



Measuring Outcomes For Neonates With Surgical Anomalies Using NSQIP-P

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ABSTRACT

Introduction: The current outcomes literature on neonatal surgery is limited to administrative data, registries, and small series subject to bias and inaccuracy. NSQIP-Pediatric provides risk-adjusted outcomes data to centers and identifies targets for quality improvement. The program has the added potential to provide reliable, actionable outcomes data for children with rare diagnoses by pooling data across centers. We sought to determine the feasibility of identifying groups of neonates by diagnosis in this CPT-driven database.

Methods: Using the 2012 PUF, we identified neonates with gastroschisis, omphalocele, necrotizing colitis, tracheo-esophageal fistula, congenital diaphragmatic hernia, intestinal atresia, Hirschsprung's disease, anorectal malformations, biliary atresia, and congenital lung lesions. We described demographics, co-morbidities, complications, and mortality.

Results: Among the 450 patients identified, mortality was 0% to 45%, SSI 0% to 5% and morbidity 0% to 41% (See Figure). We encountered two challenges in identifying cases by CPT code: 1) some cases did not have a diagnosis-specific CPT code (e.g., bowel resection for NEC); 2) diagnosis-specific CPT codes were not used consistently (e.g., jejunal atresia repair coded as "enterectomy" rather than "enterectomy for congenital atresia"). We captured some additional cases using post-operative diagnosis ICD-9 codes, but this variable did not consistently reflect the surgical procedure (e.g., "prematurity" as post-operative diagnosis for a bowel resection).

Conclusions: We have shown that it is possible to identify groups of patients with specific diagnoses in this CPT-driven database. With more accurate capture of the post-operative diagnosis variable, NSQIP-P has the potential of filling a major knowledge gap in neonatal surgery.

BACKGROUND

What do we know about neonatal surgical outcomes?

- Data is limited to administrative data, registries, and small case series
- These sources are subject to bias and inaccuracy
- Difficult to counsel parents as to what to expect post-operatively when their neonate has surgery
- Challenging to study this population and identify best practices to optimize outcome because many diagnoses are very rare

Opportunities related to NSQIP-P:

- NSQIP-P provides risk-adjusted outcomes data to centers in order to identify targets for quality improvement
- Added potential to provide reliable, actionable outcomes data for children with rare diagnoses by pooling data across centers
- Database is CPT-driven: how well can it identify groups of neonates by diagnosis?

OBJECTIVE

To determine the feasibility of identifying groups of neonates by diagnosis in NSQIP-P in order to better understand outcomes in this population



METHODS

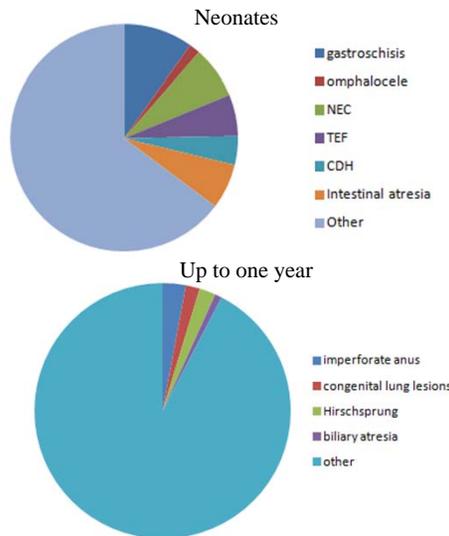
Attempted to identify neonates with the following diagnoses from the 2012 NSQIP-P PUF:

1. Gastroschisis
2. Omphalocele
3. Necrotizing enterocolitis
4. Tracheo-esophageal fistula
5. Congenital diaphragmatic hernia
6. Intestinal atresia
7. Hirschsprung's disease
8. Anorectal malformations
9. Biliary atresia
10. Congenital lung lesions

- Limited the dataset to primary pediatric surgery cases and "neonates"
- For HD, biliary atresia, anorectal malformations, and lung masses we included patients up to one year of age
- Developed algorithms based on CPT codes in order to identify patients undergoing surgery for any of these diagnoses.
- Described demographics, comorbidities, complications, and mortality

RESULTS

Proportion of all cases identified with one of the study diagnoses:

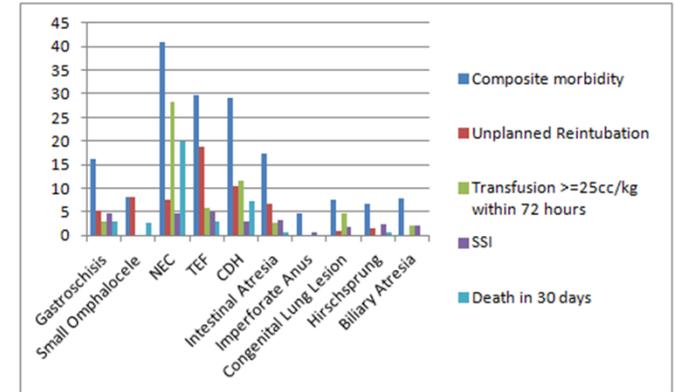


Challenges in identifying cases by CPT code:

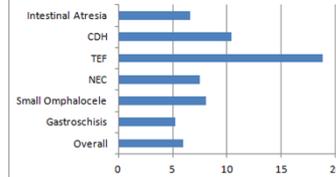
- Some cases did not have a diagnosis-specific CPT code (e.g., bowel resection for NEC)
- Diagnosis-specific CPT codes were not used consistently (e.g., jejunal atresia repair coded as "enterectomy" rather than "enterectomy for congenital atresia")
- Captured some additional cases using post-operative diagnosis ICD-9 codes, but this variable did not consistently reflect the surgical procedure

RESULTS, CONT'D.

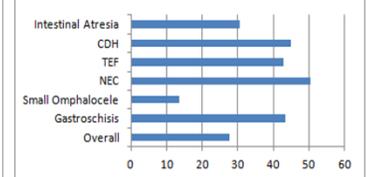
Event rates by diagnosis:



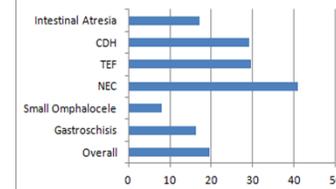
Unplanned Reintubation Rate



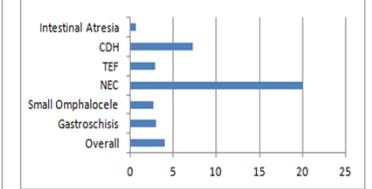
Percent in hospital at 30 days



Composite morbidity rate



Death in 30 days



CONCLUSIONS

- It is possible to identify groups of patients with specific diagnoses in this CPT-driven database
- Using CPT only limits number and types of cases that can be identified
- More accurate and consistent capture of the post-op diagnosis variable would facilitate better identification of cases
- NSQIP-P has the potential to help us study and better understand neonatal surgical outcomes