

# Home Parenteral Nutrition in Patients with Gastrointestinal Fistulas: Clinical Characteristics and Outcomes

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## Background

Gastrointestinal fistulas (GIF) have various etiologies including traumatic, infectious and inflammatory. One of the common therapeutic interventions is complete bowel rest and use of parenteral nutrition (PN). For patients discharged from the hospital, PN can be safely and effectively delivered in the home setting. Special conditions that should be considered include fluid, electrolyte and mineral losses through the fistula. GIF may also increase risk for catheter-related blood stream infections (CRBSI). Due to lack of published literature on patients with GIF receiving home PN (HPN), a decision was made to evaluate the experience of a large home infusion provider with this unique population.

## Methods

A point in time retrospective chart review was completed for all patients with primary ICD-10 of K63.2, intestinal fistula who received HPN between January – May 2019. Data collected included:

- Demographic & payer information
- Fistula location and 24 hour output > or < 500 mL
- Co-morbidities
- Weight change
- Length of HPN therapy
- HPN Prescription (volume, protein, calorie, and electrolyte content)
- Medications
- Number of CRBSI within past 2 years
- Oral intake including food and liquids, and oral rehydration solution (ORS)

## Results

140 patients were identified with a primary ICD-10 of K63.2. Patients were 60 years old on average at start of care, and 60% of the population was female. The payer mix was 40% commercial, 47% Medicare, 6.5% Medicaid, and 6.5% other. Medical record category for fistula location is shown in *Figure 1* and available in 49% of cases reviewed. At HPN start of care, 69% of patients had fistula output of >500mL per 24-hour. The mean length of therapy (LOT) was 424, standard deviation 564 days. Catheter infections of > 2 per year were found in 7% of patients. *Figure 2* shows co-morbid diagnosis categories, which were recorded in 83% of records. 49% of patients were on proton pump inhibitors, 44% on intravenous antibiotics, 29% on narcotics, 19% on antidiarrheals, 14% on octreotide, and 6% on teduglutide. 58% of patients consumed an oral diet. To better characterize patients with short LOT (ST) of < 90 days versus long LOT (LT) of > 90 days, sub-analysis of weight change, fistula output, and allowance of oral diet was completed. 18% of ST and 19% of LT patients lost weight between start of care and the data collection point with a range 0.2-15 kg. 8% of ST and 54% of LT patients gained weight, with a range of 0.1-19 kg. 62% of ST and 22% of LT patients had no weight change, and 7% had no data available. Lastly, *Table 2* details the average daily PN prescription for all patients.

Figure 1

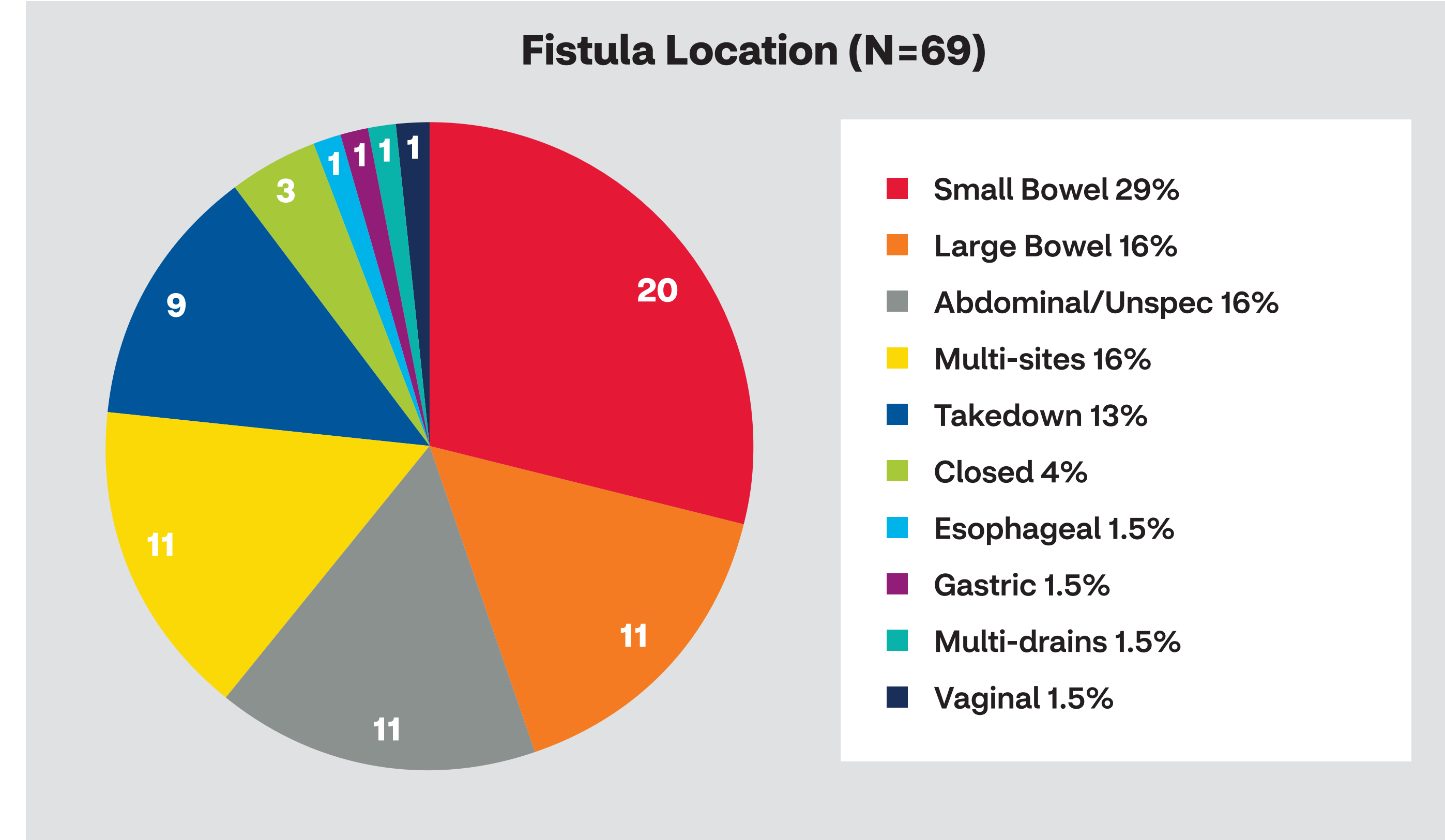


Figure 2

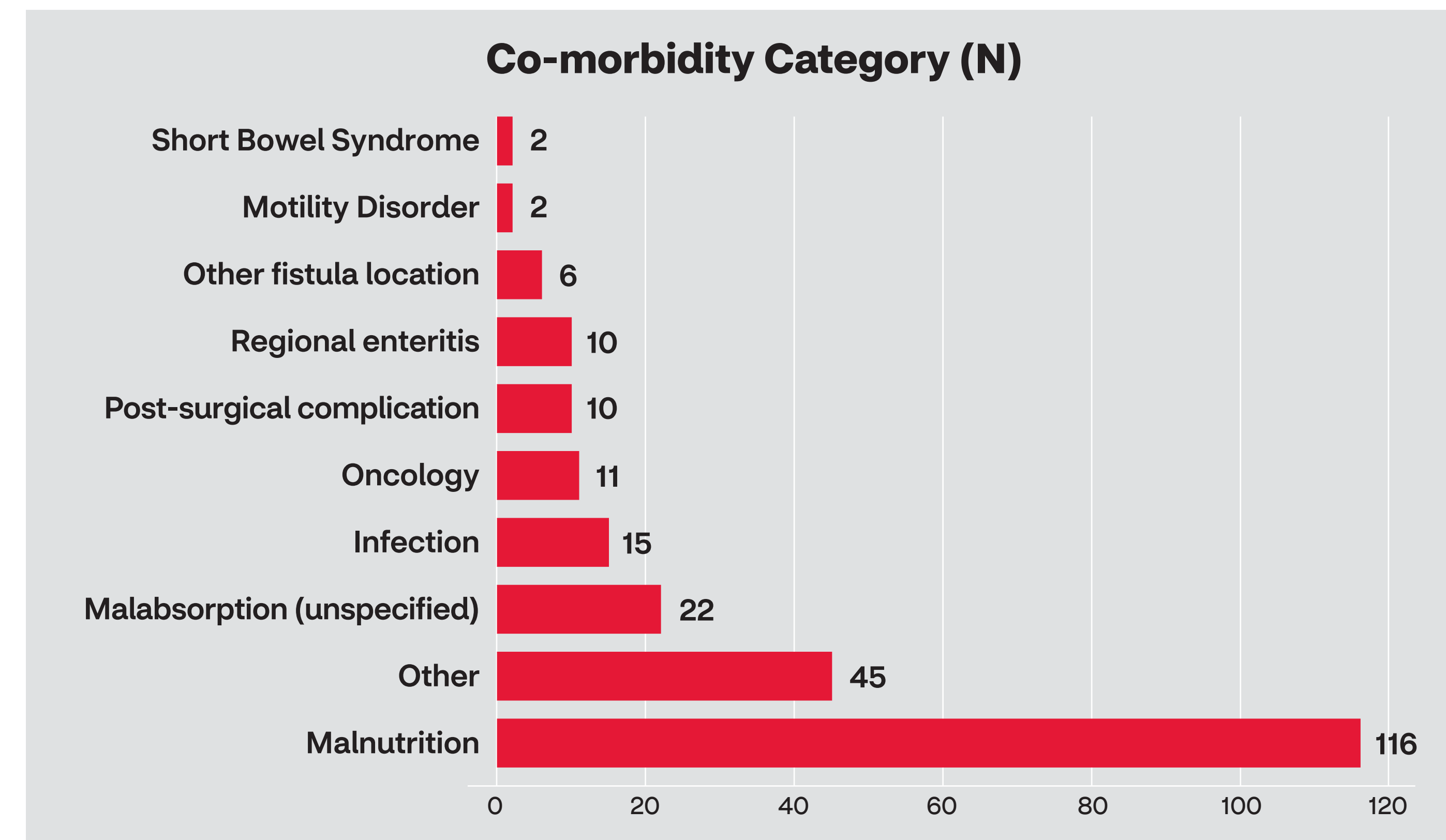


Table 1

Fistula Output (N=60)	Allowed to Consume Oral Intake		Not Allowed to Consume Oral Intake	
	LOT < 90 days % (N)	LOT > 90 days % (N)	LOT < 90 days % (N)	LOT > 90 days % (N)
< 500 mL/day	13% (8)	38% (23)	7% (4)	12% (7)
> 500 mL/day	0% (0)	10% (6)	2% (1)	18% (11)

Table 2

Average Daily PN Content	
Volume	1974 mL
Calories	25 kcal/kg
Protein	1.3 g/kg
Sodium	161 mEq
Potassium	62 mEq
Chloride	134 mEq
Bicarbonate	62 mEq
Magnesium	17 mEq

**82%**  
 of patients had a diagnosis of malnutrition at start of care

## Conclusion

Malnutrition is a common co-morbidity for patients with gastrointestinal fistulas. Many require prolonged HPN therapy. Our data suggest GIF patients are older and that fistulas are in various locations in the GI tract, most commonly the small bowel. Incidence of weight loss was similar in the ST and LT groups, suggesting that early intervention with HPN may prevent further loss. Just over half of the patients consumed oral intake. Patients with low output fistulas were more likely to be allowed oral intake, as were those on LT HPN. Antidiarrheals were uncommonly used. The incidence of patients with multiple catheter infections was low even though GIF allow gastrointestinal contents to reach the skin surface. Antibiotics were prescribed more frequently for non-CVC complications. Less than half of the patient medical records reviewed had clear identification of fistula location and output during hospitalization, indicating that transmission of documentation including GIF location and output from the hospital to the homecare provider is inconsistent. This information is critical to ensure clinically appropriate nutrition recommendations. The complexity of GIF diagnosis and related co-morbidities may impact long term quality of life.

Additional research is needed to discern whether oral intake and fistula output volume impact fistula closure over the long term. Furthermore, malnutrition screening and early intervention with nutrition support is critical given the prevalence of weight loss and malnutrition in this population.