Cost-Substitution and Hospital Diagnosis-Related Group (DRG) Performance Impact Analysis of Infliximab Biosimilar Adoption in Moderate-to-Severe Crohn's Disease Patients in China

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OBJECTIVES

To evaluate the budget impact on China's healthcare insurance fund and hospital case-level financial performance under Diagnosis-Related Group (DRG) policy in Hangzhou, resulting from substituting Infliximab originator (Remicade®, Janssen Biologics B.V.) with its biosimilar (Anbaite®, BioRay Pharmaceutical Co., Ltd.) for treating moderate-to-severe Crohn's Disease (CD).

METHODS

A cost-substitution budget impact analysis model over 2025-2027 from a health insurance payer perspective was conducted by using real-world data from Sir Run Run Shaw Hospital—a major tertiary referral center for CD cases in Zhejiang province—to derive clinical practice patterns and cost parameters.

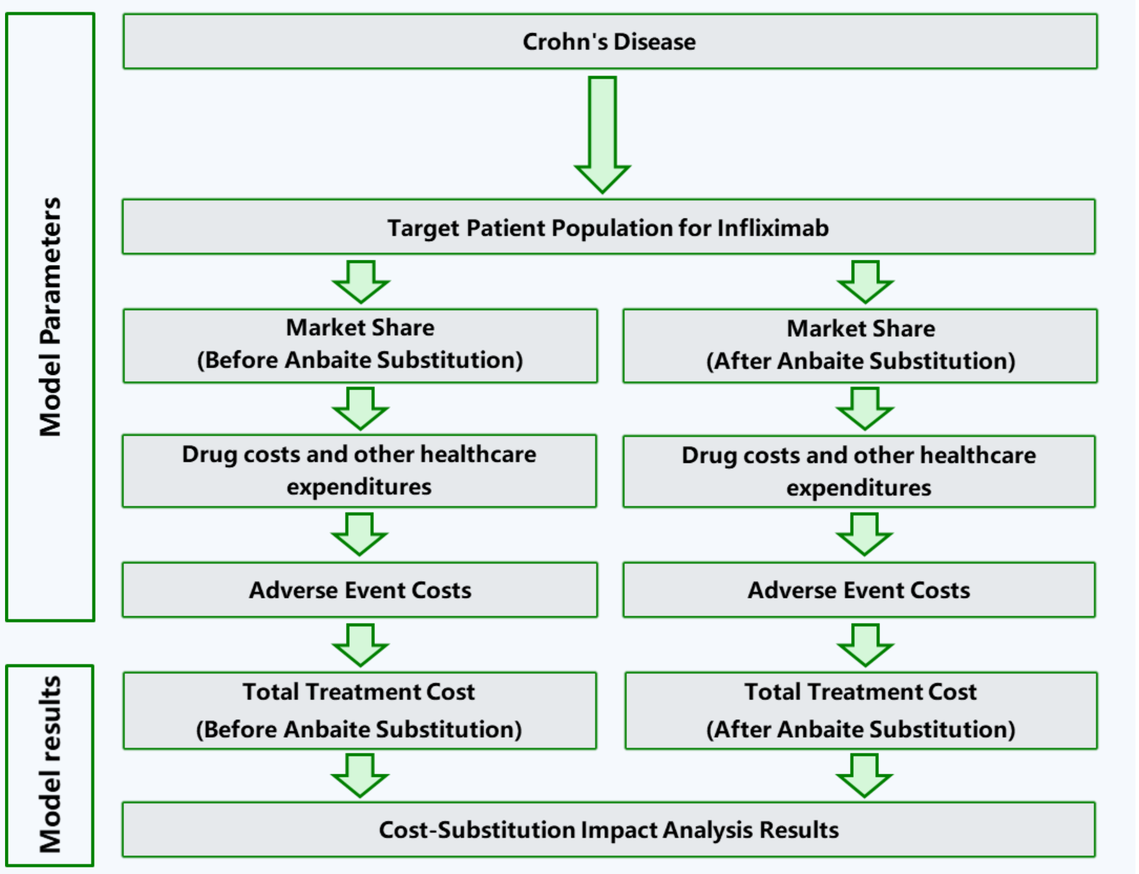

Figure 1 Framework for the cost-substitution budget impact analysis model

Epidemiological inputs were sourced from the 2023 Provincial Bulletin and published literature, while DRG payment standards for CD were obtained from the Hangzhou Medical Security Bureau. Biosimilar adoption rates were projected based on manufacturer forecasts. Deterministic sensitivity analysis assessed the robustness of key model drivers.

RESULTS

Without Infliximab biosimilar in National Drug Reimbursement List (NRDL), Infliximab's annual direct medical cost for treating Crohn's disease is ¥46.87 million, with ¥32.8 million covered by the insurance fund. With inclusion, costs decrease to ¥45.73 million, ¥45.17 million, and ¥44.6 million for 2025-2027, reducing insurance fund expenditure to ¥32 million, ¥31.61 million, and ¥31.21 million respectively, yielding cumulative savings of ¥3.573 million.

Table 1 **Results of overall benefit analysis:** direct medical costs and medical insurance fund payments

	2025	2026	2027
Scenario without Infliximab biosimilar in NRDL			
direct medical cost for treating Crohn's disease (Million CNY)	46.87	46.87	46.87
of which: medical insurance fund payment (Million CNY)	32.80	32.80	32.80
Scenario with Infliximab biosimilar in NRDL			
direct medical cost for treating Crohn's disease (Million CNY)	45.73	45.17	44.60
of which: medical insurance fund payment (Million CNY)	32.00	31.61	31.21

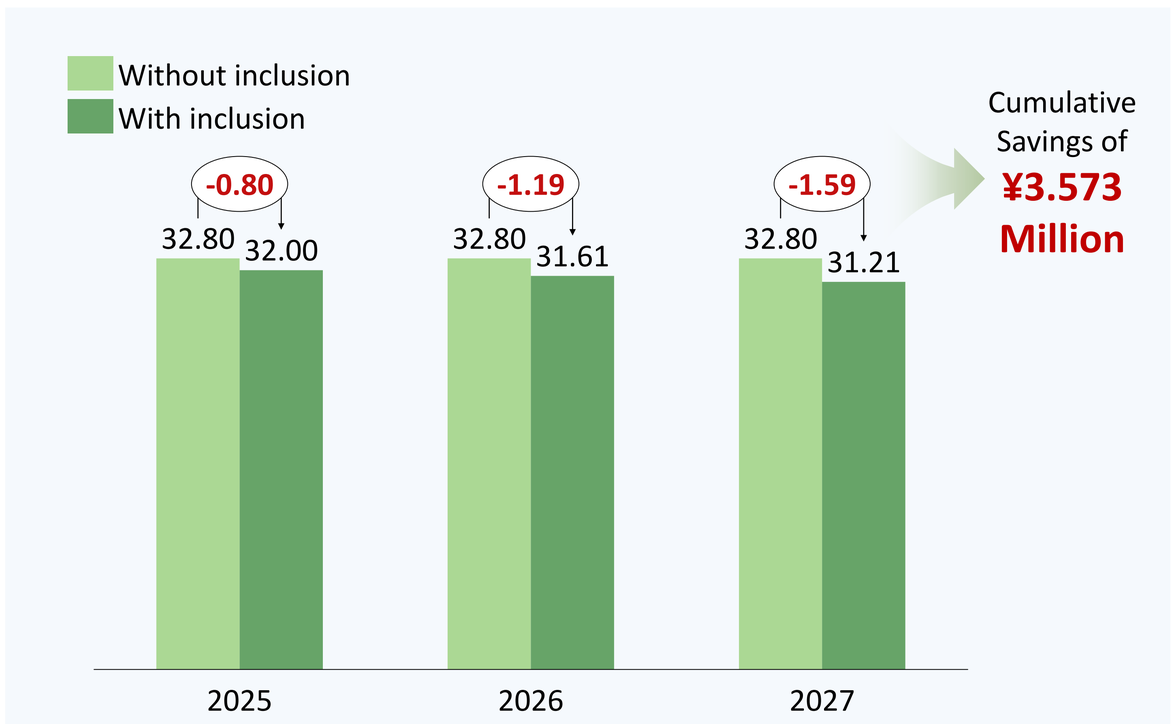

Figure 2 **Results of overall benefit analysis:** budgetary impact on the medical insurance fund from infliximab biosimilar's inclusion in NRDL

Crucially, biosimilar's flexible pricing avoided low-payment deficits by actively optimizing DRG cost margins, reversing per-case hospital performance losses (-¥1,263) to surplus (+¥985).

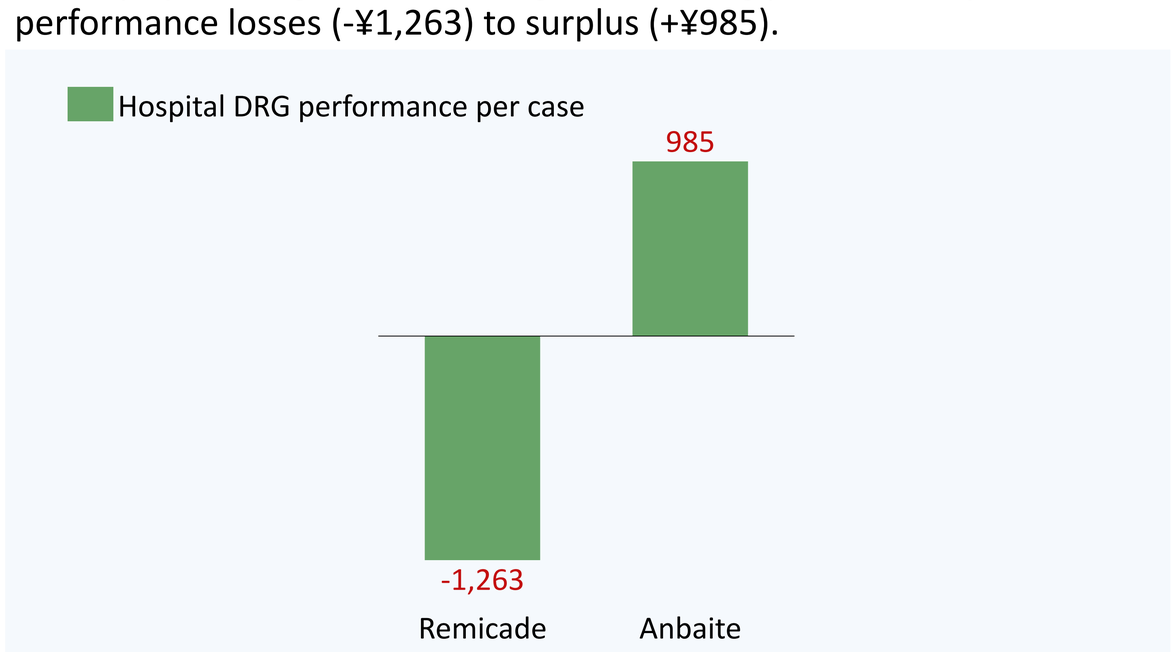

Figure 3 **Results of hospital DRG performance-based surplus analysis:** the substitution of Remicade with Anbaite converts a per-case hospital performance loss into a surplus.

Sensitivity analysis identified the top influencing factors: the price of Infliximab (the original product and the biosimilar) and the total Crohn's disease patients treated with the target medication in the hospital that year.

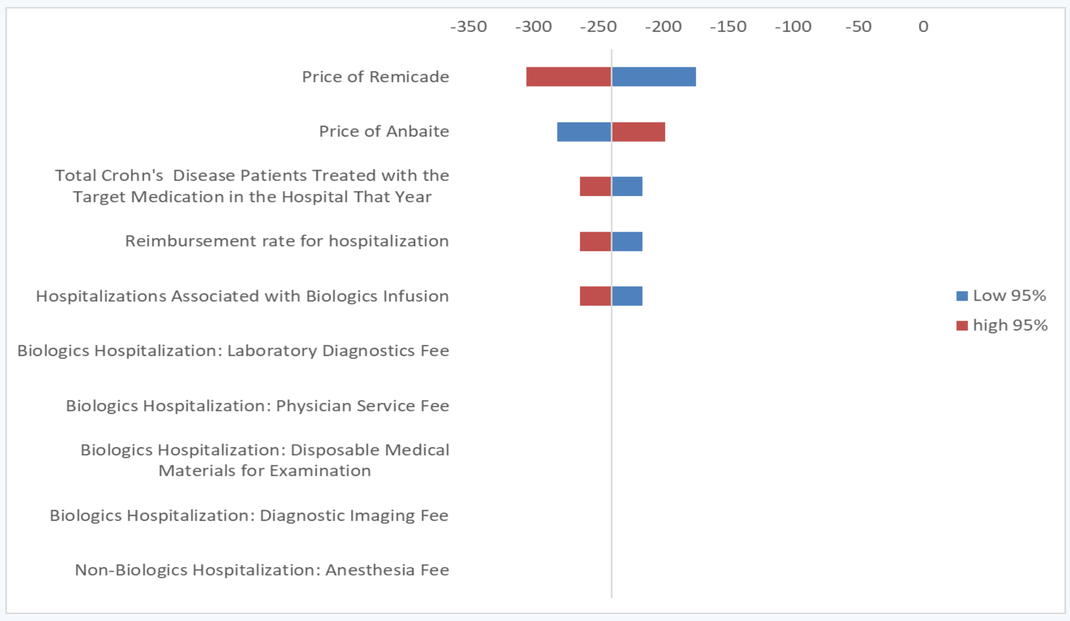

Figure 4 Results of the One-Way Sensitivity Analysis

CONCLUSIONS

Under the Diagnosis Related Group (DRG) policy in Hangzhou, China, replacing Infliximab with the biosimilar leads to savings in medical insurance fund and surplus of hospital departments performance.