Aim
To estimate the cost-effectiveness of sacral nerve stimulation (SNS) using Interstim® therapy compared to alternative treatments for patients with faecal incontinence (FI) refractory to conservative treatments (CT).

Method
A patient-level simulation model with a lifetime horizon was developed. Two subpopulations, differentiated by the presence or absence of a surgically reparable sphincter defect, were analyzed. The stated, sequential and univariate clinical and economic effects of InterStim® therapy against alternative treatments were modeled. Alternative treatments were anal sphincter repair (SR), injectable botulinum toxin A (BTA) and percutaneous tibial nerve stimulation (PTNS). The effectiveness (including quality of life and safety data for most of the interventions were based on a systematic literature review performed ad hoc; [1]) and assumed as the proportion of patients with treatment success at set time-points. Depending on the response to a treatment, subjects either could continue with the current therapy or progress to the next line of treatment (Figure 1). When all therapeutic options had been exhausted, continued conservative treatment and colostomy were deemed to be last-line therapies.

Figure 1. Model structure

A cost utility analysis was performed from the perspective of the UK national health service (NHS). Direct medical costs derived from the 2015/16 UK National Tariff and National Institute of Clinical Excellence costing report 2007 were considered. Sensitivity analysis and discounting at 3.5% for cost and outcome were included.

Four health states with different utilities were evaluated:
- no FI symptoms state where utility value was assumed as in general population, equal 0.86.
- FI with reduction in FI symptoms, with utility 0.71.
- FI without response to treatment, with utility 0.64.
- Colostomy, with utility 0.58.

SNS
Temporary evaluation of SNS can be performed using basic evaluation (monopolar lead) or advanced evaluation (bipolar lead). Outcome, morbidity and overall cost differs based on the approach used. Therefore, both types of evaluation were considered. The percentage of patients responding to treatment after basic evaluation is 69% versus 83% for advanced evaluation. [1] For patients progressing to chronic SNS, Webb reported regression analysis of the percentage of patients with >50% reduction in incontinence episodes at fixed time points was performed. [2] It was assumed that 45.7% of patients who respond to treatment are fully continent. It was assumed that 45.7% of patients who respond to treatment are fully continent.

Figure 2 SNS long-term effectiveness summary (250 reduction in FI episodes)

Linear regression analysis of the percentage of patients with >50% reduction of incontinence episodes at fixed time periods was performed. It was assumed that 22.23% of patients who respond to NASHA/DX are fully continent [9] and 53% of patients required an additional injection in the short-term.

Conclusions
SNS is a relevant treatment for fecal incontinence in patients who have failed conservative management. It brings additional benefits at an acceptable cost.

References