33

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Title: TOLTERODINE: THE COST-EFFECTIVE CHOICE FOR TREATING UNSTABLE BLADDER IN THE UK

Aims of Study:

An economic model was developed in the United Kingdom (UK) to estimate the comparative cost-effectiveness of treating unstable bladder (UB) with tolterodine immediate-release (IR), tolterodine sustained-release (SR) and oxybutynin. The model employs the payer, patient and societal perspectives over a one-year timeframe.

Methods:

The treatment population was based on the percentage of patients seeking treatment for their condition in the UK. The treatment population was divided into two groups: successfully treated patients and patients failing treatment. The percentage of successfully treated patients was calculated from clinical efficacy and adjusted by annual persistency. For each group of patients, four categories of costs were identified and quantified: incontinence pads, physician visits, lab tests/diagnostics, and associated comorbidities. Resource costs were obtained from the National Health Service (NHS), published literature and expert medical panels. The model assumed that 100% of drug, patient visit and comorbidity costs were covered by NHS.

Results:

The prevalence of sufferers in the UK was estimated to be 19% (approximately 11 million people), with only 5.9% of those patients seeking treatment. Successfully treated patients use fewer pads per day than patients who are failing treatment, which decreases the cost to the patient. Successfully treated patients visit physicians less frequently than patients failing treatment; this lower physician utilization decreases costs to patients, payers and society. Successfully treated patients have the same number of lab tests/diagnostics as patients unsuccessful with treatment, but experience a lower incidence of comorbidities due to their compliance with therapy. Efficacy was higher for tolterodine than for oxybutynin. Persistence on therapy (measured as the percentage of patients remaining on therapy at 12 weeks) was also higher for tolterodine versus oxybutynin. Therefore, effectiveness, defined as the percentage of successfully treated patients, was higher for tolterodine versus oxybutynin (42.70% for tolterodine IR, 54.67% for tolterodine SR and 9.50% for oxybutynin[1-4]).

The percentage of successfully treated patients and the number of patients seeking treatment were multiplied to calculate the number of successfully treated patients. Cost per successfully treated patient was lower for tolterodine than oxybutynin, with the lowest cost per successfully treated patient for tolterodine SR (Table 1). The model demonstrates that while the average total cost per patient for twelve months of treatment was higher for tolterodine than oxybutynin, the cost-effectiveness is superior for tolterodine versus oxybutynin. Given an arbitrary budget of £100,000 ($142,650), the number of patients one is able to treat successfully is higher for tolterodine than oxybutynin.

Table 1. Model Results (Societal Perspective)

	Tolterodine IR	Tolterodine SR	Oxybutynin
Cost per patient	£596 ($850)	£575 ($820)	£389 ($555)
Cost per successfully treated patient	£1,396 ($1,991)	£1,052 ($1,501)	£4,092 ($5,837)
# patients able to treat successfully given £100,000 ($142,650) budget	72	95	24

The incremental cost-effectiveness of tolterodine IR versus oxybutynin was £412 ($588). Tolterodine IR was dominated by tolterodine SR in an incremental cost-effectiveness analysis, as tolterodine SR has a higher effectiveness and a lower cost than tolterodine IR.

Threshold analyses included the threshold cost per tablet and cost per day at which cost per successfully treated patient was equal for each pair of drugs and the threshold persistence at which effectiveness was equal for each pair of drugs (Table 2).

Table 2. Threshold Analysis (Societal Perspective)

	Tolt IR vs. Oxy		Tolt SR vs. Oxy		Tolt SR vs. Tolt IR	
	From	To	From	To	From	To
Cost of Drug (per tablet/capsule)	£0.55 ($0.78)	£2.58 ($3.68)	£1.04 ($1.48)	£6.54 ($9.33)	£1.04 ($1.48)	£1.66 ($2.37)
Cost of Drug (per Day)	£1.10 ($1.57)	£5.17 ($7.38)	£1.04 ($1.48)	£6.54 ($9.33)	£1.04 ($1.48)	£1.66 ($2.37)
Persistence	70%	16%	77%	13%	77%	60%

Holding all other variables constant, the cost of tolterodine SR could be as high as £6.54 ($9.33) and the cost of tolterodine IR could be as high as £2.58 ($3.68), both while remaining cost-effective compared to oxybutynin. The persistence could be as low as 16% for tolterodine IR and 13% for tolterodine SR, both while maintaining the same effectiveness as oxybutynin.

Conclusions:

This economic model demonstrates the superiority of tolterodine over oxybutynin in treating unstable bladder in terms of cost-effectiveness as measured by cost per successfully treated patient.

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