

# In Vitro Fertilization with Preimplantation Genetic Testing for Aneuploidy for Infertility in China: A Cost-Effectiveness Analysis

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## Abstract

**Objectives:** To investigate the cost-effectiveness of preimplantation genetic testing for aneuploidy (PGT-A) versus conventional technology in in vitro fertilization (IVF) from the perspective of the healthcare system in China. **Design:** Economic evaluation based on a large multi-center randomized trial (CESE-PGS study). **Population:** Infertile women with a good prognosis for a live birth in China **Methods:** Following the exact steps in the IVF protocol, a decision tree model was developed, based on the data from the CESE-PGS trial and using cost scenarios for IVF in China. The scenarios were compared for costs per patient and cost-effectiveness. One-way sensitivity analysis and probabilistic sensitivity analysis were performed to confirm the robustness of the findings. **Main Outcome Measures:** Costs per live birth, Costs per patient, Incremental cost-effectiveness for miscarriage prevention **Results:** The average costs per live birth of PGT-A were estimated as ¥39230.71, which is about 16.8% higher than that of the conventional group. Threshold analysis revealed that PGT-A would need to increase the pregnancy rate of 26.24% to 98.24% or a cost reduction of ¥4649.29 to ¥1350.71 to achieve the same cost-effectiveness. The incremental costs per prevented miscarriage was approximately ¥45600.23. Probabilistic sensitivity analysis indicated a probability of 97.50% that PGT-A is cost-effective when the willingness to pay was ¥ 21,7113.00 per prevented miscarriage. **Conclusions:** The present cost-effectiveness analysis demonstrates that embryo selection with PGT-A is not suitable for routine applications from the perspective of healthcare providers in China, given the cumulative live birth rate (CLBR) and the high costs of PGT-A.

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Figure 1 Decision tree model based on the CESE-PGS trial..docx available at <https://authorea.com/users/487934/articles/572269-in-vitro-fertilization-with-preimplantation-genetic-testing-for-aneuploidy-for-infertility-in-china-a-cost-effectiveness-analysis>

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Figure 2 Costs per live birth and per patient with and without PGT-A in the base-case.docx available at <https://authorea.com/users/487934/articles/572269-in-vitro-fertilization-with-preimplantation-genetic-testing-for-aneuploidy-for-infertility-in-china-a-cost-effectiveness-analysis>

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Figure 3.docx available at <https://authorea.com/users/487934/articles/572269-in-vitro-fertilization-with-preimplantation-genetic-testing-for-aneuploidy-for-infertility-in-china-a-cost-effectiveness-analysis>

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Figure 4 Tornado diagram.docx available at <https://authorea.com/users/487934/articles/572269-in-vitro-fertilization-with-preimplantation-genetic-testing-for-aneuploidy-for-infertility-in-china-a-cost-effectiveness-analysis>