Obesity Care Model
Collaborative: Case Study

Tulane University Medical Group
Organizational Profile
An academic faculty practice, Tulane University Medical Group (hereby referred to as Tulane) serves New Orleans. The system features approximately 400 faculty members who are employed by the School of Medicine and over 50 clinics across the New Orleans metro area that serve approximately 80,000 in Tulane-owned or -operated clinics.

Pilot Profile
Tulane University Medical Group selected the Tulane Living Well Wellness Clinic (TLW) as its pilot site. This site has one full-time employed (FTE) primary care physician (divided time between three physicians) and a workplace wellness clinic led by a nurse practitioner. The on-site Tulane Living Well Wellness Clinic provides a convenient healthcare opportunity focused on meeting the needs of the hospital and university employed community. To optimize value, the clinic focuses on three service delivery areas—acute care, integration with primary care, and wellness services—in convenient, on-campus locations.

Acute Care
- Minor Illnesses (Coughs, Colds, Nausea, Ear Aches, Fever, Strep Throat, Urinary Tract Infection)
- Clinical Laboratory Improvement Amendments (CLIA) Waived Diagnostic Testing (Strep Test, Glucose Levels)
- Skin Conditions (Rashes, Bites, Ringworm)
- Minor Injuries (Abrasions, Sprains, Splinters, Minor burns).

Primary Care and Population Health
- Integration of on-campus wellness programming with employee’s primary care physician
- Chronic Condition Management (Diabetes, Hypertension, COPD) via population health analytics coordinating with employee’s primary care physician
- Routine Vaccinations

Wellness
- Health Risk Assessment and Biometric Data Collection
- Health Coaching
- Lifestyle Management
- Support Groups
- Tobacco Cessation
- Obesity Management
- Pregnancy Support Programs

The acute care services provide employees with a “well at work” option allowing them a convenient location to have minor illnesses addressed. This access can help combat unnecessary urgent care and emergency room visits, as well as decrease productivity losses. It is important that the center has convenient hour, same-day, and/or walk-in appointments available each day to ensure that employees are able to easily access care.

Similar to traditional urgent care or minute clinic services, the center can treat minor illnesses such as coughs, colds, otitis media, and upper respiratory infections. To aid in the diagnosis of these illnesses the clinic can perform various CLIA waived tests such as urinalysis, rapid influenza diagnostic tests, and rapid strep tests, or connect with an off-site lab that can perform these tests.

Acronym Legend
- BRFSS: Behavioral Risk Factor Surveillance System
- BMI: Body Mass Index
- CBT: Cognitive Behavioral Therapy
- CDC: Centers for Disease Control and Prevention
- CLIA: Clinical Laboratory Improvement Amendments
- CME: Continuing Medical Education
- DPP: Diabetes Prevention Program
- FTE: Full-Time Equivalent
- HmF: Health meets Food
- NIH: National Institutes of Health
- TLW: Tulane Living Well Wellness Clinic
- USPSTF: United States Preventive Services Task Force
Further, the center can also treat minor dermatologic conditions—rashes, bites, and fungal infections. In addition, minor injuries addressed in the clinic can include abrasions, sprains, and minor burns.

The urgent care visit is a prime opportunity to engage and help bridge health plan member screening and care gaps, specifically chronic disease care gaps for patients with conditions such as uncontrolled diabetes or hypertension.

**Benefits of Wellness Clinic**
- Improved employee satisfaction with the healthcare benefit plan
- Increased productivity of employees due to ease of care access
- Care management workflows deployed for health plan members to address individual care gaps and streamline chronic care management for various conditions including hypertension, hyperlipidemia and diabetes
- Integrated health coaching, lifestyle education, culinary medicine, care management services, health risk assessments, and biometric screenings into acute visits
- Using Healthy Life Clinics as a hub for hospital and university wellness programs
- Population health management services are used to determine care improvement opportunities for individuals and groups of patients
- Cost containment of health benefits for employees and the university

**Tulane Living Well Metabolic Care Program: Executive Summary**

Addressing obesity is a significant issue for Americans. Employer-funded health benefit plans are being challenged by the impact on health outcomes that stem from metabolic syndrome-associated conditions that are often the result of being overweight and obesity. These conditions include but are not limited to hypertension, diabetes, hypercholesterolemia, arthritis, and atherosclerotic heart disease. As part of the AMGA Obesity Care Model Collaborative, Tulane is launching a population-based and multifaceted approach to reducing obesity. The systemic approach to obesity management involves a 360° view including eight targeted interventions:

1. Health Coaching
2. Culinary Medicine
3. Exercise
4. Cognitive Behavioral Therapy
5. Dietary Counseling with or without Meal Replacement Therapy
6. Pharmaceutical Intervention
7. Diabetes Prevention Program
8. Bariatric Surgery

Obesity in a patient is defined by the National Institutes of Health (NIH) as a Body Mass Index (BMI) > 30. As of 2010, more than 78 million people in the United States were considered to be obese.¹ The prevalence of obese and overweight individuals has rapidly increased over the past several decades in virtually all areas of the world.² Of note, obesity has been demonstrated to increase risk for chronic diseases and conditions including hypertension, dyslipidemia, type 2 diabetes, coronary heart disease, stroke, gall bladder disease, osteoarthritis, sleep apnea, and certain cancers.

According to the Centers for Disease Control and Prevention (CDC), the national prevalence of obesity (BMI ≥30) is 36.5% and rising. Additionally, the prevalence of obesity in adults between 40-59 years is closer to 40%. In 2016, the Behavioral Risk Factor Surveillance System (BRFSS) demonstrated that the prevalence of obesity in Louisiana was 35.5% (95% CI 33.4-37.7%). Obesity now rivals smoking for the leading cause of preventable death in the U.S. As the largest private employer in New Orleans with nearly 5000 full-time personnel, Tulane University is undoubtedly affected by this health crisis.

Many of these conditions are directly related to lifestyle choices and are thus considered preventable. The broad prevalence of obesity and its resulting economic cost and implications make it a public health topic of national concern. With an increased understanding of patients’ attitudes, behaviors, and beliefs concerning obesity, it is Tulane’s hope to establish lifestyle interventions to reduce obesity and thus mitigate the risk of developing preventable diseases.

Program Goals and Measures of Success

With respect to this project Tulane’s main goal was to explore systematic implementation of care programs within a diagnosis group that involved multiple comorbidities and care pathways. This project was an intersection of Tulane’s value-based care team and the Culinary Medicine team.

Data Documentation and Standardization

Multiple initiatives that improve coding and documentation for obesity and related conditions.

Population Identification

Any adult patient between the ages of 18 and 79 is eligible to be evaluated for obesity. Per the developed algorithm, patients with normal BMIs would be encouraged to engage in those activities that promote a healthy weight. Patients with elevated BMIs would be appropriately evaluated, treated, and/or referred for treatment (see Appendix).

Interventions

1. **Health Coaching**

Health coaching is a comprehensive effort to combating obesity provided at the institution. The patient-centered approach incorporates in-depth discussions with patients to address present or future health risks, especially as it relates to lifestyle. A health coach is defined as an individual involved in “goal-setting determined by the patient, encourages self-discovery in addition to content education, and incorporates mechanisms for developing accountability in health behaviors.” The United States Preventive Services Task Force (USPSTF) recommends health coaching for diet and exercise in coordination with an emphasis on behavior change, including goal setting, determining values, strengths, and motivations. Studies show health coaching can result in sustainable weight loss (seven to eleven pounds for one year) in adults with an obesity diagnosis (BMI>30).

Health Coaching is a comprehensive service provided free of charge to employees covered by Tulane University’s employer-sponsored insurance plan through the Tulane Living Well Wellness Clinic to combat obesity and promote lifestyle change. The TLW nurse practitioner serves as primary health coach as a complement to an individual’s primary care physician.

TLW Health Coaching offers an average of six visits over a period of up to six to 12 months. However, there is no cap to number of visits, which are at no cost to the patient. The establishment of a strong, ongoing relationship between the health coach and employee is key to successful outcomes. During the initial appointment, a comprehensive assessment is performed. The health coach has the patient complete a thorough health survey to determine current lifestyle, eating habits, and review of preventative services on an iPad. Sample questions include:

- How would you describe your outlook?
- Do you feel that stress is affecting your health?
- How would you rate your diet on most days?
- What would motivate you to try and be healthier?
- When was the last time you had a screening for colorectal cancer?
- Have you had the latest available flu shot?
A detailed review of the survey results by the health coach is reviewed with the employee to identify focus areas for goal setting and to address gaps in preventative services. At the conclusion of the initial appointment, the patient receives a personalized set of interventions to provide support in between visits. Constant guidance is provided by the health coach through at least six follow-up visits as patients navigate the journey to wellness through subsequent health coaching sessions that address The Health Itinerary Topics, which include:

- Nutrition Basics (i.e., 24-hour diet recall)
- Navigating Fast Food and Sodium
- Understanding and Learning How to Read Nutrition Labels
- Meal Planning
- Calories and Portions, and Developing a Healthy Eating Habit

Patients are given printed resources following each health coach visit to support the health itinerary topic addressed. Two-week follow-up visits check in on the patient’s progress in between appointments to address goals. These topics along with consultation with the health coach set the foundation for patient wellness.

Patient perception regarding their participation in health coaching is assessed through a follow-up health survey given following the third and sixth visit. Responses aid the health coach to identify avenues to better assist the patient through their wellness journey. Questions posed include:

- Have I seen an overall positive change in my dietary habits since my initial health coach visit?
- Have I seen an overall positive change in my physical activity since my initial health coach visit?
- Have I seen an overall positive change in my emotional wellbeing since my initial health coach visit?
- Have I seen a positive change in my overall health since my initial health coach visit?

2. Culinary Medicine

This effort is unique to the Tulane institution in that it was first created at Goldring Center for Culinary Medicine using the Health meets Food (HmF) programming developed by Timothy S. Harlan, M.D. This program implements the use of chefs, medical students, clinicians, nurses, and other health professionals to provide hands-on instruction and guidance for preparing healthy meals to members of the New Orleans community.

An adaptive randomized trial demonstrates HmF hands-on cooking and nutrition education improves families’ Mediterranean diet adherence and suggests the classes may lower their food and clinical costs. Only four subjects would need to be educated using HmF to improve the adherence for the next subject, with the intervention generating an over 868% and 396% return on investment for families by food and medical care savings respectively.

Another nested randomized trial has shown that HmF education improves participants’ total cholesterol and diastolic blood pressure in those who have diabetes. The program educates Tulane employees not only on meal preparation, but also on how to do so in a financially sound and practical way. As of June 2017, the program has reached more than 700 New Orleans community members and was projected to reach more than 900 by the end of the 2018 academic year.

Following the third health coaching session, participants are referred to the community cooking classes offered through the Goldring Center for Culinary Medicine. Classes are taught in a state-of-the-art teaching kitchen and participants learn how to make delicious and flavorful food that just so happens to be good for you. This creates a synergy between Tulane’s service offerings for our employees that delivers a systematic approach to address obesity by providing the necessary resources for patients to be successful.

3. Exercise

Substantive and sustained weight loss always requires exercise as a key component. At a minimum, the National Institutes of Health and the CDC recommend 30 minutes per day of exercise on most days of the week or collectively 150 minutes per week. Studies also show that the difficulty is not as much in losing the weight but keeping it off for the long term. Helping patients understand and tailoring exercise programs for them is critical.
The key is both type of exercise and duration. The recommendation for 150 minutes per week may not be enough, however. It does appear that more exercise is necessary to help maintain weight loss. In one study researchers monitored four interventions in women prescribed a low-calorie diet:12

1. Moderate intensity/moderate calorie burning
2. Moderate intensity/high calorie burning
3. Vigorous intensity/moderate calorie burning
4. Vigorous intensity/high calorie burning

All of the women lost weight in the first six months, then gained some weight back every six months. After 24 months of the study, however, those women who exercised vigorously and burned over 2,000 calories per week (the high intensity/high calorie-burning group) lost the most initially and regained the least. At the six-month mark, those women had lost 9.5kg (about 21 pounds). At the 24-month mark, they’d maintained the loss of 5.8kg (about 13 pounds)—they had only gained back 3.7kg (about eight pounds).

By comparison, those women assigned to the moderate intensity and moderate calorie-burning group lost 8.2kg (18 pounds) and kept off 4.7kg (slightly over 10 pounds). They’d gained back 3.5kg (eight pounds). When the scientists interviewed those few women who actually maintained their loss of 10% of their body weight, they found that these women had actually performed an average of 68 minutes of exercise per day, five days per week—over twice as much as the CDC recommends for maintaining weight loss.

Researchers at the CDC sought to find out what strategies for weight loss or maintenance Americans are using.13 The researchers analyzed data from the 2001-2002 National Health and Nutrition Examination Survey conducted on a nationally representative sample of the U.S. population. Participants in the survey were able to select what strategies they used from a list that included eating less food, eating less fat, exercising, switching to foods with lower calories, and other, less-common strategies like skipping meals, taking diet pills or supplements, drinking lots of water, or adhering to specific diet plans.

For those who specified exercise as one of their chosen means of controlling their weight, the scientists also asked about the type of exercise they performed, how long it typically lasted, and the number of days per week they exercised.

It is clear from the survey’s results that most Americans know that eating less and exercising more are two good strategies for weight loss: 64.7% of those actively trying to lose weight ate less food and 61.3% exercised. However, few respondents were meeting the lower exercise guideline of 150 minutes per week, not to mention the higher guideline of 300 minutes per week. The men who were trying to lose weight had a higher median level of physical activity, at 180 minutes per week. Women, on the other hand, had a median exercise level of only 100 minutes per week.

As such, Tulane’s goal is to provide support for both why a person should be exercise but also how much. Tailored programs as part of the Metabolic Care Program include collaborations with the YMCA and the Reily Center, referrals to personal trainers, and assistance with scheduling participants in on-campus exercise programs.

4. Behavioral Therapy

As one of the major hurdles to reducing obesity is patient lifestyle and behavior, therapy is directed at behavior modification in order to develop healthier habits in the obese population. Therapy is a key adjunct to other modalities, such as nutrition counseling, pharmaceutical treatment, exercise, etc. While nutrition counseling does involve some behavioral modification techniques and mindfulness training, for many more intensive therapy enhances weight loss success.

While cognitive behavioral therapy (CBT) appears to be slightly superior to other modalities, all therapies appear to be effective and tailored therapy to the individual is key.14,15 The behavior change process is facilitated through the use of self-monitoring, goal setting, and problem solving. Studies suggest that behavioral treatment produces weight loss of 8%-10% during the first six months of treatment. Structured approaches such as meal replacements and food provision have been shown to increase the magnitude of weight loss. Most research on behavioral treatment has been conducted in university-based clinic programs.16

The TLW Metabolic Care Program will offer referral to selected therapists and care coordination between the treatment modalities. Therapists chosen will participate in the Tulane health plan in an effort to reduce the cost for patients.
5. Dietary Counseling with or without Meal Replacement Therapy

One-on-one dietary counseling has been the cornerstone of obesity management for decades. This effort is carried out by institution nutrition specialists as well as clinicians, with an emphasis on managing diet by eating healthy and educating patients. Tulane is presently offering counseling through registered dieticians at Goldring Center for Culinary Medicine. While this is effective, especially alongside health coaching strategies offered, there is clearly a role for more intensive medically supervised low-calorie liquid diet interventions.

In a groundbreaking study performed in Louisiana, researchers found that using a low-calorie liquid diet had a significant impact on initial weight loss and weight maintenance. The program included liquid calorie diets and dispensed, at no cost, powdered HealthOne formula. It recommended consumption of five shakes per day, providing 890 kcal/d, 75 g of protein, 15 g of fat, and 110 g of carbohydrates. Combined with counseling, participants lost over 15% of their starting weight and were able to maintain a 10% weight loss. This work is supported by outcomes showing that primary care practices can initiate effective medical management for extreme obesity.

Successful programs such as Weight Watchers have been enhanced with plans that include meal replacement therapies. In a medical weight loss program that used meal replacements to reduce calorie intake combined with weekly behavior change classes, weight loss was 14% of starting weight for the enrollees who completed 16 months of treatment. More importantly, over two years later, weight loss persisted, and patients were not regaining their lost weight.

Tulane’s plans are to combine the option of supervised meal replacement including very low-calorie diet plans in combination with dietary counseling and the option of Culinary Medicine education to enhance long-term improvement in weight loss and health outcomes.

6. Pharmaceutical Intervention

Weight loss medications are available to patients when indicated, but are generally underused in the healthcare system. There are six FDA-approved medications for the treatment of obesity and four of these agents have been approved since 2012. When treating patients with weight-loss medications, as with all medications, it is important to remember that there may be a wide heterogeneity of responses. The goal of pharmaceutical intervention is a 5% to 10% weight loss during the first six months of therapy.

There are challenges in acceptance of using medication both among patients and physicians. Education of both parties is a key component of success. Likewise, this lack of acceptance and the costs of pharmaceuticals have led both insurers and employer health plans to withhold reimbursement.

Tulane Living Well Metabolic Care Program will offer all six options: orlistat, phentermine, phentermine/topiramate, lorcaserin, Contrave, and liraglutide. Given the importance of the intervention tracking of medication adherence and patient contracts have been shown to be effective in successful weight loss programs. Continuing medical education (CME) programming is being developed to educate healthcare providers on pharmaceutical and other interventions to address obesity. Patient education materials will be available as clinic handouts at the point of care and online.

7. Diabetes Prevention Program/Real Appeal

The Diabetes Prevention Program (DPP) was a randomized trial of 3,234 subjects with obesity with insulin resistance and at high risk of developing type 2 diabetes.

The DPP showed that people at high risk for type 2 diabetes can prevent or delay the development of the disease by losing a modest amount of weight through lifestyle changes, including changes in diet and exercise. Taking metformin was shown to prevent the development of type 2 diabetes to a lesser degree compared to diet and exercise; presumably, the common physiology of both treatments is to decrease insulin resistance and thereby prolong the advent of the spent phase that heralds the onset of type 2 diabetes.

The DPP has continued to follow most participants since 2002 and has shown that those who are following the DPP lifestyle change program or taking metformin continue to prevent or delay type 2 diabetes for 15 years or more. Additionally, the program has been demonstrated to be cost saving after 10 years by reducing the incidence of cancer, cardiovascular disease, neuropathy, diabetic nephropathy, and diabetic retinopathy. Researchers are continuing to follow DPP subjects in order to assess for age-related neuropsychiatric changes.
8. Bariatric Surgery

Obesity and its associated conditions have an irrefutable impact on health, health care, and finances in the U.S. In 2008, it was estimated that the annual cost of obesity was $147 billion, which is about 20% of the national health expenditures. Obesity is incredibly costly because it is a causative or exacerbating factor of many comorbid conditions, including respiratory insufficiency, degenerative joint disease, hypertension, type 2 diabetes mellitus, obstructive sleep apnea, dyslipidemia, and other cardiovascular diseases. It is also a risk factor for several types of cancer. These conditions not only contribute to the direct (inpatient and outpatient medical expenses) but also the indirect (decreased work productivity and death) costs associated with obesity. It is projected that for every one point the average BMI raises, it will cost U.S. health care about $6 billion in direct medical costs.

One of the most costly conditions associated with obesity is type 2 diabetes mellitus. In 2012, 30 million adults (12% of the U.S. population) had diabetes, and nearly 90% of those individuals were overweight or obese. The average medical expenses for each diabetic patient was estimated as $13,700 (compared to about $2500 in non-diabetic) annually and $245 billion overall. In a study comparing 808 diabetic patients undergoing bariatric surgery (cases) to 808 diabetic patients (controls), it was found that that ROI, fully recouping cost of procedure, was 26 months for laparoscopic surgery. Thus, from a fiscal perspective, patients with type 2 diabetes and a life expectancy of >26 months, there is a cost savings when surgery is provided.

Fortunately, comorbidity reduction can be achieved with sustained weight loss. Insulin sensitivity has been shown to improve with even modest weight loss of 5% of total body weight. Thus, lifestyle modifications, including diet and exercise, are commonly encouraged for overweight and obese individuals to improve their overall health status. Numerous studies have demonstrated that while diet and exercise may serve as an obesity prevention technique, it is generally insufficient to allow weight loss >5-10% or sustained weight control. Bariatric surgery, however, has repeatedly demonstrated that it is a highly effective therapy for obesity leading to improvements in not only weight but also comorbid conditions. In fact, bariatric surgery has shown to provide on return on investment in about two to four years based on its ability to decrease healthcare costs and increase productivity. While there is an upfront investment for surgery, the real cost savings begin as early as post-operative month three and last for years as the patients’ health improves. Overall, drug costs have been shown to drop by 68% within six months of surgery and by 72% within two years. This savings is due in large part to the decreased requirement for medications, which averages about 2.4 medications per patient pre-operatively compared to 0.2 post-operatively.

One of the most significant improvements not only in health but in healthcare costs is related to diabetes. Research indicates that diabetes remission after bariatric surgery is between 86-92%. Ninety-three percent of patients are able to discontinue anti-hyperglycemic medications post bariatric surgery. By six months post-surgery, 33.5% of patients made a diabetes-related insurance claim versus 89.7% of non-operative matched cohort. Similar savings are seen relating to other comorbid conditions as the remission rate for hypertension is around 75%, dyslipidemia between 68-76%, and sleep apnea between 90-96%. In regards to insurance premiums, the largest difference in insurance premiums when programs with and without bariatric surgery was $45 and in some cases the premium was lower.

Obesity is a chronic, dangerous, and expensive disease. Research on the topic clearly indicates that the longer someone suffers with obesity the graver and more costly the consequences. Bariatric surgery has consistently been shown to not only lead to consistent and long-term weight loss but also comorbidity reduction as well as increase in work productivity. Unfortunately, bariatric surgery is left of out of insurance coverage because of concerns regarding the initial cost of surgery, weight recidivism, morbidity, and mortality. However, obesity and delay to bariatric surgery are actually more costly than bariatric surgery and related care. In fact, the improvements after bariatric surgery are so great that is being considered discrimination by many organizations to leave out bariatric surgery coverage from insurance benefits since most individuals cannot afford to pay for the operation out of pocket.
Lessons Learned and Ongoing Activities

Health coaching, pharmaceutical intervention, dietary counseling, and culinary medicine were among the most effective interventions in the collaborative.

As for challenges, the main issue is one of logistics and reimbursement for individual aspects of the program, in particular meal replacement therapies. It is thought that this is a combination of patient perception and access issues.

Because Tulane has not wanted to be perceived as profiting from the product, the contact has to be made correctly with the company. This is also complicated by not wanting to sell at retail and management of sales tax monitoring and payment.

Regarding ongoing activities and next steps, a current goal is for Tulane to become a DPP site in the future. Planning is also underway to continue expansion of the initiatives used during the collaborative to other primary care clinics and workplace wellness programming.

References


10. Submitted for publication.


Appendix

Final Data Report from AMGA Obesity Care Model Collaborative

Prevalence of Overweight and Obesity: 2019 Q2
Targeted clinics for OCMC (~122,000 total patients)

Collaborative Performance: Documentation of Obesity Diagnosis
- Proportion of patients with BMI ≥ 30 who have a documented obesity diagnosis in Targeted Clinics
- ICD10: E66.01, E66.09, E66.2, E66.8, E66.9

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<td>Relative Δ +7.9%</td>
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Appendix

Assessment for Obesity-Related Complications
- Proportion of patients (BMI ≥ 25) with select laboratory assessments by reporting period, in Targeted Clinics
- ALL assessments remain low but overall improvement since 2018 Q1
- HDL and Serum Creatinine demonstrated some of the largest absolute improvements; 6% and 5%, respectively

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Average Number Obesity-Related Complications Per Patient
- Average number of obesity-related complications per patient (BMI ≥ 25) by weight class and reporting period
- 6 complications: Type 2 Diabetes, Dyslipidemia, Hypertension, Obstructive Sleep Apnea, Osteoarthritis, Nonalcoholic Fatty Liver Disease

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### Appendix

**Obesity-Related Problem Scale**

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**Obesity and Weight Loss Quality of Life Instrument**

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Appendix

Proportion of patients (BMI ≥ 25) by weight change category and reporting period

Absolute Weight Loss Δ 8.0%
Relative Weight Loss Δ 23.5%

Measure 6: Proportion of Patients by Percent Weight Change
- By reporting period, weight class and 7 weight categories
Prescribing Anti-Obesity Medications

- Proportion of patients seen during the time period who have an active Rx for an anti-obesity medication
- Patient-weighted average across all organizations

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Project Team

Timothy S. Harlan, M.D., FACP, CCMS
Associate Dean for Clinical Services
Tulane University School of Medicine

Kerri Dotson, RDN, LDN
Director of Operations
Goldring Center for Culinary Medicine

Lesley Leblanc, M.B.A.
Director, Value-Based Programs
Tulane University Medical Group

Jenine Dabon, NP
Director Tulane Living Well Wellness Clinic

Joseph Esneault
Executive Director Clinical Services
Tulane University Medical Group