

GLP-1 Receptor Agonist: Health Care Savings or Healthcare Burden

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ABSTRACT

Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) have emerged as a topic of significant interest. Their potential benefits have sparked discussions among healthcare professionals and gained attention on social media. These agents represent a rare convergence of value and controversy in healthcare, with their significant advancements in treating type 2 diabetes mellitus (T2DM) and obesity. Beyond their clinical efficacy, GLP-1 RAs have substantial implications for healthcare economics, influencing both direct medical costs and broader economic outcomes. This article examines the financial impact of GLP-1 RAs, with a particular focus on their cost-effectiveness, healthcare expenditure, and policy considerations, to keep the audience informed and aware of the economic considerations in healthcare.

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Introduction

Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) are a class of medications that enjoy widespread recognition for their dual benefits in glycemic control and weight management. Their effectiveness, mimicking the actions of the endogenous incretin hormone GLP-1, which regulates glucose metabolism and promotes satiety, has instilled a sense of confidence and reassurance in their use. Since their introduction, almost 2 decades ago, GLP-1 RAs have become a cornerstone in the treatment of type 2 diabetes mellitus (T2DM) and obesity [1]. GLP-1 is a naturally occurring incretin hormone released by intestinal L-cells in response to food intake. It stimulates insulin secretion, suppresses glucagon release, delays gastric emptying, and reduces appetite [2]. However, native GLP-1 is rapidly degraded by dipeptidyl peptidase-4 (DPP-4), limiting its therapeutic utility. GLP-1 RAs are engineered to resist DPP-4 degradation, providing prolonged activity [3-8]. Common GLP-1 RAs include, Exenatide, Liraglutide, Semaglutide Dulaglutide.

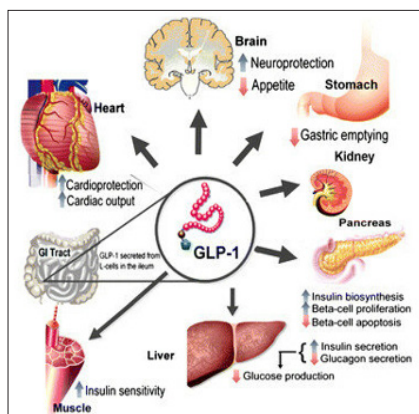


Figure 1: Illustration Demonstrating the Secretion and Effects of GLP-1 and GIP Peptides on Various Organs

The primary use of these drugs has been for treating type 2 diabetes and improving associated cardiovascular conditions by demonstrating significant benefits and reducing long-term healthcare costs in terms of controlling and improving blood glucose profile and preventing the complications related to it such as retinopathy, nephropathy, weight management by burning fat and improving overall obesity-related comorbidities, cardiovascular health and reducing the risk of stroke, kidney disease, other heart-related diseases and complications.

However, over the last few years or so, the off-label and on-label use of GLP-1 agonists for weight loss has ushered in a new era and gained a lot of attention, specifically on the beauty aspect. Since the drug has been on the market for quite a long time with clinical evidence and all the promising benefits for term improvement in patient outcome and health, this topic has become the talk of the town in the healthcare industry today. Still, the higher cost of those medications and insurance coverage on different plans has significantly raised concerns about its long-term sustainability and affordability. As these therapies gain widespread use, the question is whether the widespread adoption of GLP-1 therapies results in net healthcare savings or constitutes a growing financial burden

Healthcare Savings Analysis of GLP-1 Receptor Agonists

GLP-1 receptor agonists (GLP-1 RAs) are recognized for their efficacy in managing type 2 diabetes (T2DM) and obesity, with substantial potential to reduce healthcare costs over time. This analysis explores how GLP-1 RAs impact healthcare expenditures through reduced complications, improved patient outcomes, and long-term cost offsets.

Healthcare Costs of Diabetes and Obesity

The economic impact of Type 2 Diabetes Mellitus (T2DM) and obesity encompasses direct costs such as hospitalizations, drugs, and the care of comorbidities like cardiovascular diseases (CVD), nephropathy, and retinopathy. Indirect Costs: Decreased productivity, absenteeism, and chronic inability.

The annual expenditure on diabetes management in the United States surpasses \$327 billion, with obesity accounting for an extra \$147 billion. GLP-1 receptor agonists tackle both disorders, presenting considerable potential for cost reduction. Managing diabetes independently necessitates consistent medical appointments, pharmacological treatments, and diagnostic instruments. In total, over 37.3 million individuals, or nearly 11.3% of the U.S. population, are currently living with some kind of diabetes. Therefore, any pharmaceuticals that can assist in efficiently managing the disease will ultimately lower associated costs in the long term. GLP-1 agonists have demonstrated their effectiveness in improving glycemic control in diabetic patients, hence diminishing the likelihood of problems associated with diabetes, such as neuropathy, retinopathy, nephropathy, diabetic ketoacidosis, impaired wound healing, and periodontal disease. The health care system faces overwhelming proportions due to consequences arising from diabetes. When diabetes impairs kidney function, most chronic diabetes patients must undergo dialysis at least three times a week. The direct annual cost of dialysis per patient is approximately \$90,000 [9]. By diminishing proteinuria and decelerating the advancement of chronic kidney disease (CKD), GLP-1 has markedly decreased the likelihood of nephropathy, so conserving or postponing the \$90,000 in direct healthcare expenditures. Another significant complication of diabetes is retinopathy. Vision impairment or loss occurs due to uncontrolled diabetes. This necessitates extensive intervention via pharmacological or surgical approaches. GLP-1 agonists will assist in postponing those consequences. GLP-1 agonists has cardioprotective properties that diminish the likelihood of acute cardiac events such as strokes or myocardial infarctions. Diabetes patients would have the greatest financial burden during any hospitalization related to their condition. Hospitalization may result from complications such as acute ketoacidosis, severe kidney damage, eyesight loss, severe hypoglycemia, strokes, or myocardial infarction. A study projected that each \$1,000 invested in GLP-1 receptor agonists could result in a savings of \$2,000 in healthcare expenses attributable to a reduction in heart attacks and strokes [10].

GLP-1 agonist also have been used for on/off label use for weight reduction. After primary investigation with earlier GLP-1 agonist lots of research supported the idea that those drugs have weight reduction effects on the body. So, companies like NOVO and Eliy-lily decided to market the drug for the weight reduction indications. This beneficial effect on weight reduction is effective in reducing the complications like sleep apnea, cardiovascular events, osteoarthritis, fatty liver, reproductive health complications. Reduction in those complications is definitely beneficial to health care system.

Challenges in Realizing Savings

Despite their promise, a number of obstacles prevent healthcare savings from being realized. Since there are currently few research and data from the real world, many of these observations are based on conjecture. It is challenging to measure actual savings since benefits are extrapolated from the data that is already available. GLP-1 agonists are more expensive than alternative medicines that are currently on the market, and some patients may find the initial higher expenses to be challenging. Since many insurance plans, including Medicare, do not cover GLP-1 RAs for managing obesity, their usage is restricted to patients with diabetes, which further contributes to the problem of adherence [11]. In the event that insurance rejects reimbursement, patients may have to stop the treatment, which would make adherence even more difficult.

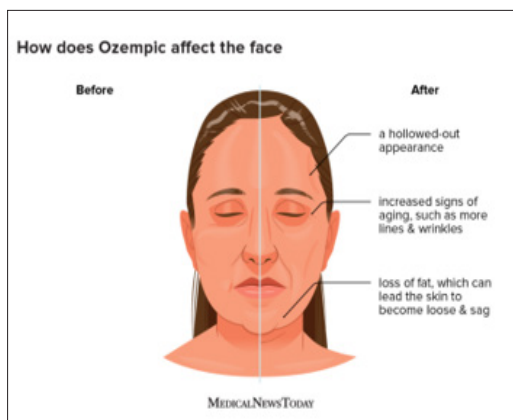
Side effects also a barrier to continuous therapy of GLP-1 agonists. Sever nausea and injection site pain are very common side effects which can result in sudden stoppage of the treatment.

The Healthcare Burden of GLP-1 Receptor Agonists

GLP-1 receptor agonists (GLP-1 RAs) have proven to be highly efficacious therapies for type 2 diabetes mellitus (T2DM) and obesity, markedly enhancing clinical results. Nonetheless, their extensive implementation has created economic prospects and obstacles, impacting the healthcare burden related to expenses, accessibility, and resource distribution. GLP-1 receptor agonists are among the costliest therapies for type 2 diabetes mellitus and obesity. The yearly expense for therapy utilizing GLP-1 receptor agonists in the U.S. varies between \$6,000 and \$12,000 per patient, contingent upon the particular drug and dosage. The expensive cost, albeit beneficial, restricts accessibility for numerous patients, particularly those who are uninsured or impoverished. The plans that include certain medications have substantially affected healthcare expenses. Expenditure in the United States on GLP-1 receptor agonists. The annual expenditure on prescription drugs reached billions, with a substantial portion allocated to novel formulations such as semaglutide and tirzepatide [12]. Global expenditure on GLP-1 receptor agonists is anticipated to rise as these drugs receive approval for expanded indications, such as obesity and prediabetes, not alone in the USA. Due to cost and infrastructure constraints, GLP-1 RAs are limited in low-and middle-income countries (LMICs). Consequently, the benefits of these medications are predominantly realized in high-income settings, perpetuating global health inequities. While GLP-1 RAs reduce complications such as cardiovascular disease (CVD) and chronic kidney disease (CKD), untreated or poorly managed diabetes still account for substantial healthcare utilization. Diabetes-related complications lead to over 7 million hospitalizations annually in the U.S. alone [12]. CVD, a significant diabetes complication, adds \$15,000–\$30,000 per patient annually to healthcare expenses [13]. The increasing prevalence of these medications has generated a distinctive scenario in the healthcare sector. Medications such as Ozempic and Mounjaro, originally prescribed for diabetes, are now being utilized for weight reduction and aesthetic objectives. A national poll of over 1,000 Americans, including physicians, reveals that 22% have consulted their doctors about Ozempic for weight loss, 15% have utilized it personally, and 47% are acquainted with someone who has employed it for weight loss. The considerable impact of social media and celebrity endorsements on Americans' interest in the substance is indisputable. This influence is resulting in drug misuse, shortages, and restricted access for diabetic patients, consequently contributing to an increase in hospitalizations when patients cannot maintain their regimen due to market deficiencies [14].

GLP-1 agonists may exhibit several adverse effects when administered as prescribed. Frequent adverse effects include gastrointestinal disturbances such as nausea, vomiting, and reduced appetite. Nonetheless, this medicine class possesses certain severe albeit infrequent contraindications that could lead to patient hospitalization. Examples include thyroid cancers, pancreatitis, hypoglycemia, and hypersensitivity reactions. The negative effects become pronounced when the medications are utilized for cosmetic goals, indicating that patients employ them for weight loss without having diabetes or obesity. The phrase 'Ozempic face' specifically pertains to these adverse effects. The swift medical weight loss induced by GLP-1 receptor agonists is a worldwide occurrence, resulting in a distinctly gaunt and diminished facial look. This phenomenon can be elucidated by the

volumetric theory of face aging, which asserts that the volume of facial fat in essential regions is vital for a youthful and revitalized facial appearance. The effects of rapid medical weight reduction are various. Patients who experience significant weight loss may appear up to five years older than their age-matched counterparts. Regrettably, even if patients regain weight, the fat is unlikely to redistribute to its pre-weight-loss configuration, resulting in enduring manifestations of facial aging [15-22].



Strategies to Mitigate the Burden

GLP-1 agonist showed lots of potential which can be transformative if we decrease the short comings of this drugs. policy reform in health care and insurance coverage can Expanded Coverage of this drugs in Medicare and Medicaid coverage prescribed for obesity. This could significantly improve access and reduce long-term healthcare costs, offering a promising path forward in healthcare policy. another way to approuce the policy is to negotiate the pricing as value based Pricing: This approach involves negotiating prices for medications based on their outcomes. By aligning costs with the long-term benefits of GLP-1 RAs, this strategy could make these treatments more affordable and reduce the overall healthcare burden. Similarly Research and Development of lower-cost alternatives or biosimilars is a promising avenue that may improve affordability and accessibility, providing reassurance about the continuous improvement in healthcare Continued research into oral GLP-1 RAs and combination therapies: These developments could potentially reduce costs associated with administration and adherence, making these treatments more accessible and affordable. Programs aimed at improving lifestyle interventions, such as diet and exercise, alongside GLP-1 RAs could significantly enhance outcomes and reduce overall dependence on medications, inspiring a new approach to healthcare.

In conclusion, while GLP-1 RAs hold immense promise for reducing the long-term healthcare burden of T2DM and obesity, their high upfront costs remain a critical challenge. Achieving a sustainable balance between cost savings and cost burden requires concerted efforts from policymakers, pharmaceutical companies, and healthcare providers to ensure that these transformative therapies are both effective and accessible to those who need them most.

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