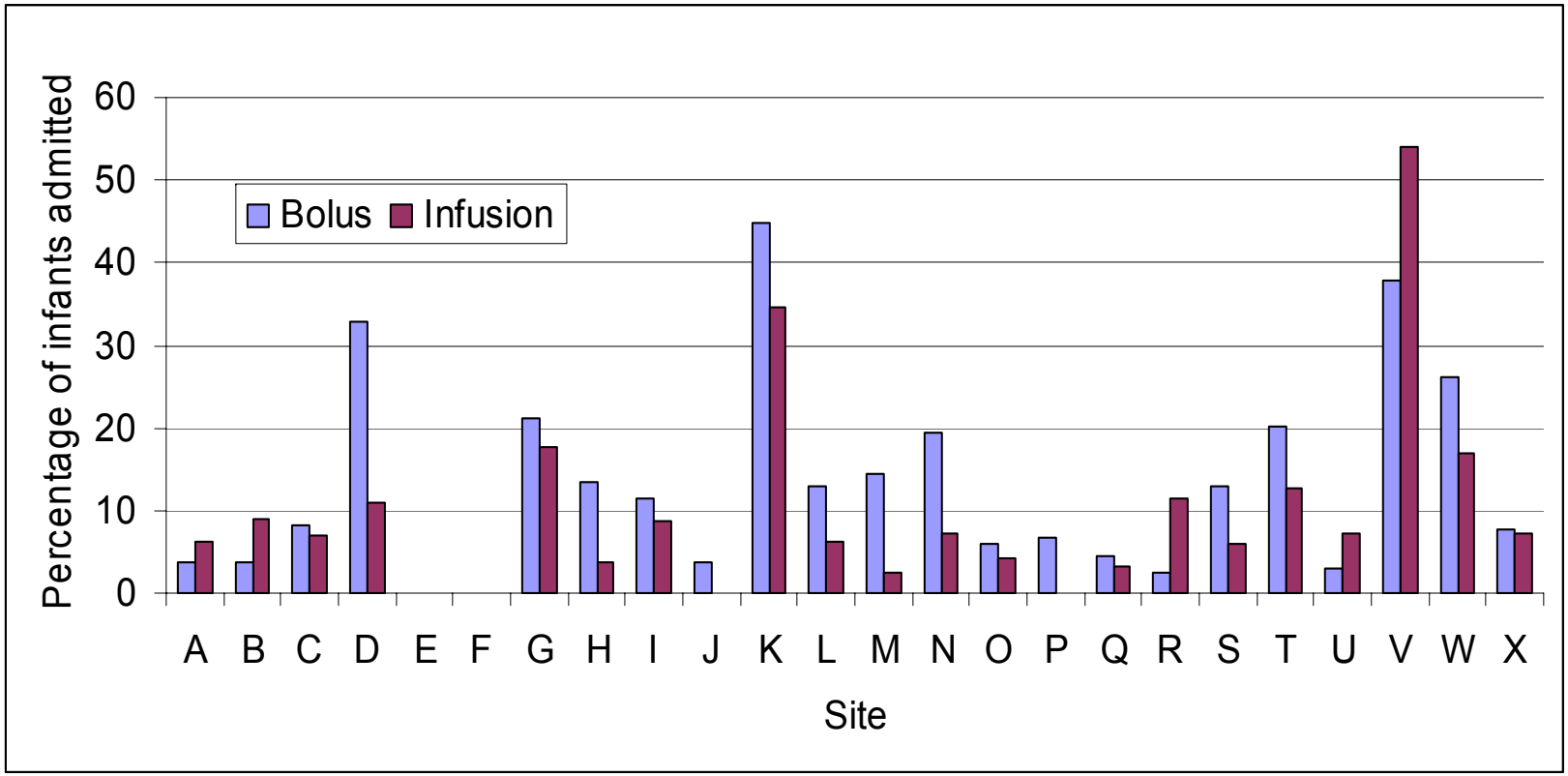
Postnatal Steroid Use	Site																							
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**V**	**W**	**X**	**Total**
%	0	0.26	0	5.48	0	3.45	2.65	1.92	1.68	0	10.20	1.37	4.82	7.32	0	4.55	1.10	1.14	4.00	2.48	1.21	3.54	10.92	0.95	**2.11**

*Percentage of all admissions to each network NICU

COMMENTS:

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

Presentation #48
Use of narcotics on Day 1



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	Total
Bolus	3.8	3.9	8.2	32.9	0	0	21.2	13.5	11.5	3.6	44.9	12.9	14.5	19.5	6.1	6.8	4.4	2.6	13	20.3	3.0	37.8	26.1	7.6	12.6
Infusion	6.3	9	6.9	11.0	0	0	17.7	3.9	8.8	0	34.7	6.3	2.4	7.3	4.3	0	3.3	11.4	6	12.8	7.3	53.9	16.8	7.1	11.9

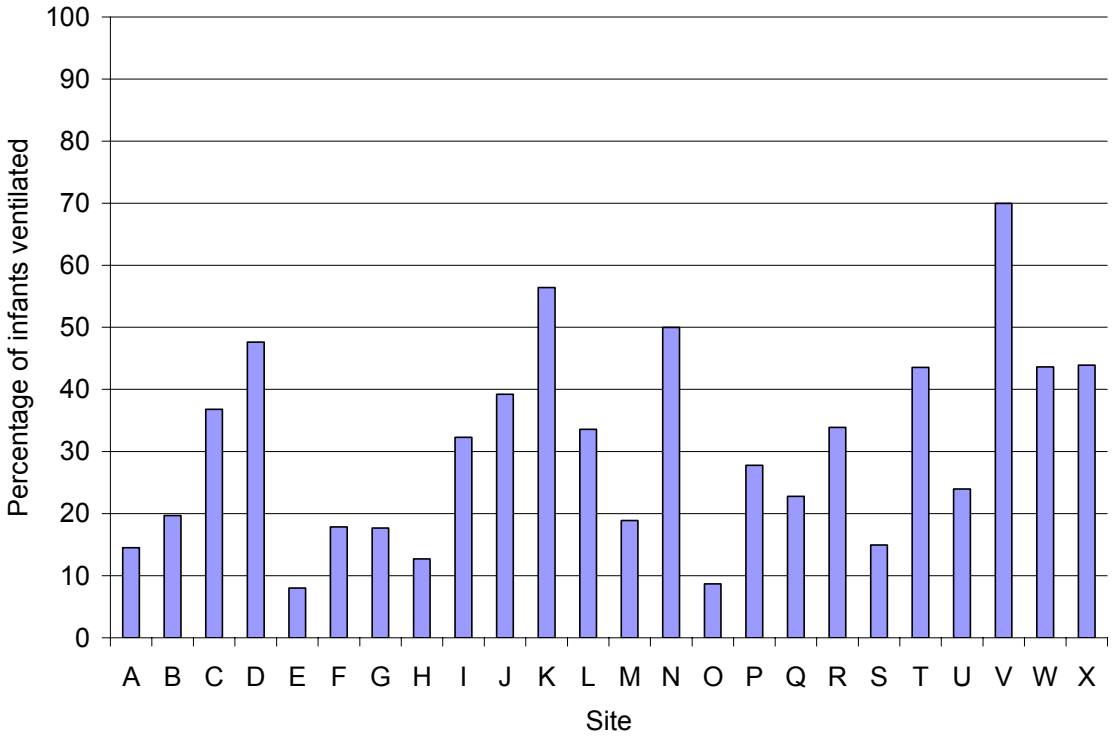
Note: This table indicates use of narcotics on Day 1 for any indication.

Presentation #49
Use of narcotics on Day 1 (by birthweight)*

Site	<1000		1000-1499		1500-1999		2000-2499		≥2500		Total	
	bolus	infusion	bolus	infusion	bolus	infusion	bolus	infusion	bolus	infusion	bolus	infusion
A	0	5.88	7.14	10.71	3.85	3.85	0	0	0	0	**3.80**	**6.33**
B	3.87	12.90	2.31	6.15	5.75	4.60	6.67	20.00	0	0	**3.86**	**9.00**
C	15.15	9.09	3.51	5.26	7.41	7.41	7.69	7.69	50.00	0	**8.18**	**6.92**
D	50.00	25.00	31.82	4.55	18.18	4.55	33.33	11.11	0	0	**32.88**	**10.96**
E	0	0	0	0	0	0	0	0	0	0	**0**	**0**
F	0	0	0	0	0	0	0	0	0	0	**0**	**0**
G	47.37	36.84	17.02	14.89	18.42	13.16	0	12.50	0	0	**21.24**	**17.70**
H	8.33	8.33	13.64	4.55	20.00	0	0	0	0	0	**13.46**	**3.85**
I	15.91	13.64	9.82	7.14	5.56	6.94	21.74	0	0	100.00	**11.49**	**8.78**
J	0	0	10.00	0	0	0	0	0	0	0	**3.64**	**0**
K	54.29	37.14	21.43	28.57	0	0	0	0	0	0	**44.90**	**34.69**
L	13.27	9.73	15.25	3.39	10.62	6.19	5.26	5.26	50.00	0	**12.88**	**6.30**
M	13.79	0	13.04	4.35	50.00	50.00	0	0	0	0	**14.46**	**2.41**
N	21.74	8.70	16.67	5.56	0	0	0	0	0	0	**19.51**	**7.32**
O	10.91	10.91	3.85	1.92	4.44	0	0	0	0	0	**6.13**	**4.29**
P	25.00	0	4.55	0	6.25	0	0	0	0	0	**6.82**	**0**
Q	5.26	5.26	6.25	6.25	3.33	0	0	0	0	0	**4.40**	**3.30**
R	1.53	5.34	1.53	5.34	0	3.92	0	0	0	0	**2.57**	**11.43**
S	50.00	14.29	9.76	4.88	3.13	3.13	0	9.09	50.00	0	**13.00**	**6.00**
T	23.68	22.37	14.94	8.05	22.58	6.45	23.53	17.65	0	0	**20.25**	**12.81**
U	4.84	19.35	3.77	0	0	0	0	0	0	0	**3.03**	**7.27**
V	47.29	59.69	26.92	42.31	23.08	58.97	57.14	57.14	100.00	0	**37.80**	**53.94**
W	41.67	37.50	31.58	23.68	19.15	2.13	0	10.00	0	0	**26.05**	**16.81**
X	8.70	15.22	6.90	3.45	10.00	3.33	0	18.75	0	0	**7.62**	**7.14**
Total	**17.00**	**19.6**	**10.40**	**8.4**	**9.60**	**7.0**	**9.20**	**9.2**	**23.50**	**5.9**	**12.60**	**11.9**

*percentage of admissions in each birthweight category of each site receiving treatment
Note: This table indicates use of narcotics on Day 1 for any indication.

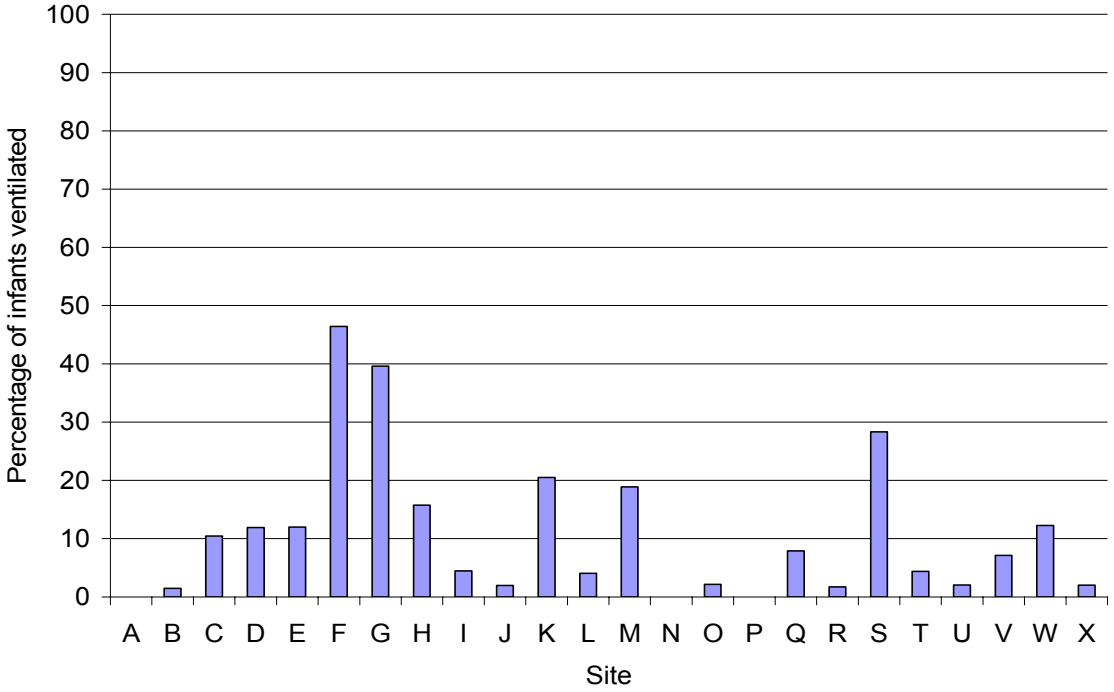
Presentation #50
Use of narcotics in ventilated infants*



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	Mean
%	14.5	19.7	36.8	47.6	8	17.9	17.7	12.7	32.3	39.2	56.4	33.6	18.9	50	8.7	27.8	22.8	33.9	14.9	43.6	24	69.9	43.6	43.9	**34.3**

*Percentage of ventilated infants receiving narcotics (morphine, fentanyl and codeine) for any indication.

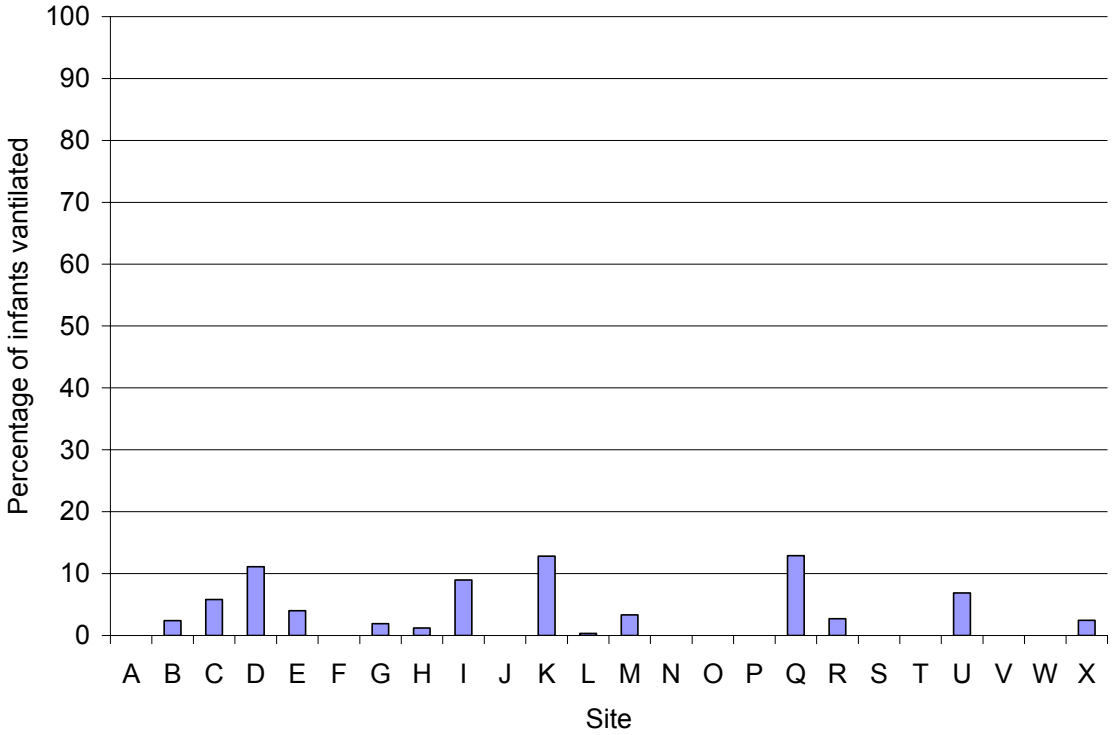
Presentation #51
Use of sedatives in ventilated infants*



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	Mean
%	0	1.5	10.5	11.9	12	46.4	39.6	15.8	4.5	2	20.5	4.1	18.9	0	2.2	0	7.9	1.7	28.4	4.4	2.1	7.1	12.3	2	**8.2**

*Percentage of ventilated infants receiving sedatives (diazepam, lorazepam, midazolam, and chloral hydrate).

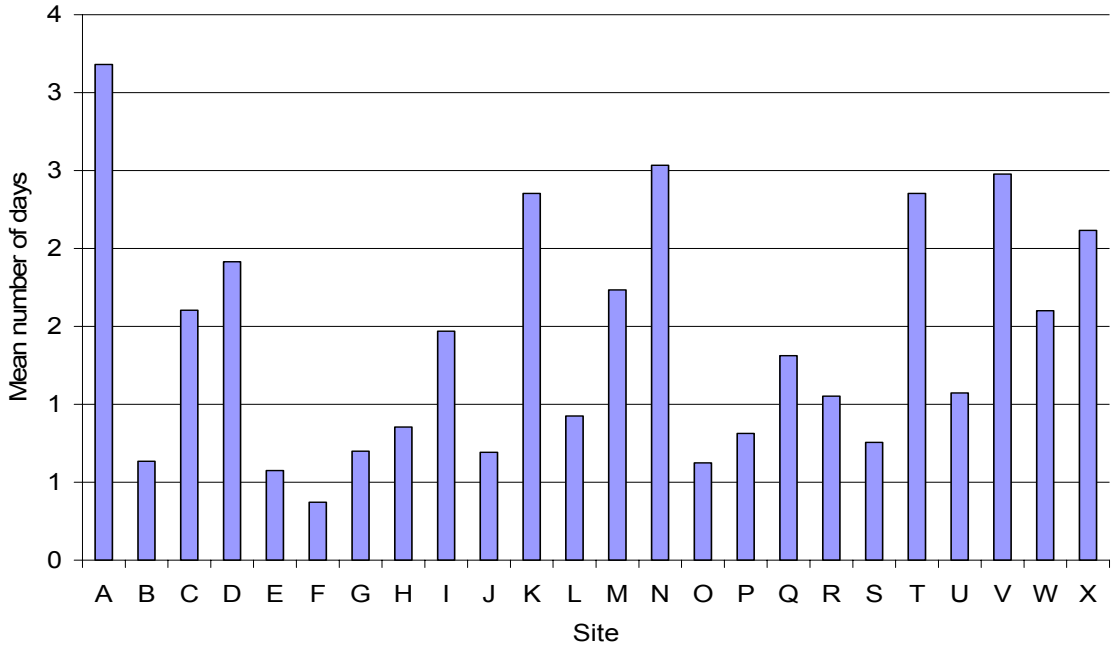
Presentation #52
Use of pancuronium in ventilated infants*



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	Mean
%	0	2.4	5.8	11.1	4	0	1.9	1.2	9	0	12.8	0.3	3.3	0	0	0	12.9	2.7	0	0	6.9	0	0	2.4	**2.6**

*Percentage of ventilated infants receiving pancuronium.

Presentation #53
Days of receiving narcotics in ventilated infants*

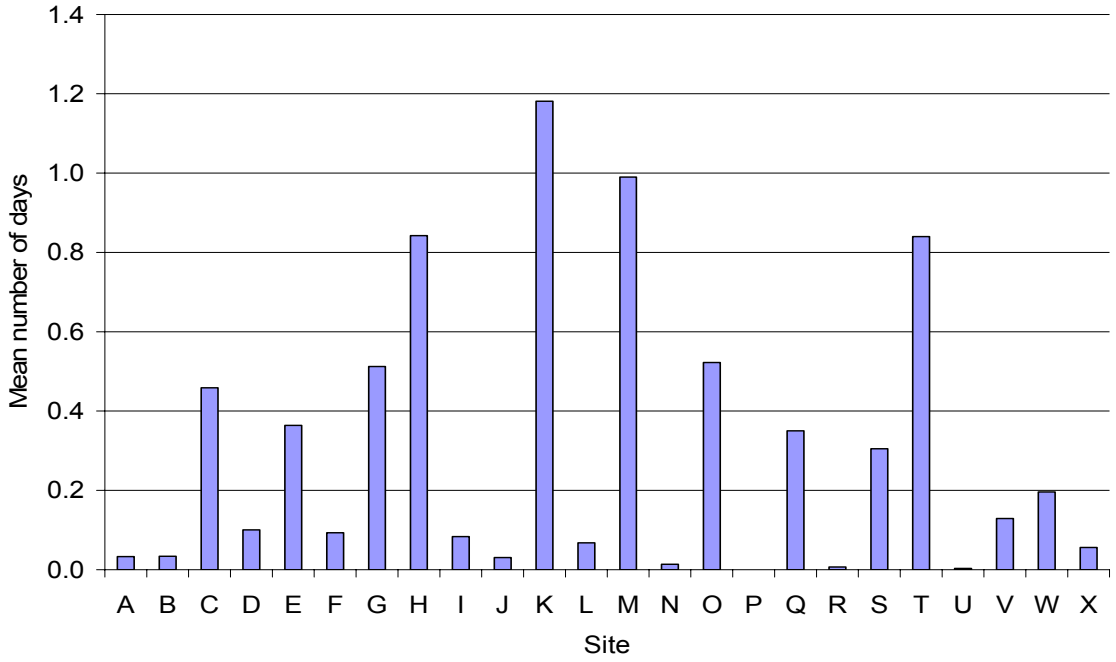


Site	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Mean
Mean number of days	3.2	0.6	1.6	1.9	0.6	0.4	0.7	0.9	1.5	0.7	2.4	0.9	1.7	2.5	0.6	0.8	1.3	1.1	0.8	2.4	1.1	2.5	1.6	2.1	**1.5**
Mean % day	27.4	4.3	15.2	19.5	5.6	8.3	7.4	13.2	15.6	2.2	16.2	8.5	5.4	13.7	4.4	13.3	18.0	7.5	8.3	16.2	8.7	25.8	19.1	14.9	**12.4**

*Narcotics include morphine, fentanyl, meperidine and codeine.
**Mean % day = Mean of (number of days of receiving narcotics/number of days of receiving assisted ventilation)*100

COMMENTS:
Mean % day represents the mean number of days receiving narcotics per 100 days receiving assisted ventilation. Site variation remains indicating that the use of this medication may also be for other reasons.

Presentation #54
Days of receiving sedatives in ventilated infants*

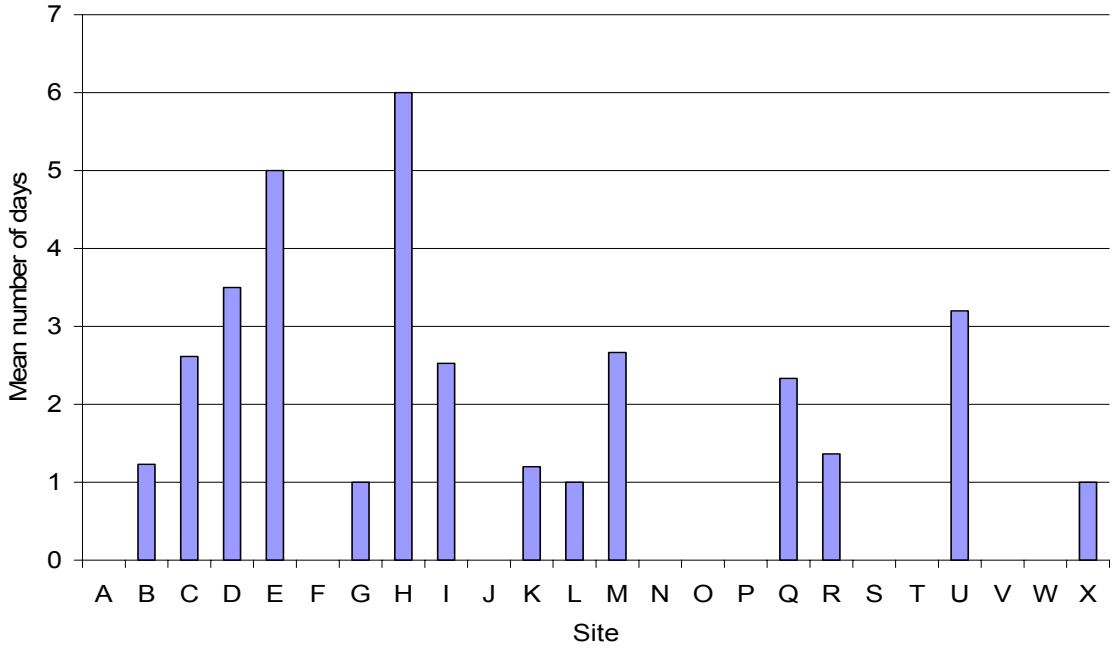


Site	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Mean
Mean number of days	0	0	0.5	0.1	0.4	0.1	0.5	0.8	0.1	0	1.2	0.1	1	0	0.5	0	0.4	0	0.3	0.8	0	0.1	0.2	0.1	**0.3**
Mean % day	0.3	0.2	4.3	1	3.5	2.1	5.4	13	0.9	0.1	8.1	0.6	3.1	0.1	3.7	0	4.8	0.1	3.3	5.8	0	1.3	2.3	0.4	**2.5**

**Mean % day = Mean of (number of days of receiving sedatives/number of days of receiving assisted ventilation)*100

COMMENTS:
Mean % day represents the mean number of days of receiving sedatives per 100 days receiving assisted ventilation. Site variation remains indicating the use of this medication may also be for other reasons.

Presentation #55
Days of receiving pancuronium in ventilated infants

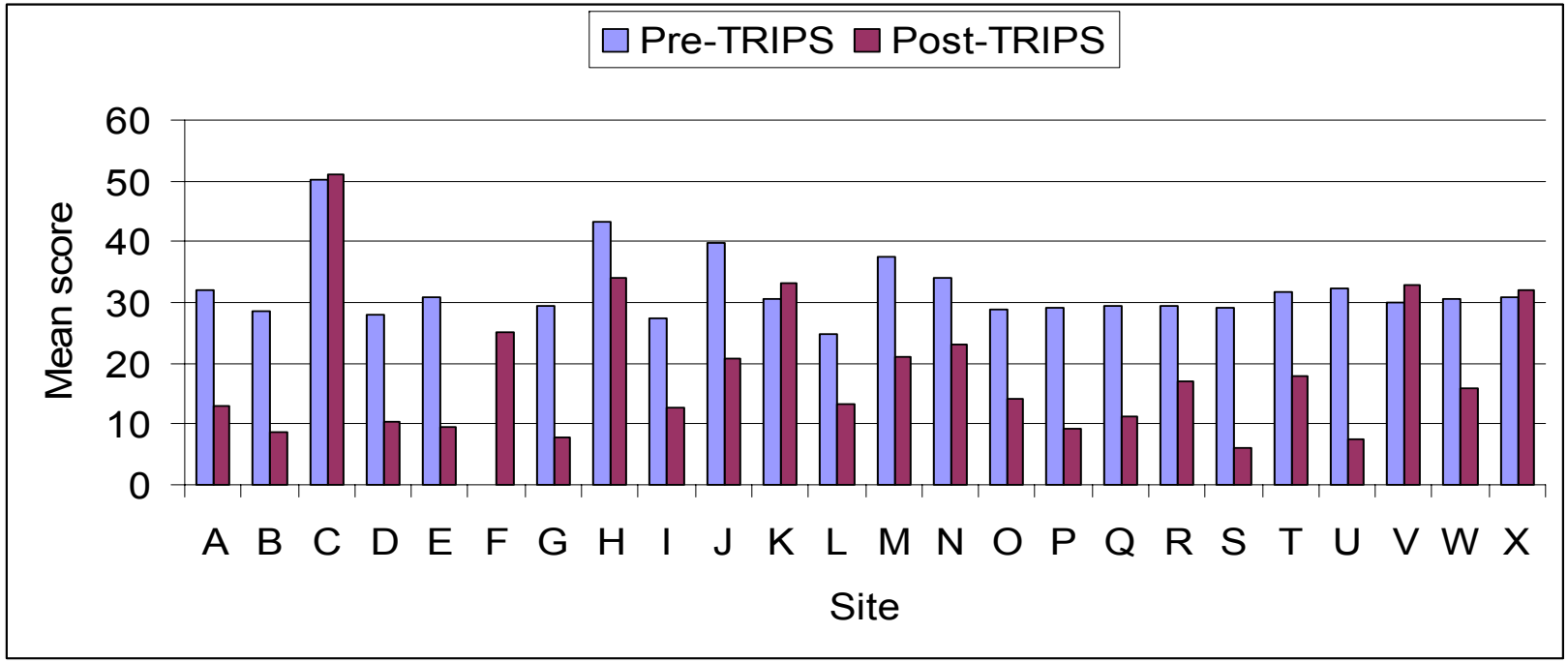


Site	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Mean
Mean number of days	0	1.2	2.6	3.5	5	0	1	6	2.5	0	1.2	1	2.7	0	0	0	2.3	1.4	0	0	3.2	0	0	1	**2.3**
Mean % day	0	9.2	24.7	35.5	48.3	0	10.9	98.6	26.7	0	7.7	9.1	8.3	0	0	0	33.1	10	0	0	27.6	0	0	7.1	**19.9**

**Mean % day = Mean of (number of days of receiving pancuronium/number of days of receiving assisted ventilation)*100

COMMENTS:
Mean % day represents the mean number of days of receiving pancuronium per 100 days receiving assisted ventilation. Site variation remains indicating the use of this medication may also be for other reasons.

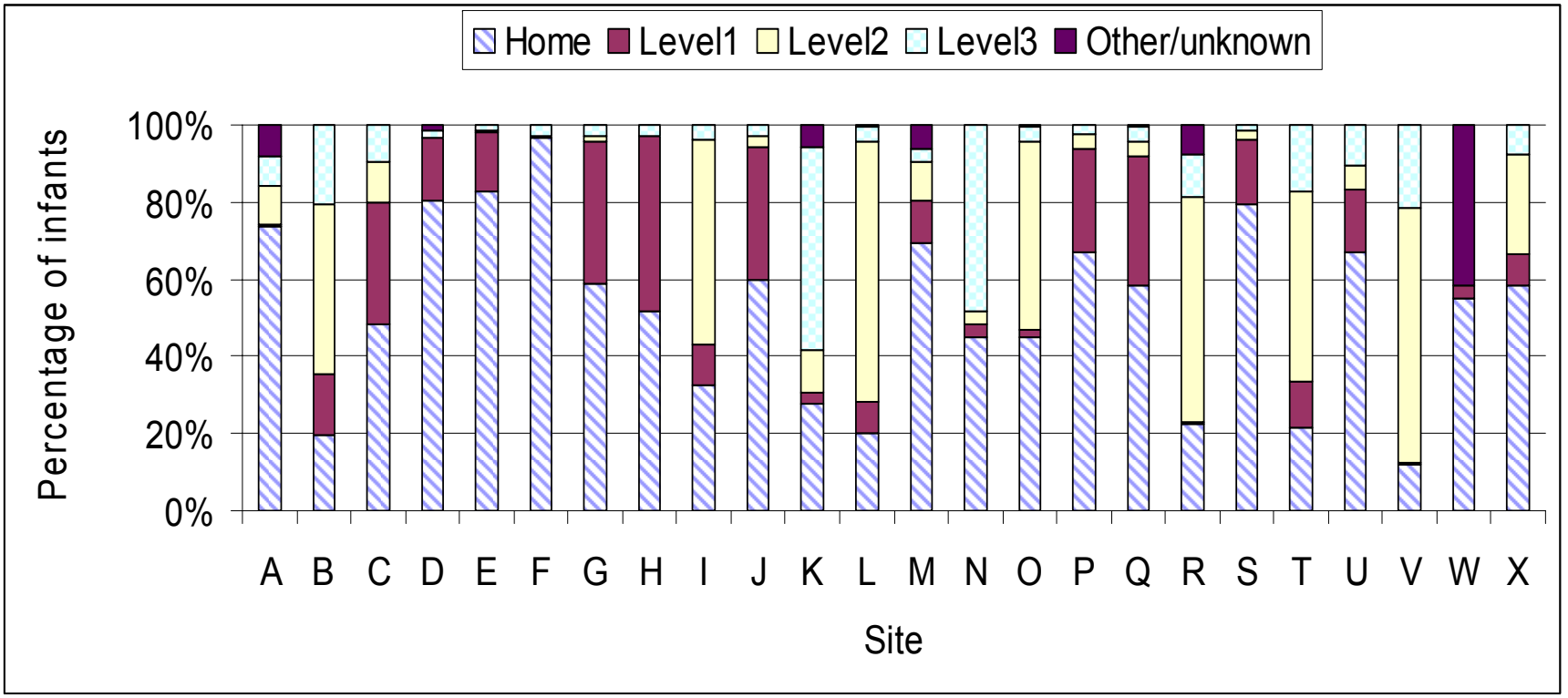
Presentation #56
Mean TRIPS score (by site)



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	Mean
Pre-TRIPS	32.1	28.4	50.3	28	30.9	N/A	29.5	43.3	27.5	39.8	30.7	24.8	37.5	34	28.8	29	29.4	29.3	29.3	31.8	32.4	30	30.7	31	**29.1**
Post-TRIPS	12.9	8.7	51	10.5	9.7	25	7.8	34	12.8	20.8	33.3	13.4	20.9	23.1	14.1	9.2	11.2	17	6	17.8	7.6	32.9	16	32	**14.6**

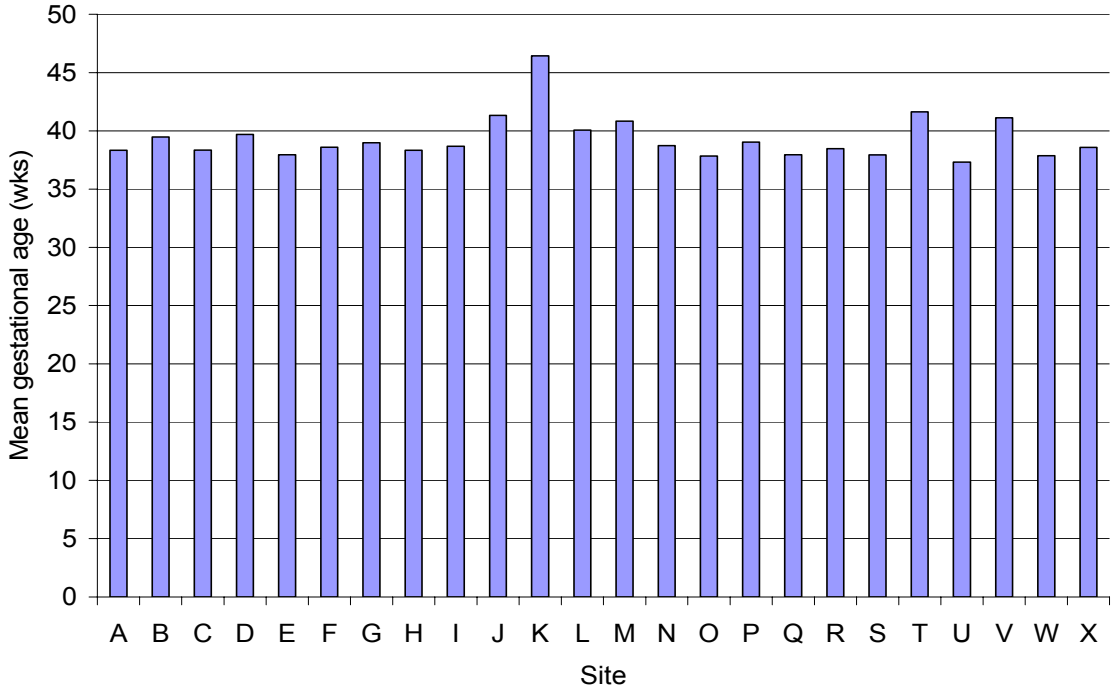
COMMENTS:
TRIPS = **T**ransport **R**isk **I**ndex of **P**hysiologic **S**tability. Variables collected for TRIPS score include temperature, respiratory status, systolic blood pressure and response to noxious stimuli. Each condition is given a score dependent on the severity of that particular condition and added together to create one score per patient per time period (pre- and post-transport). TRIPS has 3 scoring times: once in the first hour (or first two hours) of admission, once in the 12th hour (plus or minus an hour) following admission and once in the 24th hour (plus or minus an hour) following admission.

Presentation #57
Discharge destination of infants



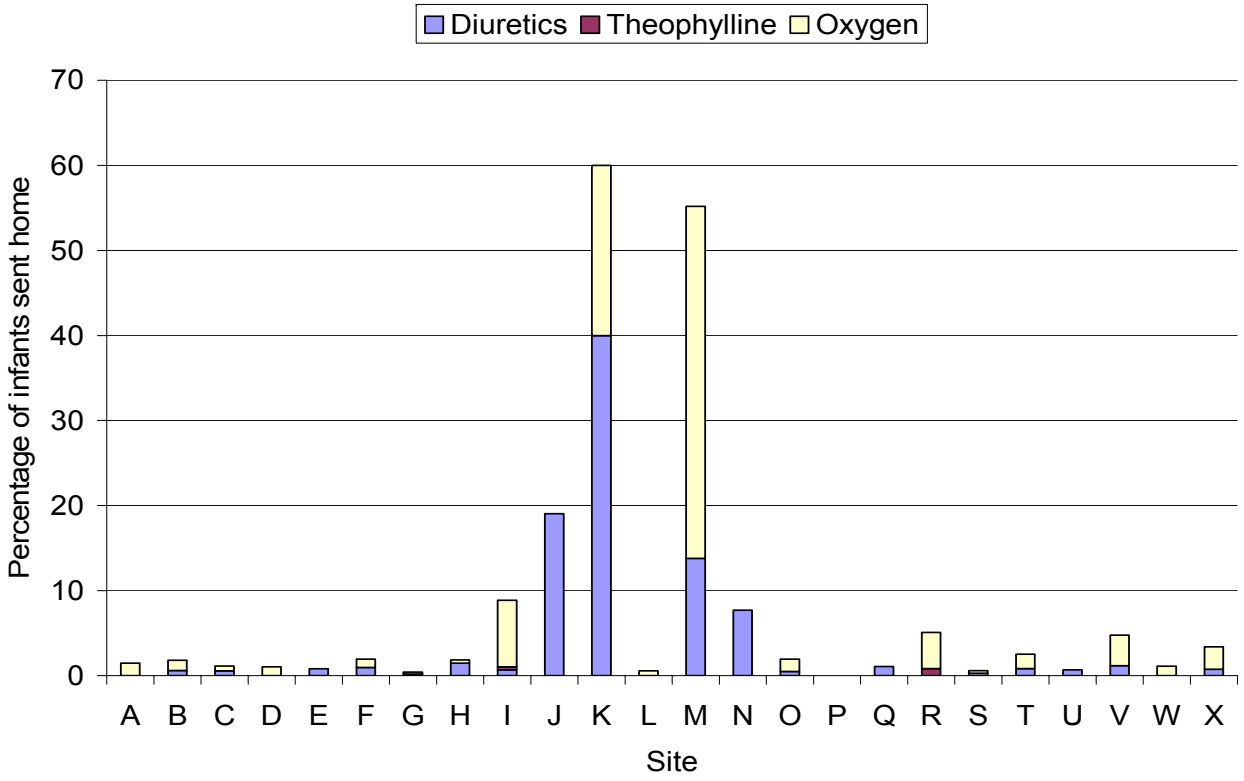
COMMENTS:
Discharge destinations varied considerably, possibly affected by the availability of the health care resources, geography and practice variations at different hospitals.

Presentation #58
Post-menstrual age at discharge home directly from NICU



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	Mean
Mean	38	39	38	40	38	39	39	38	39	41	46	40	41	39	38	39	38	38	38	42	37	41	38	39	**39**
Std. Error of Mean	0.17	0.21	0.13	0.21	0.21	0.14	0.12	0.14	0.13	0.69	2.62	0.21	0.42	0.5	0.16	0.18	0.19	0.24	0.16	0.51	0.21	0.31	0.12	0.14	**0.04**
Median	38	39	38	39	37	38	39	38	39	40	47	40	40	39	37	39	37	39	37	41	37	41	37	38	**38**

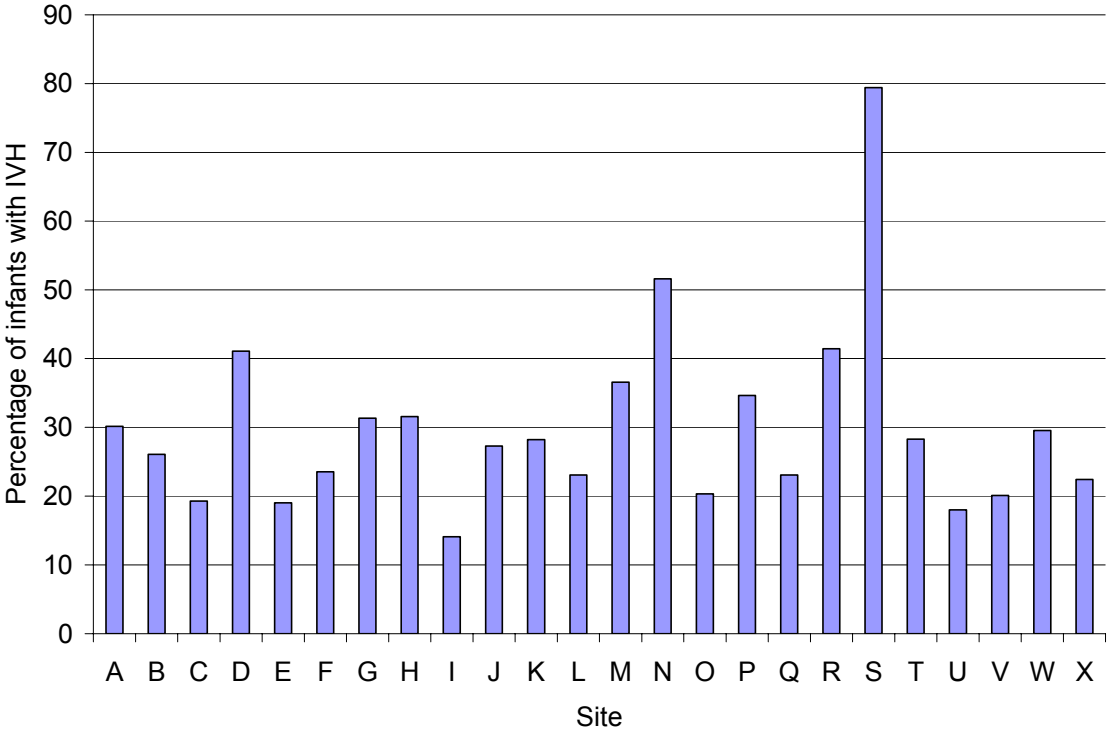
Presentation #59
Percent of infants discharged on diuretics, theophylline and oxygen*



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	Total
Diuretics	0	0.6	0.6	0	0.8	1	0	1.5	0.7	19.1	40	0	13.8	7.7	0.5	0	1.1	0	0.3	0.9	0.7	1.2	0	0.8	**0.8**
Theophylline	0	0	0	0	0	0	0.2	0	0.3	0	0	0	0	0	0	0	0	0.9	0	0	0	0	0	0	**0.1**
Oxygen	1.5	1.2	0.6	1	0	1	0.2	0.4	7.9	0	20	0.6	41.4	0	1.5	0	0	4.2	0.3	1.7	0	3.6	1.1	2.6	**1.8**

* Percentage of infants who were sent home directly from the NICU.

Presentation #60
Incidence of IVH among infants <32 weeks of gestational age



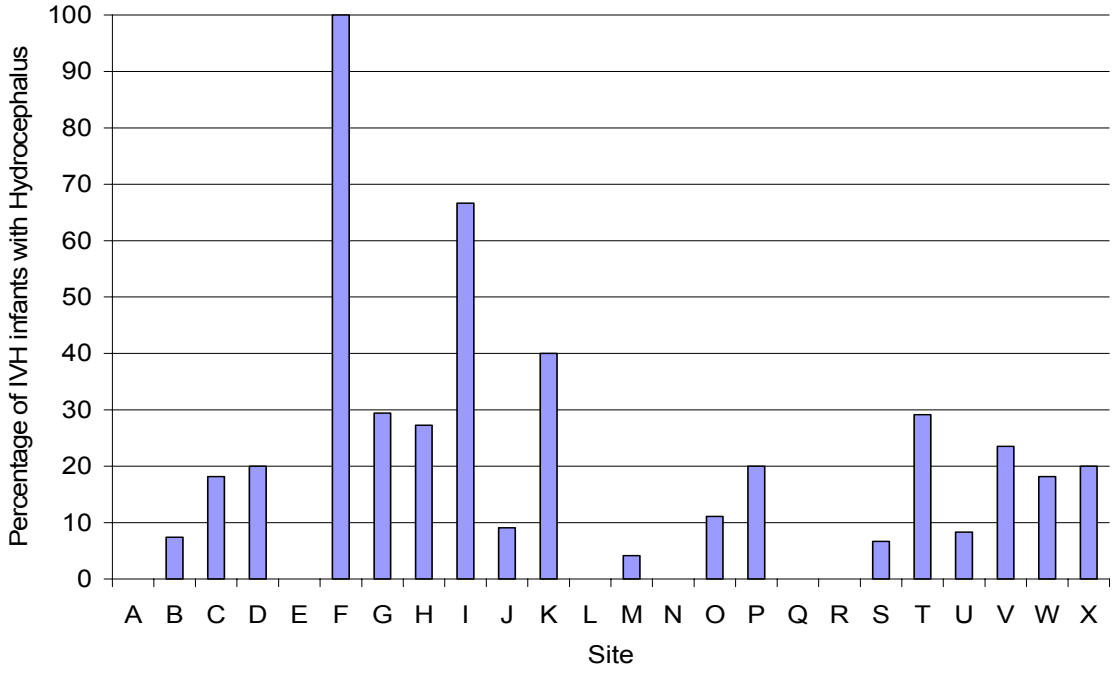
Presentation #60 (*continued*)
Incidence of IVH among infants <32 weeks of gestational age

Site	≤22	23-24	25-26	27-28	29-30	31	Mean*
A	N/A	N/A	66.7	53.3	10.0	6.3	**30.2**
B	N/A	57.1	44.4	26.7	10.8	17.8	**26.1**
C	N/A	40.0	45.5	24.0	13.2	10.0	**19.3**
D	100.0	100.0	60.0	41.7	23.8	25.0	**41.1**
E	N/A	50.0	0	37.5	0.0	0	**19.1**
F	0	50.0	50.0	25.0	25.0	0	**23.5**
G	N/A	0	76.9	50.0	4.2	10.0	**31.3**
H	N/A	50.0	50.0	50.0	28.6	10.0	**31.6**
I	0	42.1	30.8	18.5	4.6	0	**14.1**
J	N/A	14.3	26.3	33.3	0	N/A	**27.3**
K	N/A	25.0	16.7	46.2	N/A	N/A	**28.2**
L	0	65.0	41.9	25.3	13.5	6.9	**23.1**
M	N/A	22.2	45.2	33.3	N/A	N/A	**36.6**
N	N/A	42.9	33.3	66.7	N/A	N/A	**51.6**
O	N/A	28.6	32.3	20.0	13.5	11.1	**20.3**
P	0	0	100.0	50.0	37.5	0.0	**34.6**
Q	0	25.0	37.5	23.8	18.8	20.0	**23.1**
R	N/A	81.1	50.9	43.9	29.0	16.7	**41.4**
S	N/A	100.0	88.9	94.7	88.0	35.7	**79.4**
T	100.0	43.8	44.4	26.0	17.0	18.2	**28.3**
U	0	46.2	31.6	17.2	9.7	0	**18.0**
V	N/A	14.3	16.7	22.2	27.5	17.7	**20.1**
W	N/A	25.0	43.8	46.2	27.0	11.1	**29.6**
X	0	10.0	55.6	26.7	22.6	2.4	**22.4**
Mean**	**25.0**	**45.2**	**41.6**	**32.2**	**18.8**	**11.3**	**27.8**

Mean* = (number of infants with IVH for site x / total number of infants for site x)*100
Mean** = (number of infants with IVH for gestational age category x / total number of infants in gestational category x)*100
NA = non-applicable

COMMENTS:
See comments for Presentation #62.

Presentation #61
Incidence of hydrocephalus among infants with IVH (by gestational age)



Presentation #61 (*continued*)
Incidence of hydrocephalus among infants with IVH (by gestational age)

Site	≤22	≤24	25-26	27-28	29-30	31-32	33-34	35-36	≥37	Mean*
A	0	0	0	0	0	0	N/A	N/A	N/A	**0**
B	N/A	0	22.2	0	0	0	N/A	N/A	N/A	**7.4**
C	N/A	0	40.0	0	0	20.0	100.0	N/A	0	**18.2**
D	0	50.0	60.0	0	0	0	0	50.0	33.3	**20.0**
E	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	33.3	**0**
F	N/A	N/A	100.0	N/A	N/A	N/A	N/A	N/A	N/A	**100.0**
G	N/A	N/A	16.7	33.3	0	100.0	N/A	N/A	N/A	**29.4**
H	N/A	N/A	33.3	66.7	0	0	N/A	N/A	N/A	**27.3**
I	N/A	50.0	66.7	100.0	0	100.0	N/A	N/A	N/A	**66.7**
J	N/A	0	0	12.5	N/A	N/A	N/A	N/A	N/A	**9.1**
K	N/A	100.0	0	50.0	N/A	N/A	N/A	N/A	N/A	**40.0**
L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
M	N/A	0	11.1	0	N/A	N/A	N/A	N/A	N/A	**4.2**
N	N/A	N/A	0	0	N/A	N/A	N/A	N/A	N/A	**0**
O	N/A	N/A	N/A	25.0	0	N/A	N/A	N/A	0	**11.1**
P	N/A	N/A	N/A	50.0	0	0	N/A	N/A	N/A	**20.0**
Q	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	N/A	**0**
R	N/A	N/A	N/A	0	0	N/A	N/A	N/A	N/A	**0**
S	N/A	100.0	28.6	11.1	0	0	0	0	11.1	**6.7**
T	0	20.0	25.0	14.3	100.0	100.0	N/A	N/A	N/A	**29.2**
U	N/A	0	0	25.0	0	N/A	N/A	N/A	N/A	**8.3**
V	N/A	0	50.0	0	33.3	0	N/A	N/A	N/A	**23.5**
W	N/A	0	28.6	0	10.0	100.0	N/A	N/A	33.3	**18.2**
X	N/A	0	14.3	50.0	12.5	0	0	N/A	N/A	**20.0**
Mean**	**0**	**20.0**	**24.0**	**14.8**	**5.8**	**16.3**	**10.5**	**16.7**	**9.5**	**15.4**

Mean* = (number of infants with hydrocephalus for site x / total number of infants for site x)*100
Mean** = (number of infants with hydrocephalus for gestational age category x / total number of infants in gestational category x)*100
NA = non-applicable

COMMENTS:
See Appendix A for definition of intraventricular hemorrhage.

G. Site Comparisons – Risks Adjusted Analysis

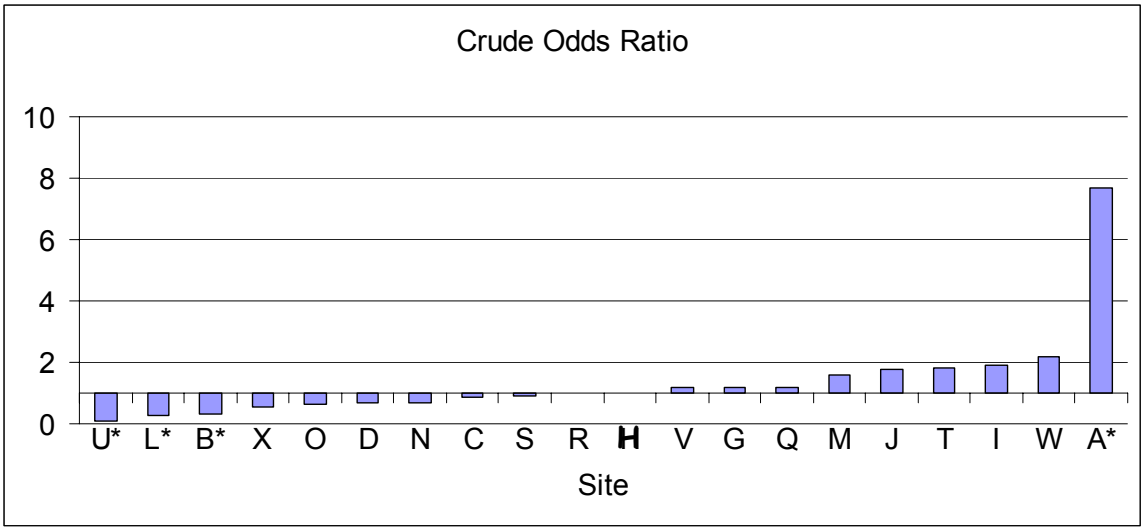
Comments: Logistic regression is used for this section-- Risk Adjusted Analysis. This technique is used to analyze interactions in which there are one or more independent variables that determine an outcome. The outcome is measured using a dichotomous variable.

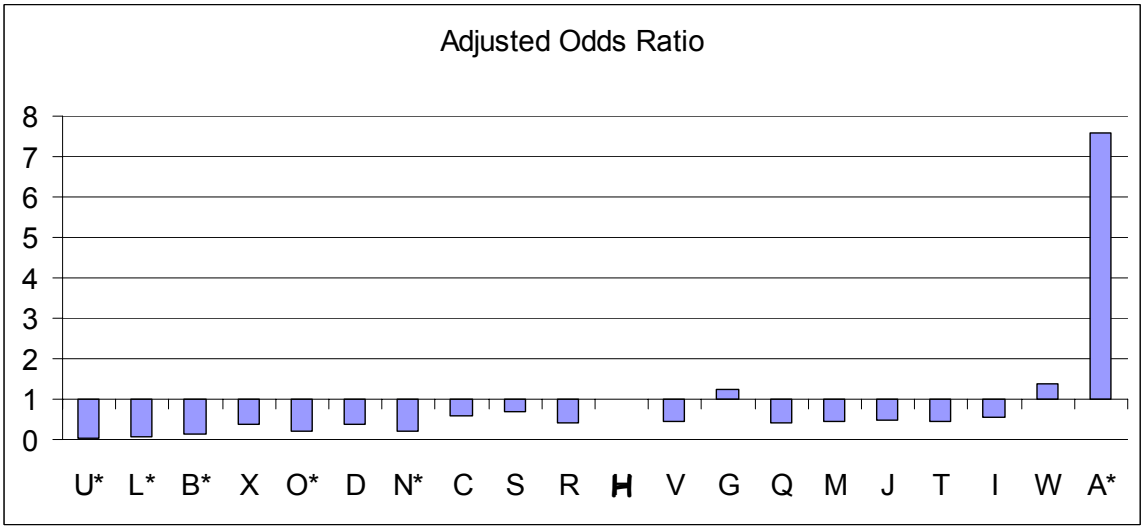
The goal of logistic regression is to find the best fitting (yet biologically reasonable) model to describe the relationship between the dichotomous characteristic of interest (dependent variable = response or outcome variable) and a set of independent (predictor or explanatory) variables. Logistic regression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

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

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

Presentation #62
Site comparison of retinopathy of prematurity





Reference site: H(E,F,K,P excluded due to small sample size)

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

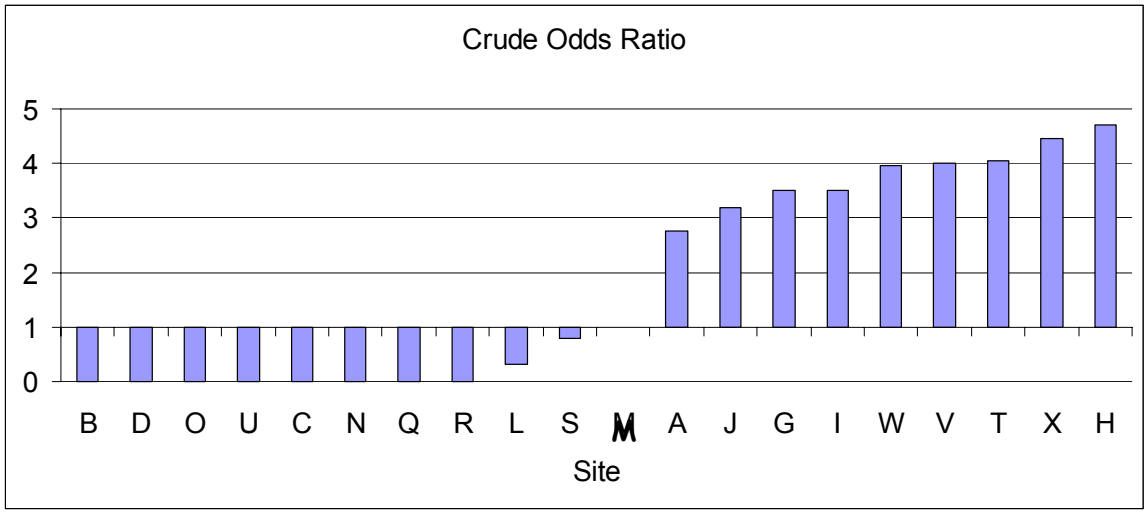
Inclusion criteria:
Birthweight <1500g
Screened for ROP
Age at admission less than 4 days

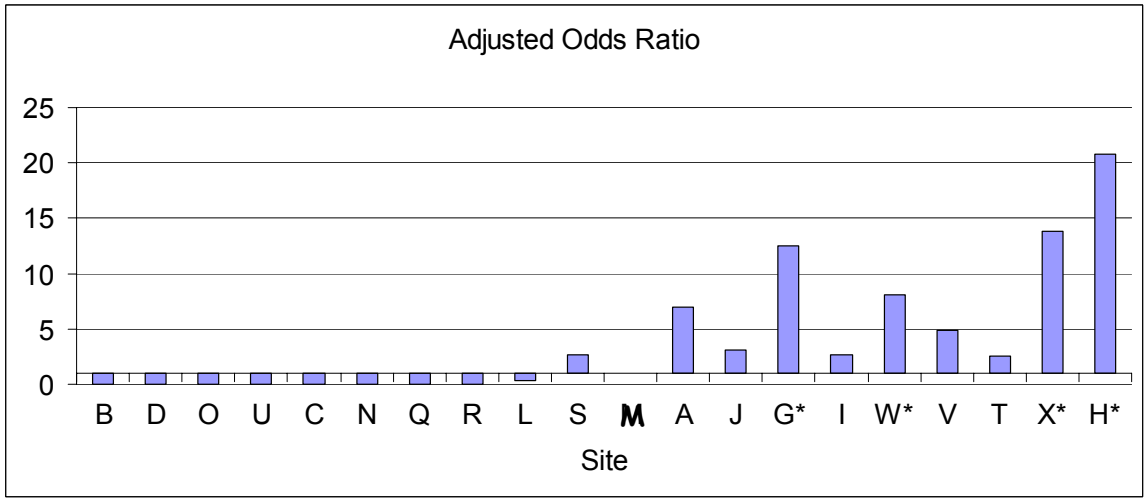
Outcome is attributed to the network hospital of first admission.

Significant predictors identified by multivariate analysis and adjusted for:

Birthweight
Gestational age

Presentation #63
Site comparison of cryo/laser therapy for retinopathy of prematurity





Reference site: M (E,F,K,P excluded due to small sample size)
***Sites significantly different from reference site (P<0.05)**

Inclusion criteria:
Birthweight <1500g
Screened for ROP
Age at admission less than 4 days

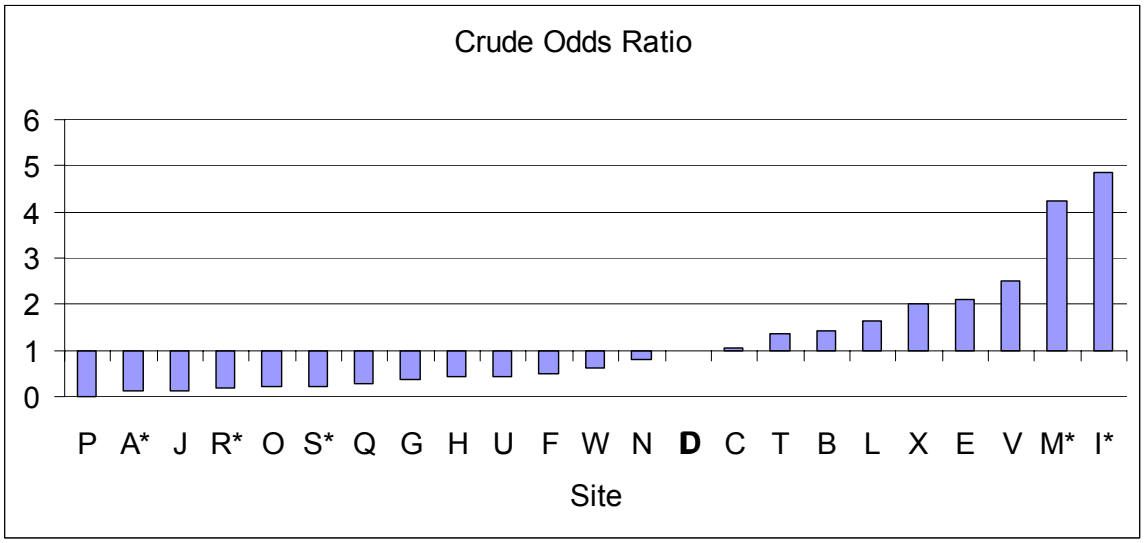
Outcome is attributed to the network hospital of first admission.

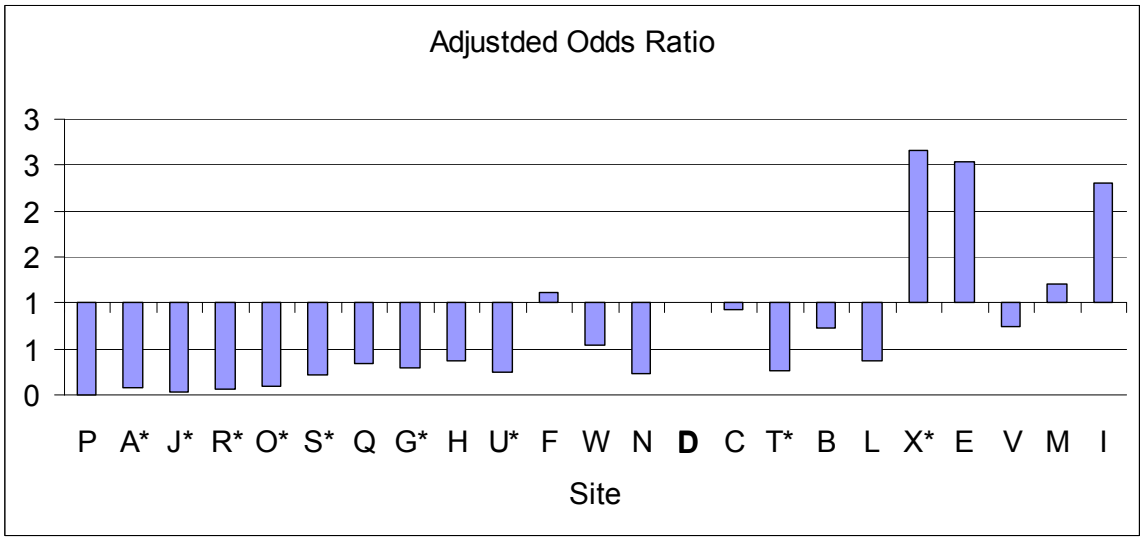
Significant predictors identified by multivariate analysis and adjusted for:

Gestational age

Note: retinopathy of prematurity refers to stage 3 and above

Presentation #64
Site comparison of oxygen dependency at 36 weeks CGA





Reference site: D (K excluded due to small sample size)

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

Inclusion criteria:
Gestational age <33 weeks
Age at admission less than 4 days
Survival to and remaining hospitalized at 36 weeks CGA

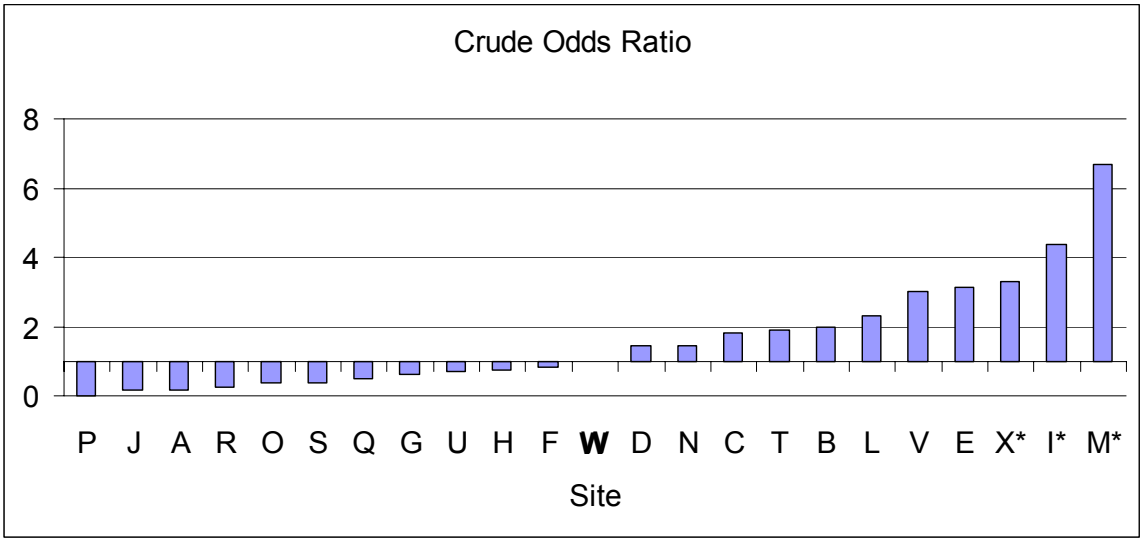
Outcome is attributed to the network hospital of first admission.

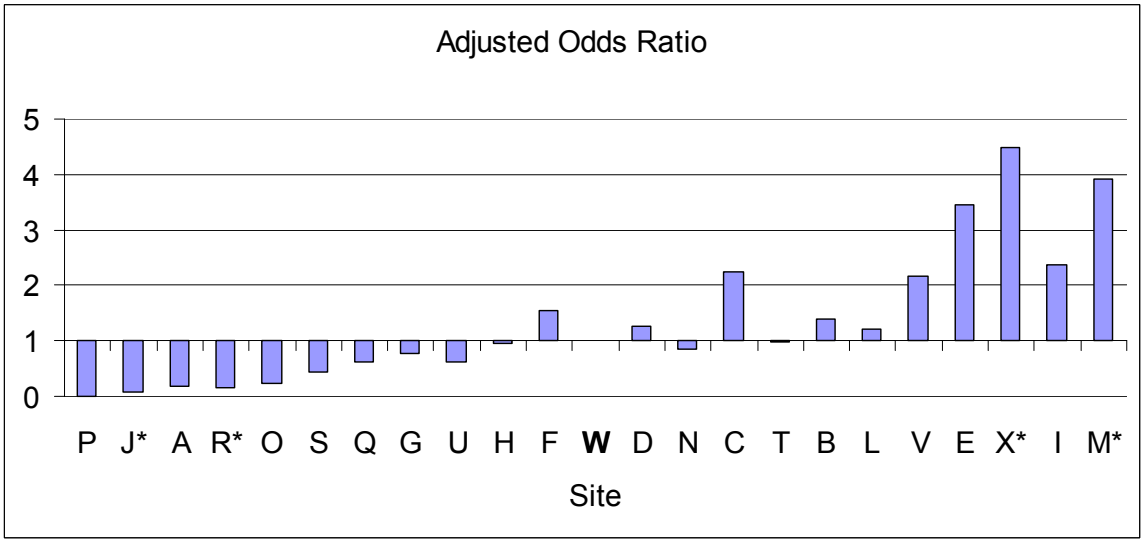
Significant predictors identified by multivariate analysis and adjusted for:

SNAP-II score
Gestational age
Gender

Note: this reflects the differences in odds ratio of bronchopulmonary dysplasia among sites.

Presentation #65
Site comparison of oxygen dependency at 36 weeks CGA or death





Reference site: W(K excluded due to small sample size)

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

Inclusion criteria:
Gestational age <33 weeks
Age at admission less than 4 days
Survival to and remaining hospitalized at 36 weeks CGA

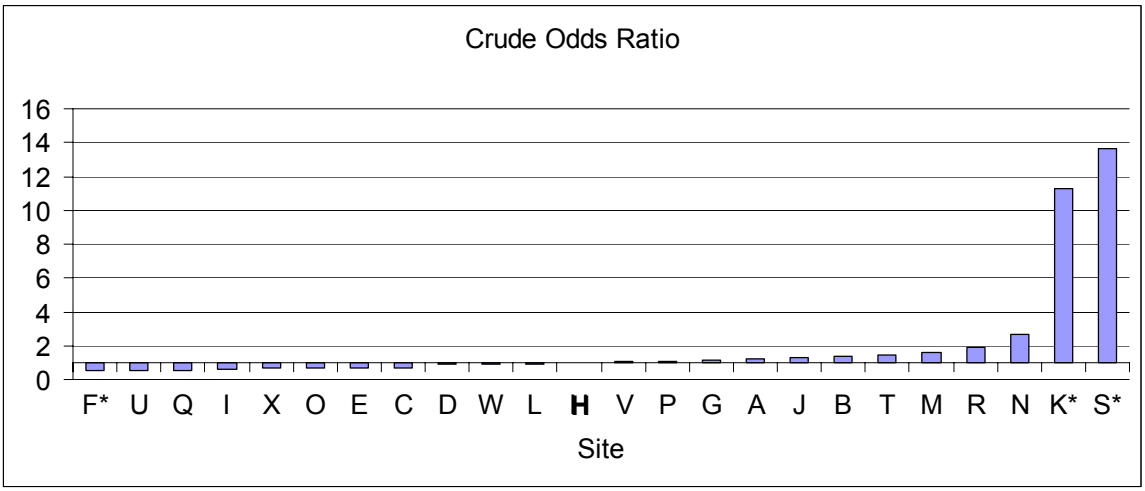
Outcome is attributed to the network hospital of first admission.

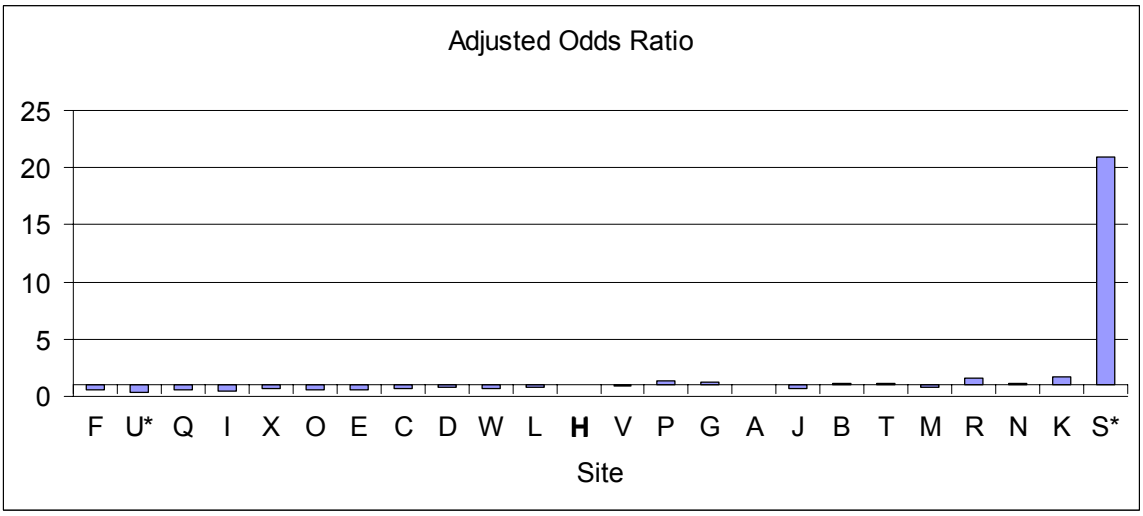
Significant predictors identified by multivariate analysis and adjusted for:

Admission SNAP-II score
Gestational age

Note: this reflects the differences in odds ratio of bronchopulmonary dysplasia among sites.

Presentation #66
Site comparison of intraventricular hemorrhage among infants <33 weeks gestational age





Reference site: H
***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

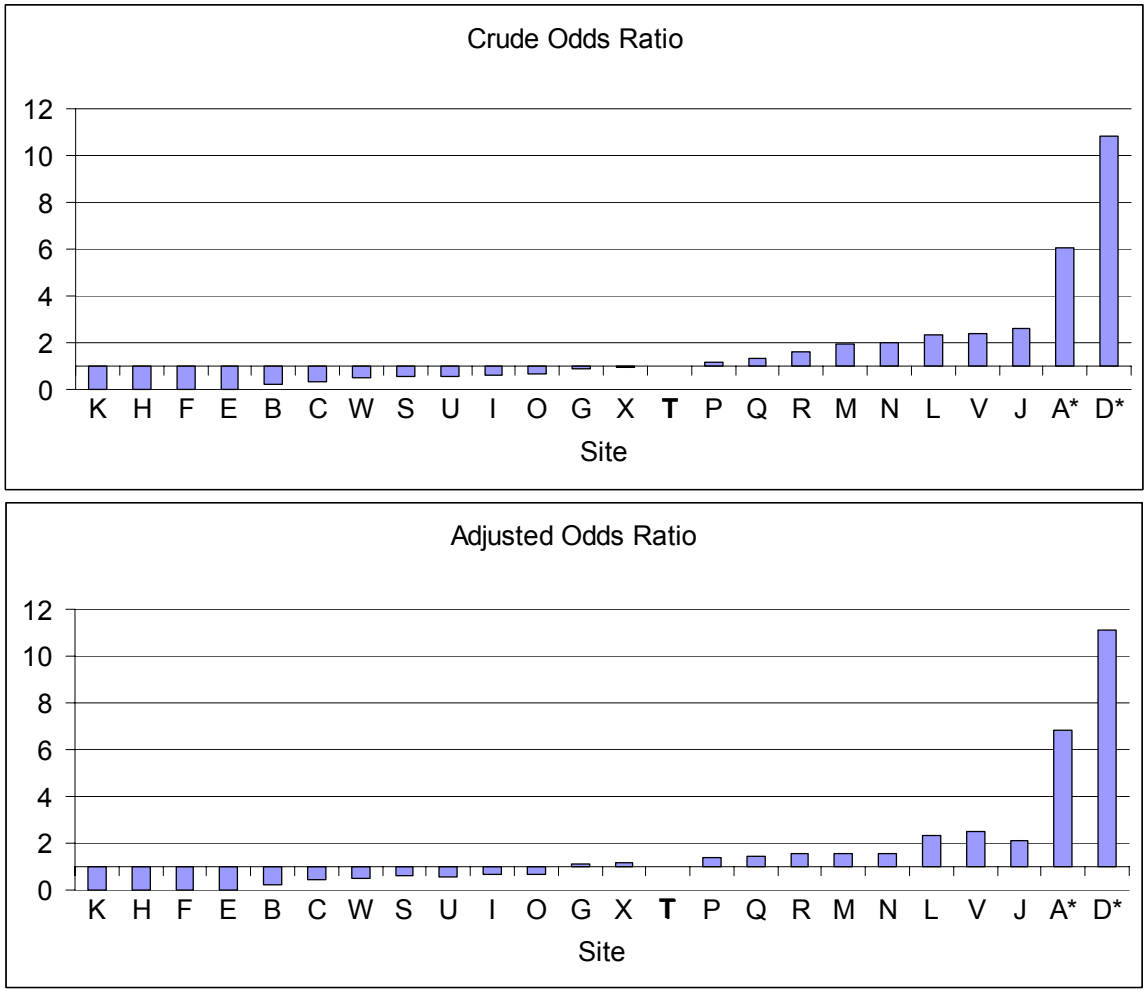
Outcome is attributed to the network hospital of first admission.

Significant predictors identified by multivariate analysis and adjusted for:

Admission SNAP-II score
Gestational age
Apgar at 5 mins
Cesarean section

Note: IVH refers to probable or definite IVH.

Presentation #67
Site comparison of necrotizing enterocolitis among infants <1500g at birth



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

Inclusion criteria:
Birthweight <1500g
Age at admission less than 4 days

Outcome is attributed to the network hospital of first admission.

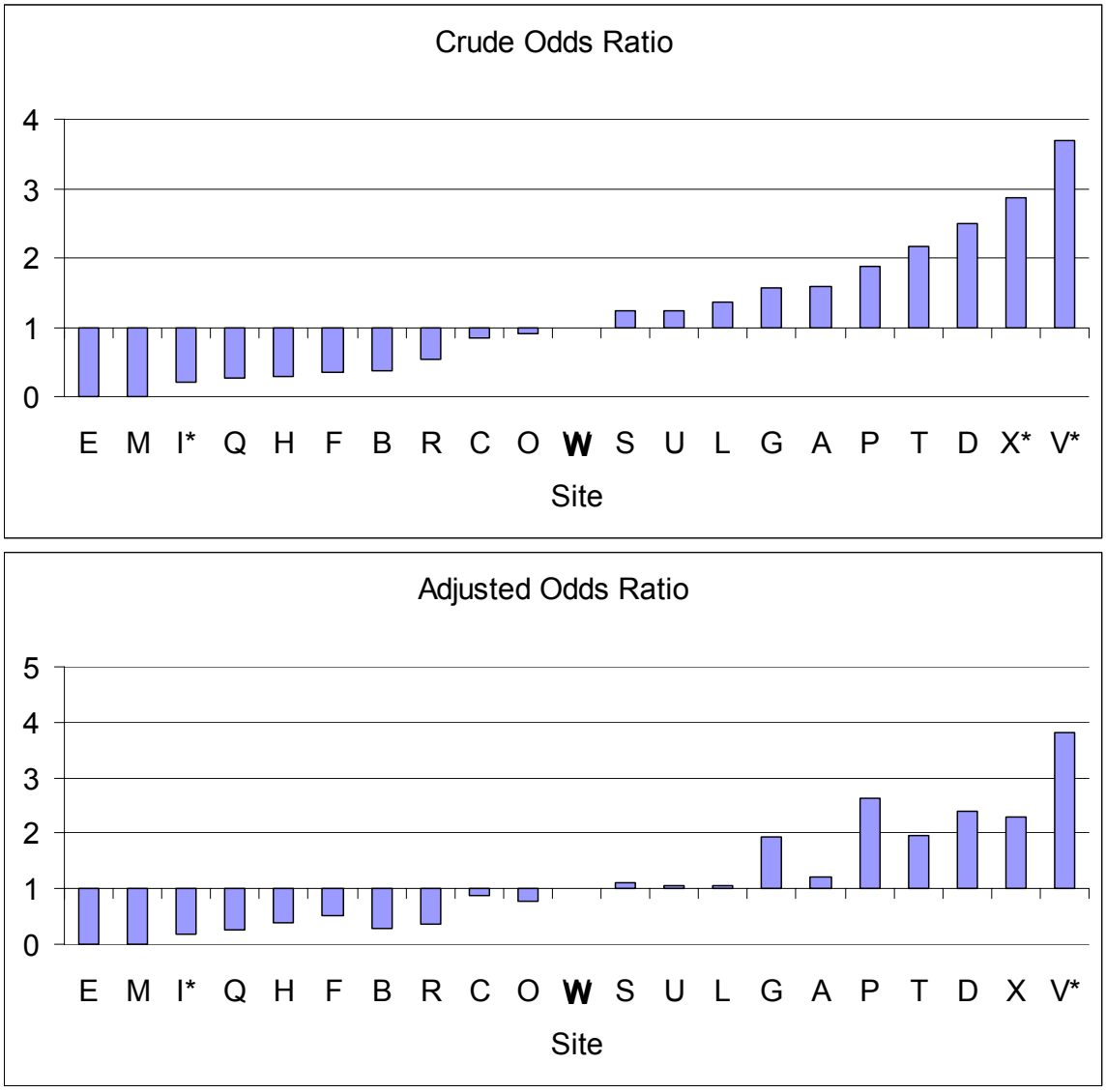
Significant predictors identified by multivariate analysis and adjusted for:

Gestational age

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.

G. Site: Risks Adjusted Analysis 128

Presentation #68
Site comparison of nosocomial infection among infants ≥1500g at birth



Reference site: W (J & N excluded due to no birthweights ≥1500g; K excluded due to small sample size)
***Sites significantly different from reference site (P<0.05)**

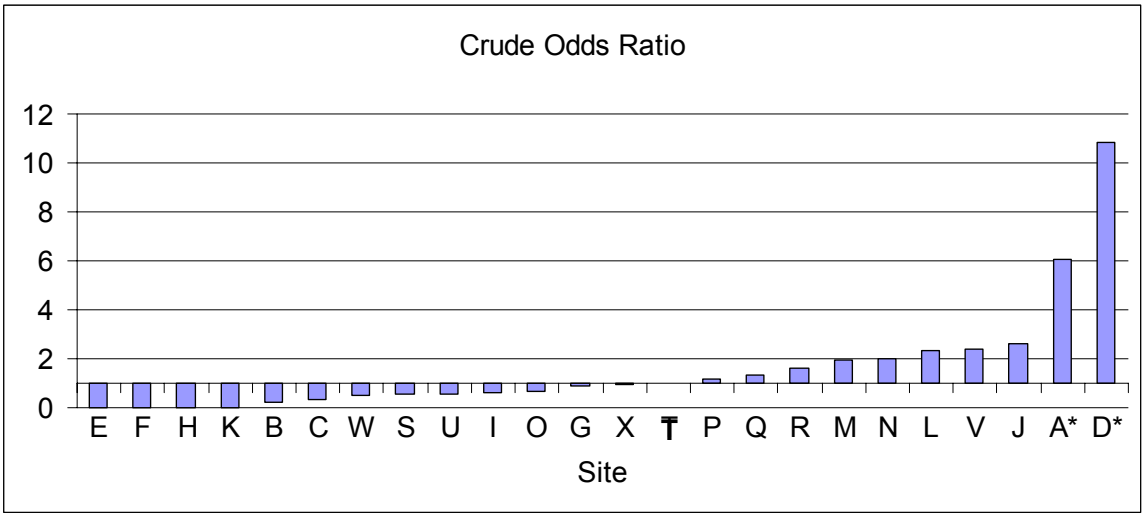
Inclusion criteria:
Birthweight ≥1500g
Age at admission less than 4 days
Remained hospitalized beyond 2 days after birth

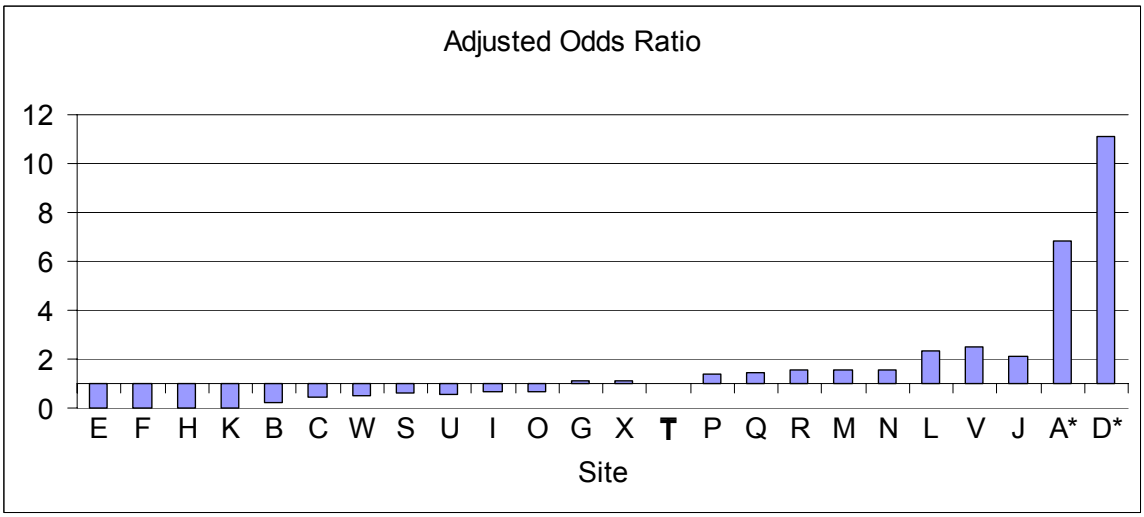
Outcome is attributed to the hospital in which the infection occurred (adjusted for transfer).

Significant predictors identified by multivariate analysis and adjusted for:

Gestational age
Apgar at 5 mins
Cesarean section

Presentation #69
Site comparison of nosocomial infection among infants <1500g at birth





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

Inclusion criteria:
Birthweight <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
Admission SNAP-II score

H. Conclusions

The Canadian Neonatal Network™ has been established since 1995. The number of NICUs participating in the national database has continued to increase, now with 24 sites participating in data collection for this report. This number will rise with the future inclusion of tertiary hospitals in Quebec, as well as US and international hospitals.

The data demonstrates continuing variations in risk-adjusted outcomes and practices, and provides benchmarking information for Canadian NICUs. Individual hospitals have the opportunity to review their outcomes and launch strategies for improving care. In addition, EPIC data collection has emerged from the database as a useful tool for evidence-based quality improvement in NICUs.

CNN researchers continue to utilize the database and produce numerous publications that will have significant impact on neonatal care and policy in Canada and internationally. With the participation of additional NICUs for 2006 - 2007, we anticipate that CNN will continue to produce definitive population-based data on outcomes, practices and quality improvement.

I. Future Plans

- **Database Improvements**: Improvements to be implemented for the CNN database include:

  - Report on population-based information and follow-up of all infants equally by capturing information from hospitals to which infants are transferred.
  - Enhance the data management capabilities on both data server and client application.
  - 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.

- **The Future of the EPIC Project**: Data collection for the EPIC project has concluded as of December 31st, 2005. Analyses are now underway to produce results for upcoming abstracts, and to compile a report summarizing the three years' results. The CNN Steering Committee will be assessing the EPIC process and putting forward recommendations from participating sites for streamlining the future of EPIC II. We are embarking on a new study in Fall 2006 "EPIC/Partnership for Health Systems Improvement (PHSI)" funded by CIHR to refine and improve on the EPIC process.

- **Expansion of Collaborative Efforts:** The CNN is in the process of establishing collaborative ties with other Neonatal Networks around the world.

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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 of Peds 2001; Jan (138)1: 92-100.

[2]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 of Peds 2001 Aug(139)2: 220-6.

[3]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 of Peds 1992 Oct (90)4: 561-7.

APPENDIX A - CNN VARIABLES AND DEFINITIONS

PATIENT LOG/ADMISSION SCREEN DEFINITIONS

Site	Character/Hospital Code for study site. All sites have this hard-coded in so no data entry is required.
Study Number	Study ID number is assigned automatically by the program. It is the unique identifier for a single admission for a study patient.
Record Number	Medical record number of the infant at the study hospital. ***This is very important to enter as all screens are linked via this number.*** When a patient is ***readmitted*** simply use the same record number followed by an 'a,' then 'b' for the next readmission, etc. For example, the first admission record # will be 123456, the first ***re***admission # would be 123456a, and the second readmission # would be 123456b.

INFANT IDENTIFICATION

Infant First Name	First name(s) of infant as recorded on medical record. Do ***not*** type in "Baby" "Boy" or "Girl" or their abbreviations. If the infant is not given a first name upon admission to the NICU leave this field blank, you can come back to it and enter it later. If the infant has still not been given a first name upon discharge, simply leave this field blank.
Infant Last Name	Family name of infant as recorded on medical record. If hyphenated or double name, record both. For multiple births use "#" followed by birth order (e.g. Jones #2). If fetal death occurs at or before 20 weeks GA do not count in birth order. If the chart does not specify date of fetal death, use the date the death was discovered. ***If the baby has a change of last name, do not record the change here nor in the comments box. However, you may want to note the change for yourself for future reference.***
Birth weight	Weight in ***grams*** at birth as recorded in birth hospital. If there are discrepant values, use the birth hospital value for outborn babies. If there is a large discrepancy between birth hospital values (more than 10%) contact the NCC for advice. If birth weight is not available, use the first weight taken up to 24 hours of life. If birth weight is only listed as an estimate, record the estimate, but make a note in the comments box that this is an approximate birth weight. If there is no weight given up to 24 hours of life select ***the missing value (-9)***.
Date of Birth	Date of birth according to obstetric and/or admitting records. Enter as YYMMDD. If date of birth is unknown enter ***the missing date value (40/01/01)***.

Time of Birth	Enter time of birth in ***military time*** (24 hour clock). If infant is born at midnight, record as 0:00. If birth time is unavailable, leave blank.
Date of Admit	Date of admission to the study NICU. This may be different than date of birth for late admissions or out-born babies. Enter as YYMMDD.
Time of Admit	Time of admission is defined as the time of the first vital signs (at least one vital sign) recorded in the NICU. Do not include time on transport for out-born infants, or time in the delivery room for inborn infants. Write time of admission in military time. If time of admission is midnight record as 0:00. If admission time is unavailable leave blank.
Coded ID	Computer scrambled version of medical record number in study hospital. Data entry is not required for this item.
Coded Name	Computer scrambled version of patient's name, for use as supplemental identifer and as security against data loss. Data entry is not required for this item.

GESTATIONAL AGE

Pediatric Estimate	Best pediatric estimate of gestational age (GA) at birth given in full weeks. Preferences among estimates should be: 1) attending note 2) scored Ballard/Dubowitz sheet 3) other estimate referenced in chart. If there is no specific pediatric GA listed in any of the above places, but the baby is referred to as a term baby, enter 40. If the only pediatric estimate listed in the above places seems to be a reiteration of the obstetric GA, you can assume that the pediatrician agrees with the obstetric GA and score this as the pediatric GA. If there is only an obstetric GA listed in the chart, record pediatric GA as the missing value. ***Also referred to as EGA or neonatal GA***. Do ***not*** use autopsy estimates of gestational age.
Obstetric Estimate	Best obstetric estimate of gestational age in full weeks according to delivering obstetrician. If noted to have discrepant obstetric last menstrual period (LMP) and ultrasound (U/S), select the U/S dates if done earlier than 25 weeks GA. Otherwise, select LMP dates. If there is no specific obstetric GA listed, but the obstetric records refer to the baby as a term baby, enter 40. If there is only a pediatric GA listed, record obstetric GA as the missing value.

APGAR SCORE

Apgar at 1 minute	One minute Apgar score. If discrepancy, select the ***missing value (-9)***.
Apgar at 5 minutes	Five minute Apgar score. If discrepancy, select the missing value.

INFANT GENDER

Infant Gender	Record sex of infant. If sex is listed as ambiguous, but the baby is later said to be male or female, score as ambiguous. If not listed or unknown, score as such.
Births this pregnancy	Total number of births in this pregnancy. For example triplets=3, twins=2. Record which birth order the infant is as part of the name (e.g. Jones #2). If fetal death occurs at or before 20 weeks, this is ***not*** counted under births this pregnancy. If the chart does not specify date of fetal death, us the date the death was discovered.

ADMISSION DETAILS

Admission Stat	Admission status at study hospital. Score as inborn, out-born (transferred in) or readmission to study hospital. If out-born or readmission, specify in "transferred from". If a patient is born at your hospital, discharged home a couple days later (without admission to the NICU) then admitted to the NICU from home this is considered an ***"inborn late admission"*** score as inborn, but do not record anything in the "transferred from" field.
Admission Head Circ.	The first Occipito-Frontal Circumference (OFC) (Head Circumference) measured after admission, as noted in the physician or nursing notes. Record in cm. If discrepancy between two measurements, select that measured by the nurse. If the first recorded head circumference is after the first 48 hours of admission, record the missing value.
Admission Temp.	Body temperature in Celsius as recorded at admission to the study NICU. This temperature need ***not*** be taken in the first 12 hours of life. Record the first temperature listed within five hours of admission. If the first recorded temperature is after 5 hours of admission record the missing value. For readmissions, record the temperature at the time of this admission to the study NICU. Use axillary or rectal, but not skin probe (temperature of the baby taken by the incubator). If the temperature is recorded as "<36" score as 35.9.
Admission Weight	Weight in grams as recorded at admission to the study NICU. When no admission weight is recorded, score the birth weight for infants admitted the same day as birth, otherwise score the first weight taken up to 24 hours following admission. If no weight taken in the 24 hours following admission record the missing value.
Transferred From	Complete this item only if the infant was out-born, readmitted, or a first time admission from home. Do ***not*** complete this item for inborn late admission from home. Record the name of the hospital the infant was transferred from most recently. If admitted from home, type "home".

PAYOR

Provincial Plan	If infant has provincial insurance coverage on admission. Provincial coverage is considered if mother has a personal health number (PHN), regardless of whether she has additional insurance coverage such as Blue Cross or Manulife. Only score insurance if mother has no PHN but some other form of insurance.
Insurance	If infant has insurance other than provincial coverage, e.g. foreign insurance
Other	If infant has no insurance on admission.
Comments	Please enter comments for the NCC here. Do not record notes to yourself in this box.

MOTHER/OBSTETRIC SCREEN DEFINITIONS

MOTHER IDENTIFICATION

Mother First Name	First name of mother as recorded on medical records. Do not enter abbreviations. Leave blank if unknown.
Mother Last Name	Family name of mother as recorded on medical records.
Date of Birth	Mother's date of birth entered as YYMMDD. If only age is given use XX0101 where XX is the year of birth. If date of birth or age is unknown enter ***the missing date value (40/01/01)***.
Date of Admit	Mother's date of admission to birth hospital entered as YYMMDD. If date of birth is unknown enter ***the missing date value (40/01/01)***.
Chart Number	Mother's hospital record number for all inborn infants. Not necessary to enter this item for out-born infants.
P.H.N.	Mother's personal health number if mother has provincial coverage. If mother does not have provincial coverage or PHN is unknown record the missing value.
Lone Parent	Record whether the mother is considered a lone parent or not. If the father is documented to be involved in the social care of this child (ie. not just financial) score no for lone parent. If father is unknown, or not involved, score yes for lone parent. If the involvement of the father is unknown, score unknown.
Mother Education	Choose from the scroll down list the ***highest level of education completed*** by the mother at the time of birth. Junior High refers to the completion of grade 10. If mother's education is unknown or not recorded, score as such.
Ethnicity	Choose from the scroll down list the race of the mother. If there are different races recorded and the infant's birth certificate is available, use the race listed on the birth certificate. If the mother's race is unknown, record as such.

Residential Postal Code	Postal Code of mother's primary residence. Record 6 digit number/letter code without spaces. This should be completed for all babies, including out-born. If unknown leave blank.

ANTENATAL HISTORY

Gravida	The number of times a woman has been pregnant. Including all abortions, live and still births. ***Also abbreviated as G.***
# Antenatal Visits	The number of antenatal visits the mother has had for the current pregnancy.
Date of first U/S	Date of first antenatal ultrasound if less than 20 weeks GA. If greater than 20 weeks or unknown record the missing date value. If the first ultrasound date is not given but the GA at first ultrasound is, estimate the date of first ultrasound, by counting back from GA at birth date.
Total Abortions	The total number of both spontaneous (miscarriages) and therapeutic (planned) abortions of mother to date.
Antenatal Corticosteroid TX	Antenatal corticosteroid treatment given to mother prior to delivery. If dates of administration are available , score as noted in #1. If dates are not available, but completeness is discussed, score as noted in #2. If dates and completeness are not discussed, score as in #3. In no information is available, record as unknown. 1) ***Complete*** defined as receipt of at least one dose of corticosteroids (betamethasone, beta celestone, dexamethasone, cortisone, dihydrocortisone, but ***not*** prednisone) 24 hours or more before delivery ***and*** 7 days or less before delivery. (Therefore complete refers to two doses). ***Partial*** defined as at least one dose given less than 24 hours or more than 7 days before delivery. If the chart discusses obstetric information, but does not mention steroid administration, assume "no" steroids given. 2) If no dates of administration are given, by the chart refers to "complete" or "partial" doses, score as such. 3) If no dates of administration are given and the chart does not refer to completeness, but indicates that steroids were administered score as "partial". If it specifies that two or more doses were administered (e.g. weekly beta), score as "complete".
Number of Courses	Number of antenatal corticosteroid courses given to mother prior to delivery. If not mentioned or unknown score the missing value. Note: ***course is NOT synonymous with dosage***. 1 'complete' course is 2 doses (1 dose 24 hrs+ before delivery and 1 dose 7 days or less before delivery) 2 'complete' courses then is 4 doses.

BIRTH SUMMARY

ROM	Check if rupture of maternal membranes (either artificial or natural) occurred at any time prior to birth. If ROM did not occur prior to birth leave ROM box blank, and enter the date and time as the birth date/time. If it is unknown if ROM occurred prior to birth, do not check the ROM box***, but enter the missing date value (40/01/01) under ROM date***.
ROM date	Date of rupture of maternal membranes recorded as YYMMDD. If unknown enter ***the missing date value***.
ROM time	Time of rupture of maternal membranes in military time. If unknown leave blank.
Labour Initiation	Type of labour initiation, whether none, spontaneous, augmented, or surgically induced. If unknown record as such. Augmentation is defined as medications given to increase the strength and/or speed of contractions.

RISKS

Risks	Check all risks (drugs, alcohol and cigarettes) that apply for this pregnancy. Do not record for mothers who used prior to being pregnant. But do record for those mothers who used while unaware they were pregnant, although they may have stopped once they became aware of their pregnancy. The boxes do not define quantity so do record use of alcohol/drugs even if described as social use only. Drugs includes all recreational drugs (ie. marijuana, cocaine, heroin, etc.) as well as abused prescription drugs know to do damage to a developing fetus (ie. codeine, methadone).
Cig # per day	Record average number of cigarettes smoked per day during this pregnancy. If unknown enter the missing value. If no cigarettes had during pregnancy leave blank. Note that an average pack of cigarettes contains 20 cigarettes, if stated mother smoked half a pack per day, score as 10 cigarettes a day.

OBSTETRIC

Chorioamnionitis	***Chorioamnionitis*** is defined as inflammation of the chorion and amnion. Answer yes, no or unknown to a diagnosis of chorioamnionitis during pregnancy/labour or delivery.
Tocolysis	***Tocolysis*** is defined as the delaying/halting of preterm labour. Answer yes, no or unknown to medical tocolysis during labour.
Prenatal Care	If the mother had at least one prenatal care visit prior to hospital admission during which delivery occurred, click on the “some” button. Otherwise, click on the “none” button. If a pregnancy is dated by ultrasound (U/S) (other than on this

	admission) or if the notes indicate the mother had prenatal screens (rubella immune or hepatitis status) assume there was some prenatal care. If there are no obstetric records, select "unknown".
Diabetics	Answer yes, no or unknown regarding mother's status as a diabetic. This includes both gestational diabetes as well as previous maternal diabetes (ie. prior to conception).
Delivery Type	Record whether the delivery was vaginal or by cesarean section. If obstetric information is noted, but delivery type is not mentioned, "vaginal" may be assumed. If vaginal can be inferred (e.g. "vacuum extraction"), score vaginal. If there are no obstetric records, select "unknown."
Maternal Hypertension Preeclampsia	Record whether maternal hypertension or preeclampsia are present or not, or whether this information is unknown. If obstetric information is noted, but maternal hypertension is not mentioned, select "none." If there is no obstetric data in the chart, select "unknown." Common abbreviations for this include: HTN, PIH, ***HELLP*** and PET. ***"Questionable HTN," "question of HELLP syndrome" or "rule out PET" without more information should be scored as unknown.***
Presentation	Presentation on day of delivery. This should be recorded as: ***VERTEX***: Head first, includes OP (occiput posterior), hand presentation, or ***BREECH***: All types - footling, frank, etc.; or ***OTHER***: Includes shoulder, transverse, brow, face, oblique vertex, and compound presentations. If delivery is vaginal and there is no mention of presentation select "vertex." If delivery is by C-section and there is no mention of presentation, OR there is no obstetric data in the chart, select "unknown." If a baby was converted to vertex presentation for delivery by c-section, ***score the initial position of the baby***. If vertex presentation can be inferred (e.g. "tried vacuum extraction"), score vertex.
Was systemic antibiotics given to mother?	Record whether systemic antibiotics were given to the mother in the 24 hours prior to delivery. This includes antibiotics given only enterally or parentally, not topical antibiotics. If antibiotics were given to the mother, choose yes from scroll down list under 'antibiotics given to mother?' and complete the start/end dates as well as the type of antibiotic administered. If the dates are unknown record the missing value. If the type of antibiotic given is unknown score as such. If no antibiotics given or if this item is unknown, leave start/end dates and antibiotic type blank and choose 'no' or 'unknown' respectively under 'antibiotics given to mother?'

SNAP SCREEN DEFINITIONS

General:
SNAP on day one should be scored from the time of admission (defined as the time of first vitals in the NICU) for twelve (12) hours. Values occurring during an operation should be included.

Vital Signs:
Vital signs recorded while a baby is agitated or crying should generally be recorded. However, if the value seems very abnormal, contact the NCC for advice. Score any non-zero values that are recorded in the chart for babies who are dying.

Lab Values:
Lab values should be included in the scoring period if they are ***drawn during the scoring period***. Time of draw should be taken from the flow sheet when this is explicitly recorded. If the time of the draw is not explicitly recorded on the flow sheet, assume the time the lab received the samples is within 15 minutes of the draw (in other words, include values listed as occurring within 15 minutes of the end of the scoring period).

Computer values should generally be considered more accurate than flow sheet/progress note values unless they are clearly being discounted by the clinicians. Lab values discounted by clinicians should not be recorded on SNAP. Hemolyzed values are acceptable. Pathology blood draws, cord specimens and other non-blood draws (CSF, urine) should ***not*** be scored on SNAP. Do not score "diluted" lab values or samples that are contaminated.

Values listed as a Range: Vital signs listed as a range should be scored as the midpoint. Vital signs listed as "< a certain value" should be scored as one less than the value listed (e.g. a low temp of <94 should be scored as 93). Similarly, vital signs listed as "> a certain value" should be scored as one more than the value listed.

Blood Pressure: High	Highest mean arterial pressure (MAP), also called mean blood pressure (MBP), during the ***time period***, as recorded in the nursing flow sheet. Arterial line pressures and cuff pressures should be weighted equally in choosing high/low values. If these values are very different though, ask in the NICU or contact the NCC for advice. If only systolic and diastolic are recorded, assume ***mean blood pressure = diastolic + 1/3 (systolic - diastolic).*** e.g. 55/43: MBP = 43 + 1/3 (55-43) = 47.
Blood Pressure: Low	Lowest mean arterial pressure (MAP), also called mean blood pressure (MBP), during the ***time period***, as recorded in the nursing flow sheet. Arterial line pressures and cuff pressures should be weighted equally in choosing high/low values. If these values are very different though, ask in the NICU or contact the NCC for advice. If only systolic and diastolic are recorded, assume mean blood pressure = diastolic + 1/3 (systolic - diastolic). If only 1 BP is recorded in the scoring period score as low BP and enter the missing value under high BP.

Heart Rate: High	Highest heart rate during the ***time period*** sustained for more than one minute continuously. Do not include transient heart rate values that reflect bradycardia associated with apnea/desats.
Heart Rate: Low	Lowest heart rate during the ***time period*** sustained for more than one minute continuously. Do not include transient heart rate values that reflect bradycardia associated with apnea/desats. ***Do NOT score the low heart rate as zero (0) for babies who die during a scoring period.***
Respiratory Rate: High	Highest respiratory rate sustained for more than one minute. Count spontaneous respirations only. If on ventilator with no breaths above the vent, score as zero (0). ***At some sites you may need to subtract the vent rate from the listed respiratory rate in order to find the number of spontaneous respirations.***
Temperature: Low	Lowest body temperature (axillary or rectal but ***not*** skin probe, which is the baby's temperature recorded through the isolette) recorded in Celsius.
Serum pH: Low	Lowest pH during the ***time period***. This may be obtained by ABG, CBG or VBG.
Urine CCs	Total CCs of urine output during the ***time period***. Do ***not*** divide by birth weight. If notes indicate that 20% or more of the total output for the ***time period*** was lost/unmeasured (recorded as mixed with stool, "VOID", or overflow) then record the missing value. ***To calculate whether 20% was lost, if all urine output values list specific numbers, determine whether the uncertain values (CCs recorded as mixed with stool or overflow) make up 20% of the total CCs. If some values are not recorded at all (recorded as "VOID") then determine whether the uncertain values (unmeasured diapers) make up 20% of the total number of diapers.***
Weight	Enter the infant's current weight in grams.
Seizures	If only one seizure was confirmed, score as "single." If more than one seizure was confirmed, score as "multiple." Otherwise, check "none." Confirmed is defined as witnessed by 2 or more clinicians or diagnosed by EEG. Use of antiepileptics (phenobarbital) is not ALONE evidence of the diagnosis, but if antiepileptics are ordered by one clinician, and seizure is observed by a DIFFERENT clinician, assume the seizure is confirmed.

BLOOD GASES

Record only arterial blood gases, if there are no arterial blood gases recorded during the scoring period then leave this entire section blank and select N/A for each of the 3 blood gases. If there is only one arterial blood gas, enter the information required in the first line of blood gas with lowest pO2, and select N/A for the remaining lines, etc.

Blood Gas with lowest pO2	Select the ***arterial*** blood gas (ABG) with the lowest pO2 . If there are several blood gases at the same lowest pO2, record the one occurring first. Record the FiO2 (21% - 100%) and MAWP (in cm-water) at the time blood was drawn, and the pH, PO2 and PCO2 from this blood gas. FiO2 should be recorded as the missing value if the baby was on blow-by oxygen at the time of the draw or if the FiO2 is not available. If the baby was on room air, record FiO2 as 21. If the baby was on low flow O2 during the blood gas collection score '-9' as the FiO2 and make a note that the patient was on low flow during the SNAP scoring period in the comments box on the patient log/admission page. If on CPAP only, you may use CPAP value as MAWP if there is no MAWP listed. No distinction is made between nasal and endotracheal CPAP. If MAWP recordings to do not correspond with blood gas times, assume constant MAWP between recordings. MAWP should be recorded as zero (0) if the baby was not on pressure respiratory support at the time of the draw (room air, blow-by oxygen, nasal cannula or hood). MAWP should be recorded as the missing value if the baby was on pressure support (including hand bagging) but MAWP is not available. %. ***For a complete list of what FiO2s and MAWPs to score for ABGs under different O2 requirements see appendix IV***.
Blood Gas with highest MAWP	Select the ***arterial*** blood gas with the highest mean airway pressure. If this is the same gas recorded above in the lowest PO2 row, select the gas with the next highest MAWP instead. If there are several blood gases at the same highest MAWP, record the one with the lowest PO2. If there are several gases with the same highest MAWP and the same lowest PO2, record the gas occurring first. If no MAWPs are available, leave this row blank, and enter -9 for the MAWP in the 1st and 3rd rows. If MAWP is '0' for the entire scoring period because the baby was never on respiratory support, leave this row blank, and score '0' for MAWP in the 1st and 3rd rows. Record the FiO2 (21% - 100%) and MAWP (in cm-water) at the time blood was drawn, and the pH, PO2 and PCO2 from this blood gas. FiO2 should be recorded as the missing value if the baby was on blow-by oxygen at the time of the draw or if the FiO2 is not available. If the baby was on room air, record FiO2 as 21%. If on CPAP only, you may use CPAP value as MAWP if there is no MAWP listed. No distinction is made between nasal and endotracheal CPAP. If MAWP recordings to do not correspond with blood gas times, assume constant MAWP between recordings.

Blood Gas with highest FiO2	Select the ***arterial*** blood gas with the highest FiO2. If this is the same gas recorded above in the lowest PO2 row OR in the highest MAWP row, select the gas with the next highest FiO2 instead. If there are several blood gases with the same highest FiO2, select the one with the lowest PO2. If there are several gases with the same highest FiO2 AND the same lowest PO2, select the gas occurring first. Record the FiO2 (21% - 100%) and MAWP (in cm-water) at the time blood was drawn, and the pH, PO2 and PCO2 from this blood gas. FiO2 should be recorded as the missing value if the baby was on blow-by oxygen at the time of the draw or if the FiO2 is not available. If the baby was on room air, record FiO2 as 21%.
Blood Gas with highest FiO2 ***(cont.)***	If on CPAP only, you may use CPAP value as MAWP if there is no MAWP listed. No distinction is made between nasal and endotracheal CPAP. If MAWP recordings to do not correspond with blood gas times, assume constant MAWP between recordings. MAWP should be recorded as zero (0) if the baby was not on pressure respiratory support at the time of the draw (room air, blow-by oxygen, nasal cannula or hood). MAWP should be recorded as the missing value if the baby was on pressure support (including hand bagging) but MAWP is not available.
Nurse-Patient Ratio	Refers to nursing time being taken up by patient on the day that SNAP is scored. ***This number represents how many babies per nurse*** e.g. A score of 2 would imply a 1:2 ratio, meaning one nurse is looking after 2 babies. A score of 0.5 implies a 2:1 ratio meaning 2 nurses are looking after 1 baby (or 'half' a baby per nurse). Refer to your unit's nursing assignment book. If the ratio changes during the 12hr SNAP period, use the ratio that applies for the majority of the time. If unknown leave blank.
Medicus/GRASP/PRN	Refers to a measure of nursing staff needs for each infant on the day that SNAP is scored. Score will range from 1 to 6 if you are using Medicus. The score should reflect the calculated nursing care hours per day per patient.

NTISS SCREEN DEFINITIONS

General:

NTISS should be scored from the time of admission (defined as the time of first vitals in the NICU) for twenty-four (24) hours. In the final calculation of scores for NTISS, points are assigned only for the most intense therapeutic intervention. For example, a patient who began a scoring period on nasal CPAP and was then placed on mechanical ventilation, would receive only final points for mechanical ventilation. In completing thee scoring period data collection, however, both of these respiratory therapies should be selected, as this provides maximal information regarding the patient's hospital course. Review both the NICU flow sheet and the nursing/physician progress notes in order to obtain all valuable information regarding the performance of procedures. ***Therapies administered during an operation should be included***.

Medications:

The best strategy is to check the medication sheets to confirm that each medication was administered during the time period. Score medications (diuretics, aminophylline, narcotics, steroids) administered during the time period whether given po, pg, ng, IV, IM or aerosol. Score any medications classified as pressor, antibiotic, acidosis treatment, insulin drip, IVIG and "other" (unscheduled) only if the medication was administered IV (parenteral), IM or via aerosol (inhaled, nebulized). ***For categorizing medications into types refer to appendix I***.

RESPIRATORY

Supplemental O2	Receipt of ***continuous*** enriched oxygen concentration (>.21 FiO2) by oxyhood, nasal cannula, nasal catheter, facemask ***or other forms of respiratory support***. Continuous means that the patient is receiving oxygen throughout the time period and not just in brief episodes as needed, ie. during feeds. "Blow-by" oxygen does not count unless it is the mode of oxygen administration used in a transport situation. ***Do not score oxygen given as part of a hyperoxia test.***
CPAP	Use of Continuous Positive Airway Pressure (or Continuous Negative Airway Pressure). This may be administrated either by a nasal prong or nasopharyngeal CPAP apparatus, or via an endotracheal tube. Nasal cannula oxygen (occasionally labeled "prongs") does not count as CPAP, but should be counted as Supplemental O2. Do not assume that "prongs" means nasal cannula: score as CPAP if there is pressure recorded, otherwise score as Supplemental O2. ***Do not score facial CPAP as CPAP, even if there is a pressure recorded.***
Mechanical vent.	Use of conventional mechanical ventilation during the ***scoring period***, regardless of IMV rate. If pavulon\pancuronium was used then score as mechanical ventilation with muscle relaxation.
Vent. with relaxant	Mechanical Ventilation along with administration of muscle relaxants (pancuronium, pavulon, succynyl choline (sux), vecuronium (vec)). At least one dose of relaxant must be given during the ***scoring period***. Residual effects of drug given before the beginning of the ***scoring period*** do not count. Score HIFI with relaxants as HIFI only. In this case, do not score Pavulon ***(or other muscle relaxants)*** under "other meds."

High freq. vent.	Use if HIFI (high frequency ventilation, by oscillator, jet or flow-interrupter) at any time during the SCORING PERIOD. Score HIFI with relaxants as HIFI only. In this case, do not score Pavulon ***(or other muscle relaxants)*** under "other meds." ***Also abbreviated as HFO or HFOV.***
Surfactant	Receipt of exogenous surfactant replacement therapy (Bles, Exosurf, Survanta, Curosurf, Infasurf) during the ***scoring period***.
Intubation	Undergoing an intubation procedure during the ***scoring period***. This can be placement of new ETT, the exchange of an existing ETT for a new one (for example replacing of an oral tube with a nasal tube) or the reinsertion of an ETT which had become dislodged. Continuous presence of an ETT does NOT score points, nor does re-taping of an existing ETT. Do not count intubation occurring prior to the ***scoring period***, such as intubation in the delivery room. ***Nasal prong CPAP insertion does not count as endotracheal intubation.***
ECMO	On Extra Corporeal membrane Oxygenation (ECMO) at any time during the scoring period. ECMO starts when the patient is removed from pump/bypass, ***not*** at the time of decannulation.
Nitric Oxide	Treatment with ***nitric oxide*** (NO) by inhalation. This is currently an experimental protocol, but is likely to come into wider use. It is included on the NTISS checklist in order to identify treated infants and to track the frequency of use.

TRACHEOSTOMY CARE

Routine	Tracheostomy routine care on any patient with a tracheostomy in place for more than 48 hours.
New, <24 hr	Presence of a tracheostomy placed surgically within the ***scoring period or the 24 hours preceding the scoring period***. Do not double count this with Major Operation.

VASCULAR ACCESS

Peripheral IV	***Presence*** of one or more intravenous catheters (including heparin locks for drug administration) during the ***scoring period***.
Central venous	***Presence*** of a central line (CVL) during the ***scoring period***, including: ***umbilical venous lines (UVL), Broviac lines (or other surgically placed, i.e. CVL lines) or percutaneous ("spaghetti") lines*** which are placed centrally. Score lines regardless of whether central placement is achieved. Do ***not*** score lines that are never successfully placed. Where it is unclear whether the line was successfully placed, score based on whether the line has begun infusing solutions or not. CVP monitoring is scored separately.

Arterial line	***Presence*** of any arterial line (umbilical (i.e. UAL) or peripheral (i.e.. RAL)) during the ***scoring period***. If the arterial line is monitored for on-line blood pressure, score "Arterial Pressure Monitoring" as well.

DRUG THERAPY

Antibiotics: 1-2 agents *or* >2 agents	Receipt of ***intravenous*** antibiotics during the ***scoring period***. Topical antibiotics ***should not be scored***. If ***one or two*** antibiotics are administered ***concurrently***, select ***"1-2 agents."*** If ***three or more*** antibiotics are administered ***concurrently***, select ***">2 agents." If three antibiotics are administered during the scoring period, but one is terminated before another is initiated (only two are administered concurrently), select "1-2 agents."*** Antibiotics include acyclovir, amphotericin, ampicillin, cefazolin, cefotaxime, clindamycin, fluconazole, gentamicin, kefzol, penicillin and vancomycin.
Diuretics: Enteral or Parenteral	Administration of any diuretics during the ***scoring period***. If ***any of*** the diuretics are administrated intravenously at any time during the scoring period, select ***"parenteral."*** If all diuretics are administrated orally (po\pg), select ***"enteral."*** If no diuretics are given, do not score. Diuretics include: aldactone (spironolactone), diamox, diuril (chlorothiazide or CTZ), hydrochlorothiazide (HCTZ) and lasix (furosemide).
Aminophylline etc.	Theophylline, aminophylline or caffeine administration PO or IV during the ***scoring period***.
Narcotic-bolus	Any single or multiple dose (also known as "push") administration of narcotics, IV or PO during the ***scoring period*** that is not a continuous infusion. Narcotics include fentanyl, meperidine, methadone, morphine, morphine sulphate (MSO4) and opium solutions (i.e. Dilute tincture of opium (DTO)).
Narcotic-infusion	Any ***continuous infusion*** of narcotics during the ***scoring period***. Narcotics include fentanyl, meperidine, methadone, morphine, morphine sulphate (MSO4***)*** and opium solutions (i.e. Dilute tincture of opium (DTO)).
Indomethacin	Receipt of ***any*** dose (complete or not) of indomethacin (Indocin) during the ***scoring period***.
Acidosis Rx	Use of IV bicarbonate ("neut"), ***THAM*** or ***NaHCO3 (sodium bicarbonate)*** during the ***scoring period***. These drugs are usually used to treat serious acidosis, although this is ***not*** a requirement for scoring. Use of acetate in the IV fluid (i.e. Na acetate or K acetate) does ***not*** count for this variable.
Steroid - post-natal	Steroid use (IV, po or nebulized ***but not topical***) during the ***scoring period***, regardless of indication. Steroids include beclamethasone, beclovent puffs***,*** cortisol (solucortef), dexamethasone (decadron), hydrocortisone***,*** methylprednisolone (solumedrol) and prednisone.
Anti-convulsant	Anti-convulsants given regardless of reason for administration, during ***scoring period***. Includes ativan, diazepam, dilantin, diphenyl hydantoin (DPH), lorazepam,

	phenobarbital, phenytoin and Valium.
K+ binding resin	Administration of potassium binding resin (Kay-exylate) either via gavage or rectal tube ***during the scoring period***.
Erythropoietin	Administration of erythropoietin during the ***scoring period***.
Insulin	Use of insulin (IM or IV but usually by infusion) during the ***scoring period***.
Potassium drip	***Initiation*** of a concentrated potassium (K+) infusion or bolus during the ***scoring period***. Concentration must be at least 60 meq\L (6 meq\100 ml) or 450 mg\100ml or 60 mmol\L (6 mmol\100ml) (Conversion: 1 mEq\L of potassium = 75 mg\L)
IVIG	Intravenous Immune Globulin (IVIG) given for any reason during the ***scoring period***. Usually documented in the nursing medication sheets as single dose medication.
Other - unsched.	Any parental or inhaled drug beyond those already noted (antibiotics, diuretics, aminophylline, narcotics, indomethacin, acidosis treatment drugs, steroids, anticonvulsants, erythropoietin, insulin, potassium, surfactant, pressors). Such drugs might include sedatives, inhaled agents or clotting factors. In general, ***drugs given by mouth are not scored.*** However, if you are unsure contact the NCC for advice. Do ***not*** count routine vitamin K injections, eye prophylaxes, routine IV fluids (including electrolyte (NaCl, KCl) and heparin additives) or glucose solutions (i.e. D10W). Do ***not*** count hepatitis vaccine. Do ***not*** score calcium given routinely in IV fluids, ***but do*** score calcium bolus\push ordered separately. Do ***not*** score any topical medications or vitamins.

MONITORING

Frequent vital	3 out of the 4 vital signs (heart rate, respiratory rate and either temperature or blood pressure) recorded in nursing notes\flow sheet ***2 or more times*** in any given hour, ***OR 6 or more times*** in any 8 hours. Ventilator rate may be substituted for respiratory rate where applicable. Score based on heart rate and either temperature or blood pressure only, for babies on HiFi ventilation when no respiratory rates are listed. ***Skin probe temperatures*** (the baby's temperatures taken through the incubator) ***do not*** count as temperature for this item.
ECG monitoring	Use of a cardiac and\or apnea monitor during the ***scoring period***.
Warmer/incubator	Use of an infant warming device during the ***scoring period***. This includes warming tables and incubators. Short term use in the delivery room does not qualify, nor do portable warming lights.
Non-invasive O2	Use of any non-invasive blood gas monitoring devices during the ***scoring period***. Such devices include: Transcutaneous O2 monitors (TcO2 or TCM),

	Transcutaneous CO2 monitors (TcCO2), Pulse oximeters (SaO2, SpO2, or Sat monitors), End-tidal CO2 (ETCO2), Mass Spectrometer.
Arterial pressure	On-line arterial pressure monitoring during the ***scoring period***. This may be umbilical or peripheral. ***Score transducer (invasive), but not Doppler (non-invasive) monitoring.*** Points for this variable are additive with those for arterial line.
CVP monitoring	Monitoring of Central Venous Pressure (CVP) at any time during the ***scoring period***. This is differentiated from CVL by the use of a pressure transducer. CVL presence should be scored separately.
Urinary catheter	***Presence*** of a urinary catheter ***regardless of reason used*** during the ***scoring period***. This should be scored when present in addition to scoring strict monitoring of I & O.
Quantitative I-O's	Strict measurement of Input & Output for any portion of the ***scoring period***. This would be marked by numeric measurement of urinary output, such as weighted diapers or measured output from a urinary catheter. Qualitative output (checks or plus signs for voids) do not score.
# Blood draws	Number of ***separate blood draws during the scoring period***, regardless of the number of tests obtained per blood draw, or the volume withdrawn for tests. A blood draw is indicated by a cluster of tests noted on the flow sheet as drawn at the same time. Glucose reagent strips (Dextrostix, others) ***also count as a draw*** if done by heel or finger prick. If no blood draws occurred during the scoring period enter 0, if number of draws unknown enter the missing value.

PROCEDURES

Transport of patient	Transport of patient within the hospital or between hospitals if applicable (e.g. radiological procedure ***such as fluoroscopy, CAT scan or MRI***). Do ***not*** score for outborn infants who arrive via ambulance. It is mutually exclusive with trips to the operating room or cath lab (Major Operation and Minor Operation). ***Do not score if the infant is transported for non-medical reasons (e.g.. baby transported to be with the mother) and do not score for circumcision.***
Thoracentesis	Needle thoracentesis or paracentesis (diagnostic (i.e. lumbar puncture (LP) or therapeutic) during the ***scoring period***. If the needle aspiration occurs as part of chest tube insertion then it should ***not*** be counted.
Dialysis	Dialysis initiated or continued during the ***scoring period***. The presence of a dialysis catheter alone is not sufficient.
Chest tube: 1 or >1	***Presence*** of a chest tube at any time during the ***scoring period***. If more than one chest tube was present ***concurrently***, select Chest tube ">2" instead. Needle or Angiocath aspiration alone should be scored as Thoracentesis.

Operation: Minor or Major	Operations initiated or continued during the ***scoring period***. Operations defined as all operations/procedures performed in the operating room and/or requiring anesthesia. If multiple operations were performed under the same anesthesia episode, classify the operation as major if at least one of the procedures was major. Major and minor operations are mutually exclusive. ***Minor operations*** include: bronchoscopy, cytoscopy, cryo/laser treatment, balloon septostomy, cardiac catheterization, CVL placement (with anesthesia), examination under anesthesia, gastrostomy, herniorrhaphy, laryngoscopy, nephrotomy**,** PDA ligation, rectal biopsy, skin grafting and surgically placed catheters. ***Do NOT double count tracheostomy.*** ***Major operations*** include: ***laparotomy*** (bowel resection, ileostomy, repair of abdominal omphalocele, NEC), ***thoracotomy*** (ASD closure, BTS for tricuspid atresia, coarctation repair, vascular ring operation) and ***craniotomy*** (placement of a Hickman catheter, reservoir or shunt CNS, re-section of an occipital encephalocele, myelomeningocele or omphalocele). ***Operations do not include:*** Chest tube placement, cutdown venous access, ECMO, extra digit removal, peripheral arterial line placement, thora/paracentesis and UAL or UVL placement. ***For a complete list of major/minor and exclusion operations see appendix II***.
Pericardial: Centisis	Pericardiocentisis performed at any time during the ***scoring period***. This might be done to remove fluid or air. Centesis done as part of pericardial tube placement should score only as Pericardial Tube-not both. However, if a pericardiocentesis is followed several hours later by tube placement, both should be scored.
Pericardial: Tube	***Presence or placement*** of a pericardial tube during any part of the ***scoring period*** . Points can also be scored for a pericardiocentesis performed before pericardial tube placement, but not concurrent with it.

METABOLIC / NUTRITION

Gavage feeding	Feeding using tubes to deliver formula. Specific modes include: naso-gastric (NG) or oro-gastric (OG), naso duodenal (ND), or via gastrostomy. This should be scored if ***any*** feeding is delivered in this manner, including water. ***Do NOT score gavage feeding if a gavage tube was not being used to deliver formula, but rather was in place only to deliver medications.*** Gavage feeding is often marked in nursing flow sheets with numbers in the "feeding type" column (i.e. "#8" for use of an 8-french feeding tube) or with an abbreviation such as PG, NG, G or g.
IV amino acid	Parenteral nutrition (PN)\hyper alimentation (HAL) ***initiated or continued*** during the ***scoring period***. The IV stock must contain ***amino acids (AA)*** to be scored as parenteral nutrition; high glucose concentration alone is not sufficient.
Phototherapy	Phototherapy ***initiated or continued*** during the ***scoring period***.

TRANSFUSION

Platelets	Transfusion of platelets ***given at any time during the scoring period***.
White blood cells	White Blood Cell (neutrophil) transfusion ***initiated during the scoring period***.
Partial exchange	Partial plasma exchange ***initiated during the scoring period***. This is done to treat polycythemia (high hematocrit). It does not matter whether volume is replaced with albumin or normal saline (but not PRBC's or Whole Blood). Fluid given as part of exchange should ***not*** count as part of volume for the variable ***volume expansion***.
2X volume exchange	Exchange transfusion ***initiated during the scoring period***. The volume of blood (double volume, single volume, partial) does not make any difference. The blood volume used in the exchange transfusion should ***not*** be counted towards the transfusion or extensive transfusion variable.
PRBC CCs	Total CCs of blood given in transfusions ***initiated during the scoring period***, even if some volume was administrated ***after*** the scoring period. ***Do not*** include volume from transfusions initiated ***before*** the scoring period, even if some volume was administrated during the scoring period. This can be either packed cells (PC, PRBC) or whole blood. Blood used for exchange transfusions does not count. If no blood was transfused during the scoring period enter 0, if unknown enter the missing value.

CARDIOVASCULAR

Pressors: 1 or >1	Use of ***intravenous blood pressure medications*** (pressors or vasoactive drug infusions) given ***concurrently during the scoring period***. If only a single infusion is administered at once, score as "1". If a second infusion was in use **at the same time** during the scoring period then ">1" should be scored instead. Blood pressure medications include adenosine**,** dobutamine, dopamine, hydralazine**,** isoproterenol (isuprel), nitroglycerine (NTG), nitroprusside (nipride), phenylephrine, priscoline**,** prostaglandins and tolazoline. Epinephrine (epi drip) should be scored here ***unless*** given as part of CPR. If given as part of CPR, score as CPR only. Do ***not*** score inhaled nitric oxide here.
Pacemaker: Standby or Used	If cardiac pacemaker available on standby but never used during the ***scoring period***, then select "standby". If the pacer is actually used during the ***scoring period*** select "used." Any form of external pacing qualifies including direct pacer wires, trans-esophageal pacing, trans-catheter.

Volume Exp CCs	Total CCs of volume support ***initiated during the scoring period***, even if some of the volume is administered ***after*** the scoring period. This should be distinct from routine IV stock, and includes albumin (5%), albumin (25%), fresh frozen plasma (FFP), lactated ringers (LR), NaCl bolus**,** normal saline (NS, 0.9% Saline), plasmanate and thawed plasma. If different types of volume expansions are given during the ***scoring period***, include the sum of all these. This should ***not*** include bolus volume administered of bicarbonate, THAM or RBCs. Do ***not*** score such things as D10W, .25NS, .5NS or routine HepNS. If no volume given for expansion support score as 0, if volume unknown score as the missing value.
CPR	Cardio-Pulmonary Resuscitation (CPR) ***administered during the SCORING PERIOD***. There must be documentation of cardiac compressions for either bradycardia or electro-mechanical dissociation. The use of bicarbonate and\or epinephrine alone is insufficient.

TRANSPORT SHEET SCREEN DEFINITIONS

General:

Complete the Transport Sheet and TRIPS screen for all transports ***into*** the study NICU via helicopter or ambulance from another hospital. Do ***not*** complete for: inborn late admissions, patients transported between wards within your hospital, patients admitted for the first time from home or those born at home and transported to the hospital by ambulance.

Date of transport	Date of transport into the study NICU. If transport occurred over midnight (i.e. two days) record the date that transport began (i.e..date ITT left departing hospital). Score as YYMMDD.
Transferred to	Record the name of the hospital the infant arrived at. State both the hospital and the locality/city unless the locality/city is obvious from the hospital's name.
Distance of transport	Refers to the distance ***between*** the referring (departing) hospital and the destination (arriving) hospital, ***one way***. If distance is unavailable, approximate the distance for both ground and air transport. Enter as km.
Departure time from NICU	Record the time at which the transport team leaves the departing hospital. Do ***not*** record the time at which the transport team first arrived at the departing hospital. ***Note: the time at which the transport team first begins recording vitals, is also NOT necessarily the departure time.*** If unknown leave blank.
Time upon return to NICU	Record the time at which the transport team arrives at the receiving hospital and vitals are being taken by the new hospital. This time should be analogous to the admission time.
Mode of transport	Record mode of transport as air or ground. Indicate both methods of transport by checking both boxes. If unknown leave blank.

PRE-TRANSPORT

Refers to the outcomes on arrival of the transport team to the NICU of the referring(departing) hospital (the condition in which the team finds the infant on arrival). If, for some reason, the transport team does not assess the patient for a particular item, use measurements taken from the referring hospital within one hour of the team's arrival. If no measurement within one hour is available for a particular item, record the missing value (for Temp. & BP) or leave the item blank (for Resp. status & noxious stimuli).

Temperature	Body temperature in Celsius. Use axillary or rectal, but not skin probe (temperature of the baby taken by the incubator). If the temperature is recorded as "<36" score as 35.9. If no appropriate recording enter the missing value.
Systolic BP	Systolic blood pressure in mm Hg. Arterial line pressures and cuff pressures should be weighted equally. If no appropriate recording enter the missing value.
Respiratory Status: Severe	Record if infant is intubated and receiving mechanical ventilation. Record also if the infant is not intubated, but suffers from apneic spells or gasping. If the patient's respiratory status is unknown leave this item blank.
Respiratory Status: Moderate	Record if respiratory rate is ***greater than*** 60 resps per minute ***OR*** oxygen saturation recording (SPO2) is ***less than*** 85. If both severe and moderate symptoms are displayed, score as severe (the higher of the two).
Respiratory Status: None	Record if respiratory rate is ***less than*** 60 resps per minute ***AND*** oxygen saturation recording (SPO2) is ***greater than*** 85. Note that if a patient is breathing less than 60 resps per minute but is actually on CPAP, then they will be scored as 'respiratory support-none'. This is because we are looking to capture changes in patient condition as opposed to severity of the condition itself.
Response to noxious stimuli: none	Record if infant shows no sign of response when exposed to a noxious stimulus. ***Also record*** if the infant has had ***seizures*** or been given ***muscle relaxants*** (i.e. pancuronium) within the last few hours of the scoring time. If the patient's response to noxious stimuli is unknown leave this item blank.
Response to noxious stimuli: lethargic response	Record if infant has a lethargic response when exposed to a noxious stimulus.
Response to noxious stimuli: withdraws vigorously	Record if infant shows a vigorous response when exposed to a noxious stimulus. ***A vigorous response*** is characterized by behaviour such as crying or withdrawing. Score the most intense response demonstrated.

TRIPS SCREEN

TRIPS items are post-transfer items that refer to the outcomes on arrival of the transport team to the NICU of the destination hospital. These measurements can be taken by the destination NICU staff. The same 4 items are recorded here as in pre-transport on the transport sheet:

temperature, systolic blood pressure, respiratory status and response to noxious stimuli. Refer to the definitions listed above for these items, but remember to record them in the appropriate scoring time period. ***TRIPS has 2 scoring times, once in the hour (or first two hours) of admission and once in the twelfth hour (plus or minus an hour) following admission***.

DIAGNOSIS/PROCEDURES SCREEN DEFINITIONS

General:

Score all major outcomes and diagnoses that occur at your hospital on this screen. Also, if the baby was transferred into your NICU, score anything that the baby has ***at the time of transfer*** into your NICU. If the initial diagnosis occurred at the transferring hospital, record the date of first diagnosis at the previous hospital where applicable***. Do not score outcomes that are resolved before transfer in to your hospital.*** Instead make a note in the comments box where applicable. Do ***not*** score questionable diagnoses except where the data item has an uncertain/suspected category (i.e. RDS, seizures***). Items on the left-hand side of the screen (" before day 28") will generally be discovered before day 28 of life. Do not spend a lot of time searching for these diagnoses after day 28 of life. However, if any of these items are found after 28 days of life (i.e. pneumothorax, seizures), do score them.*** If you come across any serious outcomes which are not included on the Diagnoses and Procedures screen, please contact the NCC for advice on possible inclusion in the comments box.

BEFORE DAY 28

PDA	Treatment of a patent ductus arteriosis (PDA). Classify PDA by treatment, ***regardless*** of whether the baby has severe, mild or no PDA: ***Score "None" if:*** no PDA noted. PDA not considered serious enough to treat. PDA treated w/ indo. in the first 24 hours ***of admission*** and not restarted after 24 hours of admission ***Score "Indomethacin @ > 24 hours" if:*** PDA was treated with indomethacin (indocin). Since some centers use prophylactic indomethacin, count PDA treatment ***only if the first dose is administered after the first 24 hours of admission (even if your site does NOT give indomethacin prophylactically)***. If indomethacin is started in the first 24 hours of admission, discontinued and ***restarted after 24 hours of admission*** count as indomethacin treatment. Do not score indomethacin given during the first 24 hours of admission, even if the baby is diagnosed with a definite PDA, unless treatment is discontinued and then restarted at a later date. ***Score "Ligation" if:*** there was surgical ligation of a PDA, without indomethacin treatment previously. ***Score "Both" if:*** there was both indomethacin treatment and surgical ligation of a PDA. ***Score "Not Applicable\Unknown" if:*** the baby died before a diagnosis could be made or if the information is not available. If a PDA was ***diagnosed and treated prior to admission*** to your hospital and is no longer a current issue, score as ***'none'*** and make a note in the comments box regarding the resolved PDA and the treatment given at another site if known. If a PDA is ***diagnosed as clinically significant but never treated*** do to other medical reasons, ie. renal failure, too unstable for operation score as ***'none'*** and make a note in the comments box regarding the reason treatment for PDA was not given.
Ischemic encephalopathy	Ischemic encephalopathy according to the definition of Sarnat (Stages 2 and 3). This item ***only*** applies to infants >2000 grams birth weight. ***Both of the following criteria have to be met in order to score this item***: (1) history of perinatal event consistent with injury (fetal distress, low apgars, need for resuscitation), ***and*** (2) abnormal neurologic exam over the first 2-3 days ***of life***. ***Score "None" if:*** the baby's birth weight was >2000 grams ***and both*** of the above criteria are ***not*** met. ***Score "Mild" if:*** the neurologic exam included an isolated seizure and disturbances of tone. The baby may be lethargic but not comatose. (Sarnat Stage 2) ***Score "Severe" if:*** status epilepticus, coma, loss of tone, respiratory drive, cranial

	nerve abnormalities. (Sarnat Stage 3) ***Score "Not Applicable/Unknown" if:*** the baby's birth weight was <2000g ***or*** if the baby died shortly after birth before a diagnosis could be made.
RDS	Respiratory Distress Syndrome (RDS), also called Hyaline Membrane Disease (HMD). Score RDS by certainty not severity. Mild and severe RDS should be scored in the same way. RDS should be diagnosed within the first two days of life. ***Score "None" if:*** ·the clinicians describe "respiratory distress" without a specific diagnosis of RDS. ·there is no RDS according to any of the following three definitions.
RDS (***cont***.)	***Score "Definite" if:*** (1) a chest x-ray shows definite RDS, ***or*** (2) clinicians specify definite RDS based on typical symptoms (grunting and retractions), and/or a typical chest x-ray (diffuse granularity, "ground glass"), OR (3) surfactant (bles, exosurf, survanta, curosurf, infasurf***)*** is administered beyond 2 hours of age. Whenever possible, score RDS by the CXR diagnosis. If the CXR expresses doubt about the diagnosis, review the physician diagnosis with attention to dates of diagnoses as compared with x-ray dates, and find out if survanta was given. ***There is a hierarchy among the three sources in the order listed (chest x-ray, then physician diagnosis and then surfactant administration) to be used when there are conflicting diagnoses. However, when one of the sources is giving you definite information, and the others are not, score RDS according to what definite information you have. Also, if you can ask a clinician why they are diagnosing the baby contrary to what the evidence seems to be saying, then you should do so.*** ***Score "Uncertain" if:*** there was possible RDS but the clinicians recorded doubt about the diagnosis. ***Do not score uncertain if you are unsure*** about what the clinicians are saying. In this case, investigate further in the chart, or ask one of the clinicians in the NICU about RDS. ***Score "Unknown/NA" if:*** the baby died shortly after birth and no diagnosis was made.
Seizures	Occurrence of seizures at any time during the hospital stay. ***Score "None" if***: there were no seizures or seizure like movements mentioned during the hospital stay**.** ***Score "Suspected" if:*** ·observed by only one clinician ·there were movements of uncertain significance observed by more than one person. Descriptions of seizure like movements should be considered movements of uncertain significance when ***not*** accompanied by a diagnosis of seizures or administration of phenobarbital.

	Score "Definite" if: ·witnessed by 2 or more clinicians ·diagnosed by EEG ·there is one clinical observation of seizure like movements coupled with administration of phenobarbital ***or*** with a diagnosis of seizures by a ***different*** clinician. The use of antiepileptics/ anticonvulsants (i.e.. phenobarbital) is not alone evidence of the diagnosis, but can be considered as confirmation if prescribed by a second clinician. When an EEG is normal and contradicts a seizure diagnosis, score according to attending physician\neurologist diagnosis made ***after*** reviewing the EEG results.
Pneumothorax	Occurrence of pneumothorax, as diagnosed by chest x-ray, thoracentesis with documented removal of air ***or autopsy report***. While placement of a chest tube is a common response, it is not necessary for the diagnosis.
Pneumothorax date	Date of occurrence of the ***first definite*** pneumothorax by chest x-ray, documented needle aspiration ***or autopsy report. If the first time a pneumothorax is diagnosed is by autopsy report, score the date of death (not the date of autopsy) as the pneumothorax date.*** If the baby is transferred in ***with*** a pneumothorax, record the date ***of the first pneumothorax diagnosed at*** the transferring hospital. If date of first pneumothorax is unknown, enter the missing date value (40/01/01). If no pneumothorax during this hospital visit, leave blank. Do not include Pulmonary Interstitial Emphysema.

OPERATIONS/PROCEDURES

Laparotomy	Laparotomy (abdominal exploration) for surgical resolution of a variety of problems including diaphragmatic hernia (repaired from below the diaphragm), atresias, volvulus, closure of omphalocele or gastroschisis, surgical treatment of necrotizing enterocolitis, bowel resection, ileostomy, mucus fistula, bladder and epispadias repair, pyloromyotomy**,** or other major abdominal procedure. ***For a complete list of procedures included under laparotomy see appendix II***.
Thoracotomy	Thoracotomy (surgical exploration of the chest) for a variety of reasons including diaphragmatic hernia (repaired from above the diaphragm), cystic adenomatoid malformation, pneumonectomy, lobectomy, ASD closure, BTS for tricuspid atresia, coarctation repair, vascular ring operation, or other major thoracic procedure. PDA ligation should be scored as a minor, ***not*** a major operation and so it should not be scored here. ***For a complete list of procedures included under thoracotomy see appendix II***.
Reservoir or shunt CNS	Operation on the brain or spinal cord, including placement or reservoir or shunt for drainage of cerebro-spinal fluid, closure of a myeloschisis, re-section of an occipital encephalocele, myelomeningocele or omphalocele, placement of a Hickman catheter, shunt revisions, or other major CNS procedure. ***For a complete list of procedures included under shunt CNS/craniotomy see appendix II***.

ECMO	On extra corporeal membrane oxygenation (ECMO) at any time during the hospital stay. ECMO given as part of an operation ***should*** be scored here, but a note should also be made in the comments box that ECMO was given as part of an operation and not as a procedure unto itself.
Total # of operations: Major	Major operations are counted here ***and*** categorized above. If multiple procedures are performed during one anesthesia episode, count as ***one*** operation (the highest level of any of the procedures), but classify all major operations separately. Major operations include laparotomy, thoracotomy, craniotomy (reservoir or shunt CNS), and ***ECMO (on this screen but not on NTISS).*** If no operations were performed, record 0 (zero***). For a complete list of major operations see appendix II***.
Total # of operations: Minor	Minor operations are counted here. Minor operations include bronchoscopy, cytoscopy, laryngoscopy, nephrotomy, rectal biopsy, surgically placed catheters***,*** CVL placement (in operating room or with anesthesia), PDA ligation, gastrostomy, tracheostomy, balloon septostomy, cardiac catheterization, herniorrhaphy, examination under anesthesia, cryotherapy or laser therapy for ROP, and skin grafting. ***Operation do not*** include chest tube placement, UAL or UVL placement, peripheral arterial line placement, cutdown venous access***,*** extra digit removal and thora/paracentesis. ***For a complete list of minor operations and operation exclusions see appendix II***.
NEC	Necrotizing enterocolitis (NEC) according to Bell's criteria, stage 2 or higher. If there is ***definite pneumatosis (air in the bowel wall) or portal/hepatic air (air in the liver)*** diagnosed by x-ray, or if there is a surgical or autopsy diagnosis of NEC, score by highest level of treatment ***("surgical Rx" > "medical Rx")*** received. If surgical autopsy diagnosis conflicts with x-ray diagnosis, the surgical/autopsy diagnosis takes priority. ***X-rays showing free air WITHOUT pneumatosis do NOT count as NEC diagnosis.*** Bloody stools without pneumatosis may lead to a suspected diagnosis and treatment, but is ***not*** counted as NEC diagnosis. ***Please make a note of bowel perforations (that are not NEC) in the comments box.*** ***Score "None" if:*** there was no NEC diagnosed according to our definition during the hospital stay. ***Score "Unknown/NA" if:*** the baby died shortly after birth and no diagnosis was made.
NEC Date	Date of the first definitive diagnosis of NEC (by x-ray of pneumatosis, or by surgery). If pneumatosis is suspected on x-ray and then NEC is diagnosed definitively by surgery/autopsy, score the date of onset of NEC as the date of the first x-ray that showed a suspicion of pneumatosis. If unknown score the missing date.
Highest Indirect Bilirubin	Highest ***indirect*** bilirubin during the entire hospitalization. Also known as unconjugated bili. If no bili tests where done during this hospital stay record the missing value.

Highest Indirect Bilirubin: Date	Date of highest ***indirect*** bilirubin during hospitalization. If several dates on which the same highest bili occurs, record the first date. Record as YYMMDD. If no bili tests or date of highest bili unknown enter the missing date value (40/01/01).

CONGENITAL ANOMALIES / OTHER DIAGNOSIS

Record #	This field will automatically enter the record number of current patient, once an item has been selected from the corresponding list. No data entry required.
Congenital Anomaly Type	Select the type of congenital anomalies from the scroll down list. Anomalies are listed alphabetically and grouped under the systems they relate to. If a major anomaly is not listed or if it requires specification, contact the NCC for advice. Once a congenital anomaly from the list has been selected, more rows will be added to this item, therefore all congenital anomalies for the patient can be listed here.
Other Diagnosis	Select the type of additional diagnosis made from the scroll down list. Note that some diagnosis may be worded differently a various hospitals. For example a diagnosis of "thrombocytopenia" is listed on the scroll down list as "neonatal thrombocytopenia". If a major diagnosis is not listed or requires further specification, contact the NCC for advice.
Other Diagnosis Date	Record the date the diagnosis was first noticed. Record as YYMMDD. If date of diagnosis is not provided score the missing value. If no additional diagnosis are made leave this item blank.

IVH / ROP SCREEN DEFINITIONS

General:

Score the IVH portion of the screen based on all head ultrasounds, CAT scans and MRIs done during the appropriate time periods. If you come across any serious outcomes, which are not included on the IVH & ROP screen (e.g. "periventricular calcification," "parenchymal calcification," "cystic parietal lesion"), please call the NCC for advice on possible inclusion in the comments box. ***The following should not be scored anywhere:*** "possible" or "questionable" diagnoses, subarachnoid hemorrhages, subdural hemorrhages, tentorial bleeds, fluid collections in the brain, arachnoid cysts, caudothalmic groove cysts, choroid plexus cysts, subependymal cysts or other cysts other than those found in the brain parenchyma (the brain itself).

INTRAVENTRICULAR HEMMORHAGE

GM / IVH	Isolated germinal matrix/intraventricular hemorrhage. An echogenic lesion confined to the germinal matrix area, ***AND/OR*** extending into the ventricles, but not distending the ventricles with blood. Descriptors may include: "grade I or II hemorrhage," "subependymal hemorrhage" (SEH), or "germinal matrix hemorrhage" (GMH). Score according to certainly of bleed. Score "possible" and "questionable" diagnoses as "None" Score "suggestive of…" and "most likely…" as "Probable". Score all IVH bleeds that occur on either side. This should be ***based on***

	ultrasound scans in the first two weeks of life. Score " None" if none of the ultrasounds taken during the first 2 weeks of life showed a grade I or II IVH. Score "N/A" if no ultrasounds were taken during the first 2 weeks of life in your hospital. ***Do not score*** new IVH occurring after two weeks of life.
VE +/- GM/IVH	An echogenic lesion originating in the germinal matrix area ***AND*** extending into the ventricles, ***AND*** distending the ventricles with blood (grade III hemorrhage). Also includes ventricular enlargement ("ventriculomegaly") with or without a germinal matrix/IVH bleed. Again, as described above this should be ***based on ultrasound scans in the first two weeks of life***.
PEC +/- GM/IVH	Parenchymal echodensities/lucencies. An echogenic lesion in the parenchyma of the brain (white matter or gray matter) in one or more ***ultrasound scans taken after day 21 of life***. This need not be accompanied by intraventricular hemorrhages grades I-III. Descriptors may include: "grade IV IVH," "intraparenchymal hemorrhage", "intraparenchymal echodensity" (IPE), "periventricular cyst", cystic encephalomalacia", and "porencephalic cyst". Score "None" if none of the ultrasounds taken after day 21 of life showed any echolucencies. Score "N/A" if there were no ultrasounds taken after day 21 of life in your hospital. ***Do not score*** echolucencies found on ultrasounds within the first 21 days of life, but continue to follow the ultrasound reports to see if still present after 21 days of life.
Ultrasound date nearest 6 weeks	Date of cranial ultrasound nearest to 6 weeks of life ***(but not before 4 weeks and not after 12 weeks)***, upon which Levene measurements for hydrocephalus were made. Score ultrasound reports at or after 4 weeks and before 12 weeks of life, whether or not hydrocephalus is mentioned. Score as the missing date value (40/01/01) if there were no ultrasound reports at or after 4 weeks and before 12 weeks of life at your hospital, or if the patient was discharged/died before 4 weeks of life.
Lat. Ventricle-to-falx size in mm (Levene's definition)	Measurement in mm from lateral-most extent of the ventricle to the falx on coronal ultrasound scan, nearest to 6 weeks ***(but not before 4 weeks and not after 12 weeks)*** of life (Levene, Arch Dis Child 1981;56:900-904). If ventricular size is mentioned on the ultrasound report***,*** you ***should*** record this value for all babies who have had a head ultrasound after 4 weeks and before 12 weeks of life, even if the ultrasound is normal. When the size is not specified, but is recorded as "normal" score the missing value (-9). If a ventricle cannot be accurately measured due to a severe bleed, score -9. If there is no ultrasound at or after 4 weeks and before 12 weeks of life, or if the infant was discharged/died before 4 weeks of life, score as -9***.*** If the two ventricles are both measured, score the ***worse*** (larger) value.
Hydrocephalus by Levene	Score the hydrocephalus measurement by Levene ventricular index based on the ultrasound nearest 6 weeks ***(but not before 4 weeks and not after 12 weeks)*** of life. If the U/S nearest 6 weeks is unclear, vague, ambiguous or missing, or if the U/S nearest 6 weeks makes reference to a previous report (e.g. "no change from previous report" or "improvement from last U/S report") refer to past or future reports for clarification.

	Descriptors may include "PHH" (Post Hemorrhagic Hydrocephalus), "Post shunt placement for ventriculomegaly", "ventriculomegaly" and "dilated ventricles". ***Score "None" if:*** there is an ultrasound at or after 4 weeks and before 12 weeks of life, and the ultrasound nearest 6 weeks shows ***no hydrocephalus***, or shows ***mild or questionable hydrocephalus***. ***Score ">97%,<4mm" if:*** there is an ultrasound at or after 4 weeks and before 12 weeks of life, and the ultrasound nearest 6 weeks shows ***hydrocephalus or moderate hydrocephalus*** or the equivalent. ***Score ">97%,>4mm" if:*** there is an ultrasound at or after 4 weeks and before 12 weeks of life, and the ultrasound nearest 6 weeks shows ***severe hydrocephalus*** or the equivalent. ***Score "N/A" if:*** ·there is no ultrasound at or after 4 weeks and before 12 weeks of life. ·there is an ultrasound at or after 4 weeks of life, but the ultrasound nearest 6 weeks is not available. ·the infant was discharged/died before 4 weeks of life.

RETINOPATHY OF PREMATURITY (HIGHEST STAGE)

Left/Right Eye: Stage	Maximum stage of retinopathy of prematurity (ROP) in left/right eye as defined by the International Committee on Retinopathy of Prematurity (ICROP). If there is no eye exam during the hospital stay, score as "N/A".
Left/Right Eye: Zone	Record location of ROP in left/right eye by zone. Score according eye exam having the greatest degree of ROP severity. Disease severity is worst in Zone 1 (optic disk to macula), very serious in Zone 2, (macula to periphery) and worrisome in Zone 3 (peripheral vision). If there is no eye exam, score as "N/A".
Left/Right Eye: Plus	Presence of Plus Disease at any stage of ROP in the left/right eyes. Plus is indicated by extreme tortuosity and redness of vessels, often accompanied by rapid progression of disease. If there is no eye exam, score as "N/A".
Left/Right Eye: ROP Treatment	Record if cryotherapy ***(Cryo)*** or laser photocoagulation ***(Laser)*** treatment was required for Retinopathy of Prematurity (ROP) in the left/right eye. Score regardless of when treatment occurred during the hospitalization. ***This should also be counted as a minor operation under "Total number of operations" on the diagnosis/ procedures screen.*** ***Score "None" if:*** there was no surgical treatment (i.e.. either cryo or laser treatment) for any stage of ROP. ***Score "N/A" if:***

	·there was no eye exam during the hospital stay and therefore no diagnosis of ROP made. ·there was an eye exam, but the patient was said not to have any stage of ROP. ·the infant was discharged/died before an eye exam was done.

CULTURES/CVL/TRANS SCREEN DEFINITIONS

POSITIVE BLOOD OR CSF CULTURES

Record #	This field will automatically enter the record number of current patient, once an item has been selected from the corresponding list. No data entry required.
Date	Record the date of the blood drawn ***only for each positive blood or CSF culture***. Do not record the date culture was found to be positive. Only positive cultures are listed in detail. Negative cultures are included in total number of blood/CSF cultures. Enter the date as YYMMDD. If date of culture unknown score the missing date value.
Organism	Select the organisms found in all positive cultures from the scroll down list. Organisms are listed in alphabetical order according to their coded abbreviation given to the right of the full listed name. ***For a list of organism names listed in alphabetical order and their coded abbreviations see appendix III***. Simply add an organism that is not on the scroll down list by typing it in. Once an organism has been selected, more rows will be added, therefore all positive blood and CSF cultures can be listed here. If multiple organisms are found in the same culture, take as many lines as needed for that culture, listing each organism on a new line under the same date. ***Do not record repeat tests from the same infection.*** Consider the following to be signs of a new infection: (1) There is a new organism; ***OR*** (2) A blood culture ***drawn*** seven days after the initial positive draw comes up positive. ***If the same organism is found in BOTH a blood and CSF culture, DO SCORE them separately***. You ***should*** record all positive blood cultures, even if they are noted ***or thought to be*** contaminants. If patients are transferred in with a positive culture, do ***not*** record here, but make a note in the comments box. Do not record information about resistance to antibiotics.
Culture	Source of positive culture. Choose from only ***blood or CSF*** (cerebrospinal fluid).
Total # of blood cultures	Total count of all blood cultures (positive or negative) received by the clinical laboratory during this NICU admission. Two blood cultures taken at the same time from different sites (2 blood draws) count as two blood cultures. Two bottle aerobic/anaerobic combination counts as 1 culture.

Total # of CSF cultures	Total number of CSF cultures (positive or negative) received by the clinical laboratory during this NICU admission. If CSF obtained without culture, do not include.

CLINICAL DIAGNOSIS OF INFECTION

Record #	Automatically entered once a diagnosis of infection date has been entered.
Date	Record the date of occurrence of the defined diagnoses of infection (see appendix V). Enter as YYMMDD. If date of infection is unknown record the date treatment began (i.e. day antibiotics initiated) or else enter the missing date value.
Diagnosis Type	Select the diagnosis type from the scroll down list according to the descriptors of infection diagnosis given under appendix V.

CENTRAL VENOUS LINES

Date In	Date of insertion of a central venous line (CVL). If a baby is transferred in with a catheter in place, record the date of placement at the previous hospital. If this date is unavailable, record the first available date.
Catheter Type	Record the catheter type as: ***Broviac*** (surgically placed), ***Percutaneous*** (spaghetti, perc, picc) or ***Umbilical Venous*** (UVL/UVC). Record all central lines placed during the patient's hospitalization, regardless of whether central placement is achieved. ***Do not*** score lines that are never successfully placed. Where it is unclear whether the line was successfully placed, score based on whether the line has begun infusing solutions or not.
Date Out	Date of removal of a central venous line. If a baby is transferred out with a catheter still in place, record the date of discharge as the date of removal of the catheter unless the baby is transferred to another study site. In this case, request the information from the next abstractor.

TRANSFUSIONS

Date	Date transfusion was ***initiated***. Record as YYMMDD.
Pre HCT	Score this field only for PRBC transfusions. Record the ***most recent*** hematocrit before the transfusion. If there is no hematocrit within the 48 hours prior to initiation of the transfusion, record the missing value.
Vol CCs	Volume of blood product (in CCs) actually transfused. This may be different from the volume delivered from the blood bank (to accommodate losses in priming transfusion tubing or blood that the clinicians decided not to give). ***If the volume administered is not recorded anywhere, score the amount ordered by the physician, but do NOT score the amount delivered by the blood bank***. If the amount ordered by the physician is missing as well, score the missing value.

MEDICATIONS SCREEN DEFINITIONS

REFER TO APPENDIX I FOR A COMPLETE LIST OF DRUGS *AND THE CATEGORIES THEY ARE GROUPED IN. IF YOU ARE UNSURE WHAT CATEGORY A MEDICATION IS GROUPED IN CONTACT THE NCC FOR ADVICE. RECORD EACH COMPLETE COURSE OF A PARTICULAR MEDICATION AS A SINGLE LINE. THEREFORE IF VANCOMYCIN IS GIVEN FOR 11 DAYS BUT ONLY GIVEN EVERY OTHER DAY, THIS WOULD BE SCORED AS 1 'COURSE', AND EACH DAY NEED* ***NOT*** *BE SCORED SEPARATELY ON A NEW LINE. GENERALLY IF A MEDICATION IS STOPPED FOR MORE THAN 48 HOURS IT IS CONSIDERED A NEW 'COURSE'.* **NOTE: TOPICAL MEDICATIONS ARE NOT SCORED.**

NARCOTICS / SEDATIVES

Record #	This field will automatically enter the record number of current patient, once an item has been selected from the corresponding list. No data entry required.
Start Date	First date of administration of all narcotic or sedative drugs given during this hospital stay. Record regardless of method of administration (i.e.. bolus or infusion). Enter the date as YYMMDD.
Type	Select from the scroll down list the type of narcotic/sedative administered between the dates recorded. Some common narcotics/sedatives include: ***fentanyl, morphine, acetaminophen (tylenol), chloral hydrate, and midazolam***. If a narcotic/sedative is not included in the list simply add it by typing it in.
End Date	Last date of administration of the listed narcotic/sedative. ***If a medication is only given for 1 day, then score that day as both the start and end date.*** Enter the date as YYMMDD.

PARALYTICS

Start Date	First date of administration of all paralytics given during this hospital stay. Record regardless of method of administration (i.e.. bolus or infusion). Enter the date as YYMMDD.
End Date	Last date of administration of the listed paralytic. ***If a medication is only given for 1 day, then score that day as both the start and end date.*** Enter the date as YYMMDD.

ANTIBIOTICS

Start Date	First date of administration of all antibiotics given during this hospital stay. Record regardless of method of administration (i.e.. bolus or infusion). Enter the date as YYMMDD.
End Date	Last date of administration of the listed antibiotic. ***If a medication is only given for 1 day, then score that day as both the start and end date.*** Enter the date as YYMMDD.

POST-NATAL STERIODS

Start Date	First date of administration of all post-natal steroids given during this hospital stay. Record regardless of method of administration (i.e.. bolus or infusion). ***Do NOT score steroids given to the mother prior to the infant's birth.*** Enter the date as YYMMDD.
Type	Select from the scroll down list the type of post-natal steroid administered between the dates recorded. Common steroids include: ***dexamethasone, budesonide, hydrocortisone and beclamethasone***. If a steroid is not included in the list simply add it.
End Date	Last date of administration of the listed narcotic/sedative. ***If a medication is only given for 1 day score that day as both the start and end date.*** Enter the date as YYMMDD.

DAY 28 SCREEN DEFINITIONS

General:

The scoring period for "day 28" data should be from 6:00 am on ***day 28 of life*** to 5:59 am of the following day (24 hours). If you are missing part of the day 28 flow sheet and you can get accurate information from other sources (i.e. progress notes), then score based on these other sources. Otherwise, you should use the closest complete 24 hour scoring period (it is okay to adjust times of day), but it should not be more than 48 hours off from day 28. If the patient is transferred to another level 2 or 3 hospital prior to day 28 of life record the information on this screen when available as follows: (i) For a patient 32 weeks or less GA at birth score for the entire screen. (ii) For a patient 32 weeks or more GA record only the current weight and head circumference.

Level of Respiratory Support	Note the highest (most intensive) level of support (None, Oxygen only, CPAP, Mechanical ventilation) received at any time on day 28. Score HIFI as mechanical ventilation. If the patient died or was discharged home or to a level 1 nursery prior to day 28 of life score as "N/A" and leave the rest of this screen blank. If there is no appropriate information leave blank.
Oxygen %	***Record the first appropriate FiO2*** (percent inspired oxygen) ***in the scoring period*** on day 28. ***Do not*** record the highest appropriate FiO2 in the scoring period. ***See appendix IV for the definition of appropriate FiO2***. If on low flow nasal cannula, record the percent of the administered oxygen (This will be combined with the liter flow later). If the patient is ***receiving no supplemental oxygen***, enter 21%. If the information is unavailable, enter the missing value.
Nasal cannula CCs	If the infant is receiving low-flow oxygen by nasal cannula, record the flow rate in CCs per minute. ***Record the first value noted in the scoring period***. If calibrated as liters\minute, translate into CCs (e.g.. 1\4 liter=250 cc. 1\8 liter is 125 cc). Be sure to record the percent oxygen delivered via the nasal cannula. If the infant is ***receiving no supplemental oxygen*** then enter zero (0). Score the midpoint for nasal cannula CCs listed as a range. If the baby is on mechanical ventilation but not on nasal cannula, score as '0'.

Mean airway pressure	***Record the first mean airway pressure (MAWP) noted in the scoring period***. If on CPAP only and no MAWP is listed, you may use CPAP pressure (in cm's of water) as MAWP. If ventilated, use airway pressure from ventilator records. ***If not on CPAP or ventilator*** then enter 0 (zero). If the information is unavailable, enter the missing value.
Weight	Weight nearest day 28 (within 5 days). If not weighed, enter the missing value.
Head circumference	Head circumference nearest day 28 (within 10 days). Not necessary for infants over 2000 gm birth weight. If the information is unavailable, or if head circumference is not measured within 10 days, enter the missing value.

WEEK 36 SCREEN DEFINITIONS

General:

Week 36 should be computed from the obstetric GA, ***unless*** there is a difference of three or more weeks between the obstetric and pediatric GA. If they differ by three or more weeks, use the pediatric estimate. The scoring period for "week 36" data should be from 6:00 am on day one of week 36 to 5:59 am of the following day ***(24 hours)***. Otherwise, you should use the closest complete 24 hour scoring period (it is okay to adjust times of the day). ***Week 36 data should not be collected if the gestational age (see above for which gestational age to use) is 32 weeks or more or if the baby is discharged from NICU care or dies before 36 weeks.*** If a baby is transferred to another ***study*** hospital before week 36, score according to receiving hospital's records.

Nasal cannula CCs	If the infant is receiving low-flow oxygen by nasal cannula, record the flow rate in CCs per minute. ***Record the first value noted in the scoring period***. If calibrated as liters\minute, translate into CCs (e.g.. 1\4 liter=250 cc. 1\8 liter is 125 cc). Be sure to record the percent oxygen delivered via the nasal cannula. If the infant is ***receiving no supplemental oxygen*** then enter zero (0). Score the midpoint for nasal cannula CCs listed as a range. If the baby is on mechanical ventilation but not on nasal cannula, score as '0'.
Mean airway pressure	***Record the first mean airway pressure (MAWP) noted in the scoring period***. If on CPAP only and no MAWP is listed, you may use CPAP pressure (in cm's of water) as MAWP. If ventilated, use airway pressure from ventilator records. ***If not on CPAP or ventilator*** then enter 0 (zero). If the information is unavailable, enter the missing value.
Target SaO2: Low	The lowest recorded oxygen saturation (SaO2) during the scoring period (i.e.. day 1 of week 36). If there is no oxygen saturation recorded or the information is unavailable, enter the missing value.
Target SaO2: High	The highest recorded oxygen saturation (SaO2) during the scoring period (i.e.. day 1 of week 36). If there is no oxygen saturation recorded or the information is unavailable, enter the missing value.

DISCHARGE SCREEN DEFINITIONS

General:
Complete this screen for all patients that are discharged from your NICU, regardless of whether or not they are transferred out of your hospital or to another ward/nursery within your hospital. If a patient is transferred within your hospital enter your hospital name and the nursery name under the appropriate level of care received there. If a patient is ***discharged to another hospital for less than 24 hours for either surgical or medical care*** that can not be given at your hospital, you need not count them as a discharged patient. Make a note of the date and reason for transfer in the comments box on the patient log/admission page and continue data collection for the rest of the patient's hospital stay in the current data set. If however the patient is discharged for more than 24 hours, complete the discharge information and record their return as a readmission, entering the remainder of the hospital stay in the new 'readmission' data set.

Discharge weight	Weight nearest discharge (within 5 days). Score the missing value if not weighed ***in the 5 days prior to discharge/transfer***. This item need only be completed for infants weighing ***less*** than 2500 grams at birth. This ***should*** be completed for babies who die.
Head circumference	Head circumference nearest discharge (within 10 days). Score the missing value if not measured ***in the 10 days prior to discharge/transfer.*** This item need only be completed for infants weighing ***less*** than 2500 grams at birth. This ***should*** be completed for babies who die.
Discharge Date	Score the date of discharge from initial hospitalization ***in the NICU***. Record as YYMMDD.

SUPPORT AT DISCHARGE

If infant not on any of the supports listed below at the time of discharge or transfer, leave this section blank. ***Do NOT mark anything in this column if the baby died.***

Oxygen	Score this if the patient is on ***continuous oxygen/***supplemental oxygen (FiO2 >21%) ***at the time of discharge/transfer***. ***Do not score*** oxygen for feeds only as this is not a form of continuous oxygen.
Theophylline	Score this if the patient received theophylline, caffeine, or aminophylline ***at any time in the 24 hours prior to discharge/transfer***.
Diuretic	Score this if the patient received chronic diuretics (IV or PO***) at any time in the 24 hours prior to discharge/transfer***.
Monitor	Score this if the patient is receiving continuous cardiac or apnea monitoring ***at the time of discharge/transfer***. If the chart does not specify and discharge is to a community hospital, score monitor at discharge. If the chart does not specify and discharge is to the routine nursery, do not score. If discharge is to home, there must be clear evidence of plans for home monitoring to score this item.
Ostomy	Score this if the patient has any ostomy (ileostomy or colostomy, ***but not***

	tracheostomy or gastrostomy) ***at the time of discharge/transfer***.
Gavage	Score this if the patient received gavage feeding (any PG or NG feeds) ***at any time in the 24 hours prior to discharge/transfer***. If you are already scoring gastrostomy at discharge, ***do not*** score gavage at discharge as well.
Incubator	Score this if the patient is in an incubator or radiant warmer ***at any time in the 6 hours prior to discharge/transfer***. Do not count incubator use for transport only.
Tracheostomy	Score this if the patient has a tracheostomy in place ***at the time of discharge/transfer***.
Gastrostomy	Score this if the patient has a gastrostomy in place ***at the time of discharge/transfer***.

RESPIRATORY SUPPORT/NEEDS

CPAP	Score this if the patient is on CPAP ***at the time of discharge/transfer***. Do ***not*** score if the patient died while on CPAP.
IMV	Score this if the patient is on mechanical support (intubated and being hand bagged or on mechanical ventilation) ***at the time of discharge/transfer***. Do ***not*** score if the patient died while receiving mechanical support.
Other	Score this if the patient is on another type of respiratory support not listed here or in the "support at discharge" section ***at the time of discharge/transfer***.
Days on ventilator	Total number of days during which the infant was on IPPV. One day is defined as 6am to 5:59am the next day. If infant received IPPV during any part of a day, that day is counted as one day. (***ventilation does NOT include*** CPAP, nasal cannula, O2 by mask, incubator O2, or O2 by funnel). ***Score all days (or partial days)*** including ventilation for the duration of a procedure and up to 24 hours after the procedure as a result of the procedure.
Days on CPAP	Total number of days during which the infant received CPAP. One day is defined as 6am to 5:59 am the next day. Exclude any days during which IPPV also occurred. Include any days where the infant was only on CPAP part of the day. ***Score all days (or partial days)*** including CPAP for the duration of a procedure and up to 24 hours after the procedure as a result of the procedure.
Days on O2	Total number of days during which the infant received continuous O2, but not IPPV or CPAP. One day is defined as 6am to 5:59am the next day. Include any days where the infant was only on O2 part of the day. ***Score all days (or partial days)*** including O2 for the duration of a procedure and up to 24 hours after the procedure as a result of the procedure. ***Do not score*** days on which oxygen was given for feeds only as this is not a form of continuous oxygen.

POST-TRANSFER SCREEN DEFINITIONS

General:

Complete this screen only for patients that are discharged to another level II or level III nursery from your NICU. If patients are discharged home or to a level I nursery from your NICU leave this screen blank. As long as the patient is transferred to a destination other than home continue to complete the post-transfer information for each transfer until the patient is finally discharged home. Additional post-transfer boxes will continue to pop up each time the previous box is completed. If the information for certain items will never be available (e.g.. The baby has been discharged from the next hospital and they do not have the transfusion or oxygen information anymore), score those items as "N/A" or the missing value.

Destination from next hospital	Record destination on discharge from second hospital here. If second discharge is to another hospital or the baby died at the subsequent location ***score "other"*** and ***record the destination/death in the "if transferred/other, specify" box***. If second discharge is unknown score as "unknown or N/A".
Date of next discharge	Record the date of discharge from the subsequent location. If that discharge was to a destination other than home, record the next discharge information again in the box that pops up below.
If transferred /other, specify	If disposition is other than home, record destination from second hospital here. ***If the baby died at the next hospital, type DIED.***
Last day on oxygen at hospital	If the infant was still on oxygen at the time of the primary discharge, attempt to ascertain from the receiving convalescent hospital what day supplemental oxygen was finally discontinued. If the baby did not receive O2 at the receiving hospital, leave blank. If the baby went home or to another hospital/nursery on O2, use the date of discharge.