HP-HMG versus rFSH in treatments combining fresh and frozen IVF cycles: success rates and economic evaluation

Wex-Wechowski J, Abou-Setta AM, Kildegaard Nielsen S, Kennedy R

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
The aim of the study was to assess the cost-effectiveness of human menopausal gonadotrophin (HP-HMG) compared with recombinant FSH (rFSH) for in vitro fertilisation treatment of couples seeking an intervention for infertility in the UK. The authors concluded that the results demonstrated the superior cost-effectiveness of HP-HMG to produce live births compared with rFSH. There were a few limitations to the study so the authors’ conclusions should be considered with a degree of caution.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The objective of the study was to assess the cost-effectiveness of human menopausal gonadotrophin (HP-HMG) compared with recombinant follicle stimulating hormone (rFSH) for in vitro fertilisation (IVF) treatment of couples seeking an intervention for infertility in the UK.

Interventions
The interventions under comparison were HP-HMG (Menopur) and rFSH (GONAL-F) used in IVF treatments with cryopreserved embryos for ovarian stimulation. The setting of the study was couples undergoing an IVF intervention in the UK.

Location/setting
UK/Primary, secondary and tertiary care

Methods
Analytical approach:
The authors used a decision analytic model to combine individual patient level data from two randomised controlled trials with live birth data and published cost estimates from the UK. The time horizon of the analysis was up to three cycles (one fresh and two frozen). The authors stated that the study perspective was that of the NHS payer.

Effectiveness data:
The main clinical effectiveness evidence came from prospective multinational randomised controlled trials that were pooled to provide the patient population and outcomes (Andersen et al. 2006, European and Israeli Study Group 2002 and Platteau et al. 2008; see Other Publications of Related Interest). The pooled population consisted of 986 women aged 18 to 39 treated with either HP-HMG (491 participants) or rFSH (495 participants). The main effectiveness estimate was live birth rate. For other clinical parameters trial data (such as drop-out rates following each cycle) were supplemented with a selection of known recent relevant studies from the published literature.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
Live birth rate and number of babies born per patient who initiated treatment were the benefit measures.
Cost data:
The cost categories included those related to treatment doses of HP-HMG and rFSH, GnRH agonists, hospitalisation for ovarian hyperstimulation syndrome, patient visits and cost of pregnancy determination and loss. Resource use quantities were based on data collected in the randomised controlled trials. Unit costs were from published UK sources (including the British National Formulary, UK reference costs and the published literature). Costs were indexed to the year 2008. No discounting was performed due to the short time horizon.

Analysis of uncertainty:
Confidence intervals around summary statistics were derived using bootstrapping. The authors conducted probabilistic sensitivity analysis to assess the impact of multiple parameter uncertainty on the results.

Results
Under a treatment schedule of one fresh and two frozen cycles HP-HMG was expected to result in 679 (95% confidence interval 639 to 720) live births compared with 580 (95% CI 536 to 623) with rFSH per 1,000 treatments.

Mean total cost per patient of HP-HMG was estimated to be £5,393 (95% CI £5,341 to £5,449) compared with £6,269 (95% CI £6,210 to £6,324) with rFSH.

Average mean costs per live birth were estimated to be £11,659 for HP-HMG treatment and £14,388 for rFSH treatment. Results of incremental comparison between the treatments showed that HP-HMG was dominant (less costly and more effective) compared with rFSH. Probabilistic sensitivity analysis showed that these findings were robust as cost savings (with HP-HmG) were seen in 100% of patients when willingness to pay for a live birth was varied from zero to £20,000.

Authors' conclusions
The authors concluded that the results demonstrated the superior cost-effectiveness of HP-HMG to produce live births compared with rFSH.

CRD commentary
Interventions:
The level of reporting of interventions was technical and this may make assessment of the interventions under study difficult for the non-specialist reader. It was unclear whether all available options were included in the analyses and whether current practice was included in the model.

Effectiveness/benefits:
The sources of effectiveness estimates were described in adequate detail but the authors did not describe the methods used to identify and select included studies from the published literature so it was unclear whether the best available evidence was incorporated in the model. The included studies included a large number of clinics (53) with a low number of patients from 13 different countries which may affect the validity of these data for other study settings.

Costs:
The costs included in the analysis were reported in adequate detail and appeared to be relevant to the perspective stated by the authors. Parameter estimates and sources of data were reported in tables. Sources of costs were given and were likely to reflect the UK setting. The authors reported the price year and adjustments made to cost data.

Analysis and results:
An incremental analysis was appropriate to compare the costs and effectiveness of the two alternative treatments under study but it was unclear whether all appropriate comparators were included in the analysis. The authors used appropriate methods to assess the impact of uncertainty on the model results and reported the results fully. Some of the limitations to the study were addressed by the authors. The results may not be generalisable to all settings.

Concluding remarks:
There were a few limitations to the study so the authors’ conclusions should be considered with a degree of caution.
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