STATENS BEREDNING FÖR MEDICINSK OCH SOCIAL UTVÄRDERING

Bilaga till rapport

Undersökning av kromosomavvikelser i embryot vid assisterad befruktning/Effectiveness, complications and health economic and ethical aspects of preimplantation genetic testing for aneuploidy (PGT-A) during in vitro fertilisation (IVF) report 393 (2025)

Bilaga 9 Tabell över inkluderade studier,hälsoekonomi/

Appendix 9 Characteristics of included health economic studies

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Table 1 Economic evaluation of IVF with PGT-A vs. IVF alone in women aged 20-37 years.

Author **Year** **Country** **Reference**	He 2023 China [1]
Study design **Population** **Setting** **Perspective**	CEA based on RCT [2]. Up to 3 embryo transfers. Women 20-37 years old with at least 3 available good-quality blastocysts and without use of donated sperm or oocytes. Mean age 29 years. Academic fertility centres. Healthcare system (direct medical costs based on local out-of-pocket charges, since IVF was not reimbursed in China at the time of the analysis).
Intervention vs control	IVF with PGT-A vs IVF.
Incremental cost	2 785 CNY per live birth per patient (32 939 CNY for IVF with PGT-A vs. 30 154 CNY for conventional IVF). Same for miscarriage prevention. Costs estimated based on 1 of 14 participating hospitals. Costs reported in Chinese Yuan Renminbi (CNY) year 2021.
Incremental effect	Cumulative live birth rate (IVF with PGT-A vs. IVF): 0.84 (0.82—0.86) vs. 0.90 (0.87—0.92)* Cumulative miscarriage rate (IVF with PGT-A vs. IVF): 0.08 (0.06—0.11) vs. 0.15 (0.11—0.18)*
ICER	Cumulative live birth rate: IVF is cheaper and more effective than IVF with PGT-A (dominant strategy). Cumulative miscarriage rate: cost of 45 600 CNY to prevent one miscarriage.
Study quality and transferability** **Further information** **Comments**	Low-moderate quality. Transferability to Swedish setting expected to be low due to private financing of IVF in China at the time of study. Risk of bias for cumulative live birth outcome in [2] deemed to be moderate. • Unclear derivation of probabilities for clinical pregnancy and live birth from RCT. • Large impact of variation in clinical pregnancy rates and euploidy on results. Unclear interpretation of Tornado-diagram. Unclear derivation of willingness-to-pay thresholds. • The cost-effectiveness results are closely tied to the evaluated treatment set-up. The probabilities of clinical pregnancy and live birth per embryo transfer were higher in the PGT-A group, however, the cumulative live birth rate was lower. This is due to the evaluated treatment design, with patients in the PGT-A group receiving between 0 and 3 embryos, while in the comparator group, patients always received 3 embryos.

CEA = Cost-effectiveness analysis; **CNY** = Chinese Yuan Renminbi; **ICER** = Incremental cost-effectiveness ratio; **IVF** = in-vitro fertilisation; **PGT-A** = preimplantation genetic testing for aneuploidy; **RCT** = randomised controlled trial; **vs** = versus.

* Mean values from probabilistic sensitivity analysis.
** Assessed using SBU's checklist for model-based health economic studies [3].

Table 2 Economic evaluation of IVF with PGT-A vs. IVF alone in women aged 38 years and above.

Author **Year** **Country** **Reference**	Collins et al. 2017 US [4]
Study design **Population** **Setting** **Perspective**	CEA based on observational study [5]. One embryo transfer. Women older than 37 years, with successful oocyte retrieval and development of at least one blastocyst, receiving fresh embryo transfers. Theoretical model using data from fertility centres for effects and costs. Healthcare system.
Intervention vs control	IVF with PGT-A (array CGH) vs IVF.
Incremental cost	USD 4509 (USD 6888 for IVF with PGT-A vs. USD 2379 for IVF alone). Costs reported in USD year 2016.
Incremental effect	Live birth rate: 24.9% for IVF with PGT-A vs. 20.7% for IVF alone. Incremental live birth rate: 4.2%.
ICER	USD 105 489 per additional live birth achieved.
Study quality and transferability* Further information Comments	Low-moderate quality. Transferability to Swedish setting expected to be low-moderate due to insurance-based system in the US. Risk of bias for live birth outcome in [5] deemed to be high. • Analyses in [5] based on data from 2011–2012, meaning that diagnostic techniques may not involve analysis of all chromosomes as is done in current practice. • Model structure includes decision node that does not reflect the clinical decision-making process. Given the specific assumptions, the node is superfluous but introduces unnecessary risk for errors if the model structure is adapted by others. • Assumed that an IVF cycle without PGT-A involved the transfer of at most two embryos, with same probability of clinical pregnancy and miscarriage for one and two euploid embryos. • Costs of live birth not included. • Results sensitive to variation in cost and effect inputs. • Unclear rationale for derivation of cost-effectiveness threshold based on average cost of achieving live birth with IVF alone based on published data.

CEA = Cost-effectiveness analysis; **CGH** = comparative genomic hybridisation; **ICER** = Incremental cost-effectiveness ratio; **IVF** = in-vitro fertilisation; **PGT-A** = preimplantation genetic testing for aneuploidy; **USD** = United States Dollar; **vs** = versus.

* Assessed using SBU's checklist for model-based health economic studies [3].

References

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