OBJECTIVES
• Iron deficiency anaemia (IDA) is the most common form of anaemia worldwide and is one of many extra-intestinal complications of ulcerative colitis and Crohn’s disease (1).
• Iron deficiency (ID) and IDA can have a significant impact on quality of life as symptoms can include chronic fatigue, diarrhoea, abdominal pain, headache, dizziness, weight loss, impaired concentration and memory (2).
• Furthermore, the symptoms of anaemia are associated with psychological and social consequences and in turn can influence healthcare associated costs (3).
• Although the cause of anaemia in inflammatory bowel disease (IBD) is multifactorial, iron deficiency is one of the most prevalent underlying factors caused by poor iron intake, chronic blood loss, or impaired absorption (1).
• Intravenous iron compared to oral iron treatment has shown medical benefits for IBD patients who have severe or refractory anaemia or are in an active disease state (2,3).
• To date, quite a few studies exist assessing the prevalence of iron deficiency with or without anaemia (IDA) in IBD, but only little evidence is published comparing the different iron therapies.
• This study aimed to describe demographic characteristics and to compare healthcare outcomes and costs after oral vs. intravenous iron treatment initiation for IBD patients suffering from IDA.

METHODS
• Pooled claims data of about 75 German health insurances from the Health Risk Institute research database were used to identify IBD patients with IDA.
• Patients were required to have at least one of the following ICD-10-GM codes K56 - Crohn’s disease and K51 - Colitis ulcerosa to be identified as IBD patients. Furthermore, all IBD patients additionally suffering from IDA were identified from ICD-10-GM codes E85.1 for ID and D50 (except D50) for IBD and/or ATC codes B30A, B30AB, B30AC, B30AD, B30AE for iron products.
• Data from January 1st, 2012 through September 31st, 2014 were included in the study.
• The enrolment period for the study population spanned from January 1st, 2012 through December 31st, 2013.
• An individual pre-observation period of four quarters was required to identify newly treated IBD patients as well as an individual post-observation period of the index quarter and three consecutive quarters for the assessment of outcomes.
• A 1:1 propensity score matching was performed to directly balance both treatment groups regarding age, gender, and comorbidities. Propensity scores were calculated including the variables age, gender, and the updated Charlson Comorbidity Index (CCI) in a multivariable logistic regression. Matching couples were identified applying the nearest neighbor matching technique and a caliper of 0.05 was determined.
• Patient characteristics were assessed in the index quarter and healthcare outcomes and costs were analysed within the pre- and post-index period for the matched cohorts to compare treatment effects.
• Non-observable covariates were adjusted by applying the difference-in-differences (DiD) approach.

RESULTS
• In total, 29,331 patients with IBD were identified in 2013, of which 2,379 patients were diagnosed with IDA.
• Of these, 589 patients were not treated with any type of prescribed iron therapy within the observation period.
• In total, 29,331 patients with IBD were identified in 2013, of which 2,379 patients were diagnosed with IDA.
• Of these, 589 patients were not treated with any type of prescribed iron therapy within the observation period.
• In total, 29,331 patients with IBD were identified in 2013, of which 2,379 patients were diagnosed with IDA.
• Of these, 589 patients were not treated with any type of prescribed iron therapy within the observation period.
• In total, 29,331 patients with IBD were identified in 2013, of which 2,379 patients were diagnosed with IDA.
• Of these, 589 patients were not treated with any type of prescribed iron therapy within the observation period.
• In total, 29,331 patients with IBD were identified in 2013, of which 2,379 patients were diagnosed with IDA.
• Of these, 589 patients were not treated with any type of prescribed iron therapy within the observation period.
• In total, 29,331 patients with IBD were identified in 2013, of which 2,379 patients were diagnosed with IDA.
• Of these, 589 patients were not treated with any type of prescribed iron therapy within the observation period.
• In total, 29,331 patients with IBD were identified in 2013, of which 2,379 patients were diagnosed with IDA.
• Of these, 589 patients were not treated with any type of prescribed iron therapy within the observation period.
• In total, 29,331 patients with IBD were identified in 2013, of which 2,379 patients were diagnosed with IDA.
• Of these, 589 patients were not treated with any type of prescribed iron therapy within the observation period.
• In total, 29,331 patients with IBD were identified in 2013, of which 2,379 patients were diagnosed with IDA.
• Of these, 589 patients were not treated with any type of prescribed iron therapy within the observation period.

CONCLUSION
• The assessment of the pre-observation period healthcare cost comparison after matching revealed significant incremental baseline differences in terms of outpatient care, pharmaceuticals, and total costs – suggesting that the performed matching could not balance the baseline differences in terms of healthcare cost.
• An incremental baseline total cost difference after matching of 44.636€ remained which in turn suggested bias due to unobserved variables/untreatedness. No significant incremental differences were found in terms of all-cause as well as IDA-related hospitalisation in the pre-index period.

Table 1. Comparison of mean baseline healthcare costs after matching in Euro

Figure 3. Comparative analysis of hospitalisations before and after/during iron treatment (percent of patients)

Figure 4. Difference-in-differences approach of healthcare costs

REFERENCES