

ERG additional scenario analyses

13 January 2012

**Botulinum toxin type A for the prophylaxis of headaches associated with
chronic migraine**

Botox for chronic migraine: additional sensitivity analyses

In the light of the pre-meeting briefing and a request from the chair, the ERG has undertaken some additional sensitivity analyses. These in part relate to the 3-prior specific utilities as supplied by the manufacturer to NICE on 23 Dec 2011.

Manufacturer supplied 3-prior specific utility estimates.

Health State	Botox			Placebo		
	n	Mean	SE	n	Mean	SE
0 - 3	24	0.691	0.028	13	0.669	0.053
4 - 9	45	0.699	0.018	40	0.638	0.022
10 - 14	36	0.635	0.024	44	0.565	0.024
15 - 19	26	0.561	0.028	36	0.550	0.037
20 - 23	18	0.462	0.054	21	0.597	0.039
24 +	15	0.501	0.055	41	0.461	0.035

These are augmented by a set of analyses related to the abstract of Rothrock and colleagues (2011). This indicates that of 100 CM patients with an initially good response of a reduction of at least 50% in HDPM, over a follow up period of at least 2 years (2.88 years mean follow up):

- 24% were able to stop injections and maintain good response for at least six months, with a mean number of injections of 4.7,
- 68% remained good responders but required ongoing injections at an average frequency of 3.2 months, and
- 8% relapsed back to CM.

The electronic model does not permit the modelling of the 8% relapsing. But the 24% maintaining response for at least 6 months without further injections can be approximated by assuming 24% of EM patients in the botox arm have the positive stopping rule applied. The minimum six months without further injections fits reasonably well into the manufacturer time horizon of 2 years.

This gives rise to the following additional sensitivity analyses:

- **SA1a** Include the positive stopping rule
- **SA1b** Exclude the positive stopping rule
- **SA1c** 24% of EM patients have the positive stopping rule applied
- **SA2a** Exclude the negative stopping rule
- **SA2b** Apply a negative stopping rule of at least 1 health state within the 1st cycle
- **SA2c** Apply a negative stopping rule of at least 1 health state within 2 cycles
- **SA2d** Retain the manufacturer base case negative stopping rule of 2 health states in 2 cycles
- **SA3a** Apply the 3-prior specific utilities differentiated by arm
- **SA3b** Assume that both arms have the 3-prior specific placebo utilities

These sensitivity analyses are from a baseline of the ERG deterministic ICERs as per tables 49 and 50 of the ERG report which, applying the original manufacturer utility estimates and negative stopping rule, resulted in ICERs of £10,257 per QALY including the positive stopping rule and £17,517 per QALY excluding the positive stopping rule.

Additional deterministic sensitivity analyses: 3-prior group

+ve stopping rule	-ve stopping rule	Utilities	Δ Cost	Δ QALY	ICER
1a Include	2a None	3a Differentiated	£1,412	0.101	£13,986
		3b Undifferentiated	£1,412	0.050	£28,273
	2b 1HS in 1st cycle	3a Differentiated	£945	0.098	£9,618
		3b Undifferentiated	£945	0.052	£18,328
	2c 1HS in 2 cycles	3a Differentiated	£1,413	0.107	£13,167
		3b Undifferentiated	£1,413	0.059	£24,019
	2d 2HS in 2 cycles	3a Differentiated	£916	0.081	£11,267
		3b Undifferentiated	£916	0.045	£20,324
1b Exclude	2a None	3a Differentiated	£2,297	0.094	£24,387
		3b Undifferentiated	£2,297	0.050	£46,290
	2b 1HS in 1st cycle	3a Differentiated	£1,703	0.093	£18,241
		3b Undifferentiated	£1,703	0.051	£33,237
	2c 1HS in 2 cycles	3a Differentiated	£2,373	0.104	£22,852
		3b Undifferentiated	£2,373	0.059	£40,008
	2d 2HS in 2 cycles	3a Differentiated	£1,510	0.077	£19,483
		3b Undifferentiated	£1,510	0.044	£34,250
1c 24% EM patients	2a None	3a Differentiated	£2,085	0.096	£21,756
		3b Undifferentiated	£2,085	0.050	£41,945
	2b 1HS in 1st cycle	3a Differentiated	£1,521	0.095	£16,091
		3b Undifferentiated	£1,521	0.051	£29,642
	2c 1HS in 2 cycles	3a Differentiated	£2,142	0.105	£20,468
		3b Undifferentiated	£2,142	0.059	£36,194
	2d 2HS in 2 cycles	3a Differentiated	£1,367	0.078	£17,438
		3b Undifferentiated	£1,367	0.044	£30,850