EE314

# A Cost-Utility Analysis in Patients with Inflammatory Bowel Disease and Iron Deficiency Anaemia in the Netherlands

## Reduced Hypophosphataemia and Fracture Incidence with Ferric Derisomaltose Versus Ferric Carboxymaltose Translate to Cost Savings and Higher Quality of Life

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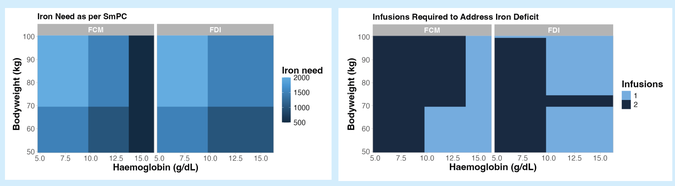
## Background and Aim

The prevalence of inflammatory bowel disease (IBD) in the Netherlands was 432 per 100,000 in 2010 and is rising.[1] Iron deficiency anaemia (IDA) is common in patients with IBD, and treatment with intravenous (IV) iron is recommended in patients with active disease. The aim was to evaluate the cost-utility of two high-dose, rapid-infusion, IV iron formulations — ferric derisomaltose (FDI) and ferric carboxymaltose (FCM) — in patients with IBD and IDA in the Netherlands.

# Methods

## Iron Administration Model

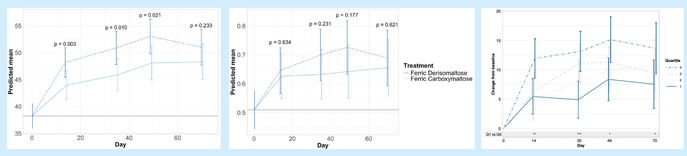



Joint distributions of baseline haemoglobin and bodyweight were combined with posological data from the summaries of product characteristics (SmPCs).[2,3]

## Patient-level simulation

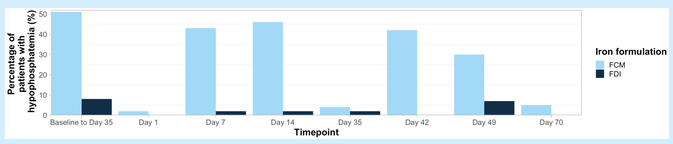
- Previously-published model implemented in Microsoft Excel
- Five-year time horizon with a monthly cycle length
- Process disutilities associated with intravenous iron infusions modelled with a diminishing marginal utility model[5]
- Future costs discounted at 3% *per annum*; effects at 1.5%[6]
- Unit costs obtained primarily from the Dutch DBC system (hospital case-based payment system) and the G-Standaard, reported in 2024 Euros[7]
- Patient characteristics were based on the PHOSPHARE-IBD trial[8]

## Disease-related Quality of Life



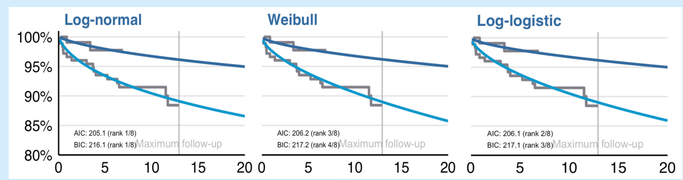

Baseline quality of life (QOL) was modelled based on SF-6Dv2 utilities derived from the PHOSPHARE-IBD trial.[8,9] Lower QoL with FCM was driven by reduced vitality associated with hypophosphataemia.[8]

## Phosphate Monitoring and Hypophosphataemia Treatment




Phosphate monitoring was modelled in line with the SmPCs (i.e. required only with FCM)[2,3] and hypophosphataemia treatment was modelled in line with the PHOSPHARE-IBD trial.[7]

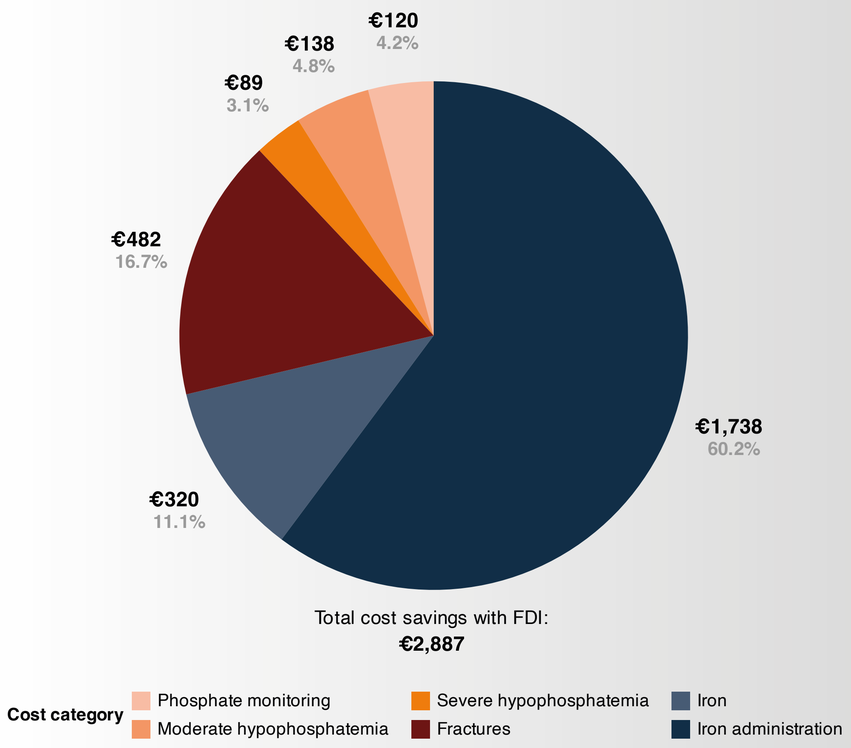
## Fracture Model




A parametric fracture-free survival model was developed based on recent data showing elevated risk of fracture with FCM versus FDI, but similar fracture risk after FDI treatment as before.[4]

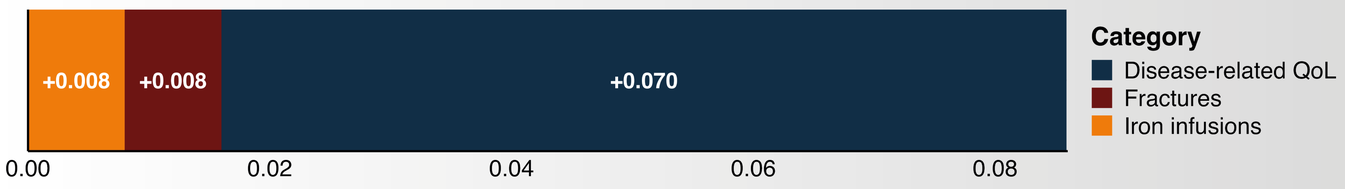
# Results

## Incremental costs of FCM *vs* FDI




## Incremental QALYs with FDI *vs* FCM

Total QALY benefit with FDI versus FCM: **0.086 QALYs**




FCM, ferric carboxymaltose; FDI, ferric derisomaltose; QALYs, quality-adjusted life years.

## Summary

| | LE (years) | QALE (QALYs) | Total cost (EUR) | Incremental cost-utility ratio | Iron infusions per patient | Mean infusions per course | Proportion needing >1 iron infusion |
|---|---|---|---|---|---|---|---|
| FCM | 4.942 | 2.630 | 10,511 | **FDI dominant** | 7.27 | 1.83 | 83% |
| FDI | 4.942 | 2.716 | 7,624 | | 5.63 | 1.42 | 42% |
| **FDI vs FCM** | **0.00** | **+0.086** | **-2,887** | | **-1.64** | **-0.41** | **-41%** |

EUR, 2024 Euros; FCM, ferric carboxymaltose; FDI, ferric derisomaltose; LE, life expectancy; QALE, quality-adjusted life expectancy; QALYs, quality-adjusted life years.

# Conclusions

- Relative to FCM, FDI was associated with greater QoL improvements in the treatment of patients living with IBD and IDA in the Netherlands.
- FDI also led to lower costs from the health insurer perspective, driven by the reduction in iron infusions required versus FCM, as well as the increased incidence – and need for treatment – of hypophosphataemia and fractures with FCM.
- Based on these results, FDI was the dominant treatment option, both improving QoL and reducing costs relative to FCM, in people living with IBD and IDA in the Netherlands.

**1.** de Groof EJ *et al.* Burden of disease and increasing prevalence of inflammatory bowel disease in a population-based cohort in the Netherlands. European Journal of Gastroenterology & Hepatology. 2016;28(9):1065-1072. **2.** Ferric Derisomaltose Summary of Product Characteristics. **3.** Ferric Carboxymaltose Summary of Product Characteristics. **4.** Zoller H *et al.* Incidence of Fractures after Intravenous Iron: A Retrospective Analysis Comparing Ferric Carboxymaltose and Ferric Derisomaltose. Blood 2023;(S1):3838. **5.** Hu S *et al.* Disutilities Associated with Intravenous Iron Infusions: Results from a Time Trade-off Survey and Diminishing Marginal Utility Model for Treatment Attributes in China. Patient Relat Outcome Meas. 2023;14:253-267. **6.** Zorginstituut Nederland. Guideline for economic evaluations in healthcare. 2024. **7.** Z-Index. G-Standaard. Available from: https://www.z-index.nl/english **8.** Zoller H *et al.* Hypophosphataemia following ferric derisomaltose and ferric carboxymaltose in patients with iron deficiency anaemia due to inflammatory bowel disease PHOSPHARE-IBD): a randomised clinical trial. Gut. 2022;gutjnl-2022-327897. **9.** Bjorner JB *et al.* Hypophosphatemia attenuates improvements in vitality after intravenous iron treatment in patients with inflammatory bowel disease. Qual Life Res. 2024;33(8):2285-2294.

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