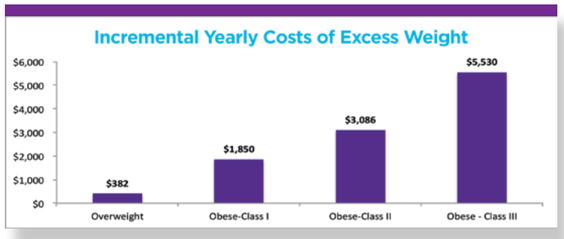
Summary

For decades lifestyle interventions have been the mainstay for treating obesity, but research has shown that often these are not sufficient. The goal of any obesity treatment should be to achieve clinically meaningful effects on health status, which in turn results in lower incidence of obesity-related comorbidities and lower healthcare costs.

With the approval of obesity pharmacotherapy by the FDA, including Qsymia, combined with the medical establishment's shift in thinking about obesity as a disease, physicians now have a very powerful tool to improve the metabolic health of Americans.

By focusing on treating obesity first, employers will be tackling the cause rather than waiting until obesity leads to other chronic illness and in turn, higher costs. The medical community–in partnership with forward-thinking employers–has the potential to dramatically improve patients' health and quality of life while simultaneously reducing healthcare spend.



Source: Moriarty et al, JOEM Vol 54 (3), March 2012

1 Finkelstein EA, et al. Health Aff. 2009;28:w822-w831.

2 Wang F, et al. J Occup Environ Med. 2006;48:668-674.

3 Kraschnewski JL, et al. Int J Obes. 2010;1-11;.2. Sacks FM, et al. N Engl J Med. 2009;360:859-73.

4 2013 ACC/AHA Guideline for the Management of Overweight and Obesity in Adults. J Am Coll Cardiol. 2013

5 Gadde KM, Allison DB, Ryan DH, et al. Lancet. 2011;377(9774):1341-1352

6 Qsymia [prescribing information]. Mountain View, CA: 2013")

A New Way Forward:

Rethinking How We Address Obesity and its Associated Comorbidities through Pharmacy Benefit Plans

Executive **Summary**

The time has come for a fundamental shift in how we treat obesity in the United States. The data is conclusive: obesity is a *major* driver of failing health and leads to costly comorbidities, including heart disease, type 2 diabetes and many forms of cancer. The American Medical Association has officially declared obesity a disease. Yet the majority of benefit plan designs continue to address the obesity problem through lifestyle modification and wellness programs, despite very limited success rates and healthcare costs that continue to spiral out of control.

There is now clinical evidence for well-tolerated, effective, sustained weight loss through pharmacotherapy. The next step is to adapt current health plan designs to match these new therapies to the plan members who need them most.

Employers can lead the charge in the fight against obesity–and its associated rising costs–by optimizing their healthcare spend toward treatment protocols that have a more proven rate of return.

Introduction

The fight against obesity in the United States experienced a watershed year in 2012, with the approval of two weight loss drugs–the first approvals in 13 years–by the U.S. Food and Drug Administration (FDA). Perhaps even more important than the approval of these new therapies were the tremendous research gains around obesity and related health problems.

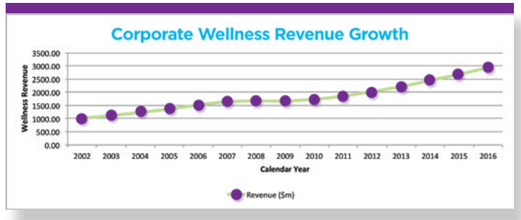
Prior to the approval of the new therapies for obesity, weight loss drugs had been brought to market relatively quickly and with short data sets to support their merits. More extensive research has made it known that taking a fad diet pill for a period of weeks and gaining the "quick fix" of a few lost pounds is unhealthy for patients and ineffective in fighting obesity and its associated comorbidities over the long term.

At the same time that major research and pharmacotherapy gains were made, major health organizations shifted their approach to the obesity problem. The American Medical Association (AMA) declared in 2013 that obesity is a disease like type 2 diabetes or cancer. The American Association of Clinical Endocrinologists (AACE) developed a clinical algorithm to guide physicians toward proactive intervention for all patients with excess weight and type 2 diabetes/pre-diabetes.

The combination of these revolutionary therapies with the AMA's stance on obesity and AACE's new guidance to clinicians shows a clear regulatory and clinical shift in obesity treatment. This has tremendous implications for both the long-term health of the nation and the ever-increasing burden of rising healthcare costs to the American economy.

Why Rx Therapy? **Changing the Way We Fight Obesity**

Obesity has long been a target for corporate benefit plan managers because of its association with comorbidities like type 2 diabetes, and the resulting higher cost of healthcare. Currently, the U.S. spends $166 billion annually on obesity, equivalent to 9 percent of all healthcare spending.[1] It is proven that for every one-point increase in BMI there is an associated 4 percent increase in medical costs and 7 percent increase in drug costs.[2] To date, plan managers have typically turned to corporate wellness programs that include lifestyle modification components to tackle the problem, but these have yielded mixed results in terms of both efficacy and cost savings.



Source: IBISWorld Industry Report OD4621: Corporate Wellness Services in the U.S., December 2011.

One of the reasons for the limited success of lifestyle interventions is a lack of understanding about the multiple causes of obesity. Genetics, society/environment, and behavior all intermingle with perhaps the most overlooked cause of obesity—human biology. Put simply: people are wired to eat whenever possible. There is an evolutionary driver to overeating that can be difficult to overcome in a society where high energy density foods are readily available.

As a result, only about 15-20 percent of people engaging in lifestyle interventions such as a reduced-calorie diet, brief counseling and increased physical activity experience meaningful weight loss over a period of one year.[3] This leaves 80-85 percent of the overweight and obese population behind and prone to obesity-related complications like high blood pressure, high cholesterol, type 2 diabetes, sleep apnea, and many forms of cancer.

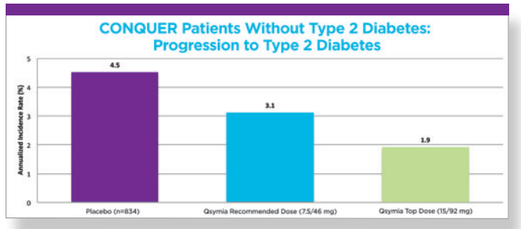
The historic AMA declaration signaled a major change within the medical community, and pharmacotherapy is now considered an accepted, effective method for treating obesity–particularly before more extreme and expensive measures like bariatric surgery. These anti-obesity therapies also have major implications for the millions of Americans already taking drugs to manage type 2 diabetes, high cholesterol and high blood pressure. By managing obesity first, many people may be able to avoid these conditions altogether, reduce the amount of medication they are required to take, or improve control of hard-to-treat or resistant comorbidities.

About Qsymia®: **How Does it Work?**

Qsymia is one of the weight loss drugs approved by the FDA in 2012. It is recommended as an adjunct to a reduced-calorie diet and increased physical activity for chronic weight management in adults with an initial BMI of ≥30 Kg/m^2 (obese) or ≥27 Kg/m^2 (overweight) and with at least one weight-related comorbidity, such as type 2 diabetes. Qsymia is a combination of two ingredients that work together to both suppress appetite and increase satiety (sense of fullness), the two main biologic drivers to overeating.

In essence, Qsymia addresses the biologic components of the disease that make weight loss so challenging. Qsymia is intended to augment more traditional lifestyle interventions to provide meaningful, sustained weight loss. Clinically, "meaningful" weight loss is generally viewed as a 5-10 percent weight loss that is sustained for one year.[4] While 5-10 percent may not sound like much, this translates to a 15-30 pound weight loss in a 300-pound patient, which has significant health implications. Research has proven that metabolic changes begin at just 5 percent weight loss and even greater benefits are seen with 10 percent or higher weight loss. Improvements to systolic and diastolic blood pressure, glucose, lipids, inflammation, and better quality of life have all been demonstrated.

From a health plan cost management perspective, Qsymia's impact on an obese person who was progressing from pre-diabetes to type 2 diabetes is particularly compelling. Patients on the recommended dose of Qsymia experienced more than a *30 percent annualized reduction in progression to Type 2 diabetes.* For those on the top dose, the reduction rate was closer to 60 percent.[5]

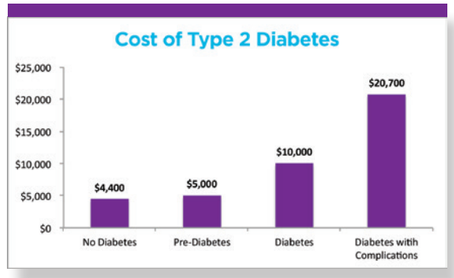


* Progression to type 2 diabetes defined as ≥ 2 consecutive visits with fasting glucose ≥ 126 mg/dL or 2-hours post oral glucose tolerance test glucose ≥ 200 mg/dL

Source: Gadde KM, Allison DB, Rhan DH, et al. Lancet. 2011; 377 (9774): 1341-1352

The cost of Qsymia is nominal when compared to the potential health gains and overall cost savings of disease avoidance over time.

The average cost of a patient with type 2 diabetes health plan is anywhere from $10,000 to $20,000 per member, per year, depending on levels of complications. With Qsymia, each one-point reduction in an obese person's BMI is a step closer to avoiding a diabetes diagnosis and its associated long-term costs and complications.



Source: United Healthcare Report: The United States of type 2 Diabetes: Challenges and Opportunities in the Decade Ahead, Nov. 2010.

Who is the Appropriate Plan Sponsor for Qsymia and What is the ROI?

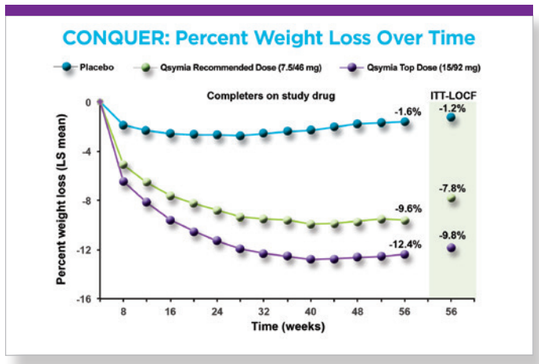
Employers have become accustomed to adding costs to their health plans each time they add a new benefit. For the right group, however, an investment in Qsymia can actually *lower costs* because of the dramatic reduction in obesity-related chronic diseases like type 2 diabetes, and the associated decreases in medical and drug expenses.

Potential plan sponsors considering the addition of Qsymia to their benefit design should consider some/all of the following criteria:

- **Self funded:** Plans that retain a portion–or all–of the risk through self-funding of health plans.
- **Low employee turnover:** Relatively static populations allow benefit sponsor to realize financial gain of disease avoidance/risk factor reduction over a longer time period.
- **High disease burden from obesity and related illnesses:** Relatively high exposure to the comorbidities associated with obesity (pre-diabetes, elevated cholesterol and high blood pressure, etc.)
- **Have existing obesity treatment protocols targeting high-risk populations:** These could include wellness programs (which may include reimbursed weight loss program and/or disincentive/health outcomes focused programs) or bariatric surgery programs within plan design.

Assuming the above condition(s) are in place, there are two key factors that drive long-term ROI for Qsymia:

- **Drug efficacy:** Weight loss occurs in first 8-12 weeks and is sustained through two years based on clinical studies.
- **Time employee is on plan:** For reasonable cost reduction a member must be on the drug for at least 12 months and continue from there. It's important to note that using pharmacotherapy to treat obesity is a long-term strategy, not a short-term fix. Chronic disease states require chronic treatment, as seen in type 2 diabetes, hypertension, and dyslipidemia. Those who begin obesity therapy should think of it similarly to treating chronic high blood pressure or high cholesterol–as a maintenance drug.



Source: Gadde, KM, Allison, DB, et al. Effects of Low-Dose, Controlled-Release, Phentermine Plus Topiramate Combination on Weight and Associated Comorbidities in Overweight and Obese Adults (CONQUER): A Randomised, Placebo-Controlled, Phase 3 Trial. The Lancet, April 16, 2011; 377: 1341-52.

Possible Plan Benefit Designs/Approaches

To assist plan sponsors, a model has been developed that incorporates the latest scientific data to estimate Qsymia's impact on claim cost for health plans. The model requires that plan sponsors select a coverage option, employee contributions and provide basic data about the underlying population.

Disease management only: Tightly managed and targeted only to certain high-risk subset of population with defined ongoing weight reduction needs.

- Target population: BMI of 35 or greater or patients with pre-diabetes
- Tier 2 copay
- Estimated ROI: Positive ROI in 12 months

Prior authorization only: Broader targeted risk pool–including BMI of 30 or greater and risk profile consistent with pre-diabetes, metabolic syndrome or other risks. This is a slightly broader coverage option requiring physician review as well as specific standards in order for members to receive coverage.

- Target population: BMI of greater than 27 with at least one comorbidity
- Tier 2 copay
- Estimated ROI: Positive ROI in 12 to 24 months

Fair use: Available to any self-selected member of the plan. Benefit is more generic in nature. Highest cost and most likely communicated as "employee benefit" component of wellness program and/or key differentiator in plan design. There is an unlikely financial return on investment for employer using this model unless the copay is set at 100% of drug cost.

- BMI of greater than 30
- Tier 2 or Tier 3 Copay
- Cost to plan sponsor varies by copay amount charged to employees
- Estimated ROI: Based on copay design/employee contribution

MODELLING POTENTIAL SAVINGS FROM OBESITY PHARMACOTHERAPY

An interaction modeling tool is available that can be customized to the demographics of your company or plan. To find out if your group is a fit for Qsymia and better understand what potential benefit savings might be, contact your Vivus, Inc. account representative for more information.