Supplementary Appendix

Supplementary Fig. 1 Schematic diagram of the definitions of the various types of parenteral nutrition episode.

*The case of alternately repeating PN at hospital and HPN with switching is also treated as PN episode

HPN home parenteral nutrition, PN parenteral nutrition

Definition:
- PN episode (from PN initiation to discontinuation) is defined as the period between PN records that satisfies the following criteria:
  - Between-PN at hospital record intervals need to be ≤2 weeks throughout the period (Continuous PN at hospital).
  - Between-HPN record intervals need to be ≤2 months (61 days) throughout the period (Continuous HPN).
  - Two consecutive records (Inpatient PN and HPN) are observed on the same month, or on two consecutive months (Switching).
  - The date interval between the first record and the last record of the period needs to be ≥6 months.
**Supplementary Fig. 2** PN duration in weaned and unweaned patients (a) and patients with and without an SBS record (b)

*PN* parenteral nutrition, *SBS* short bowel syndrome
| ICD-10 code | Disease name                                      | n  | %   |
|-------------|--------------------------------------------------|----|-----|
| K567        | Ileus                                            | 110| 28.0|
| K509        | Crohn’s disease                                  | 65 | 16.5|
| K650        | Acute pan-peritonitis                            | 41 | 10.4|
| K565        | Adhesive ileus                                   | 31 | 7.9 |
| K650        | Perforative peritonitis                          | 28 | 7.1 |
| K562        | Strangulation ileus                              | 26 | 6.6 |
| K631        | Small intestinal perforation                     | 26 | 6.6 |
| K508        | Crohn’s ileocolitis                              | 24 | 6.1 |
| K913        | Postoperative adhesive ileus                     | 23 | 5.9 |
| K913        | Postoperative ileus                              | 20 | 5.1 |
| K550        | Intestinal necrosis                              | 19 | 4.8 |
| K566        | Small intestinal ileus                           | 18 | 4.6 |
| K550        | Small intestinal necrosis                         | 17 | 4.3 |
| K632        | Small intestinal fistula                          | 17 | 4.3 |
| K560        | Paralytic ileus                                  | 16 | 4.1 |
| T814        | Postoperative intra-abdominal abscess            | 16 | 4.1 |
| K550        | Acute superior mesenteric artery occlusion       | 14 | 3.6 |
| K659        | Peritonitis                                      | 11 | 2.8 |
| K500        | Crohn’s enteritis                                 | 10 | 2.5 |
| K550        | Thrombosis of mesenteric artery                  | 9  | 2.3 |
| K566        | Obstructive ileus                                | 9  | 2.3 |
| K567        | Subileus                                         | 9  | 2.3 |
| K550        | Nonobstructive mesenteric ischemia               | 8  | 2.0 |
| K566        | Stenosis of small intestine                      | 8  | 2.0 |
| K650        | Localized peritonitis                            | 8  | 2.0 |
| D126        | Familial polyposis coli                          | 7  | 1.8 |
| K520        | Radiation enteritis                              | 6  | 1.5 |
| Code  | Description                               | Count | Frequency |
|-------|-------------------------------------------|-------|-----------|
| K660  | Intestinal adhesions                      | 6     | 1.5       |
| K650  | Acute peritonitis                         | 5     | 1.3       |
| Q431  | Hirschsprung disease                      | 5     | 1.3       |
| A052  | Necrotic enteritis                        | 4     | 1.0       |
| C179  | Small intestine carcinoma                 | 4     | 1.0       |
| K559  | Ischemic enteritis                        | 4     | 1.0       |
| K567  | Pseudoileus                               | 4     | 1.0       |
| K650  | Acute circumscribed peritonitis           | 4     | 1.0       |
| N735  | Pelvis peritonitis                        | 4     | 1.0       |
| R190  | Intraperitoneal mass                      | 4     | 1.0       |
| C179  | Small intestinal malignant lymphoma       | 3     | 0.8       |
| D126  | Adenomatosis coli                         | 3     | 0.8       |
| D372  | Small intestinal tumor                    | 3     | 0.8       |
| I728  | Superior mesenteric artery dissociation   | 3     | 0.8       |
| K501  | Crohn’s colitis                           | 3     | 0.8       |
| K633  | Small intestinal ulcer                    | 3     | 0.8       |
| K650  | Intestinal perforation peritonitis        | 3     | 0.8       |
| R590  | Mesenteric lymph node enlargement         | 3     | 0.8       |
| C172  | Ileal cancer                              | 2     | 0.5       |
| D126  | Colorectal adenoma                        | 2     | 0.5       |
| K315  | Superior mesenteric artery syndrome       | 2     | 0.5       |
| K500  | Crohn’s ileitis                           | 2     | 0.5       |
| K508  | Stomach Crohn’s disease                   | 2     | 0.5       |
| K562  | Small bowel volvulus                      | 2     | 0.5       |
| K566  | Mechanical ileus                          | 2     | 0.5       |
| K650  | Perforative intra-abdominal abscess       | 2     | 0.5       |
| K658  | Bacterial peritonitis                     | 2     | 0.5       |
| K928  | Digestive tract stenosis                  | 2     | 0.5       |
| A099  | Inflammatory bowel disease                | 1     | 0.3       |
| C241  | Periampullary cancer                      | 1     | 0.3       |
| Code  | Description                                      | Weight | Factor |
|-------|--------------------------------------------------|--------|--------|
| C481  | Malignant mesenteric tumor                       | 1      | 0.3    |
| D014  | Small intestinal carcinoma in situ               | 1      | 0.3    |
| D126  | Gardner syndrome                                | 1      | 0.3    |
| D484  | Mesenteric tumor                                 | 1      | 0.3    |
| I728  | Superior mesenteric artery aneurysm              | 1      | 0.3    |
| K353  | Appendiceal peritonitis                          | 1      | 0.3    |
| K469  | Internal hernia                                  | 1      | 0.3    |
| K500  | Duodenal Crohn’s disease                         | 1      | 0.3    |
| K501  | Rectal Crohn’s disease                           | 1      | 0.3    |
| K509  | Steroid-dependent Crohn’s disease                | 1      | 0.3    |
| K550  | Mesenteric vein thrombosis                        | 1      | 0.3    |
| K550  | Acute mesenteric artery occlusion                 | 1      | 0.3    |
| K550  | Acute small intestinal ischemia                   | 1      | 0.3    |
| K550  | Ileal necrosis                                   | 1      | 0.3    |
| K551  | Chronic ischemic enteritis                        | 1      | 0.3    |
| K562  | Complex obstructive ileus                        | 1      | 0.3    |
| K562  | Sigmoid volvulus                                 | 1      | 0.3    |
| K571  | Small intestine diverticulosis                    | 1      | 0.3    |
| K650  | Duodenal perforative peritonitis                 | 1      | 0.3    |
| K650  | MRSA peritonitis                                 | 1      | 0.3    |
| K650  | Celiac pelvis abscess                            | 1      | 0.3    |
| K658  | Biliary peritonitis                              | 1      | 0.3    |
| K659  | Postoperative peritonitis                         | 1      | 0.3    |
| Q432  | Pseudo-Hirschsprung’s disease                    | 1      | 0.3    |
| Q438  | Chronic idiopathic intestinal pseudo-obstruction | 1      | 0.3    |
| Q793  | Gastroschisis                                    | 1      | 0.3    |
| R190  | Mesenteric mass                                  | 1      | 0.3    |

*84 diseases are listed. Cancers are highlighted in blue.
**Supplementary Table 2** Rates of biologic treatment use for Crohn’s disease patients \((n = 79)\)

| Biologic      | Lookback period, n (%) | Index PN period, n (%) | Lookback – follow-up period, n (%) |
|---------------|-------------------------|------------------------|-----------------------------------|
| Adalimumab    | 13 (16.5)               | 20 (25.3)              | 28 (35.4)                         |
| Infliximab    | 7 (8.9)                 | 19 (24.1)              | 24 (30.4)                         |
| Ustekinumab   | 0                       | 5 (6.3)                | 9 (11.4)                          |
| Vedolizumab   | 0                       | 0                      | 1 (1.3)                           |

*PN* parenteral nutrition