

## Technical specification of the sensitivity analyses (SA)

### SA1 (fecundability)

Monthly pregnancy chances are assumed 20% higher/lower than the base case chance of 0.23. So for +20% we get  $0.23 \times 1.2 = 0.276$  and for -20%:  $0.23 \times 0.8 = 0.184$ . The standard deviation (SD) of the distribution of monthly pregnancy chances should also be changed, according to a constant Coefficient of Variation of 0.52. Therefore, the SD becomes  $0.52 \times 0.276 = 0.143$  for +20% and  $0.52 \times 0.184 = 0.096$  for -20%.

### SA2 (sterility)

In this SA, a new sterility curve was used, based on a recent publication that has derived a 'Biological age at last birth' curve (Eijkemans *et al.*, 2014) by selecting the oldest birth quartile in each of six historical populations. To find the sterility curve that generates this age at last birth distribution, the model was run a large number of times to find empirically the best fitting sterility curve, assuming other parameters in the model to be the same as in the historical populations that contributed most to the curve.

The resulting sterility rates are 3.5% at age 25, 6.1% at age 30 and 9.2% at age 35 versus 1%, 2%, and 5% at these respective ages in the baseline run.

### SA3 (IVF results)

We explore further improved IVF outcomes by increasing the current per IVF cycle success rates of 0.295 with 25%:  $P' = 0.295 \times 1.25 = 0.369$ . For applying the change to the logistic Lintsen *et al.* (2007) prediction model we need the corresponding factor change in Odds Ratio:  $(0.295 \times 1.25 \times (1 - 0.295)) / (0.295 \times (1 - 0.295 \times 1.25)) = 1.396$ .

### SA4 (other treatments)

We explore the additional benefit of other treatments by assuming the application of four instead of three IVF cycles. Because the model uses a fixed number of three cycles, we implement this SA through changing IVF success rates,  $P'$  versus  $P$ , from:  $(1 - P)^4 = (1 - P')^3 \rightarrow P' = 1 - (1 - P)^{4/3}$ . OR =  $(1 - (1 - 0.295)^{4/3}) * (1 - 0.295) / (0.295 * ((1 - 0.295)^{4/3})) = 1.419$ .

### SA5 (IVF discontinuation)

We explore possibility that couples discontinue IVF by assuming one or two instead of three IVF cycles.

\*One instead of three IVF cycles. Realisation: through changing IVF success rates,  $P'$  versus  $P$ , from:  $(1 - P)^1 = (1 - P')^3 \rightarrow P' = 1 - (1 - P)^{1/3}$ . OR =  $(1 - (1 - 0.295)^{1/3}) * (1 - 0.295) / (0.295 * ((1 - 0.295)^{1/3})) = 0.2953$ .

\*Two instead of three IVF cycles. Realisation: through changing IVF success rates,  $P'$  versus  $P$ , from:  $(1 - P)^2 = (1 - P')^3 \rightarrow P' = 1 - (1 - P)^{2/3}$ . OR =  $(1 - (1 - 0.295)^{2/3}) * (1 - 0.295) / (0.295 * ((1 - 0.295)^{2/3})) = 0.6272$ .

### SA6 (family size preferences)

No technical specification needed.

## References

- Eijkemans MJ, van Poppel F, Habbema JDF, Smith KR, Leridon H, te Velde ER. Too old to have children? Lessons from natural fertility populations. *Hum Reprod* 2014;29:1304–1312.  
Lintsen AM, Eijkemans MJ, Hunault CC, Bouwmans CA, Hakkaart L, Habbema JD, Braat DD. Predicting ongoing pregnancy chances after IVF and ICSI: a national prospective study. *Hum Reprod* 2007;22:2455–2462.