COST-EFFECTIVENESS OF FERRIC CARBOXYMALTOSE FOR TREATING IRON DEFICIENCY ANEMIA IN CHINA

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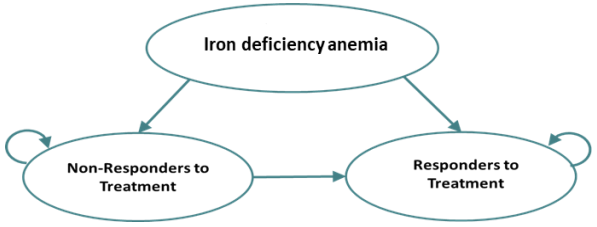
Background

- Iron deficiency anemia (IDA) is an important public health issue in China, with an estimated prevalence rate of 8.7%.[1]
- Ferric carboxymaltose (FCM) is an innovative formulation of high-dose intravenous iron and expected to be introduced to China in 2022.
- An economic evaluation was conducted to investigate the cost-effectiveness of FCM for the treatment of IDA in Chinese adult patients.

Methods

- A Markov model was applied to compare FCM against iron sucrose (IS), from a Chinese healthcare perspective over a 6-month period.
- Three health states were defined, including IDA, responders to treatment and non-responders to treatment (Fig. 1)

Figure 1. Model structure

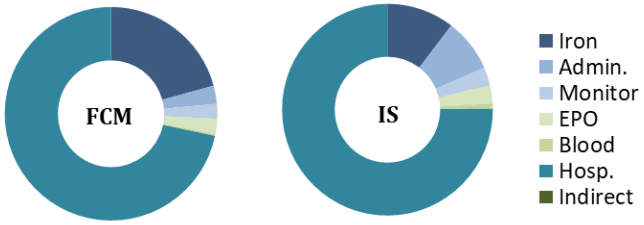


- The main efficacy data, response rates (defined as an increase ≥ 2 g/dL from the baseline), was obtained from an open-label phase-III randomized trial, where FCM was compared to IS over a period of 8 weeks in China (NCT03591406 [2]).
- The direct cost consisted of iron formulation, administration, laboratory/monitoring, erythropoietin (EPO), blood transfusion and hospitalization costs. (Table 1)
- Base-case included only the direct cost. Societal perspective included additional indirect cost, covering productivity loss, transportation and family/caregiver costs. (Table 1)
- Utility input comprised both utility scores for each health state and utility decrements due to injections, as shown in Table 1.

Table 1. Cost and utility parameters

Parameter	FCM	IS	Reference
Iron cost	¥2,929	¥1,274	NCT03591406 Trial
Adminstration cost	¥282	¥1,004	National average price
Laboratory/monitoring cost	¥230	¥345	National average price
EPO use	¥238	¥335	Xiao et al. [3] & literature
Blood transfusion	¥27	¥99	Xiao et al. [3] & literature
Hopitalization	¥7,353	¥9,246	Xiao et al. [3] & literature
Indirect cost	¥105	¥454	Assumption
Utility index			
IDA utility	0.807		Strauss & Auerbach 2018 [4] Yang et al. 2018 [5]
Responder utility	0.957		
Non-responder utility	0.807		
Injection disutility value	0.017-0.039		Wu et al. 2021 [6]

Figure 2. Base-case results



Results

- In the base-case scenario, FCM was dominant over IS, associated with 0.003 additional QALYs and savings of ¥1,245 (Fig.2).
- The main model drivers were quick responses and reduced injection frequency of FCM, as well as shorter hospital stay.
- From the societal perspective, FCM was also dominant over IS with potential cost savings of ¥1,594.
- FCM remained dominant in all tested scenarios and through deterministic sensitivity analyses (Fig. 3).

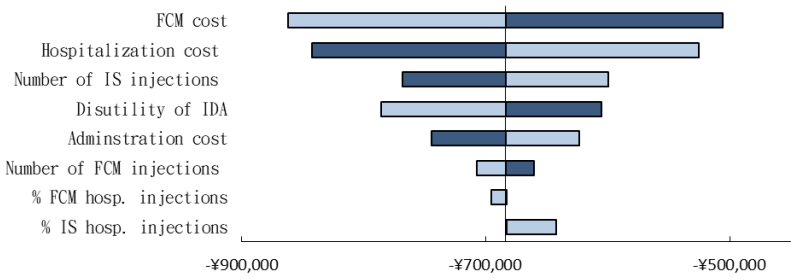
Discussion

- The study was based on the results of a local trial (NCT03591406 [2]), with a representative sample of IDA patients in China (n=371). Thus, the generalizability of the current study is high.
- However, the trial was noninferiority design. The full efficacy of FCM might not be captured in the trial. Consequently, it might have limited the incremental QALYs measured in the current study.
- The indirect cost was under-estimated in the study as the cost input was based on the unit price and did not reflect the substantial amount of time saved by FCM.

Conclusion

- **Ferric carboxymaltose was a cost-effective treatment versus iron sucrose for treating adult patients with iron deficiency anemia in China.**

Figure 3. Tornado graph



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