BURDEN OF ILLNESS IN NEW OSTOMATES:
AN ANALYSIS BASED ON GERMAN CLAIMS DATA

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Objectives

- The clinical and economic burden that ostomates impose on healthcare systems has previously been evaluated.[1,2]
- The aim of this study was to complement existing research by gaining insights into the demographics, morbidity, and healthcare consumption of new ostomates specifically.

Methods

- This non-interventional, retrospective analysis investigated German ostomates from 2012 to 2017 based on an anonymized claims database, covering 4.8 million insurees representative of the German population.[3]
- Ostomates who had one new colostomy, ileostomy, or urostomy created in the years from 2013 to 2015 were identified based on procedure codes[1].
- Individuals with an ostomy procedure[1], ostomy device[2], or ostomy diagnosis[3] within one year before index (=stoma creation) were excluded from the analysis to make sure only new ostomates were included. Further, only continuously insured individuals were included. Patients who died during follow-up were included as well.
- Patients were followed-up for year 1 and year 2 (FU1, FU2) after index.
- Statistical processing of the data was performed in SAS 1 (Version 9.2). Descriptive statistic data were collected. Evaluation of the data was performed in Microsoft Office Excel 2010.

Results

DEMOGRAPHICS

- A total of 5,885 ostomates were included in the analysis. Ostomates had a mean age of 68 (SD=15.8) and 57% were male.

Table 1: Demographic results of all ostomates and subgroups

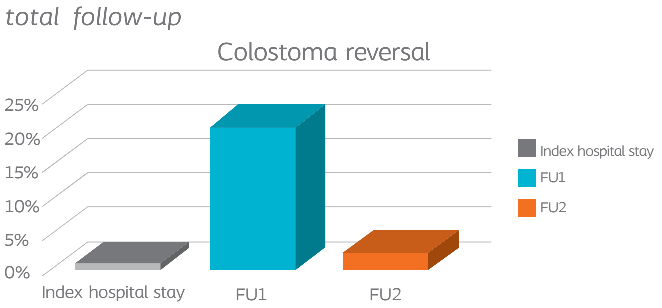
	Ostomate, all	Colostomist	Ileostomist	Urostomist
Population size	5,885	2,922	2,126	836
Mean age [95% CI]	68 [67; 68]	69 [69; 70]	64 [63; 65]	72 [71; 72]
Female %	43	48	43	27

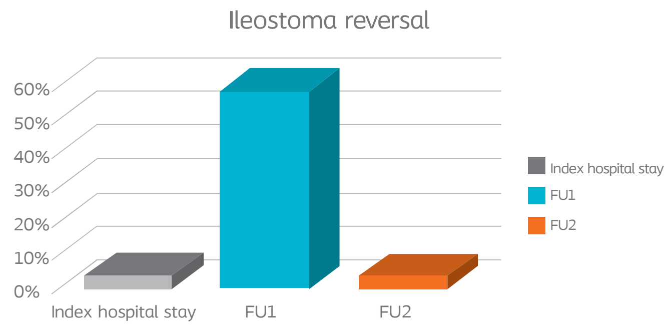
- 46% suffered from cancer as their underlying condition for stoma surgery[4], 11% from diverticulitis[5] and 3% from inflammatory bowel disease[6].
- Urostomists showed the highest CCI (4.61) compared to colostomists and ileostomists with a CCI of 3.8, respectively.[4]

STOMA REVERSAL

- 21% of colostomists and 59% of ileostomists had their stoma reversed during FU1 (Figure 1).

Figure 1: Colostoma- and Ileostoma reversal during total follow-up



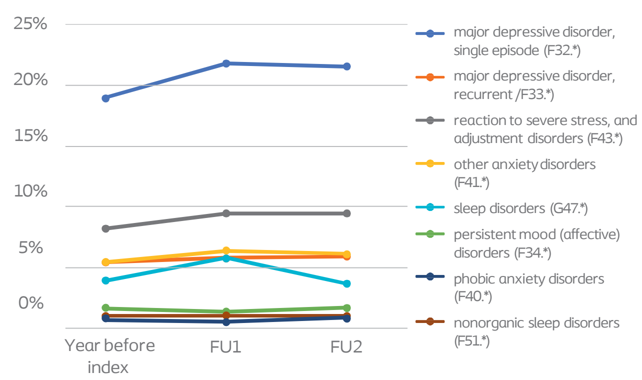


- On average, ileostomists waited for 160 days for their stoma to be reversed, colostomists waited for 196 days.
- 10% of former colostomists and 13% of former ileostomists were diagnosed with fecal incontinence[7] within one year after stoma reversal.
- 12% of colostomists and 17% of ileostomists who had their stoma reversed and were identified as fecal incontinent, received pelvic floor muscle training[8] to improve their continence, respectively.

PSYCHOLOGICAL BURDEN

- 48% of ostomates were diagnosed with a psychological disorder[9] during total follow-up, compared to 31% in the year before index.
- In FU1, single major depressive disorders[10] increased by 15% when compared to the year before index. Sleep disorders[11] increased by 48% (Figure 2).
- With 25% of all patients diagnosed, single major depressive disorder[10] was the leading cause for psychological burden in ostomates during total follow-up.

Figure 2: Psychological burden during total follow-up



COST

- Average stoma related inpatient cost was €22,214 in FU1 and €1,281 in FU2. Stoma related cost includes costs of stoma creation[1] and costs of stoma reversal[12] (Table 2).

Table 2: Stoma related inpatient cost per ostomate during total follow-up

	Stoma specific inpatient cost FU1	Stoma specific inpatient cost FU2
Type of	Mean annual stoma related inpatient cost in € [95% CI]	
Ostomate, all	22,214 [21,495; 22,934]	1,281 [916; 1,645]
Colostomist	21,592 [20,520; 22,663]	1,137 [887; 1,387]
Ileostomist	25,414 [24,123; 26,705]	1,764 [889; 2,639]
Urostomist	16,134 [15,397; 16,871]	442 [85; 799]

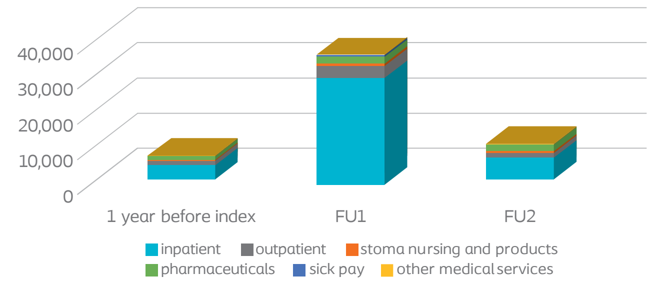
- Average annual total cost per ostomate was €35,450 during FU1 and €10,058 during FU2, compared to €6,942 in the year before index (Table 3).

Table 3: Cost overview of mean annual total cost per ostomate during total follow-up

	Total cost, year before index	Total cost FU1	Total cost FU2
Type of ostomy	Mean annual total cost in € [95% CI]		
Ostomate, all	6,942 [6,662; 7,222]	35,450 [34,547; 36,353]	10,058 [9,475; 10, 641]
Colostomist	6,792 [6,388; 7,196]	34,668 [33,269; 36,067]	9,947 [9,174; 10,720]
Ileostomist	7,048 [6,571; 7,525]	38,712 [37,197; 40,228]	10,147 [9,027; 11,268]
Urostomist	7,206 [6,555; 7,858]	29,766 [28,617; 30,916]	10,174 [9,195; 11,154]

- The analysis shows that the main cost driver after stoma creation was inpatient costs. Inpatient costs accounted for 82% of the total follow-up cost, outpatient costs for 6%, pharmaceuticals for 7%, stoma nursing products for 3%, and sick pay for 1% (Figure 3).

Figure 3: Distribution of the annual mean total cost per ostomate during total follow-up



Discussion

- The analysis is consistent with other literature in the field concerning demographic results.[2,5,8]
- The analysis reveals an undersupply with regards to continence training after stoma reversal. Evidence suggests that temporary stoma patients should begin pelvic floor muscle training as early as possible, at best before initial stoma surgery for the sphincter to function properly after reversal and must be advised to do so.[5,6]
- An increase in patients diagnosed with psychological disorders was found when comparing the year before index and FU1, indicating a relation to stoma creation. Worries or fear of smells, leakage and skin irritation, stigma and unplanned changes leading to ostomates isolating themselves are possible reasons.[7] With regards to reducing the above-mentioned ostomy complications, literature suggests to invest in preoperative stoma siting and patient education.[8]
- Due to the inclusion of patients who deceased or had their stoma reversed in the follow-up, primarily the costs allocated to stoma nursing and products are under-estimated in this analysis.
- Inpatient costs are substantially higher in FU1 than in the year before index. The cost increase cannot entirely be explained with stoma specific costs, suggesting an increase in critical events in FU1 causing additional inpatient costs. It is to be investigated to which extent these are related to stoma creation.

Conclusions

- New ostomates suffer higher morbidity and pose a significantly higher economic burden to society compared to the year before stoma creation.
- Further studies are essential to confirm the necessity and evaluate the impact of in- and outpatient interventions to reduce preventable stoma related complications and costs. Preferably, interventions should start before initial stoma creation.

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[1] 5-460, 5-461, 5-462, 5-455, 5-456, 5-572.2, 5-564.2**, 5-564.3**, 5-564.6**, 5-564.7**, 5-565.0**, 5-565.1**, 5-565.5** [2] 29.26* [3] Z43*, Z93* [4] C20, C67, C18, C56, C78, C97, C19, C61, C21
[5] K57 [6] K50, K51, K52 [7] R15 [8] SO1, SO2 [9] F32*, F33*, F34*, F40*, F41*, F43*, F51*, G47* [10] F32* [11] G47* [12] 5-464.4**, 5-465.0, 5-465.1, 5-465.2, 5-466

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