

# Preimplantation genetic testing for BRCA gene mutation carriers: a cost effectiveness analysis

Nadav Michaan<sup>1</sup>, Moshe Lashno<sup>1</sup>, Yoni Cohen<sup>1</sup>, Tamar Safra<sup>1</sup>, Shira Peleg-Hasson<sup>1</sup>, Dan Grisaru<sup>1</sup>, and Ido Laskov<sup>1</sup>

<sup>1</sup>Tel Aviv Sourasky Medical Center

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## Abstract

Objective: Gynecologic oncologists should be aware of the option of conception through IVF/PGT-M for families with high BRCA related morbidity or mortality. Our objective was to investigate the cost-effectiveness of preimplantation genetic testing for selection and transfer of BRCA negative embryo in BRCA mutation carriers compared to natural conception. Design: Markovian process decision analysis model comparing two strategies, conception through IVF/PGT-M and BRCA negative embryo transfer and natural conception with a 50% chance of BRCA positive newborn. Setting: Not applicable Population: Theoretical couple, with either one parent carrying a BRCA germ line mutation. Intervention: None Methods: Costs of two strategies were compared using quality adjusted life years (QALYs'). All costs were discounted at 3%. Main outcome measure: Incremental cost effectiveness ratio (ICER) compared to willingness to pay threshold was used for cost-effectiveness analysis. Results: IVF/ PGT-M is cost-effective with an ICER of 150,219 new Israeli Shekels, per QALY gained (equivalent to 44,480 USD), at a 3% discount rate. Conclusion: IVF/ PGT-M and BRCA negative embryo transfer compared to natural conception among BRCA positive parents is cost effective and should be considered for selected couples with high BRCA mutation related morbidity. Funding: No funding of any kind was received for this article

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Table 1 Probabilities used in model.pdf available at <https://authorea.com/users/391443/articles/505547-preimplantation-genetic-testing-for-brca-gene-mutation-carriers-a-cost-effectiveness-analysis>

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Table 2 cost effectiveness analysis.pdf available at <https://authorea.com/users/391443/articles/505547-preimplantation-genetic-testing-for-brca-gene-mutation-carriers-a-cost-effectiveness-analysis>

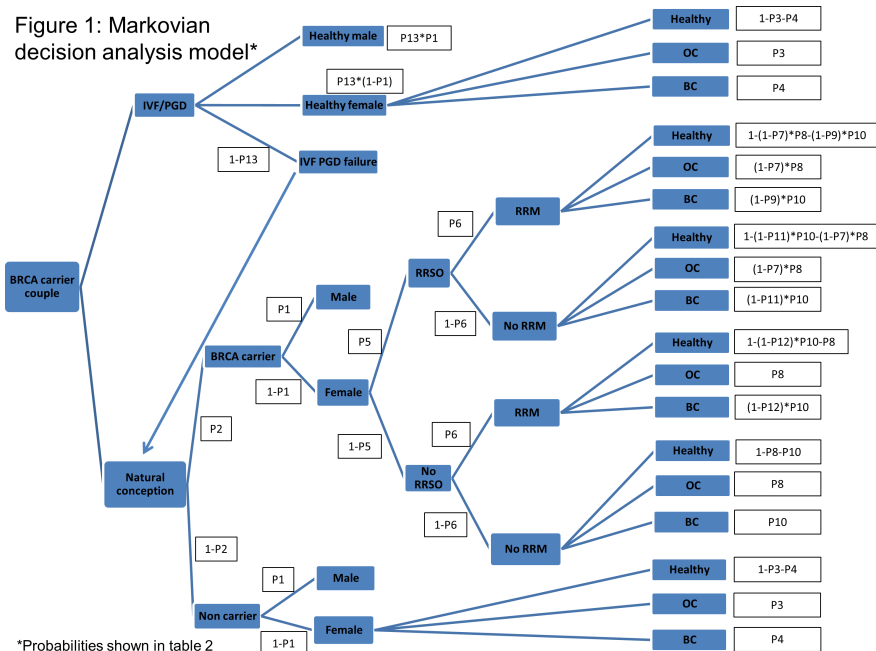


Figure 2: Tornado sensitivity analysis, effect of model parameters on ICER\*

