

## LONG TERM COST EFFECTIVENESS OF BOTULINUM TOXIN A AND SACRAL NEUROMODULATION FOR PATIENTS WITH REFRACTORY OVERACTIVE BLADDER.

### Hypothesis / aims of study

Recent NICE guidelines in the UK have suggested that botulinum toxin A (BTX) treatment should be given prior to sacral neuromodulation (SNM) in patients with refractory overactive bladder (OAB). Commissioning, initial high outlay costs and access to SNM limits its use in the NHS in the UK. Therefore we decided to assess the cost effectiveness of BTX and SNM over a prolonged period.

### Study design, materials and methods

An economic decision analytical model (with Markov modelling for repetition of events), was developed to assess and compare the quality adjusted life years (QALY's) gained and the costs in pounds sterling incurred from SNM and BTX therapies over 10 years from a societal perspective. These values were obtained from both extensive literature reviews of the most recent data and also from expert opinion. Successes were defined as, at least 50% reduction in OAB symptoms. The base case for SNM utilized a first stage tined lead procedure and the full implant using the Interstim® II system (Medtronic, Minneapolis, MN). BTX (OnabotulinumtoxinA, Allergan, Irvine, CA) was administered under local anaesthetic in the outpatient department, once per year at a dosage of 100 U. The primary outcome was to obtain the incremental cost effectiveness ratio defined as (SNM cost-BTX cost/SNM QALY-BTX QALY). All costs and utilities were discounted at a rate of 3.5%. Sensitivity analyses were also conducted to assess the impact of varying variables such as costs, adverse event rates, dosage, inter injection interval, visits to clinic and setting on cost effectiveness.

### Results

In the base case scenario, BTX (£11,549) was more expensive than SNM therapy (£10,917) by £632 over 10 years. The QALY's gained in BTX treatment (6.93) was higher than SNM (6.83) by 0.1. The ICERs suggested BTX (£6315) was more cost effective than SNM (£17262) over 10 years. In the sensitivity analyses performed, increasing the BTX dosage to 200 U and moving from local to general anaesthetic increased BTX costs relative to SNM, although BTX remained cost effective. However increasing the number of BTX injection procedures to twice yearly made BTX more expensive and not cost effective in relation to SNM.

### Interpretation of results

In this Markov model at 10 years, our base case analysis suggested that BTX is more cost effective than SNM. Limitations of such a study are related to heterogeneity in efficacy and adverse events for both treatments and they are derived from multiple sources. The study is as robust as what is put into the modelling and as such the base cases were designed to reflect 'real life' practice in 2015. However practice varies worldwide and cost effectiveness may differ in different health care systems.

### Concluding message

During a 10 year time interval, BTX therapy for refractory OAB in a UK healthcare system was found to be cost effective in comparison to sacral neuromodulation. However SNM becomes more cost effective if the BTX procedure is performed every 6 months.

### Disclosures

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