The Canadian Pediatric Surgery Network

Le Réseau Canadien de Chirurgie Pédiatrique

CAPSNet

1st Network Report
2005-2007

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ACKNOWLEDGEMENTS

It is with great excitement that we are releasing this, our first CAPSNet Report. The Canadian Pediatric Surgery Network began as a small group of surgeons interested in improving pediatric surgical outcomes through clinical research. With the help of many contributors, the CAPSNet database now provides the infrastructure to support leading and ongoing national perinatal-neonatal surgical research. Funding for the development of the Network database is supported by an operating grant from the Canadian Institutes of Health Research (CIHR). Furthermore, we would like to acknowledge the contributions of the Canadian Association of Pediatric Surgeons (CAPS) who have provided encouragement and early financial support as well as a platform for discussion of issues of mutual relevance to both the Network and CAPS membership. We also acknowledge the Canadian Neonatal Network (CNN) and the Neonatal-Perinatal Interdisciplinary Capacity Enchancement (NICE) Team, who have provided mentorship and support for the establishment and ongoing endeavors of the Network. Last, but certainly not least, we acknowledge the contributions and dedication of each of the Data Abstractors and Site Investigators at our participating institutions.

Participating CAPSNet Sites for the 2007 Report:

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Children's and Women's Health Centre of British Columbia, Vancouver, BC
Royal University Hospital, Saskatoon, SK
Winnipeg Health Sciences Centre, Winnipeg, MB
in cooperation with: St. Boniface General Hospital, Winnipeg, MB
Hospital for Sick Children, Toronto, ON
in cooperation with: Mt. Sinai Hospital, Toronto, ON
McMaster Children's Hospital, Hamilton, ON
London Health Sciences Centre, London, ON
Kingston General Hospital, Kingston, ON
Children's Hospital of Eastern Ontario, Ottawa, ON
in cooperation with: The Ottawa Hospital, Ottawa, ON
Montréal Children's Hospital, Montréal, QC
in cooperation with: McGill University Health Centre, Montréal, QC
Hôpital Ste-Justine, Montréal, QC
Centre Hospitalier de L'Université Laval, Ste-Foy, QC
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INTRODUCTION & OBJECTIVES OF THE NETWORK

The **CA**nadian **P**ediatric **S**urgery **Net**work (CAPSNet) is a multi-disciplinary group of Canadian health researchers working together on research issues concerning pediatric surgical care. To date there are 26 network members of which the majority are clinically active pediatric surgeons. Network membership spans the perinatal disciplines including: neonatology, perinatology, and medical genetics. Financial support of CAPSNet's initial project: "Establishing best perinatal practices for Gastroschisis and Congenital Diaphragmatic Hernia" has been provided by a grant from the Canadian Institutes of Health Research (CIHR).

The main objectives of the network are to:

1. Maintain a national pediatric surgical database, providing an infrastructure to facilitate and encourage collaborative national research.
2. Identify variations in clinical practices across Canadian centres and identify those practices which are associated with favourable and unfavourable outcomes.
3. Disseminate new knowledge through effective knowledge translation, and study impact of practice change.
4. Study the economic impact of clinical practice decisions to enable identification of treatment strategies that are efficacious and cost-effective.

Population Definition

The CAPSNet database captures:

A) All cases of confirmed or suspect Congenital Diaphragmatic Hernia (CDH) and Gastroschisis (GS) diagnosed antenatally and referred to one of the participating tertiary perinatal centres for ongoing prenatal care of the fetus, regardless of the final outcome of pregnancy,

AND

B) All cases of CDH and GS diagnosed postnatally up to 7 days of life who were either born at or transferred after birth to one of the participating centres.

Data presented in this report includes data on all eligible patients either referred antenatally or born on or after May 1st, 2005 and discharged from hospital prior to May 1st, 2007. Data presented in the following pages of this report include primarily aggregate level data.

SUMMARY OF DATA BY DIAGNOSIS AND BIRTH OUTCOME

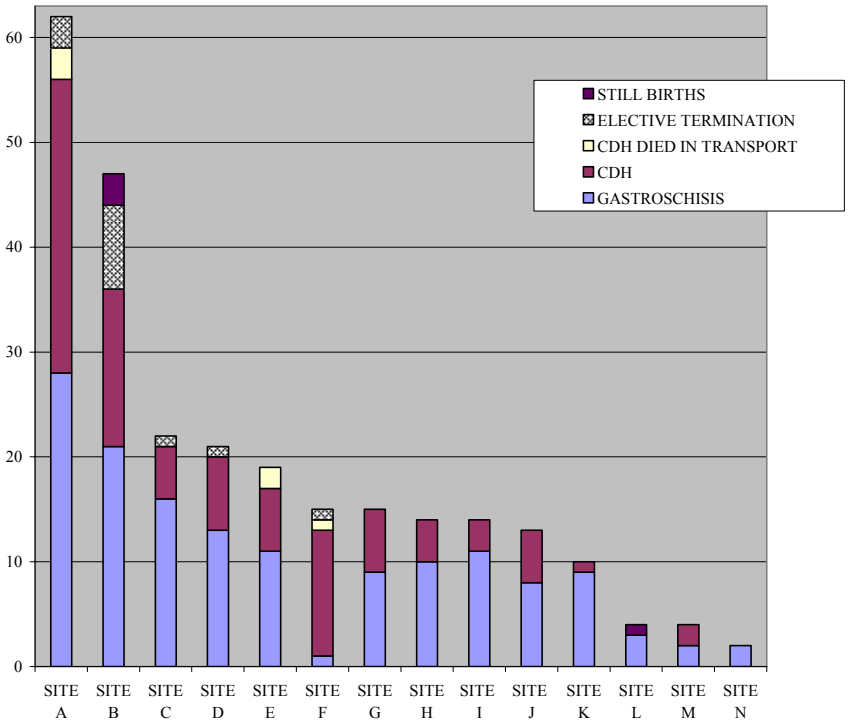
GASTROSCHISIS		CONGENITAL DIAPHRAGMATIC HERNIA	
Complete live births (N)	144	Complete live births (N)	94
Incomplete live births†	16	Incomplete live births†	4
Died in Transport*	0	Died in Transport*	6
Elective Terminations	3	Elective Terminations	11
Still-Births	2	Still-Births	2
Total Case Incidence	*165*	Total Case Incidence	*117*
Misdiagnosed Antenatally §	3	Misdiagnosed Antenatally §	2

† Represents cases for which there are known live-births, but the infant was still in hospital as of May 1st, 2007. Only completed cases where patients have been fully discharged from hospital have been included in this report (N).

* Represents postnatally diagnosed live-births, where the infant was born at a community hospital and did not survive postnatal transfer to the CAPSNet tertiary pediatric centre.

§ Represents cases for which the antenatal diagnosis was suspected Gastroschisis or CDH, but where the diagnosis was disconfirmed at birth. The 3 cases of suspected Gastroschisis where confirmed at birth as in fact Omphalocele.

FIGURE A: DISTRIBUTION OF CASES BY CENTRE



COMMENTS: The overall incidence of elective termination of Gastroschisis was 1.8% (N=3) and 9.4% for CDH (N=11). It is unclear whether the lack of elective terminations in some hospitals is accurate or reflects a gap in our ability to capture this data.

SECTION 1: GASTROSCHISIS

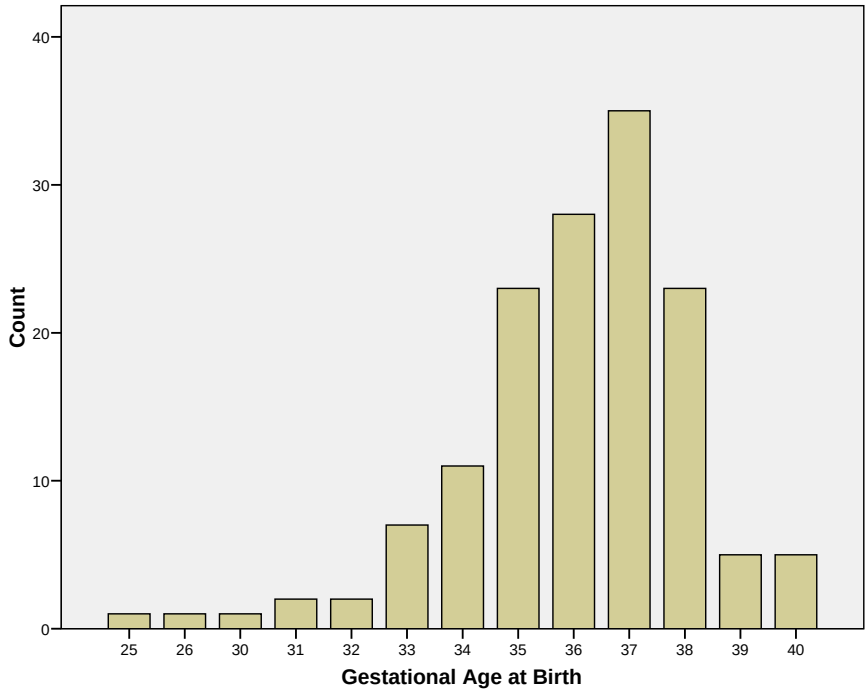
Descriptive Analyses

TABLE 1.A: PATIENT POPULATION

GASTROSCHISIS N=144	
Mean Gestational Age	36.0 weeks
Mean Birth Weight	2480 grams
Proportion of Males	54.2 %
Mean SNAP Scores Survivors	8.9 (±10.56)
Non-Survivors	15.3 (±21.71)

SNAP (Score for Neonatal Acute Physiology) is an illness severity scoring system which stratifies patients according to cumulative severity of physiologic derangement in several organ systems within the first 12 hrs of admission to the intensive care unit. This scoring system has been shown to be highly predictive of neonatal mortality and to be correlated with other indicators of illness severity including therapeutic intensity, physician estimates of mortality risk, length of stay, and nursing workload. SNAP provides a numeric score that reflects how sick each infant is. The scoring system is modeled after similar adult and pediatric scores, which are already widely in use. Standard deviations (shown in brackets) are high, particularly in non-survivors due to small numbers in the database.

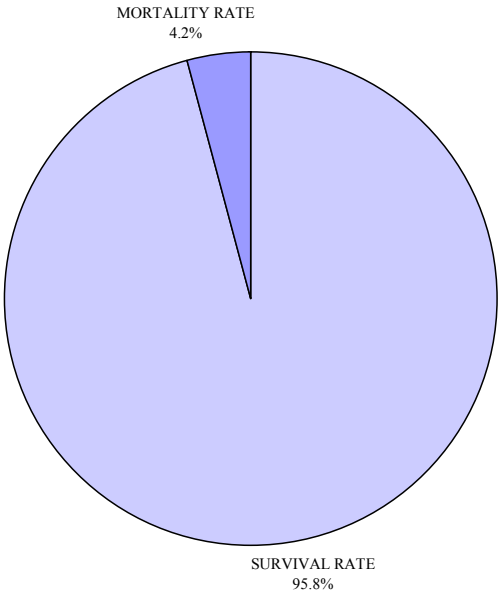
FIGURE 1.1: DISTRIBUTION OF GESTATIONAL AGE AT BIRTH



COMMENTS:

Gestational age at birth refers to age in completed weeks.

FIGURE 1.2: GASTROSCHISIS SURVIVAL

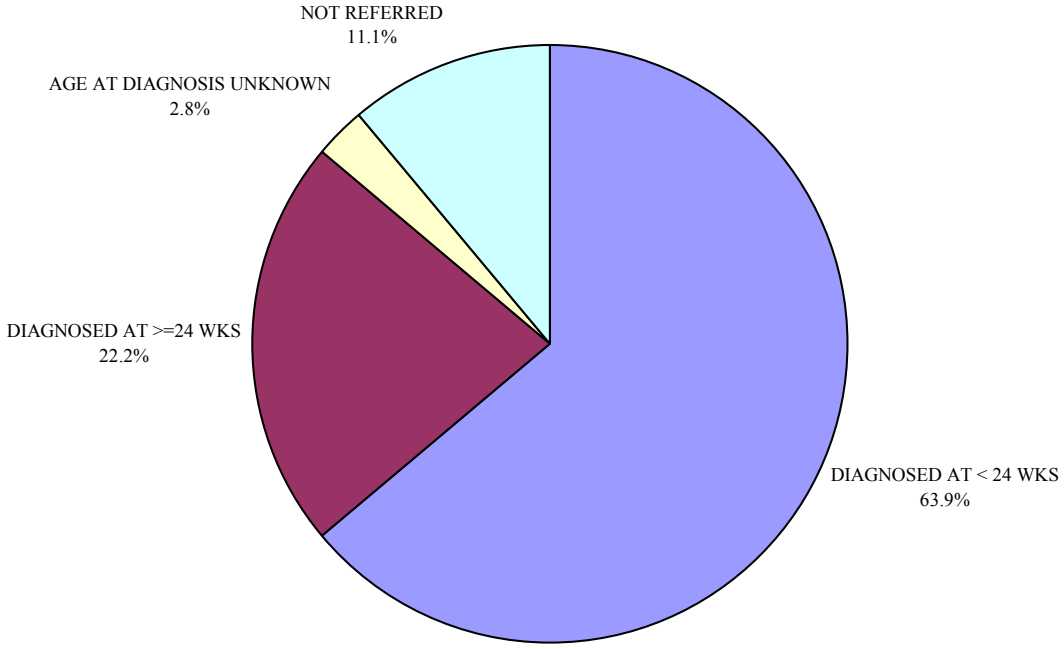


Survival	N	%
Survivors	138	95.8
Non-Survivors	6	4.2

COMMENTS:

There were a total of 6 deaths from 6 different centres, resulting in a 95.8% survival rate.

FIGURE 1.3: EARLY VERSUS LATE ANTENATAL DIAGNOSIS



Age at Antenatal Diagnosis	N	%
Antenatal diagnosis at < 24 weeks	92	63.9
Antenatal diagnosis at >= 24 weeks	32	22.2
Age of diagnosis unknown	4	2.8
Not Referred	16	11.1

COMMENTS:

Age of diagnosis of Gastroschisis refers to the gestational age of first referral to a tertiary care facility, medical genetics or maternal-fetal-medicine (MFM) clinic. If there is no referral date reported then the age at diagnosis refers to the gestational age at the first ultrasound in which the defect was noted. There were 16 cases (11.1%) in which there was no antenatal referral to a CAPSNet centre and therefore no confirmed antenatal diagnosis of Gastroschisis.

FIGURE 1.4: MAXIMUM BOWEL DILATION REPORTED ON ANTENATAL ULTRASOUNDS

COMMENTS: Refers to the maximum internal (i.e. endoluminal) diameter measured from inner wall to inner wall along the short axis of the bowel loop at the most dilated segment of the extruded bowel in millimeters (mm).

Measurements are recorded on up to 4 ultrasounds taken at varying time points including:
(i) first ultrasound taken at the tertiary CAPSNet centre
(ii) last ultrasound taken between 23+0 and 31+6 weeks;
(iii) last ultrasound taken between 32+0 and 34+6 weeks, and
(iv) last ultrasound before delivery.

The data presented here reflects the worst (i.e. greatest) bowel dilation reported on any one of the above measured ultrasounds.

43% of cases had no bowel dilation measurement done. Where there was no measurement due to the infrequency of antenatal ultrasounds (i.e. one or fewer) this has been reported separately.

Ultrasound Measurements	**N**	**%**
Bowel dilation >= 18 mm	44	30.6
Bowel dilation < 18 mm	38	26.4
Missing measurements	38	26.4
No measurement (<= 1 ultrasound)	24	16.7
Total with no measurements	*62*	*43.1*

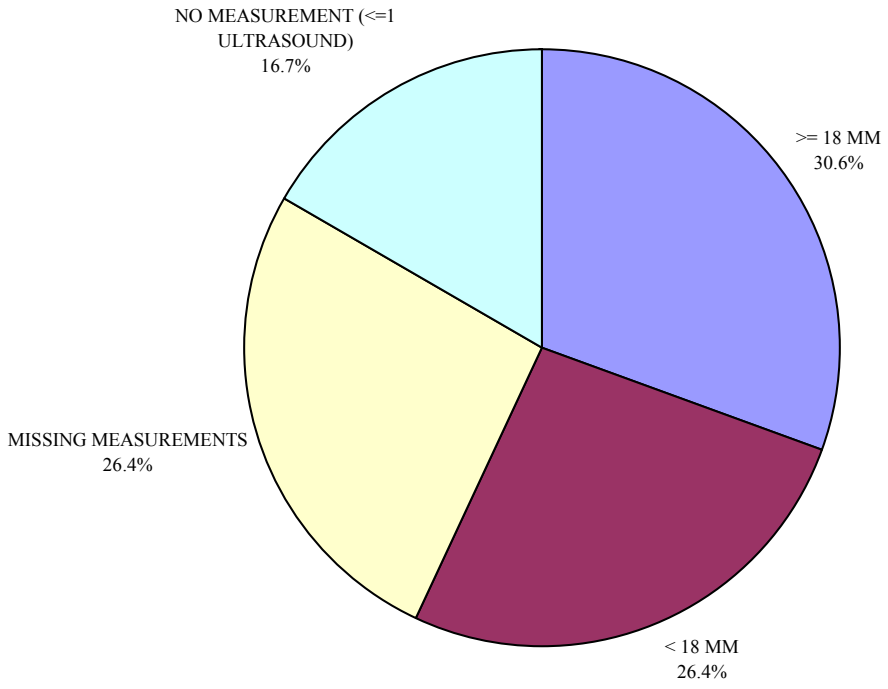


FIGURE 1.5: BOWEL WALL THICKENING REPORTED ON ANTENATAL ULTRASOUNDS

COMMENTS: Refers to the maximum bowel wall thickness measured from the inner wall to the outer wall of the thickest portion of the small bowel in millimeters (mm).

Measurements are recorded on up to 4 ultrasounds taken at varying time points including:
(i) first ultrasound taken at the tertiary CAPSNet centre
(ii) last ultrasound taken between 23+0 and 31+6 weeks;
(iii) last ultrasound taken between 32+0 and 34+6 weeks, and
(iv) last ultrasound before delivery.

The data presented here reflects the worst (i.e. greatest) bowel wall thickening reported on any one of the above measured ultrasounds.

78.5% of cases had no bowel wall thickness measurement done. Where there was no measurement due to the infrequency of antenatal ultrasounds (i.e. one or fewer) this has been reported separately.

Ultrasound Measurements	**N**	**%**
Bowel dilation >= 4 mm	8	5.6
Bowel dilation < 4 mm	23	16.0
Missing measurements	89	61.8
No measurement (<= 1 ultrasound)	24	16.7
Total with no measurements	*113*	*78.5*

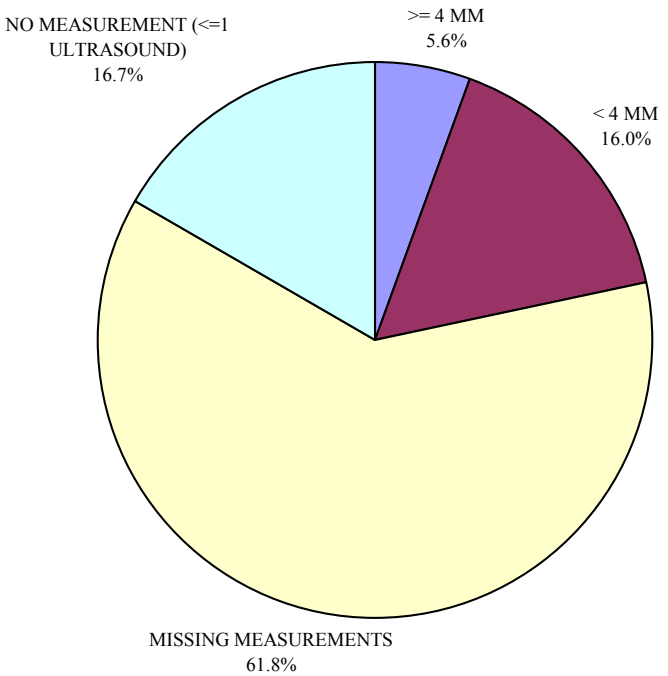
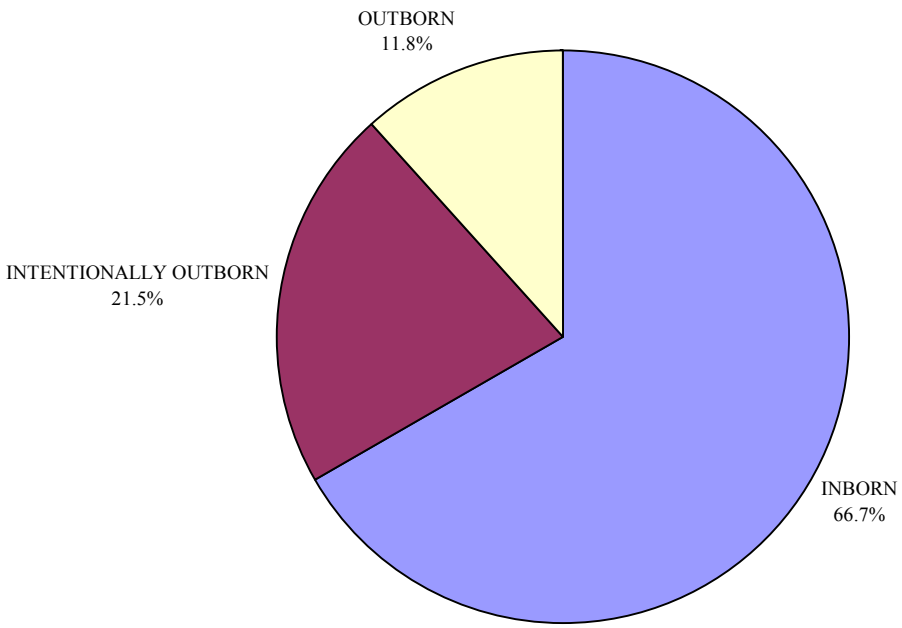


FIGURE 1.6: LOCATION OF DELIVERY

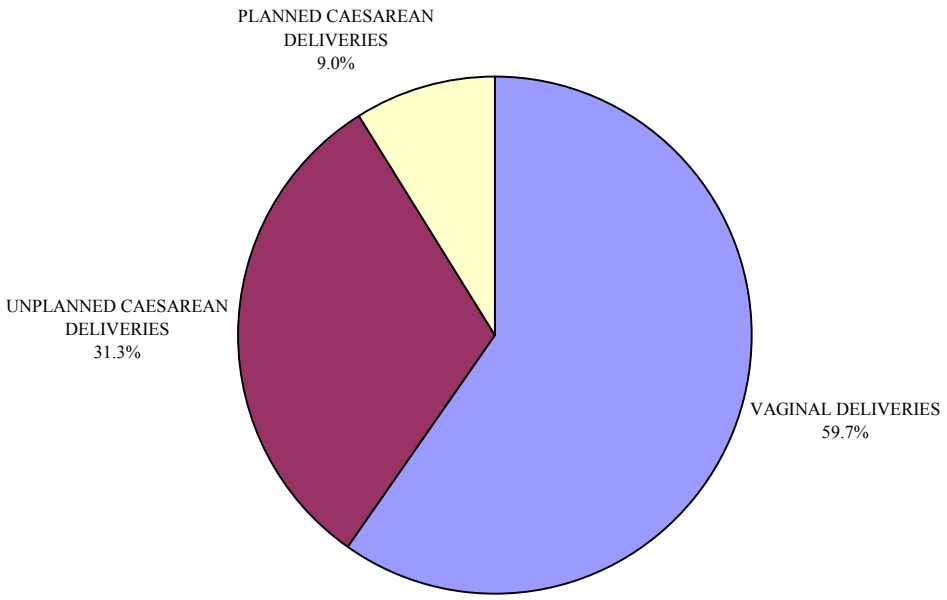


Location of Delivery	**N**	**%**
Inborn	96	66.7
Intentionally Outborn	31	21.5
Outborn	17	11.8

COMMENTS:

"Intentionally outborn" refers to anticipated births where the newborn was deliberately delivered at a geographically linked maternal hospital and transferred within a few hours of birth for postnatal care to the pediatric centre. Thus over 88% of all patients were delivered at a tertiary CAPSNet centre or a tertiary facility associated with a CAPSNet centre. Only 11.8% of infants were delivered in outlying community hospitals and transported after birth to the CAPSNet centre for treatment.

FIGURE 1.7: MODE OF DELIVERY



Mode of Delivery	N	%
Vaginal deliveries	86	59.7
Unplanned C/S deliveries	45	31.3
Planned C/S deliveries	13	9.0

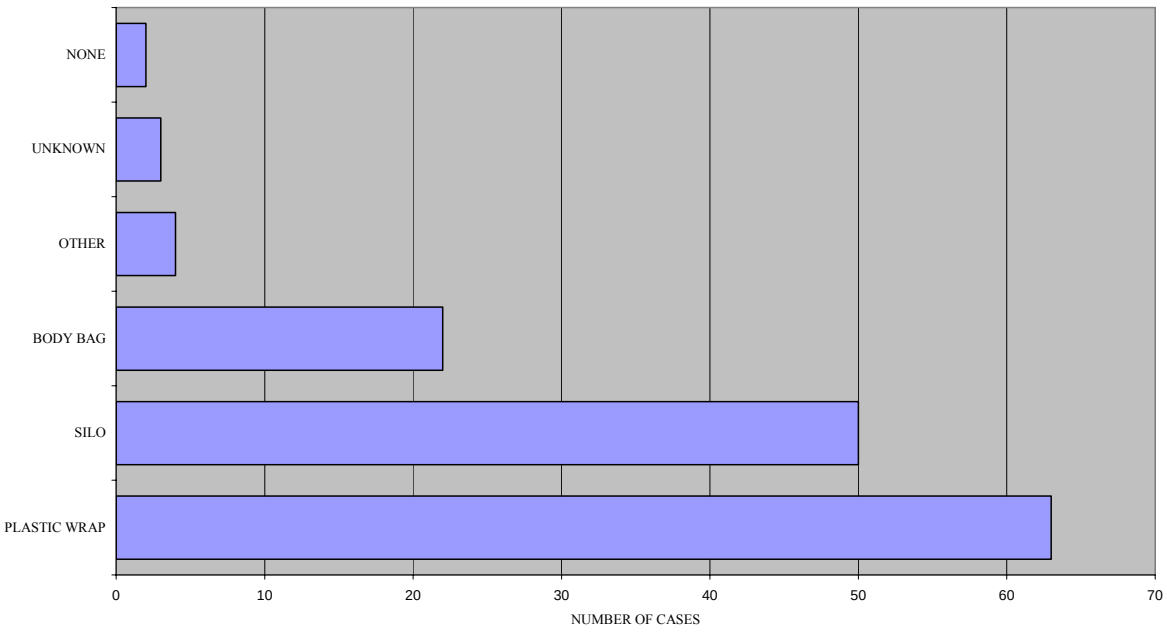
TABLE 1.B: ANTENATAL PLANS FOR DELIVERY

Delivery plan as of 32 weeks	N	%
No pre-determined plan	44	30.5
Spontaneous Vaginal Delivery	38	26.4
Caesarean Section	15	10.4
Induction	41	28.5
Other	1	0.7
Unknown	5	3.5

COMMENTS:

Two-thirds of all live-births had a pre-determined delivery plan as of 32 weeks gestation. Induction for vaginal delivery, followed closely by spontaneous vaginal delivery was the most common stated delivery plan.

FIGURE 1.8: PRE-OPERATIVE BOWEL PROTECTION BY TYPE OF BOWEL COVERING



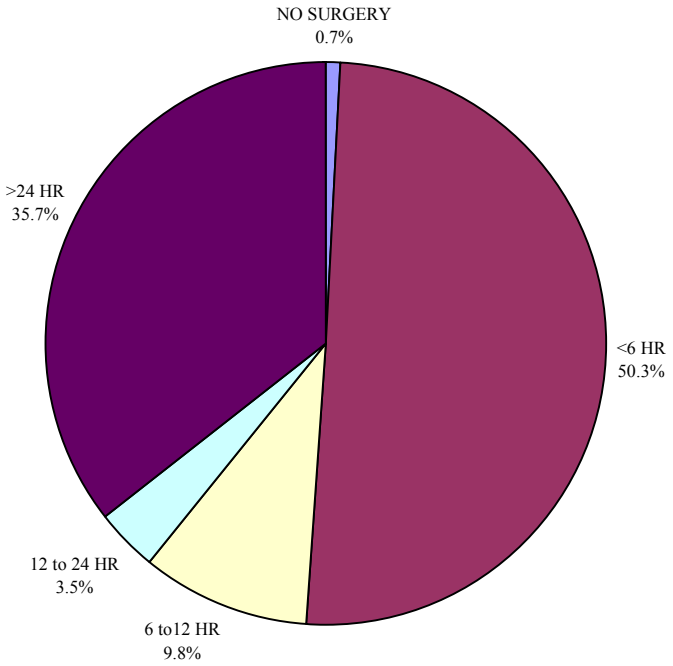
Type of Bowel Covering	N	%
Plastic Wrap	63	43.7
Silo	50	34.7
Body Bag	22	15.3
Other	4	2.8
Unknown type	3	2.1
No bowel protection	2	1.4

TABLE 1.C: TIMING OF BOWEL PROTECTION

Reports the time since birth to initial placement of bowel protection.

Timing of Bowel Protection	N	%
<=1 hr	98	68.0
1-4 hr	23	16.0
> 4 hr	19	13.2
Timing unknown	2	1.4
No bowel protection	2	1.4

FIGURE 1.9: TIMING OF GASTROSCHISIS CLOSURE



Timing of Surgical Closure	N	%
No Surgery	1	0.7
< 6 hr	72	50.3
6 to 12 hr	14	9.8
12 to 24 hr	5	3.5
>24 hr	51	35.7

COMMENTS:

Timing of closure refers to the time since birth to the first attempted surgical closure of the defect occurred.

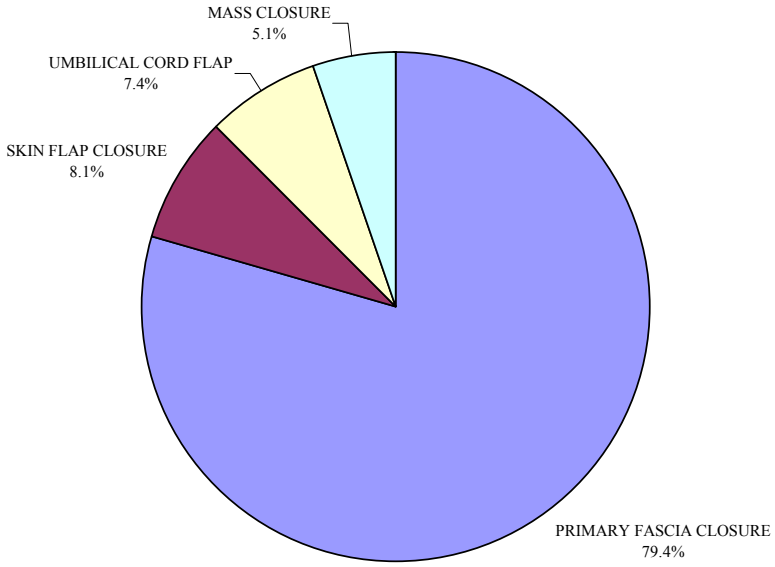
TABLE 1.D: TREATMENT INTENT

Treatment Intent of Primary Surgeon	N	%
Urgent Primary Closure	89	63.1
Elective Primary Closure following Silo placement	52	36.9

COMMENTS:

In 63% of cases, the primary surgeon reported that the treatment intent at the time the patient was first admitted to the unit was urgent (i.e. early) primary closure as opposed to elective primary closure having delayed surgical repair facilitated first by Silo placement. And in fact, 63.6% of all primary closures were initiated in the first 24 hours after birth.

FIGURE 1.10: METHOD OF SURGICAL CLOSURE



Method of Surgical Closure	N	%
Primary Fascia Closure	108	79.4
Skin Flap Closure	11	8.1
Umbilical Cord Flap	10	7.4
Mass Closure	7	5.1

TABLE 1.E: OPERATIVE SUCCESS

89% (N=127) of corrective surgeries were successful on the first operative attempt. Of those surgeries that were not successful on the first attempt, the table below reports the reasons closure was unsuccessful.

Reasons for Failed Surgery	N	%
Bowel not reducible	12	8.39
Bowel would reduce, but IPP or PIP too high to close abdomen	3	2.10
Bowel was reducible, but seemed too tight (IPP not measured)	1	0.70

TABLE 1.F: ASSOCIATED ANOMALIES

Associated Anomalies	**N**	**%**
Isolated Defect	103	71.5%
One Associated Anomaly	32	22.2%
Two or more associated anomalies	9	6.3%

COMMENTS:

In female infants the most common associated anomaly was an anomaly of the heart or circulatory system (19.7% of females). In male infants, the most common associated anomaly was undescended testis.

UNDESCENDED TESTIS

Undescended Testis/Testes	**N**	**%**
None	60	76.9%
Confirmed	Left 4 Right 5 Bilateral 1	12.8%
Unknown	8	10.3%

COMMENTS:

Among the 78 males in the population, 12.8% (N=10) had at least one undescended testis along with the Gastroschisis defect.

BOWEL INJURY ASSESSMENT

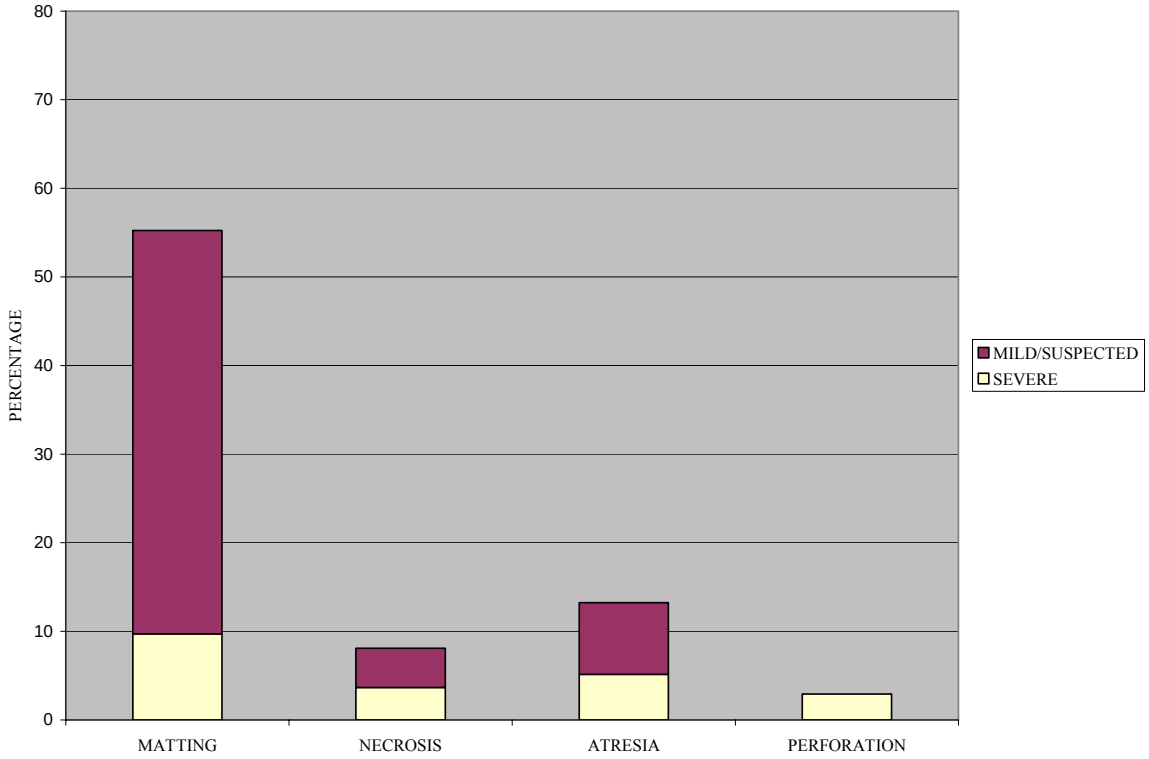
Treating surgeons were asked to record bowel injury according to the existence and severity of injury based on four bowel elements: matting, necrosis, atresia and perforation. There were two assessments done, the first upon the initial referral following admission to the CAPSNet centre and the second during the first attempted surgical correction of the defect. An overall bowel injury score was computed based on the worst score from these two assessments.

To compute the bowel injury score, each element was assigned a value between 0 and 2 according to the severity of the condition (as indicated below). The values for each element were then summed to give an overall score. The maximum possible total score is therefore 8.

Matting	0-None	1-Mild	2-Severe
Necrosis	0-Absent (none)	1-Focal (localized)	2-Diffuse (widespread)
Atresia	0-Absent	1-Suspected	2-Present
Perforation	0-Absent		2-Present

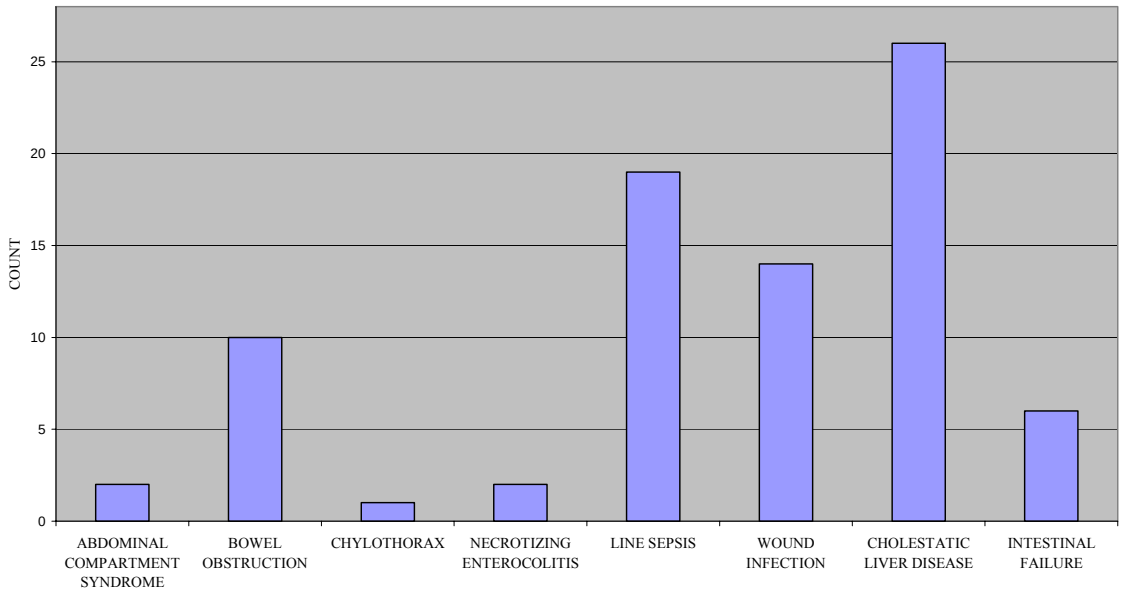
The overall mean bowel injury score was: 1.0 with a range in scores from 0 to 6.

FIGURE 1.11: PROPORTION AND SEVERITY OF BOWEL MATTING, NECROSIS, ATRESIA AND PERFORATION



Bowel Injury (N)	None	Mild/Focal /Suspected	Severe
Matting	60	61	13
Necrosis	125	6	5
Atresia	118	11	7
Perforation	133	-	4

FIGURE 1.12: SELECTED NEONATAL COMPLICATIONS



Selected Neonatal Complications	**N**	**%**
Abdominal Compartment Syndrome (ACS)	2	1.4
Bowel Obstruction	10	6.9
Chylothorax	1	0.7
Necrotizing Enterocolitis	2	1.4
Line Sepsis	19	13.2
Wound Infection	14	9.7
Cholestatic Liver Disease	26	18.1
Intestinal Failure	6	4.2

COMMENTS:

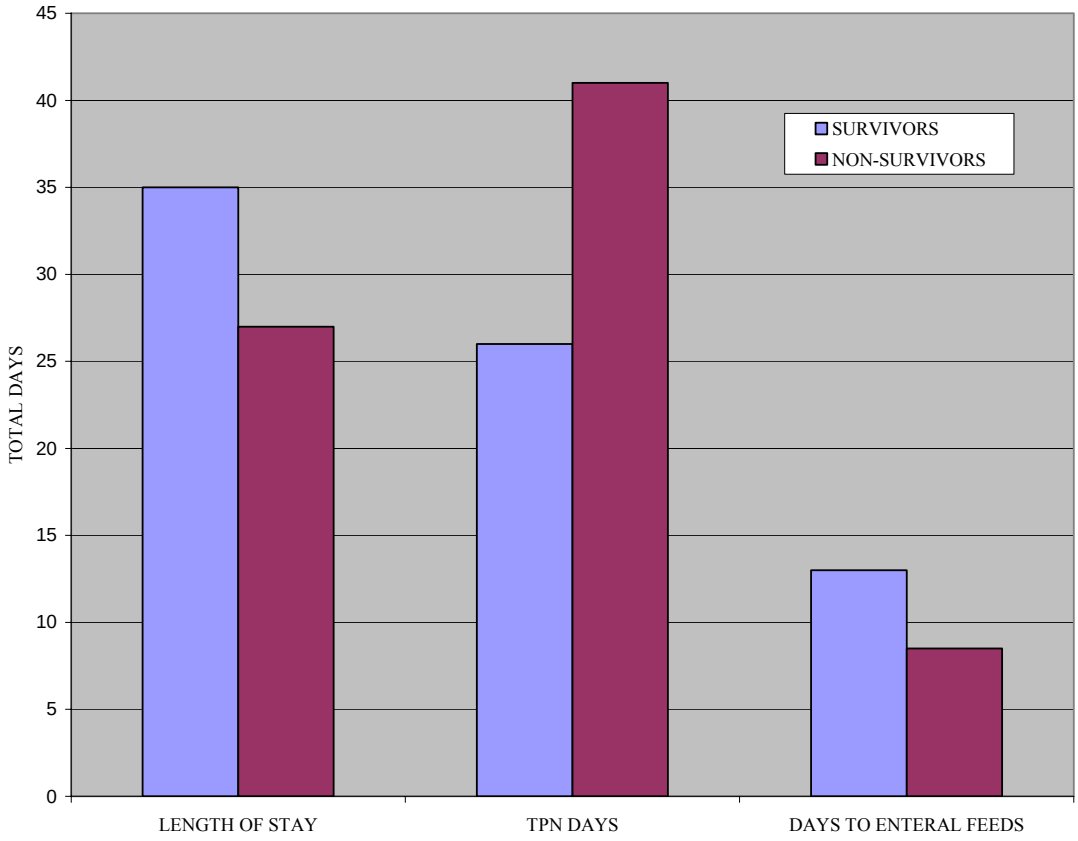
The following neonatal complications are reported at any time during the infant's hospitalization:

-*abdominal compartment syndrome* (i.e. increase in intra-abdominal pressure)
-*bowel obstruction* requiring re-operation
-*chylothorax*
-*necrotizing enterocolitis* requiring medical or surgical intervention
-*line sepsis* requiring antibiotics or line removal
-*wound infection* requiring antibiotics

The following complications are reported only at discharge:

-*cholestatic liver disease* with conjugated (direct) bili greater than or equal to 10 at discharge.
-*intestinal failure* or short bowel syndrome requiring total parenteral nutrition (TPN) at discharge.

FIGURE 1.13: OUTCOMES: MEDIAN LENGTH OF STAY, TOTAL TPN DAYS AND DAYS TO ENTERAL FEEDS

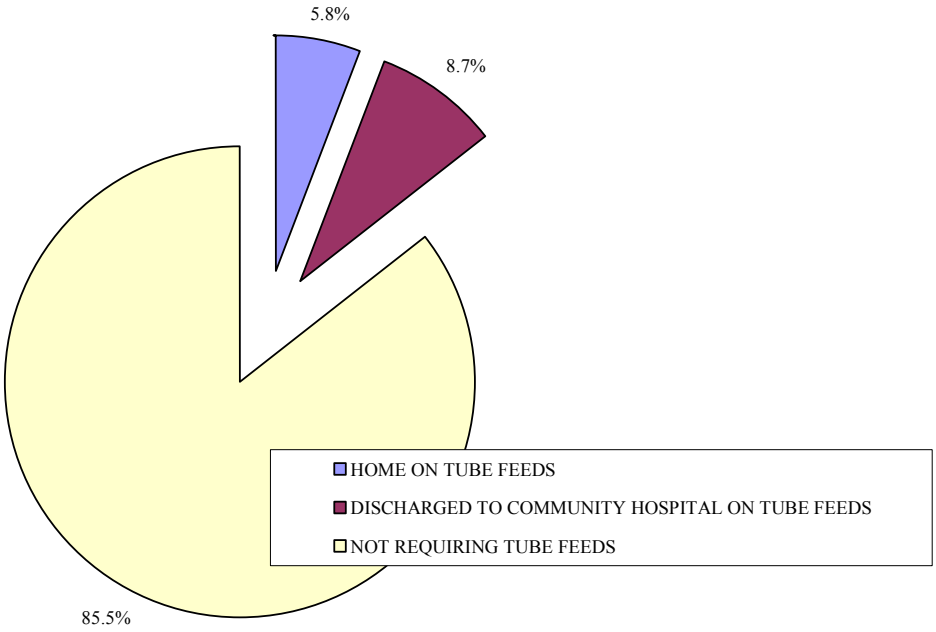


	Survivors (N=138)			Non-Survivors (N=6)		
	Median	Mean	Range	Median	Mean	Range
Length of stay (days)	35.0	45.5	4 - 395	27.0	83.2	1 - 271
TPN days	26.0	35.6	8 - 221	41.0	82.3	34 - 172
Days to enteral feeds	13.0	16.5	2 - 70	8.5	8.5	1 - 16

COMMENTS:

The last TPN day is reported as the first date in which TPN (total parenteral nutrition) was stopped for a period of more than 72 hours (3 days). Days to enteral feeds, records the date in which enteral feeds were first given, including via gavage and/or tube feeding and regardless as to the timing of the feeding regime. Additionally it does not require that the infant be receiving purely enteral feeds (i.e. they may also be receiving supplemental nutrition via TPN and/or IV fluids).

FIGURE 1.14: NEED FOR TUBE FEEDS AT DISCHARGE



Need for Tube Feeds at Discharge	**#**	**%**
Home on tube feeds	8	5.8
Discharged to a community hospital on tube feeds	12	8.7
Not requiring tube feeds at discharge	118	85.5

COMMENTS:

Data reports only need for tube feeds among survivors.

SECTION 2: CONGENITAL DIAPHRAGMATIC HERNIA

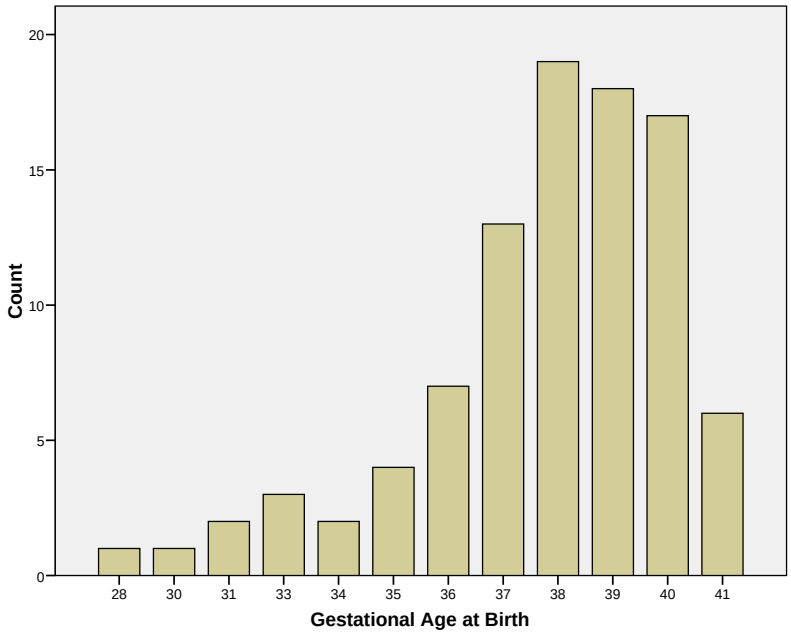
Descriptive Analyses

TABLE 2.A: PATIENT POPULATION

CONGENITAL DIAPHRAGMATIC HERNIA N=94	
Mean Gestational Age	37.7 weeks
Mean Birth Weight	2999 grams
Proportion of Males	51.1 %
Mean SNAP Scores Survivors	11.4 (±11.00)
Non-Survivors	28.5 (±14.20)

SNAP (Score for Neonatal Acute Physiology) is an illness severity scoring system which stratifies patients according to cumulative severity of physiologic derangement in several organ systems within the first 12 hrs of admission to the intensive care unit. This scoring system has been shown to be highly predictive of neonatal mortality and to be correlated with other indicators of illness severity including therapeutic intensity, physician estimates of mortality risk, length of stay, and nursing workload. SNAP provides a numeric score that reflects how sick each infant is. The scoring system is modeled after similar adult and pediatric scores, which are already widely in use. Standard deviations (in brackets) are high, particularly in non-survivors due to small numbers in the database.

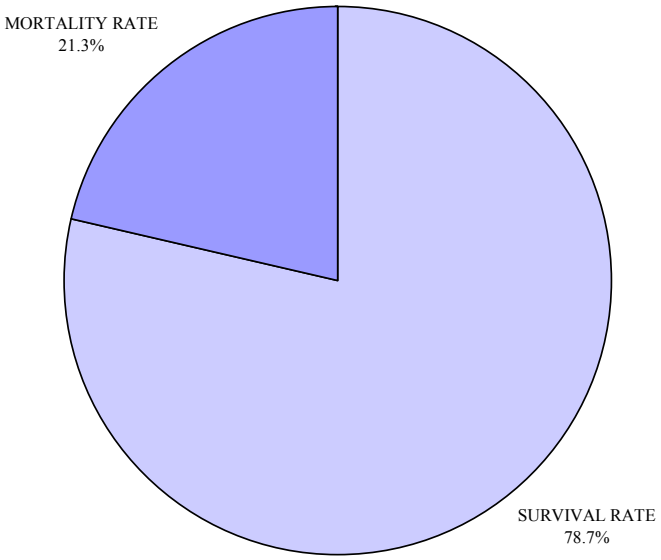
FIGURE 2.1: DISTRIBUTION OF GESTATIONAL AGE AT BIRTH



COMMENTS:

Gestational age at birth refers to age in completed weeks.

FIGURE 2.2: CDH SURVIVAL



Survival	N	%
Survivors	74	78.7
Non-Survivors	20	21.3

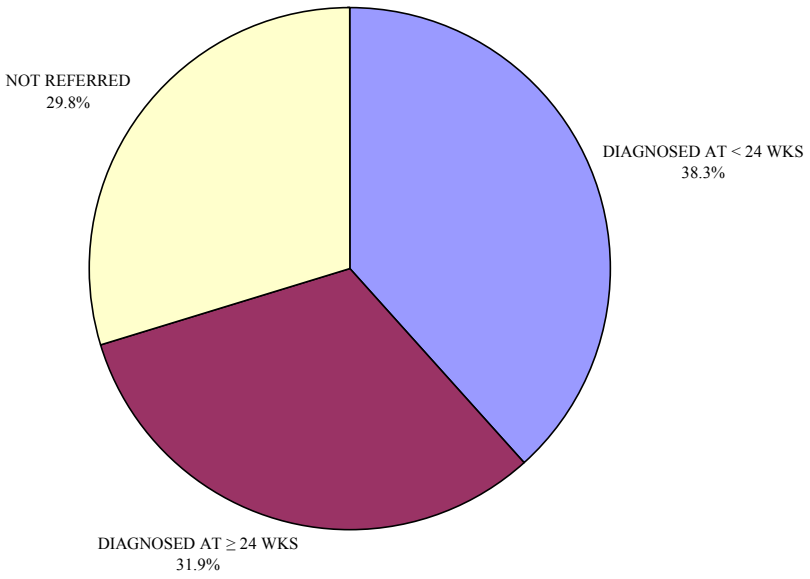
COMMENTS:

There were a total of 20 deaths from 9 different centres, resulting in a 21.3% mortality rate.

ECMO:

There were 7 (7.5%) patients who received ECMO treatment from 3 different centres, of which only 2 would survive to discharge home.

FIGURE 2.3: EARLY VERSUS LATE ANTENATAL DIAGNOSIS OF CDH



Age at Antenatal Diagnosis	N	%
Antenatal diagnosis at <= 24 weeks	36	38.3
Antenatal diagnosis at > 24 weeks	30	31.9
Not Referred	28	29.8

COMMENTS:

Age of diagnosis of CDH refers to the gestational age of first referral to a tertiary care facility, medical genetics or maternal-fetal-medicine (MFM) clinic. If there is no referral date reported then the age at diagnosis refers to the gestational age at the first ultrasound in which the defect was noted. There were 28 cases (29.8%) in which there was no antenatal referral to a CAPSNet centre and therefore no confirmed antenatal diagnosis of CDH.

FIGURE 2.4: MAXIMUM LUNG-HEAD RATIO MEASUREMENTS REPORTED ON ANTENATAL ULTRASOUND

COMMENTS: Refers to the maximum recorded lung to head ratio measured from a transverse axial image through the chest demonstrating the four-chamber view of the heart with associated shift to the contralateral side. The contralateral lung is observed and the longest diameter measured (in millimeters). A line perpendicular to the first is then drawn and measured again in millimeters (mm).

Measurements are recorded on up to 4 ultrasounds taken at varying time points including:
(i) first ultrasound taken at the tertiary CAPSNet centre
(ii) first ultrasound taken between 23+0 and 27+6 weeks;
(iii) first ultrasound taken between 28+0 and 32+6 weeks, and
(iv) last ultrasound before delivery.

The data presented here reflects the worst (i.e. greatest) lung to head ratio reported on any one of the above measured ultrasounds.

84% of cases had no lung to head ratio measured. Where there was no measurement due to a lack of antenatal ultrasounds this has been reported separately.

Ultrasound Measurements	**N**	**%**
Lung-Head Ratio ≤ 1.0	2	2.1
Lung-Head Ratio > 1.0	13	13.8
Missing measurements	50	53.2
No Ultrasounds	29	30.9
Total with no measurements	*79*	*84.1*

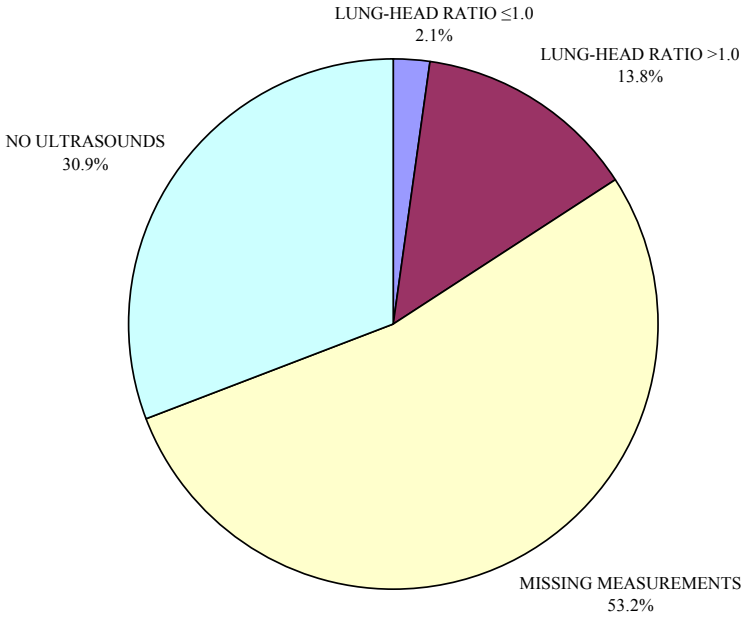
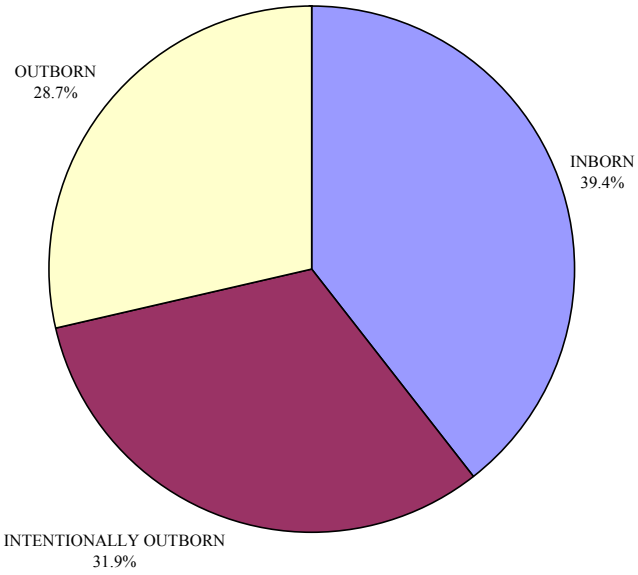


FIGURE 2.5: LOCATION OF DELIVERY

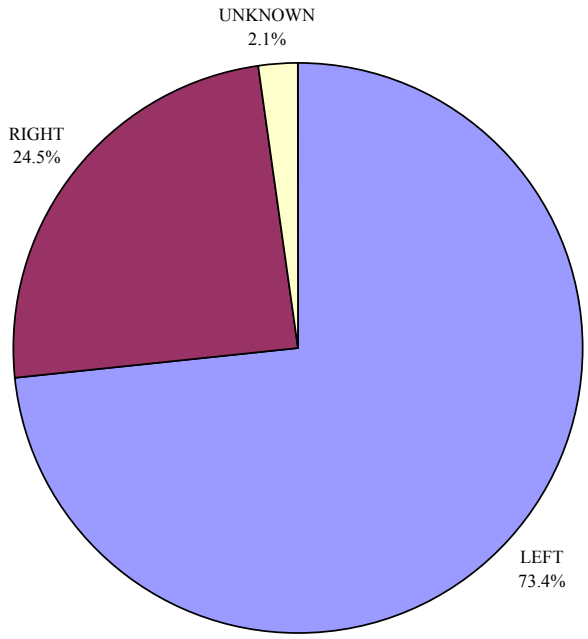


Location of Delivery	N	%
Inborn	37	39.4
Intentionally Outborn	30	31.9
Outborn	27	28.7

COMMENTS:

"Intentionally outborn" refers to anticipated births where the newborn was deliberately delivered at a geographically linked maternal hospital and transferred within a few hours of birth for postnatal care to the pediatric centre. Thus 71.3% of all patients were delivered at a tertiary CAPSNet centre or a tertiary facility associated with a CAPSNet centre. 28.7% of infants then were delivered in outlying community hospitals and transported after birth to the CAPSNet centre for treatment.

FIGURE 2.6: SIDE OF DEFECT

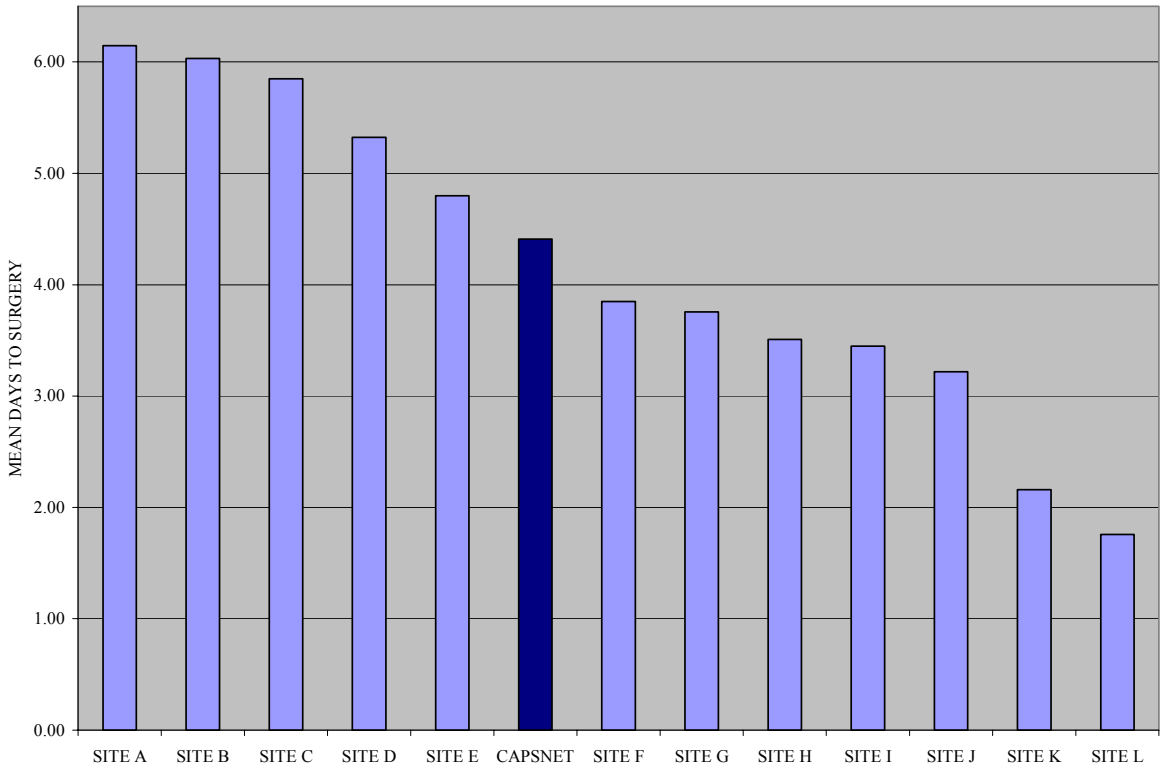


Side of Defect	N	%
Left	69	73.4
Right	23	24.5
Unknown	2	2.1

COMMENTS:

The majority of defects occurred on the left side of the diaphragm.

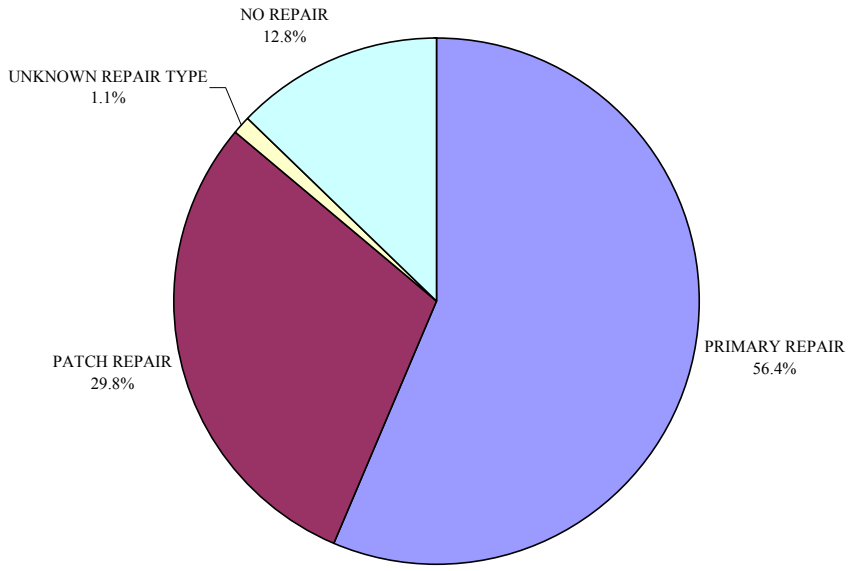
FIGURE 2.7: MEAN DAYS TO SURGICAL REPAIR BY SITE



COMMENTS:

87.2% of CDH diagnosis resulted in surgery. Among all sites, the mean time to surgical correction was 4.4 days (represented by the dark 'CAPSNet' bar in the above graph). The median was 2.8 days with ranges between 0 – 21 days.

FIGURE 2.8: METHOD OF SURGICAL CLOSURE

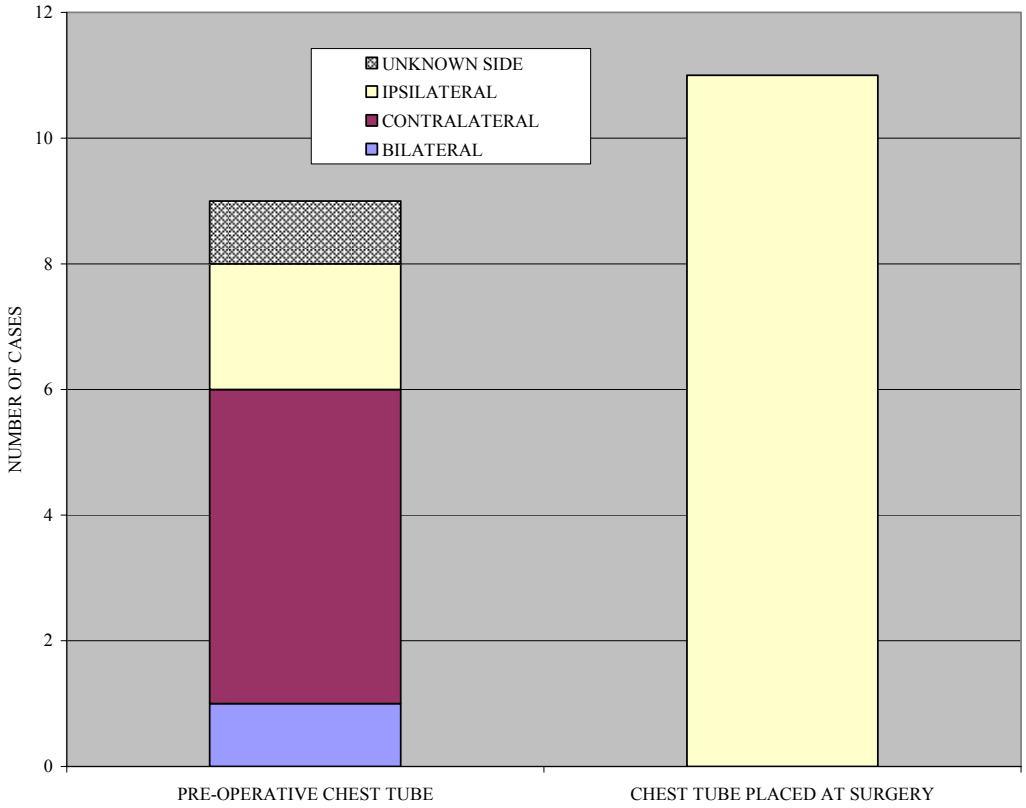


Method of Closure	N	%
Primary Repair	53	56.4
Patch Repair	28	29.8
Unknown	1	1.1
No Repair	12	12.8

COMMENTS:

12.8% (N=12) patients died prior to surgical correction of the defect and therefore did not undergo repair.

FIGURE 2.9: USE OF CHEST TUBE - TIMING AND TYPE –



Chest Tube Placement	N	%
None	74	78.7
Pre-operative	9	9.6
Operative	11	11.7

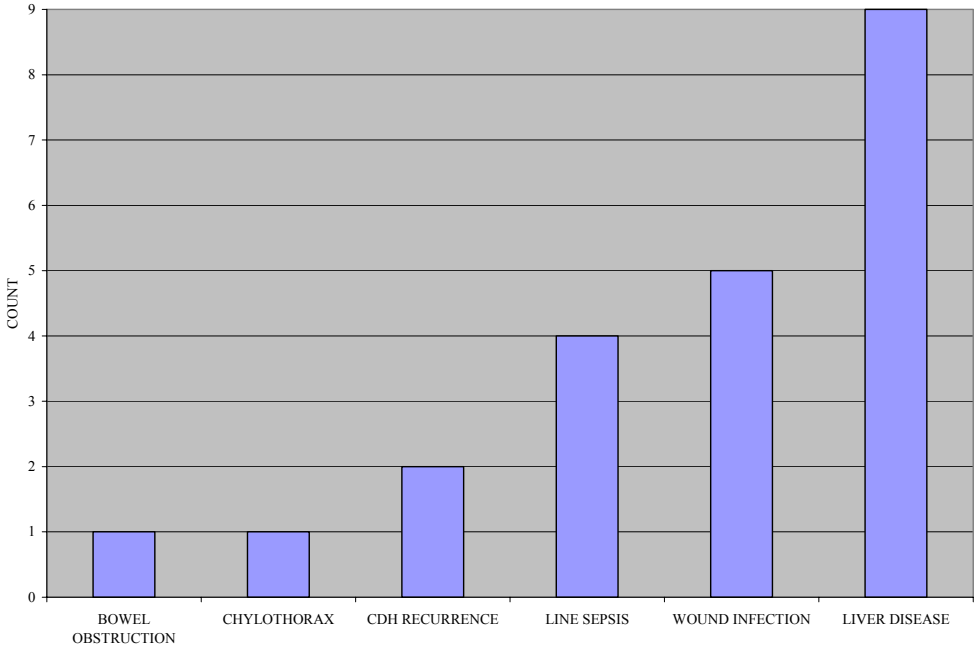
TABLE 2.B: ASSOCIATED ANOMALIES

Associated Anomalies	N	%
Isolated Defect	53	56.4
One Associated Anomaly	28	29.8
Two or more associated anomalies	13	13.8

COMMENTS:

The most common associated anomaly was an anomaly of the heart or circulatory system (29.8% of all cases).

FIGURE 2.10: SELECTED NEONATAL COMPLICATIONS



Selected Neonatal Complications	**N**	**%**
Abdominal Compartment Syndrome	0	0.0
Bowel Obstruction	1	1.1
Chylothorax	1	1.1
Necrotizing Enterocolitis	0	0.0
CDH Recurrence	2	2.1
Line Sepsis	4	4.3
Wound Infection	5	5.3
Cholestatic Liver Disease	9	9.6
Intestinal Failure	0	0.0

COMMENTS:

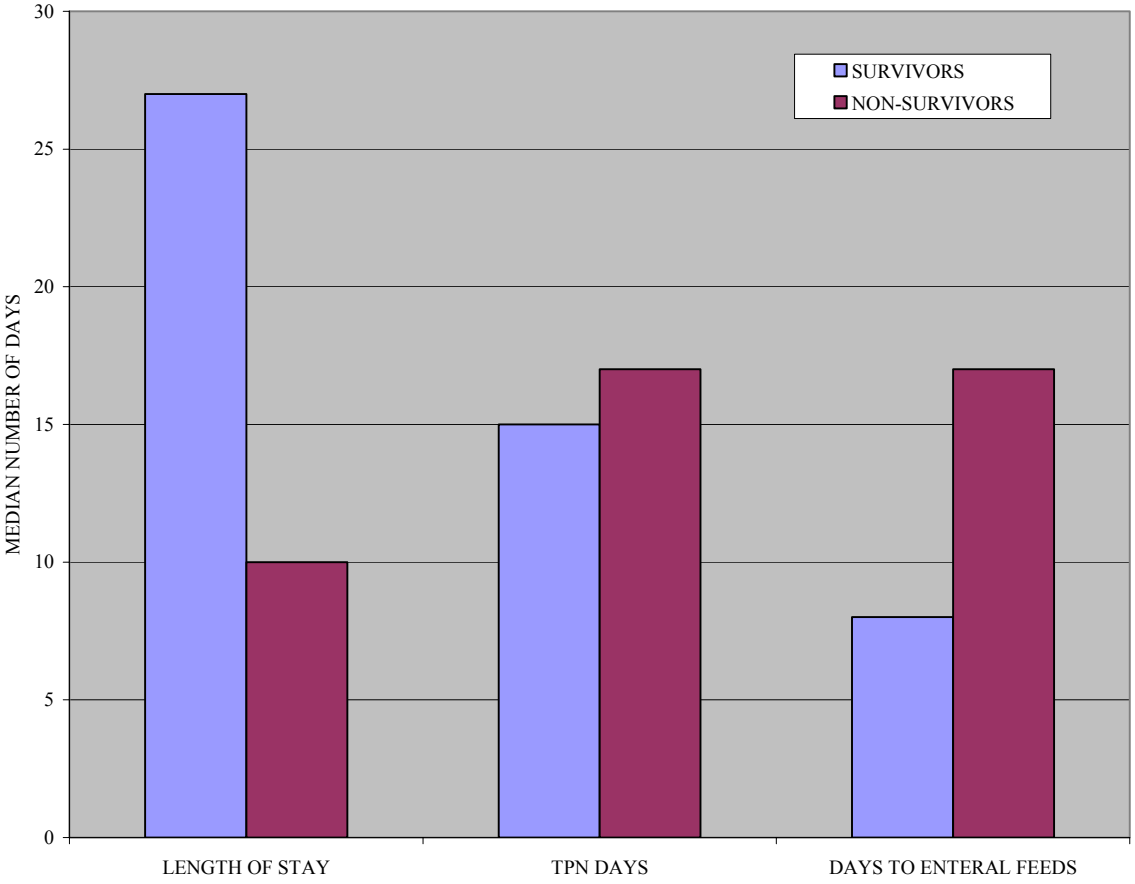
The following neonatal complications are reported at any time during the infant's hospitalization:

-*abdominal compartment syndrome* (i.e. increase in intra-abdominal pressure)
-*bowel obstruction* requiring re-operation
-*chylothorax*
-*necrotizing enterocolitis* requiring medical or surgical intervention
-*CDH recurrence* involving re-herniation of the viscera into the thorax
-*line sepsis* requiring antibiotics or line removal
-*wound infection* requiring antibiotics

The following complications are reported only at discharge:

-*cholestatic liver disease* with conjugated (direct) bili greater than or equal to 10 at discharge.
-*intestinal failure* or short bowel syndrome requiring total parenteral nutrition (TPN) at discharge.

FIGURE 2.11: OUTCOMES: MEDIAN LENGTH OF STAY, TOTAL TPN DAYS AND DAYS TO ENTERAL FEEDS

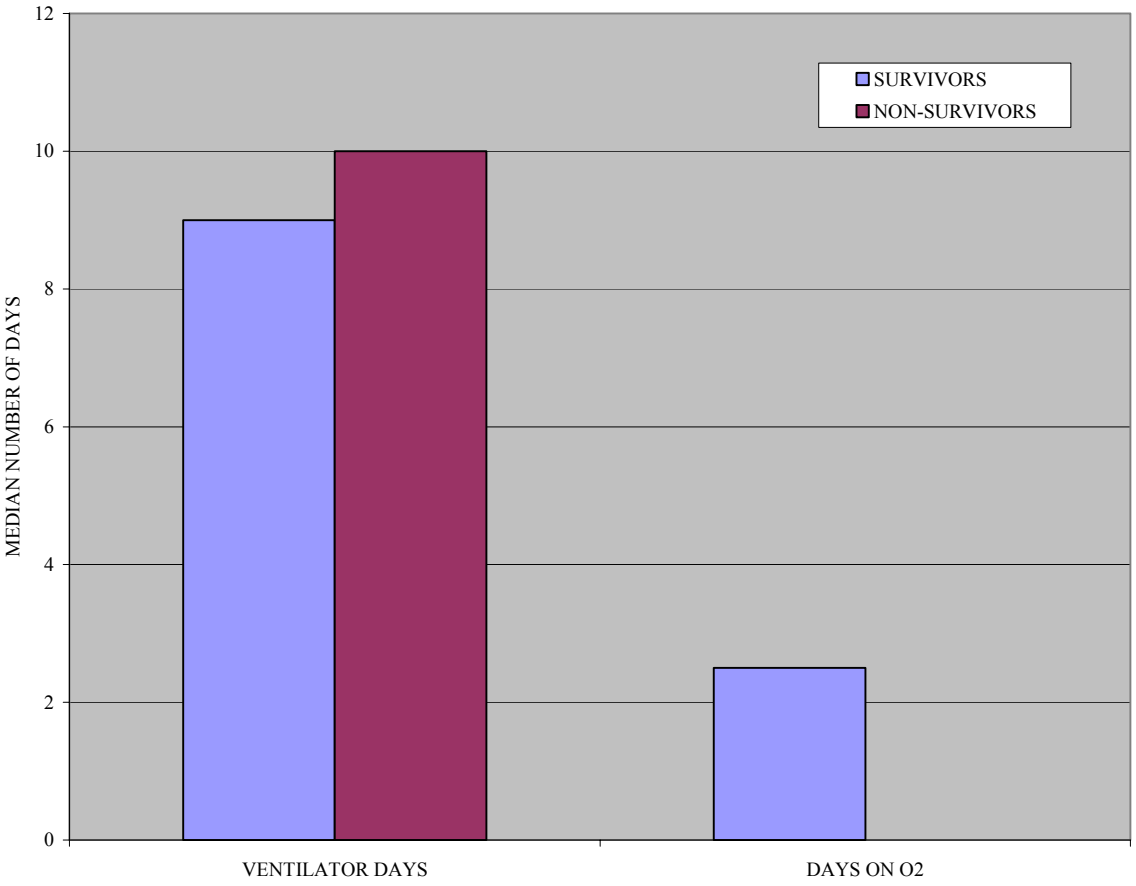


	Survivors (N=74)			Non-Survivors (N=20)		
	Median	Mean	Range	Median	Mean	Range
Length of stay (days)	27	38.8	1 - 147	10	21.3	1 – 124
TPN days	15	18.1	6 - 68	17	22.6	2 - 46
Days to enteral feeds	8	9.5	2 - 27	17	20.2	12 - 30

COMMENTS:

The last TPN day is reported as the first date in which TPN (total parenteral nutrition) was stopped for a period of more than 72 hours (3 days). Days to enteral feeds, records the date in which enteral feeds were first given, including via gavage and/or tube feeding and regardless as to the timing of the feeding regime. Additionally it does not require that the infant be receiving purely enteral feeds (i.e. they may also be receiving supplemental nutrition via TPN and/or IV fluids).

FIGURE 2.12: MEDIAN VENTILATION AND OXYGEN SUPPORT DAYS

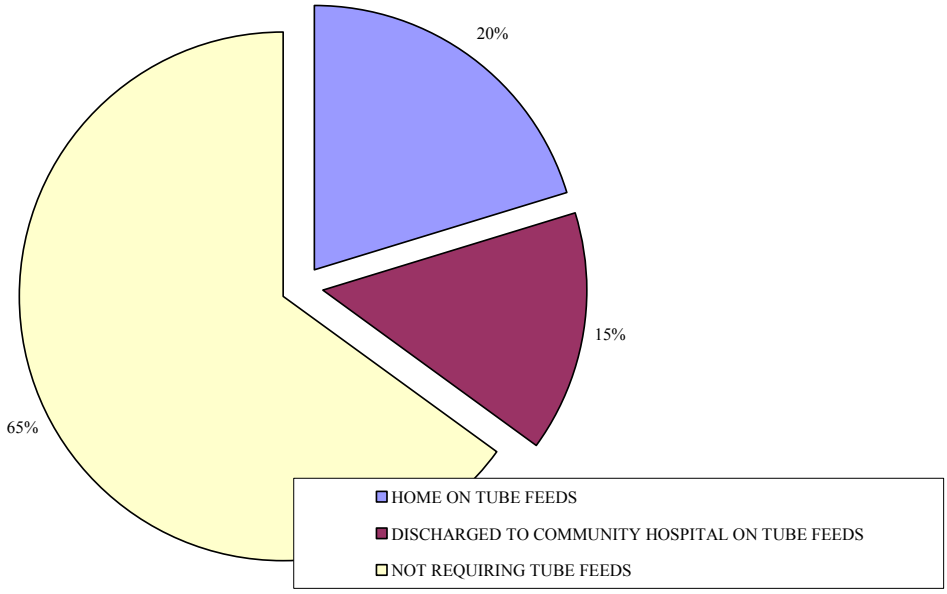


	Survivors (N=74)			Non-Survivors (N=20)		
	Median	Mean	Range	Median	Mean	Range
Days requiring Ventilator support	9	13.2	2 – 83	10	16.6	1 – 71
Days requiring supplemental oxygen support	2.5	6.8	0 – 114	0	0.9	0 – 17

OXYGEN AT 28 DAYS:

23% (N=17) of survivors required supplemental oxygen support at 28 days of life.

FIGURE 2.13: NEED FOR TUBE FEEDS AT DISCHARGE



Need for Tube Feeds at Discharge	**#**	**%**
Home on tube feeds	15	20
Discharged to a community hospital on tube feeds	11	15
Not requiring tube feeds at discharge	48	65

COMMENTS:

Data reports only need for tube feeds among survivors.

CONCLUSION

After 2 years of data collection, the Canadian Pediatric Surgery Network (CAPSNet) database is now able to report on a variety of treatment and outcomes for neonates diagnosed with Gastroschisis and Congenital diaphragmatic hernia. To date there have been several conference presentations by CAPSNet Steering Committee members and their trainees. Furthermore, there are several additional ancillary studies utilizing CAPSNet data that are also currently underway (see appendix I for more information). CAPSNet also welcomes the Alberta Children's Hospital in Calgary, Alberta who has recently begun data collection in August of 2007. Although not included in this report, Alberta Children's joins CAPSNet as the 15th contributing centre.

Appendix: Conference Presentations & Ancillary Projects to date

Conferences:

February 17, 2007 — 15th Annual **Western Perinatal Research Meeting (WPRN)**
Banff, Alberta
Introduction to the Canadian Pediatric Surgery Network database.
Claydon J.E.

May 23-27, 2007 — 38th Annual Meeting of the **American Pediatric Surgical Association (APSA)**, Orlando, Florida
CAPSNET: A population-based pediatric surgical network and database for analyzing incidence, treatment and outcome of surgical birth defects: The first 90 cases of gastroschisis.
Skarsgard E.D.

April 30, 2007 — 26th Annual **International Fetal Medicine and Surgical Society (IFMSS),** Dutch Aruba

CAPSNET: A population-based pediatric surgical network and database for analyzing incidence, treatment and outcome of surgical birth defects: Ultrasound predictors of outcome in antenatally diagnosed gastroschisis.
Pressey T., von Dadelszen P.

CAPSNET: A population-based pediatric surgical network and database for analyzing incidence, treatment and outcome of surgical birth defects: The first 90 cases of gastroschisis.
Laberge JM.

August 24, 2007 — 39th Annual Meeting of the **Canadian Association of Pediatric Surgeons (CAPS)**, St. John's, Newfoundland

Impact of maternal substance abuse on children with gastroschisis
Weinsheimer R.L., Yanchar N.L.

Gastroschisis closure – Does method really matter?
Weinsheimer R.L., Yanchar N.L.

Outcome predictors in congenital diaphragmatic hernia (CDH)
Baird R., MacNab Y.C., Skarsgard E.D.

Other Ongoing Ancillary Projects:

Puligandla P.S., Cowan KN., Bütter A., and Laberge JM.
Can the CAPSNet gastroschisis bowel score prognosticate outcomes in gastroschisis?

Mills J., Macnab Y., and Skarsgard E.D.
Does overnight birth time affect outcomes in neonates with gastroschisis or congenital diaphragmatic hernia?