Development of a Patient Database to Track Short- and Long-Term Outcomes of Children with Intestinal Failure in Manitoba: A Retrospective Review

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INTRODUCTION

- In Canada, approximately 24.5 per 100,000 live births result in intestinal failure (IF).
- IF is defined as:
  - Insufficient gut length or quality for sustained growth, maintenance, and hydration
  - Parenteral nutrition supplementation (PN) ≥42 days
- **Research Goal: Establish a database to determine the short- and long-term medical outcomes of children treated for IF in Manitoba.**

METHODS

- A retrospective review was completed at the Winnipeg Children's Hospital (WCH) from January 2007-January 2021.
  - SMOFlipid® and Omegaven® introduced in 2007.
  - Reduce the incidence of intestinal failure-associated liver-disease (IFLAD)
- Patients were included who were ≤17 years old at the time diagnosis of IF.
- Variables collected included demographics, primary diagnosis, comorbidities, and outcomes to allow for comparison with data reported by other centres.
- Birth/maternal data, including self-reported alcohol intake, were obtained from the prenatal care forms.
- Descriptive statistics were performed.

RESULTS

- Total charts included: 141
- Excluded: on PN but insufficient data, bone marrow transplant or chemotherapy.

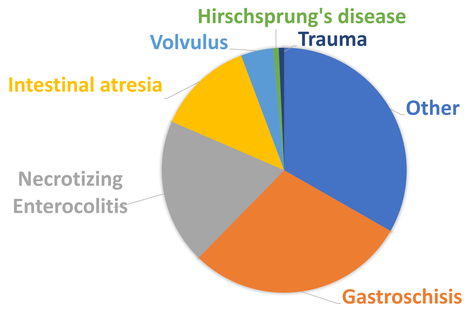

Figure 1: Primary Diagnosis of Intestinal Failure in Manitoba

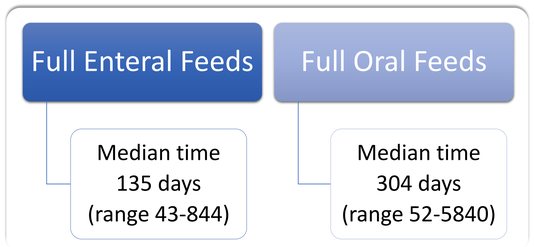

Figure 2: Time to full enteral and oral feeds

Table 1: Study Population Demographics

	Patients, n (%)
Children needing PN ≥42 days	141
Males:Females	81 (57.4): 60 (42.5)
Birth Weight, *mean ± SD* (grams)	2331.3 ± 1121.9
Birth Weight Classification	
▪ Normal (> 2500 grams)	50 (45.0)
▪ LBW (2500-1500 grams)	32 (28.8)
▪ VLBW (1500-1000 grams)	7 (6.3)
▪ ELBW (<1000 grams)	21 (18.9)
Gestational Age (weeks), *mean ± SD*	33.5 ± 5.1
Prematurity	
▪ Term child (>37 weeks)	49 (37.9)
▪ Late Preterm (32-37 weeks)	46 (35.7)
▪ Very Preterm (28-32 weeks)	8 (6.2)
▪ Extremely Preterm (<28 weeks)	26 (20.2)
Multi-gestation	
▪ Twins	11 (7.8)
APGAR Scores	
▪ APGAR 1 min (mean ± SD)	6 ± 3
▪ APGAR 5 min (mean ± SD)	7 ± 2
▪ APGAR 10 min (mean ± SD)	7 ± 2

Abbreviations: PN= parenteral nutrition; LBW= low birth weight; VLBW= very low birth weight; ELBW= extremely low birth weight.

Table 2: Study Population Birth and Obstetrical History

	Patients, n (%)
Maternal Age in years at time of delivery (mean ± SD)	25.8 ± 6.6
Method of Delivery	
▪ Spontaneous Vaginal delivery	57 (52.3)
▪ Spontaneous Vaginal delivery with Vacuum	6 (5.5)
▪ Caesarean section (elective)	26 (23.9)
▪ Caesarean section (emergency)	20 (18.3)
Maternal Exposure During Pregnancy	
▪ Alcohol	8 (10.8)
▪ Smoking	43 (58.1)
▪ Narcotics	3 (4.1)
▪ Marijuana	11 (14.9)
▪ Other illicit Drug use	5 (6.8)

Table 3: Hospital Admissions for Intestinal Failure Patients

	Mean ± SD	Median (range)
NICU Length of Stay (weeks)	12.6 ± 8.7	10.9 (0,52)
PICU Length of Stay (weeks)	5.9 ± 10.4	3.6 (0,50)
Number of PICU admissions		1 (0,3)
Ward Length of Stay (weeks)	10.1 ± 14.0	6 (0,74.4)
Overall LOS (first admission) (weeks)	23.6 ± 16.4	18.4 (6,104.1)
Subsequent admission LOS (weeks)	7.3 ± 12.9	2.5 (0.3,74.4)

Abbreviations: LOS = Length of Stay; NICU = neonatal intensive care unit; PICU = pediatric intensive care unit

- 12 patients had bone-fragility fractures
- 5 children underwent referral for transplant
- 20% transitioned to home PN program
- 24 (17%) deaths

CONCLUSION

- The reasons leading to IF in children are multiple.
- Children with IF have variable, complex courses and associated varied outcomes.
- Close, long-term follow-up is needed to manage the care of these complex children, highlighting the need for a collaborative, multidisciplinary approach.
- We aim to further standardize our follow-up to improve the outcomes of children with IF in Manitoba.

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