

Budget-Impact-Analysis of iron treatment using intravenous ferric carboxymaltose in inflammatory bowel disease patients with iron deficiency anemia in Austria

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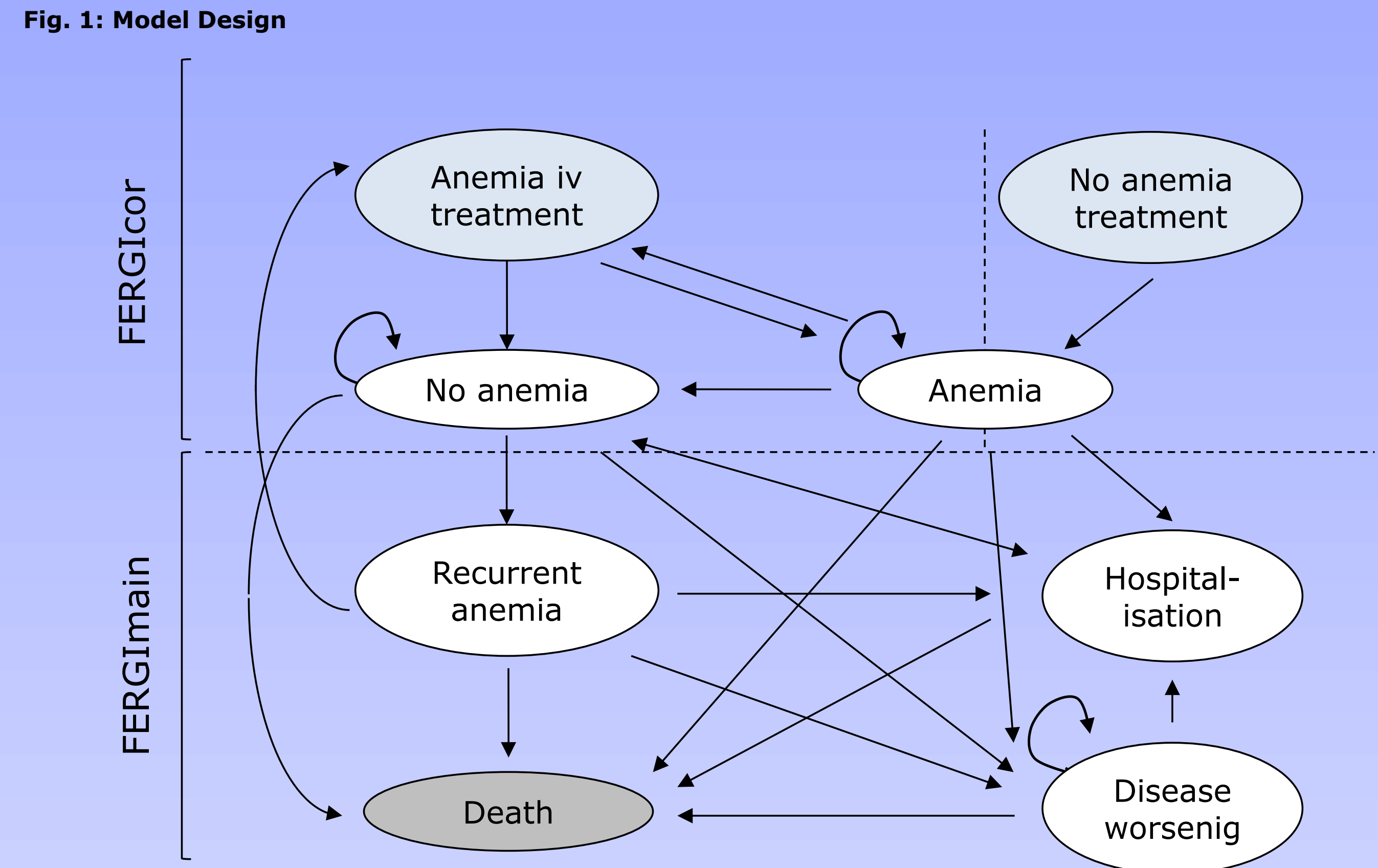
Objectives

Iron deficiency (ID) appears in 60-80% of patients with inflammatory bowel disease (IBD), out of which about one-third is affected by anemia.

Anemia which depicts a frequent extra-intestinal manifestation of IBD has a significant impact on quality-of-life components such as emotional, physical and cognitive functions, the ability to work, hospitalization, as well as healthcare costs. Thus, the objective of this analysis is the evaluation of the cost saving potential through an increased use of intravenous iron therapy with ferric carboxymaltose (FCM) based on clinical trial evidence.

Methods

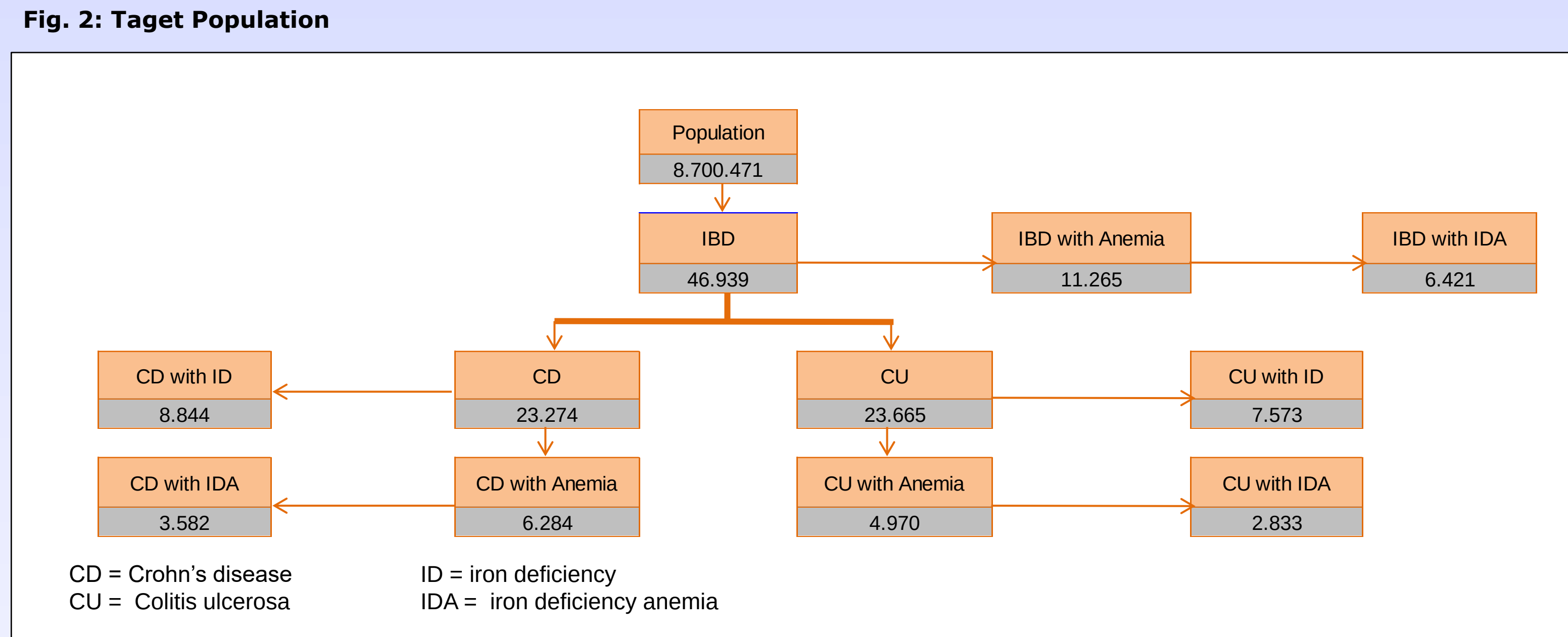
A budget-impact-analysis (BIA) with a four-year’s time horizon was developed from the payer’s perspective. IBD patients with iron deficiency anemia (IDA) run into a Markov-model and receive different iron-deficiency strategies (FCM, Iron-Sucrose (IS), oral or no-treatment) according to current clinical practice. The model includes 6 states (treatment success, recurrent anemia, hospitalization, disease worsening and death) based on RCT-data of FERGIcor and FERGImain. The objective of the model was to assess the influence of a higher percentage of treated patients (65%-74%) in general and an increased share of IV substances (49%-59%) on health-care budgets from the payers perspective. Input-data were derived via a systematic literature review. Direct costs were retrieved from published sources and were expressed in 2016 €.



Source: own developed

Target Population

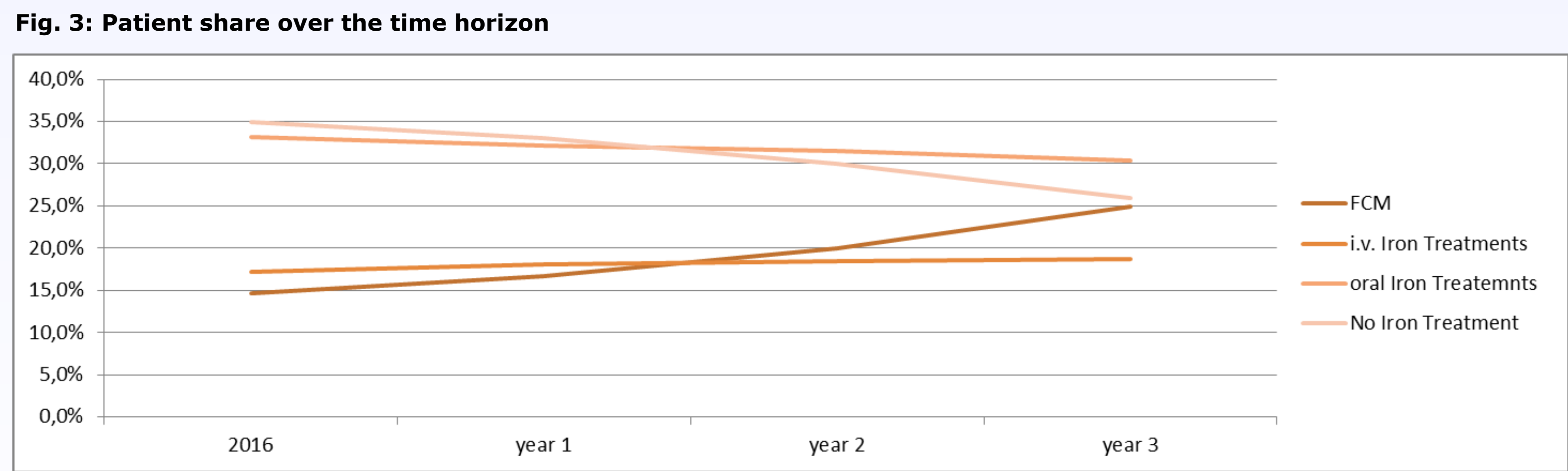
According to a systematic literature search around 50,000 Austrians suffer an IBD. Between 35-90% patients with an IBD experience an ID with or without anemia. Affected persons are distributed as displayed in Fig. 2.



Source: own developed

Market

Based on a market research survey (medupha 2016) in 2016 65% of IBD patients with an ID or IDA receive iron treatment. 51% in an oral form; 49% as i.v. application. The treatment shift is shown in Fig. 3.



Source: own developed

Resource Use and Costs

The total costs per patient are a function of both the quantity of given resource used and its unit cost. The resource use was determined by the systematic literature review (e.g. RCT, cohort studies, disease specific guidelines). Direct costs comprise all direct medical costs like consultation, lab test, inpatient costs, medication and treatment costs from catalogue and official price lists for the Austrian health insurances funds and the Austrian official drug price list (Warenverzeichnis). Inpatient treatment costs are derived from the Austrian DRG catalogue (LKF). An overview of the cost data contain in the analysis as shown in Tab. 1.

Tab. 1: Costs Components

Cost components	Costs in Euro	Source
Outpatient costs		
GP		
1 st consultation	16.60	To determine the average rate for Austria, the fee schedules of all nine regional health insurance providers have been used (BGKK, KGKK, NOEGKK, OÖEGKK, SGKK, STGKK, TGKK, VGKK, WGKK). The calculation of the average rates is weighted by population percentages (Statistik Austria 2016).
2 nd consultation	6.92	
3 rd consultation	6.58	
4 th consultation and any further one	6.05	
complete blood count	8.91	
iv injection	12.44	
Inpatient costs per stay		
Anemia	1,604	LKF 2016, Gutzwiller et al. 2012
Crohn´s disease	1,088	
Colitis ulcerosa	1,088	
Iron therapy per year		
ferric carboxymaltose (FCM)	402.66	Drug price list (Warenverzeichnis) 2016, IPF, own calculations
other iv iron therapy	253.89	
oral iron therapy	19.99	

Source: IPF own calculations

Results

The result of the BIA shows that an increased use of iron-therapy (+9% from 65 to 74%) and a shift towards i.v. application (+10% from 49 to 59%)) in IBD patients with IDA leads to a positive budget impact from the second year onwards (-44.075 € in the 3rd year). The additionally treated patients (+713) causes increased costs for iron medication and outpatient services (+51,175 € 1st year to +208,221€ in the 3rd year).

Tab. 2: Results of the BIA, in €

	year 1	year 2	year 3
Hospitalization	-40,679	-145,784	-252,296
Outpatient setting	8,478	14,025	21,273
Iron medication	42,698	99,196	186,948
TOTAL	10,497	-32,563	-44,075

Source: IPF own calculation

Saving effects are achieved due to reduced hospital stays (-40,679 € in the 1st year to -252,296 € in the 3rd year) (Fig. 4).

Fig. 4: Disaggregated results of the BIA, in €



Source: IPF own calculations

Not treating an IDA leads to significant increase in follow-up costs. According to a systematic literature review follow up treatment costs are 2.5 times higher in patients with IDA compared to patients without.

Conclusion

IV iron therapy with FCM in IDA patients are associated with cost-savings by reduced hospitalizations.

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Additional Literature with the author

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