

Impact of exenatide on medical costs and health utilities in type 2 diabetes: experience from EXSCEL

S.D. Reed¹, Y. Li¹, H. Dakin², F. Becker², J. Leal², S.M. Gustavson³, B. Kartman⁴, E. Wittbrodt³, R.J. Mentz¹, N.J. Pagidipati¹, M.A. Bethel⁵, A.M. Gray², R.R. Holman⁵, A.F. Hernandez¹;

¹Duke Clinical Research Institute, Durham, USA, ²Oxford Health Economic Research Centre, Oxford, UK, ³AstraZeneca, Gaithersburg, USA, ⁴AstraZeneca, Molndal, Sweden, ⁵Diabetes Trials Unit, Oxford, UK.

Background and aims: The Exenatide Study of Cardiovascular Event Lowering (EXSCEL) demonstrated a numerical, but not statistically significant, reduction in major adverse cardiovascular events and a nominally significant improvement in all-cause mortality in 14,752 patients with type 2 diabetes (T2D), with or without previous cardiovascular disease, randomized 1:1 to exenatide 2mg once-weekly (EQW) or placebo added to usual care. Those allocated EQW experienced significantly greater reductions in glycated hemoglobin, body weight, LDL-cholesterol and systolic blood pressure compared with placebo. Medical resource use and EQ-5D data were collected throughout the study.

Materials and methods: Medical resources were valued from US and UK perspectives using Medicare payments and wholesale acquisition costs (WAC) for concomitant medications with a 23.1% discount for EQW in the US analysis, and using the English National Schedule of Reference Costs and Prescription Cost Analysis database for the UK analysis. EQ-5D-5L and EQ-5D-3L responses were mapped to 3-level health utilities using both US and UK tariffs. Hierarchical generalized linear models were used to compare medical resource use, costs and health utilities with specific error distributions and link functions.

Results: Mean follow-up was 3.3 years. Mean number of hospitalizations per patient were similar in both groups (EQW 0.83 vs. placebo 0.84; $p=0.31$), as were annual hospitalization rates, ranging from 0.24–0.29 per person-year from year 1 to year 5. The mean cumulative number of inpatient days over the trial follow-up period was 0.41 days lower in the EQW group than the placebo group (7.05 days vs. 7.46 days respectively; relative rate ratio 0.91; $p=0.05$). Inpatient and outpatient costs were similar between treatment groups when US or UK costs were assigned. Although EQW-treated patients incurred lower costs for concomitant diabetic and non-diabetic medications, and in overall total costs excluding study medication, inclusion of EQW costs led to higher total mean costs in the EQW arm (Table). There were no significant differences observed in US or UK EQ-5D health utilities between groups throughout the follow-up period.

Conclusion: Similar hospitalization rates and health utilities were reported across time with EQW, compared with placebo. However, mean cumulative inpatient days were significantly reduced with EQW, compared with placebo. Total costs were significantly lower in the EQW group when the cost of study medication was excluded, but were significantly greater when the cost of branded EQW was included in the analysis.

Table: Medical costs over trial period in exenatide and placebo groups, using US and UK unit costs (mean, SD)

	US analysis (\$)			UK analysis (£)		
	Exenatide (N=7,356)	Placebo (N=7,396)	Mean cost ratio <i>p</i> -value	Exenatide (N=7,356)	Placebo (N=7,396)	Mean cost ratio <i>p</i> -value
Inpatient costs	9,654 (25,051)	10,078 (26,016)	0.92, $p=0.10$	5,021 (14,028)	5,204 (13,929)	0.92, $p=0.51$
Outpatient costs	2,156 (1,872)	2,139 (1,910)	1.01, $p=0.68$	1,313 (1,231)	1,293 (1,215)	1.01, $p=0.74$
Total non-study medication costs	17,098 (15,992)	18,698 (16,899)	0.91, $p<0.01$	2,457 (2,558)	2,708 (2,913)	0.91, $p<0.01$
Diabetic medication costs	13,882 (14,592)	15,445 (15,295)	0.89, $p<0.01$	1,640 (1,618)	1,823 (1,687)	0.89, $p<0.01$
Other medication costs	3,216 (3,610)	3,252 (3,876)	0.99, $p=0.39$	817 (1,676)	885 (2,019)	0.96, $p=0.03$
Study medication: exenatide 2mg once-weekly	13,790 (8,374)	--	--	2,084 (1,254)	--	--
Total costs (excluding study medication)	28,907 (32,600)	30,914 (34,089)	0.92, $p=0.02$	8,790 (15,024)	9,204 (14,970)	0.93, $p=0.02$
Total costs	42,697 (34,355)	30,914 (34,089)	1.39, $p<0.01$	10,874 (15,136)	9,204 (14,970)	1.18, $p<0.01$

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