Health economic evaluation of dipeptidyl peptidase-4 inhibitors

Sir,

The predicted loss of national income from diabetes in India is 336.6 billion International Dollars. Furthermore, studies have demonstrated that the prevalence of diabetes in India is rising with the progression of time. Therefore, this financial burden is bound to increase.

About 90-95% of all the diabetes patients are of the type-2 diabetes mellitus (T2DM). A range of classes of oral therapeutic agents exists for the treatment of T2DM. Among these classes, the newest US FDA-approved drug therapeutic class is of the DPP-4 inhibitors. DPP-4 inhibitors offer substantial glycemic control in T2DM patients. However, DPP-4 inhibitors come at increased costs. Thus a systematic review of the health economic evaluation of DPP-4 inhibitors is required.

Separately, the PubMed was searched using the following search strategies: (1) (“saxagliptin” [Supplementary Concept]) AND “Economics”[Mesh] 2) (“sitagliptin” [Supplementary Concept]) AND “Economics”[Mesh] 3) (“vildagliptin” [Supplementary Concept]) AND “Economics”[Mesh] 4) (“BI 1356” [Supplementary Concept]) AND “Economics”[Mesh]. The references cited in all the above retrieved publications were also reviewed for relevance and were obtained and included in the search results when applicable.

Currently, saxagliptin is approved at once a daily dosage of 2.5 mg and 5 mg in individuals with normal renal functioning and at 2.5 mg in individuals with moderate-to-severe renal insufficiency or end-stage renal disease (ESRD). Furthermore, several clinical trials have shown the effectiveness, safety, and tolerability of saxagliptin in terms of HbA1c, FPG, and PPG reductions.

A total of three studies were obtained when the PubMed was searched for saxagliptin and economics, combined. These searches were examined as follows. The abstracts of these three studies were reviewed for the inclusion criterion of the cost-effectiveness analysis of saxagliptin. This lead to non-inclusion of all three studies, as none of them met the above described inclusion criterion. This indicates that, including India, no health economic evaluation of saxagliptin has been conducted till date in any part of the world.

Currently, the recommended daily dosage of sitagliptin is 100 mg once daily which may be taken without regard to food. The efficacy, safety, and tolerability of sitagliptin is well established in several well designed clinical trial studies.

A total of 11 studies were obtained when the PubMed was searched for sitagliptin and economics, combined. The articles obtained were examined for the inclusion criterion of the health economic evaluation of sitagliptin. Based on this criterion, only one study evaluating the cost and consequences associated with sitagliptin was found. As per this study, in comparison to glyburide and exenatide, sitagliptin was found cost-effective. Nonetheless, this study was conducted in the United States settings, and, therefore, the results of cost-effectiveness analysis, if conducted in any other country, may differ. No other study evaluating the pharmaeconomics of sitagliptin was found in the conducted literature search.

Vildagliptin is currently not approved by the US FDA, but is in India, European countries, and Japan for the treatment of T2DM patients. Currently, vildagliptin is given 50 mg twice a day in combination with metformin or a thiazolidinedione and 50 mg once a day in combination with sulfonylurea. The efficacy, safety, and tolerability of vildagliptin have been established in various clinical trials of durations of 12 to 104 weeks.

Only one study was found when PubMed was searched for vildagliptin and economics, combined. The full-text article for this study was retrieved and was reviewed for the health economic evaluation of vildagliptin. On reviewing the full-text article, no health economic evaluation of vildagliptin was found. This indicates that, including India,
no health economic evaluation of vildagliptin has been conducted in any part of the world.

Currently, the recommended dose of linagliptin (BI 1356) is 5 mg once a day, with or without food. No active-comparator clinical trial study of linagliptin monotherapy has been conducted till now. However, in two double-blinded, placebo-controlled clinical trials, the efficacy, safety, and tolerability of linagliptin was established.[7]

No studies were found when PubMed was searched for linagliptin (BI 1356) and economics, combined. This indicates that no health economic evaluation of linagliptin has been conducted till date in any part of the world.

Sitagliptin, saxagliptin, vildagliptin, and linagliptin have been approved worldwide including in places such as India, USA, and Europe. However, this literature review demonstrates that, except for sitagliptin, no formal economic evaluation of DPP-4 inhibitors has been conducted till date in any part of the world. For sitagliptin also, only one cost-effectiveness analysis conducted in the US settings was found. Therefore, formal and systematic health economic evaluations for assessing the cost-effectiveness of DPP-4 inhibitors in the treatment of T2DM are required in India as well as in other parts of the world.

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