Louisiana Obesity Prevention and Management Commission 2017 Annual Report

Report prepared in response to ACT 186 of the 2016 Regular Session

Prepared by: Bureau of Chronic Disease Prevention and Health Promotion

Louisiana Department of Health

Office of Public Health

Melissa R. Martin, RDN, LDN
Director of the Bureau of Chronic Disease Prevention and Health Promotion, Louisiana Department of Health

Carolyn Johnson, Ph.D
Director of the Tulane Prevention Research Center

Donna H. Ryan, MD
Executive Director, Pennington Biomedical Research Center

Michael Comeaux
Health and Physical Education Coordinator, Louisiana Department of Education

February 2018

LOUISIANA DEPARTMENT OF HEALTH

Contents

Executive Summary

Obesity is associated with more than 200 diseases and is now a global epidemic. According to the 2016 America's Health Rankings report to Louisiana's adult obesity rate is 36.2 percent and ranks fiftieth in the United States. The state's obesity epidemic has resulted in profound health and economic implications for Louisiana and its residents and continues to escalate. Public policy intervention is needed to address and reverse the increasing prevalence of obesity among Louisiana residents to reduce both the high human and economic costs.

Obesity is a driver of many of the non-communicable diseases currently affecting public health in Louisiana. Type 2 diabetes is the chief disease associated with obesity. According to the 2016 Louisiana Behavioral Risk Factor Surveillance System (BRFSS) data, approximately 434,000 (12.1%) of the state's adult population have diabetes. Almost 8.7 percent of Louisiana's adult population has pre-diabetes. About 58 percent of those living with diabetes are obese; 5.8 percent of Louisiana residents have heart disease, about 44 percent of those with heart disease are obese; 22.8 percent of Louisiana residents smoke, and almost 28 percent of those who smoke are obese. Not only is the health impact of obesity on individuals in Louisiana staggering, the cost to the state is $2.9 Billion per year according to data from the National Center for Chronic Disease Preventions 2010.

Through the 2014 Regular Session Act 580 and the Regular Session of 2016 Act 186, the Louisiana Obesity Prevention and Management Commission (Commission) has been tasked to address the following duties between July 2014 – March 31, 2018:

1) Assisting the executive departments and agencies in achieving programmatic goals. To this end, the commission shall provide leadership and support for:
    (a) Organizational efforts found necessary to achieve programmatic objectives.
    (b) Articulating standards through the dissemination of materials, identification of expert opinion, identification of alternate means of developing effective population-based programs, and development of policy on identified health risks.
    (c) Creating awareness among payers, providers, and patients of the health risks due to overweight and obesity conditions.
    (d) Enhancing reporting mechanisms of latest outcomes and health trends in the area of overweight and obesity concerns.
    (e) Conducting evaluations of program effectiveness.
    (f) Encouraging research and the identification of resources that seek ways to promote cost-effective methods of treating overweight and obesity conditions.
2) Assisting in conducting exploratory research as deemed necessary with the intent of achieving programmatic objectives.
3) Conducting public meetings to discuss obesity.
4) Advising and assisting participating agencies with the development and implementation of obesity programs.
5) Analyzing what other entities across the state are doing to combat obesity.
6) Advising the executive departments and agencies as to the implementation of the commission's recommendations.

The following report includes recommendations for future Commission activities and highlights the Commission's activities during the timeframe of April 2017 through November 2017.

Report on the 2017 Annual Commission Progress

Bringing Value to Louisiana Communities

The vision of the Commission is to:

- Identify and pursue opportunities for increased collaboration,
- Ensure accountability through efforts to enforce existing policy, and
- Deliver information, recommendations, guidelines, and suggestions.

Over the last nine months, the Commission has worked with community members and organizations to determine the value they could bring to Louisiana residents. An interactive activity was conducted with community members that allowed participants to make recommendations for priority areas and goals for the Commission. Four priority areas were defined. Recommended strategies and activities have been drafted to provide guidance and support to local initiatives and community leaders:

1. Educate Payers and Healthcare Providers on Obesity Prevention and Treatment Best-Practices
2. Provide Community Resources for Obesity Prevention Best-Practices
3. Support Data Driven Decision Making for Reducing Obesity in Louisiana
4. Inform Louisiana Elected Officials- local and state

Priority Area 1: Educate Payers and Healthcare Providers on Obesity Prevention and Treatment Best-Practices

Recommended Strategies and Activities:

1. Disseminate and provide trainings on clinical guidelines and best-practices for obesity prevention and treatment across all healthcare provider organizations statewide.
2. Increase the number of obese or overweight adults and children in Louisiana counseled on weight loss options by healthcare providers.
3. Encourage research and the identification of resources that seek ways to promote cost-effective methods of treating overweight and obesity conditions.
4. Create awareness amongst payers of the health risks due to overweight and obesity conditions.
5. Encourage Community-Clinical Linkages: How can Public Health and Health Systems interact to improve obesity outcomes.

See Appendix 1 for a report that supports Priority Area 1 written by Dr. Donna Ryan of Pennington Biomedical Research Center titled ***"Treating Obesity Medically and Surgically".***

Priority Area 2: Provide Community Resources for Obesity Prevention Best-Practices

Recommended Strategies and Activities:

1. Develop a statewide repository of Health Resources for communities.
2. Increase utilization of the findings from the Louisiana Department of Health (LDH) State Health Improvement Plan (SHIP) Priority Area of Promoting Healthy Lifestyles.
3. Develop partnerships for expanding municipality efforts for community-based obesity prevention initiatives.
4. Strengthen the implementation of Nutrition standards and Physical Activity Policies and Best-Practices in Early Childcare Centers (ECC) and Schools.

See Appendix 2 to learn more on how Commission Member agencies, Louisiana Department of Education (LDOE) and LDH are partnering to improve health outcomes for Louisiana students K-12.

Priority Area 3: Support Data Driven Decision Making for Reducing Obesity in Louisiana

Recommended Strategies and Activities:

1. Improve the collection of Childhood Obesity data.
2. Increase the use of Adult Obesity data for decision making.
3. Use data to frame the impact of Social Determinants of Health and the Systematic Drivers of Obesity including but not limited to socioeconomic status, violence, abuse, depression, poverty, adverse childhood experiences, and trauma.
4. Maintain a database of active and recommended Louisiana Obesity Prevention and Treatment public policies.

Priority Area 4: Inform Louisiana Elected Officials- local and state.

Recommended Strategies and Activities:

1. Increase the number of educational opportunities for elected officials regarding the burden of Obesity in Louisiana.
2. Conduct quarterly public meetings to discuss obesity prevention and management.
3. Provide annual Legislative report which includes recommendations that reflect the efforts of the Commission.
4. Partner with other community coalitions and legislated commissions to maximize impact on population health.

Moving Forward

The Commission intends to structure future quarterly meetings by priority area, inviting guest speakers on specific topics and allowing community members to identify which meetings would be most beneficial to attend. In addition to these efforts, the Commission is beginning to create a model for community-based prevention efforts. This report will summarize the model and current progress on adapting the model for Louisiana communities.

Communicating the resources of the Commission is key to increasing awareness of available support. The Commission has developed a communications plan and is working to improve access to resources through the development of a webpage and community resource guide.

Community Action Model

Active Living by Design (ALBD)[1, 2] developed a Community Action Model (CAM) as an evidence-based framework for increasing active living and healthy eating through various strategies. After more than 12 years of implementing successful initiatives though application of the model, the new and refined CAM highlights: 1) community context 2) six essential practices and 3) a 3P approach (Partner, Prepare, and Progress). ALBD posits that the model "...can be useful to community coalitions and local leaders seeking a collaborative approach to creating healthier places..."

The Commission believes that such a model can provide a context in which to review and evaluate work already accomplished, provide a framework for current identified priorities, and establish strategies by which future accomplishments can be achieved. See Appendix 3 for the Community Action Model infographic.

Community Context. According to the research conducted by Active Living by Design, community context plays a vital role in healthy communities' work. Evaluating community context means examining residents, culture, history, business, government, nonprofits, coalitions, programs, policies, systems, resources, and environment. See Appendix 4 for an overview of Louisiana from a Community Context Perspective. The Commission is well positioned to develop a comprehensive analysis of the state context, with the purpose of identifying methods that use many statewide influences for the promotion of healthy programs.

State Level Policies. In its first iteration from 2013-2015, the Commission conducted a retrospective canvas of all legislation enacted by the Louisiana State Legislature from 2000 to 2014 that focused on obesity, nutrition, physical activity, or other related health matters. No fewer than 24 pieces of legislation were passed, indicating a significant intent of the Legislature to attempt to improve the health of Louisiana residents. Unfortunately, these pieces of legislation, which had the potential to influence policies statewide, had little to no effect for several reasons: 1) funding was unavailable to support any of these bills, 2) dissemination of information about these policies did not occur in a manner to be informative to relevant organizations and institutions, and 3) compliance issues were not addressed.

Statewide Obesity Prevention Programs. Also in its first iteration, the Commission developed a list of all institutions, organizations, agencies, nonprofits, etc., to e-survey their active programs that addressed obesity, healthy diet, and physical activity. Responses were received from every parish in the state, and 69 programs were identified. Once again, these results reflect the interest and previous attempts to address the issue of obesity across the state. It was also clear, however, that many independent, disjointed, and non-coordinated efforts did not result in a decrease in Louisiana's rate of obesity. The Commission believes a coalition is much needed to disseminate information, provide a touchstone for organizations that seek to partner and collaborate on obesity-prevention efforts, and to provide technical assistance and expertise.

---

[1] Active Living by Design. http://activelivingbydesign.org/community-action-model.

[2] Hennessey Lavery, S., Smith, M. L., Esparza, A. A., Hrushow, A., Moore, M., & Reed, D. F. (2005). The Community Action Model: A Community-Driven Model Designed to Address Disparities in Health. American Journal of Public Health, 95(4), 611–616. http://doi.org/10.2105/AJPH.2004.047704

The Six Essential Practices of the Community Action Model

1) Health Equity Focus. An intentional focus to reduce health disparities can be achieved by eliminating avoidable and unjust health inequities affected by social, economic, and environmental conditions.

Louisiana has much work to be done in this area, and this is certainly an action item that needs to be addressed, especially in the health arena and particularly with overweight and obesity.

2) Community Engagement. Community engagement involves an intentional process to empower residents to engage in and contribute to planning and implementation of solutions within their own communities.

Community engagement action can be put in motion by the Commission following a comprehensive analysis of the state's contextual factors that can be influential in developing a collective will and collective impact relative to health, and obesity in particular. It can be foreseen that the state's varied cultural heritage and economic assets will play important roles in this process.

3) Facilitative Leadership. The Commission has taken a facilitative leadership role for action to reduce/prevent/manage obesity across the state; however, in order to be effective, an expansion in function, membership and funding needs to occur. The Commission is willing to engage in grant-writing to secure funds to support needed work, to review membership and explore the inclusion of additional members, and to engage in discussions to identify a realistic range of activities that can be achieved within the time frame of the enacted legislation.

4) Sustainable Thinking. The Commission is in a unique and strategic position to identify assets and opportunities that are necessary for successful and lasting statewide improvement. Any work of the Commission needs to be sustainable. Therefore, identification of organizations/institutions in locations across the state that can partner with the Commission to extend its reach into regional communities is crucial for sustainability to be achieved.

5) Culture of Learning. Inherent in a "culture of learning" is the concept of continuity. Developing this cultural community concept is, therefore, closely tied to sustainable thinking in that partnerships and continual assessment of initiatives and opportunities provide for collaborative sharing and learning. This kind of learning infusion can be inculcated locally but can also occur by effecting the priorities identified by the Commission, which will be described in the 3P Action Steps.

6) Strategic Communication. Strategic communication is a priority already established by the Commission and will be effected through goal-driven communications that align messages with a specific audience's values, mission, and goals. Generalized messages via traditional forms of communication, such as newsletters, press releases, reports, brochures, etc., still have their purpose; however, up-to-date technological methods are becoming more useful, efficient, and convenient with webpages, smart phones, social media, etc. Communication methods will be successful only with goal-driven, strategic messaging designed for specific audiences. The Commission is willing to meet this challenge and is anticipating moving forward with its communication priorities.

The 3P Action Steps of the Community Action Model

(1) Preparation. The Commission initiated a series of discussions at regular meetings to identify immediate priorities for action and include; 1) educating payers and healthcare providers on obesity prevention and treatment best practices; 2) providing community resources for obesity prevention best practices; 3) improving data tracking for obesity in Louisiana; and 4) effectively meeting the requirements and standards set by Louisiana Act 186. Each of the above priorities has a set of goals that

focus on a framework for the work of the Commission which include: the Commission will act as a facilitative leader by maintaining a repository of obesity prevention and treatment best practices, the Commission will provide technical assistance and expertise, and will develop partnerships, conduct public meetings, and generate an annual legislative reporting. It was also decided there would be a focus on childhood obesity, a severe and increasing problem in the state that will affect generations to come.

(2) Partnering. The Commission plans to provide technical assistance, expertise, and communications regarding best practices for prevention and treatment of obesity to relevant organizations statewide. The above priorities specifically identify payers, healthcare providers, community nonprofits, and the Louisiana legislature as immediate partners. As the work of the Commission progresses, these partners will be augmented with those organizations/institutions/agencies that reported they were doing active obesity work in the survey conducted in the spring of 2018. The development of a network of partners throughout the State, dedicated to and focused on prevention and management of obesity, will extend the reach of the Commission to local communities and will provide for sustainability and a culture of learning.

(3) Progress. The Commission will track progress via this Community Action Model. Initial progress included the compilation of a database of legislation relevant to obesity enacted by the Legislature between 2000 and 2014, a contact list of organizations/institutions/agencies across the state, and information regarding obesity programs being conducted in Louisiana. It should be recognized that such a list is not static and will be modified over time to reflect changes that are occurring in obesity oriented programs in the community.

Communications Plan

The Commission is working to engage stakeholders and community members in order to bring awareness of the resources available through the Commission. The Commission aims to promote the Commission webpage, healthcare provider trainings, accurate data, local and national resources, and local success stories. Commission members will work with their associated organizations and partners to promote Commission resources through a variety of mediums including social media and newsletters. The Commission will continue to bring together members and other partners for the purpose of furthering the legislated objective.

LDH has developed and launched a webpage for the Commission (wellaheadla.com/ObesityCommission). The webpage will host resources for communities and partners to execute best practices for fighting obesity. The site will connect to resources provided by commission member organizations, downloadable fact sheets, and community success stories. The Commission webpage will connect with LDH's statewide Community Resource Guide (wellaheadla.com/Well-Ahead-Community/Community-Resource-Guide). The Community guide allows all community members to find and add community resources within a zip code range. Resources range from local diabetes education classes to free exercise classes within a community. Additionally, the webpage will link to the LDH searchable database of WellSpots across Louisiana. WellSpots are organizations (Childcare Centers, Schools, Worksites, Hospitals, Restaurants, Colleges, and Healthcare Provider Facilities) actively implementing wellness benchmarks that move the health of their employees, students, patrons, patients, and communities forward (wellaheadla.com/WellSpots/Find-WellSpots). Lastly, the webpage

will link to the LDH's Well-Ahead Louisiana Provider Education Network and work to maintain and promote a list of training opportunities (wellaheadla.com/healthcareprovidertrainings).

Conclusion

In summary, the commission is well poised to continue supporting health promotion and obesity prevention efforts within Louisiana communities by utilizing the four priority areas and working with community partners and local initiatives aimed at improving population health across Louisiana. The Commission will continue to encourage community member attendance and participation in quarterly meetings. The Commission projects that the following action items will be completed prior to sunset on March 31, 2018:

1. Louisiana Community Action Model will be finalized.
2. Community success stories will be collected and distributed
3. Engagement with webpage to enhance access to resources will be increased.
4. Partners will be engaged to improve community awareness of obesity prevention and management resources.
5. Discussions on opportunities to identify funding to support efforts will have occurred.

In the event the Commission is not reinstated, community members and several commission members desire to continue quarterly meetings and collaborations on obesity prevention and management.

APPENDIX 1:

PENNINGTON BIOMEDICAL RESEARCH CENTER LSU

Treating Obesity Medically and Surgically

Authored by: Commission Member Dr. Donna Ryan of Pennington Biomedical Research Center

Summary

Data yielded by well-designed scientific studies show that weight loss produces significant personal health improvements for overweight individuals and reduces the associated economic burden. Evidence provided by these documented findings supports the value of clinically indicated medical and surgical interventions for obese individuals. However, current health insurance reimbursement structures provide disincentives for medical interventions by qualified physicians and surgeons, thus perpetuating an unhealthy and increasingly expensive *status quo*.

The following brief report outlines the problem with emphasis on Louisiana, discusses scientific findings, and presents recommendations that offer a preliminary blueprint for Louisiana policymakers seeking to control and reduce the disproportionately high burden obesity-related chronic diseases that affect the state's citizens.

Why treat obesity medically and surgically?

This discussion addresses the obesity epidemic currently affecting all countries in the developed and developing world. Obesity is the result of susceptible individuals being exposed to an "obesogenic environment." No country has been successful in slowing or reversing the epidemic, although we are beginning to see public health policy approaches to limit access to or discourage use of obesogenic foods, such as sugar sweetened beverages and to improve the built environment. These and other measures may ultimately show benefit, but progress is slow. The secular trends are powerful; ready access to highly palatable and energy dense foods is ubiquitous and, similarly, the physical activity requirements for work or play are ever-diminishing. Thus, it is imperative that we develop medical approaches to obesity management in order to diminish the chronic disease burden and its economic consequences.

The problem. Obesity and type 2 diabetes are at epidemic levels in the United States. According to the last National Center of Health Statistics data brief,[1] more than one-third of American adults (36.5%) have obesity. Louisiana is also disproportionately affected by the obesity epidemic and now has the highest adult obesity rate in the nation at 34.9% of the population.[2] Obesity is not only associated with, but is also a driver of many of the non-communicable diseases currently afflicting public health. There are more than 200 diseases associated with obesity.

The implications of the obesity epidemic in Louisiana are profound. Obesity is linked to many comorbid conditions, and chief among them is type 2 diabetes. Approximately 520,000 people in Louisiana or 13.9% of the adult population have diabetes[3] and, in addition, 37.5% of the adult population have prediabetes.[3] The consequences are not only an enormous health burden, but also an economic burden. According to the *National Center for Chronic Disease Preventions 2010,* obesity cost the state of Louisiana $2.9 Billion annually

Mechanisms by which excess body fat increases health risk. Current thinking about how excess adiposity drives health risk is through several mechanistic pathways. The excess physical burden of body weight can play a role, especially in lower extremity arthritis and pain and in sleep apnea. For example, in knee osteoarthritis, every pound of excess weight exerts a four-fold burden on the knee per step in daily activities.[4] Another mechanistic pathway is through biochemical products of fat tissue.[5] Fat tissue itself is an active endocrine organ, secreting a number of adverse cytokines, including pro-inflammatory and pro-thrombotic molecules, among others. The "portal hypothesis" also maintains that free fatty acids released from visceral fat stores directly into the portal vein bathing the liver and contributing to the abnormal lipid profile and insulin resistance characteristic of metabolic syndrome. Circulating free

fatty acids can also affect muscle insulin sensitivity. Finally, fatty infiltration of liver and muscle can contribute to pathology.[6]

Mechanisms by which weight loss can improve health risk. A recent paper[7] from Washington University in St Louis describes an experiment in which different levels of weight loss were assessed for their impact on metabolic function and adipose tissue biology. For clinicians, the take-away message from the above referenced study[7] is that modest weight loss (5%) has multiple metabolic and cardiovascular risk factor benefits and more weight loss (11% and 16%) has even more benefits for metabolism and cardiovascular risk factors. However, for some clinical endpoints, especially if one is seeking improvement in inflammatory markers, it may be necessary to achieve 16% weight loss or more. This may help to explain why clinically it requires more weight loss to see improvement in NASH activity scores for Non-Alcoholic Steatotic Hepatitis (NASH), and for improvement in symptoms of obstructive sleep apnea and for knee pain with osteoarthritis.

EVIDENCE OF HEALTH BENEFITS OF DIFFERENT DEGREES OF WEIGHT LOSS:

1. **Modest and moderate weight loss and diabetes prevention.** The health benefit of modest weight loss is best exemplified clinically in the relationship between weight loss and diabetes prevention. While an average weight loss of 6.7% reduced the incidence of diabetes by 58% in the group participating in the American Diabetes Prevention Program[8] and similarly in the Finnish Diabetes Prevention Trial,[9] it's important to distinguish group benefits versus individual benefits. An analysis by Hamman, et al[10] from the American Diabetes Prevention Program showed <u>that in individuals with impaired glucose tolerance, for every kilogram of weight lost there was a 16% reduction in risk for progression to diabetes</u>. Furthermore, after about 10 kg weight loss, there was negligible benefit, in terms of diabetes risk reduction, from further weight loss. This is illustrated in **Figure 1**. Clearly, even one or two kg of weight loss in persons at risk for developing type 2 diabetes (i.e. those with prediabetes) can have health benefits. In addition, this analysis of the Diabetes Prevention Program weight loss showed reduced diabetes incidence similarly across all race and ethnicity groups for both sexes, for all ages and for several levels of physical activity and regardless of the level of the initial obesity.

2. **Modest and moderate weight loss in established type 2 diabetes.** The relationship between modest weight loss and improvement in glycemia is powerful and it is not limited to diabetes prevention. This is illustrated with analyses from the Look AHEAD study of >5000 individuals with type 2 diabetes. In one analysis,[11] categories of weight loss were defined (stable weight, $\geq$2%<5%, $\geq$5%<10 %, $\geq$10%<15% and $\geq$15%). This analysis demonstrated that improvement in fasting glucose and hemoglobin A1c is observed beginning at only $\geq$2<5% weight loss. Of course, greater weight loss was associated with greater benefit to glycemic outcomes in a direct and linear fashion. It must be noted that these benefits to glycemic measures were achieved alongside *reductions* in antidiabetic medications.[11]

3. **Modest and moderate weight loss and improvement in cardiovascular disease risk factors**. Data from the Look AHEAD Study also showed that health benefits of modest weight loss are not limited to glycemic measures. The analysis cited above[11] also evaluated the impact of progressive categories of weight loss on other risk factors and showed that improvement in triglycerides and systolic blood pressure begins with $\geq$2<5% weight loss.[j] For diastolic blood pressure and HDL cholesterol, improvement begins at $\geq$5<10% weight loss.[j] All of these risk factors improved in a direct and linear fashion with greater weight loss being associated with

greater risk factor benefit. However, for LDL cholesterol, the relationship is less strong and in the Look AHEAD study, where baseline LDL was 100 mg/dl, there was no reduction in LDL.[j] However, there was a reduction in use of lipid lowering medications in the modest weight loss group (average -8.7% at year 1) in this study.[11]

4. **Benefits of modest and moderate weight loss on cardiometabolic risk factors across all levels of obesity.** Of importance is the demonstration from another analysis[11] from the large Look AHEAD data set (n>5000) that baseline BMI category (Obese stage I, II or III) does not alter the benefit of modest weight loss.[12] Each of the BMI categories demonstrate the same amount of mean weight loss, when expressed as a percentage from baseline, with the same lifestyle intervention. Of course, those with higher BMI category would lose more weight when expressed in kilograms; but when expressed proportionally there is no significant difference across BMI categories in weight loss. Thus, for patients with BMI 40 kg/m^2 or more there was no difference in mean percentage weight loss when compared to those with BMI 35<40 or BMI 30<35. Further, the same held true for improvement in most risk factors. Except for HDL cholesterol, weight loss had the same impact across the three BMI categories with significant improvement in hemoglobin A1c, triglycerides, systolic blood pressure, and LDL cholesterol.[12]

5. **Benefits of moderate weight loss on symptoms of obstructive sleep apnea.** The Look AHEAD Study incorporated a substudy of sleep apnea, called Sleep AHEAD. More than 80% of the participants with type 2 diabetes in four sites of Look AHEAD had at least mild obstructive sleep apnea.[13] With the intensive lifestyle intervention (ILI), mean weight loss at one year at these four sites was 10.8 kg vs. 0.6 kg in the diabetes support and education (DSE) group. At 1 year, remission of OSA (apnea hypopnea index, AHI, <5 events per hour) was 3 times more common in the ILI participants (13.6%) than in the DSE participants (3.5%). Further, the prevalence of severe obstructive sleep apnea among ILI participants (18.4%) was half that of the DSE group (37.9%). Participants with a weight loss of 10 kg or more had the greatest improvements. In fact, weight loss of 10 kg or more was required for significant association with AHI change. At 4 years, improvements persisted, despite some weight regain to 5.2 kg below baseline in the ILI group.[14] Remission of OSA at 4 years was 5 times more common with intensive lifestyle intervention (20.7%) than diabetes support and education (3.6%).[14] For clinicians, weight loss can be a major modifier of symptoms of obstructive sleep apnea as measured by the apnea hypopnea index, but 10% or more should be the goal to impact clinical symptoms. This larger amount of weight loss required for improvement may relate to the physical impingement on airway by excess body fat and it may take more proportional weight loss to impact symptoms.

6. **Benefits of modest and moderate weight loss on osteoarthritis of the knee.** Osteoarthritis of the knee is closely linked to obesity as a risk factor and is quite common. Nearly half of Americans are projected to experience osteoarthritis of at least one knee in their lifetime.[15] A diet and exercise intervention which achieved 5.7% weight loss on average, and compared to a control condition produced significant improvements in WOMAC (Western Ontario MacMaster University score, which measures self-reported function), the 6 minute walk distance ($p<0.05$), stair climb time ($p<0.05$) and knee pain.[16] Knee joint loads were also assessed in those patients and the investigators found that each pound of weight lost resulted in a 4-fold reduction in the load exerted on the knee per step during daily activities.[17] Accumulated over thousands of steps per day, a reduction of this magnitude would appear to be clinically meaningful. A subsequent study achieved average weight loss of 10.6% with diet and exercise, and compared to a control condition of exercise alone produced significant improvement in pain, function, IL-6 levels and a

quality of life measure.[18] However, radiographic and Magnetic Resonance Imaging outcomes did not fare as well. Despite the positive effects of weight loss in this study on symptoms as well as mechanistic outcomes (such as joint compressive force and markers of inflammation), there was no statistically significant improvement on the rate of structural progression either on X-ray or MRI over 18-months.[19] Thus, if a real impact on osteoarthritis of the knee is to be achieved, one must treat before established pathology in the knee, at the stage of knee pain alone. In the Look AHEAD study of men and women with type 2 diabetes, there was 15% less incidence of knee pain at year one in lifestyle intervention group (-8.7% weight loss) than support group (-0.9% weight loss) at one year.[20] However, at year 4 this difference in incidence decreased to 5% and was no longer statistically significant.[20] Therefore the best strategy would be to treat early and to treat more aggressively to produce greater weight loss, thus preventing the onset of structural damage to the joint.

7. **Benefits of weight loss on hepatic steatosis and non-alcoholic steatotic hepatitis (NASH).** As discussed above, in the experiment conducted by Magkos et al,[7] weight loss disproportionately reduces fat from liver. In that study, 5% weight loss reduces intrahepatic triglyceride by 13%; 11% weight loss reduced it by 52% and 16% by 65%. As part of a substudy, 96 participants in Look AHEAD underwent proton magnetic resonance spectroscopy (MRS) to quantify fatty infiltration of the liver, with hepatic steatosis defined as 5.5% or higher being non-alcoholic fatty liver disease.[21] In that study, the greater the weight loss the greater the reduction in hepatic steatosis. However, while there were group differences in steatosis, with the lifestyle intervention group reducing steatosis on average 50.8% (versus 22.8% in the support group; $P>0.04$), there were no group differences in mean ALT and ASP.[21] It appears that it may take 10% or more weight loss to have an impact on NASH Activity Scores as assessed by liver biopsy.[22]

8. **Benefits of lifestyle intervention on improvement in feeling and function (Quality of Life, Depression, Mobility, Sexual Dysfunction, and Urinary Stress Incontinence).** While reducing risks for other diseases is important, equally important is improving how patients feel and function. There is a known graded response to weight loss achieved through lifestyle intervention and improvement in **quality of life** as measured by the Impact of Weight – Quality of Life Assessment Tool.[23] Indeed, in Look AHEAD, at year one, quality of life improved more in the group undertaking lifestyle intervention than those in the support condition.[24]

   Also, in Look AHEAD, there were fewer patients who developed potentially significant symptoms of **depression** (defined as Beck Depression Inventory[25] score ≥ 10) in the lifestyle intervention group as compared to the support condition.[26] At 1 year, the incidence of BDI ≥ 10 was significantly lower in the ILI than DSE group (6.3% vs. 9.6%; $P < 0.001$) indicating that weight loss does not precipitate depression and may protect from it. Furthermore participants in the lifestyle intervention with and without symptoms of depression at baseline lost $7.8 \pm 6.7\%$ and $8.7 \pm 6.9\%$ of total body weight, respectively, a difference not considered clinically meaningful.

   Look AHEAD also assessed functionality. For participants in the lifestyle intervention, compared to the support condition, there was attenuation in the decline in **mobility** that occurs with aging.[27]
   In overweight and obese women with type 2 diabetes participating in Look AHEAD, **urinary stress incontinence** improved in those who were randomized to the lifestyle intervention as compared to the control condition.[28] Look AHEAD demonstrated the same finding in men.[29]

Sexual dysfunction was also studied in Look AHEAD and there was improvement in measures of sexual function for participants in the lifestyle intervention compared to the support condition. There was improvement in erectile function for men[30] and sexual dysfunction in women.[31]

9. **Benefits of weight loss in Polycystic Ovarian Syndrome and infertility in women.** A hallmark of women with PCOS is menstrual irregularities and its resulting infertility in addition to androgen excess and metabolic dysfunction. Most of the evidence points to improvement in ovulatory cycles and subsequent pregnancy with weight loss in obese women with PCOS. Furthermore, even a minimal weight loss of only 2-5% of total body weight improves ovulatory function and is more likely to result in spontaneous pregnancy.[32] There is more robust evidence to support improved outcomes from ovulatory cycles and pregnancy at higher rates of 5 and 10% of total body weight loss.[33] The return of normal menstrual function and decreased hirsutism are thought to be due to improved insulin sensitivity, decreased Luteinizing Hormone levels, and lower androgenemia.[33,34] Not only is pregnancy easier to achieve after modest weight loss it is also more likely to result in a successful live birth-miscarriage rates are lower at lower BMIs.[35]

10. **Benefits of weight loss on health care costs and mortality.** In an analysis from Look AHEAD[36] the impact of the lifestyle intervention on use and costs of medical services, with the support condition as comparator, showed that in the lifestyle group, annual hospitalizations were reduced by 11% (P=0.004) and hospital days by 15% (p=0.01). The cost savings for hospitalizations were 10% less in the lifestyle group (p=0.04). Medication cost savings were 7% less in the lifestyle group compared to the support group (P<0.001). Over 10 years, the relative cost savings per person in the lifestyle group were $5280 (95% CI = $3385-$7175). However, there were no differences in outpatient costs and the savings were not observed in those with a history of cardiovascular disease. The costs of conducting the Look AHEAD intervention have not been reported so cost effectiveness cannot yet be calculated.[36]

11. **Weight Loss and Mortality Reduction.** The Swedish Obese Subjects Study[37] provides a relevant paradigm for assessing the impact of weight loss *per se* on mortality and cardiovascular disease mortality, because while surgery was the method of obtaining weight loss, the procedure done in >80% of participants was the vertical banded gastroplasty. This would not great physiologic changes in gut signals as the Roux-en-Y-Bypass does that might have independent effects on mortality. The results from the Swedish Obese Subjects study, showed that surgical treatment which produces on average 16% weight loss, compared with a matched but un-operated control group without weight loss, showed a 29% reduction in overall mortality after ~ 20 years.[37] In the Look AHEAD study, participants were followed for 13 years. The mean initial weight loss at 1 year was 8.7% but half of the weight was regained. At the end of the trial there was no significant difference in the incidence of a composite end-point for major cardiovascular end-points for the intensive lifestyle intervention compared to the diabetes support and education condition.[38] However, a subsequent analysis from Look AHEAD[39] where individuals who lost at least 10% of their bodyweight in either arm of the study, in the first year of the study, had a 21% lower risk of the primary outcome of major cardiovascular events (p=0·034) and a 24% reduced risk of the secondary cardiovascular disease outcome (p=0·003) compared with individuals with stable weight or weight gain. Granted, this is not a randomized comparison, but a post hoc analysis, but it suggests that more than 10% weight loss may be needed to achieve reduction in cardiovascular events and mortality.

GUIDELINE RECOMMENDATIONS FOR WEIGHT LOSS. The concept that we do not need to normalize weight or achieve major weight loss to obtain health benefits has been reinforced in recent Obesity Guidelines.[2] In 2013, an expert panel formed by the NIH conducted an evidence-based review[2] around 5 critical questions. Critical Question 1 addressed the health benefits of weight loss: What amount (shown as percent lost, pounds lost, etc.) of weight loss is necessary to achieve benefit with respect to CVD risk factors, morbidity, and mortality? The graded evidence statements that resulted from this effort provide the strongest support for weight loss beginning at 3% (for glycemic measures and triglycerides) and 5% (for blood pressure, HDL and LDL cholesterol) to be considered clinically meaningful.[2] The Expert Panel went on to observe that increased weight loss amounts provide even greater benefits. Still, the clinical practice recommendation, based on expert opinion, was to set an initial goal of 10% weight loss. Clinical Practice Guidelines for Comprehensive Care of Patients with Obesity issued by the American Society of Clinical Endocrinologists (AACE) and the American College of Endocrinology (ACE) take a different approach.[40] That approach is more complications centric. Obesity disease stage is based on ethnic-specific BMI along with assessment cutoffs for adiposity-related complications. Stage 0 is assigned to individuals who are overweight or obese by BMI classification but have no complications, whereas Stage 1 and 2 are defined as individuals who are overweight or obese by BMI classification and having 1 or more mild-moderate complications (Stage 1) or at least 1 severe complication (Stage 2). For patients with Stage 2, 10% or more weight loss is recommended. The American College of Obstetrics and Gynecology provides an Obesity Tool Kit[41] for practitioners and relies on the 2013 Obesity Guidelines,[2] as well as other sources to inform their recommendations. The Tool Kit does not specifically address weight loss goals.[41]

Policy Recommendations:

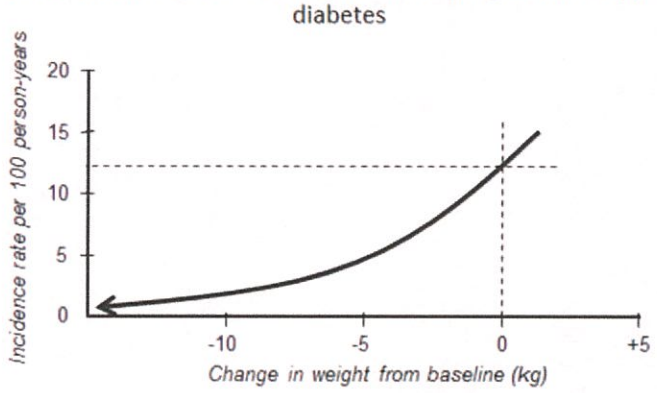
1. **There is currently a disincentive for medical practitioners to provide weight management services because these services are frequently specifically excluded from reimbursement by health plans. Health plans should follow CMS regulations for reimbursing for intensive behavioral therapy for obesity.**
2. **Medications are often specifically excluded from any reimbursement by health plans. The newer medications approved by FDA for chronic weight management should be covered.**
3. **Bariatric surgery is often specifically excluded from coverage by health plans. These procedures should be covered if performed according to guidelines and in centers of excellence.**

Table 1. Relationship with amount of weight loss and various comorbidities

Condition	Amount of weight loss needed to effect improvement	References
Glycemic Improvement – Diabetes prevention in impaired glucose tolerance	2.5% weight loss or more; maximal impact at 10%	2,8,9,10
Glycemic improvement –	2.5% to >15%; greater weight loss associated with greater glycemic improvement; true for all BMI classes	11,12

Type 2 diabetes		
Triglyceride reduction	2.5% to >15%; greater weight loss associated with greater glycemic improvement; true for all BMI classes;	11,12
HDL increase	5% to >15%; greater weight loss associated with greater glycemic improvement; not true for BMI >40 kg/m^2	11,12
Apnea Hypopnea Index Improvement in Obstructive Sleep Apnea	10%+ weight loss required for significant improvement	13,14
Knee pain and function in persons with osteoarthritis	5-10% improves knee functionality, speed, walk distance and pain; 10%+ required to improve IL-6 and CRP levels; knee MRI and X-ray findings do not change	16-19
Emergent knee pain prevalence	5-10% weight loss, with persistent maintenance required to prevent knee pain in individuals with obesity	20
Hepatic steatosis reduction	5-15%+; greater weight loss associated with greater improvement	21
Non-alcoholic steatotic hepatitis activity score	10%+ weight loss required for significant improvement	22
Impact of Weight on Quality of Life score	5%-15%+; greater weight loss associated with greater improvement	23
Depression	5-10% may reduce risk for emergent depression; individuals with depression lose as much weight as non-depressed individuals.	26
Mobility	5-10% loss attenuates mobility decline with aging	27
Urinary Incontinence	5-10% improves symptoms in men and women	28,29
Sexual Function	5-10% improves erectile function in men and sexual dysfunction in women	30,31
Polycystic Ovarian Syndrome and infertility	Improvement in ovulatory cycles and subsequent pregnancy with 2-5% weight loss, with more weight loss producing more robust effect.	32-34
Health care costs	In persons with diabetes 5-10% weight loss associated with reduction in hospitalization and medication costs, but not outpatient costs.	36
Mortality	16% weight loss (vertical banded gastrectomy) associated with reduction in all cause and cardiovascular mortality. 5-10% weight loss with lifestyle intervention had no effect on major cardiovascular outcomes, but in those with 10%+ weight loss, there was a reduction in those outcomes.	37,38,39

Figure 1. The DPP experience: Every kg of weight loss was associated with 16% reduction in risk for progression to type 2 diabetes



Redrawn from: Hamman, *et al Diabetes Care* 29:2102-2107, 2006

References

1. Ogden CL, Carroll MD, Fryar CD and Flegal KM. Prevalence of Obesity among adults and youth: United States, 2011-2014. NCHS Data Brief No. 219. November 2015.
2. The State of Obesity. Better Policies for a Healthier America. https://stateofobesity.org/adult-obesity/ [Accessed August 14, 2017]
3. The State of Obesity. Better Policies for a Healthier America. https://stateofobesity.org/diabetes/ [Accessed August 14, 2017]
4. Messier RP, Gutekunst DJ, Davis C, DeVita P. ARTHRITIS & RHEUMATISM Vol. 52, No. 7, 2005, 2026-32.
5. Sikaris KA. The Clinical Biochemistry of Obesity. Clin Biochem Rev. 2004 Aug; 25(3): 165–181.
6. Bays H. Central obesity as a clinical marker of adiposopathy; increased visceral adiposity as a surrogate marker for global fat dysfunction. Curr Opin Endocrinol Diabetes Obes. 2014 Oct;21(5):345-51.
7. Magkos F, Fraterrigo G, Yoshino J, Luecking C, Kirbach K, Kelly SC, de las Fuentes K, Sonbing H, Okunade AL, Patterson BW, Klein S. Effects of moderate and subsequent progressive weight loss on metabolic function and adipose tissue biology in humans with obesity. Cell Metabolism 2016; 23, 1–11.
8. Diabetes Prevention Program Research Group. (2002). Reduction in the incidence of Type 2 diabetes with lifestyle intervention or metformin. New England Journal of Medicine, 346: 393-403.
9. Tuomilheto J, Lindström J, Eriksson JG, et al for the Finnish Diabetes Prevention Study Group. Prevention of type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance. N Engl J Med 2001; 344:1343-1350.
10. Hamman RF, Wing RR, Edelstein SL, et al. Effect of weight loss with lifestyle intervention on risk of diabetes. Diabetes Care. 2006, 29(9): 2102–2107.
11. Wing, R.R., Lang, W., Wadden, T.A. et al. (2011). Benefits of modest weight loss in improving cardiovascular risk factors in overweight and obese individuals with type 2 diabetes. Diabetes Care, 34, 1481-1486.
12. Unick, J.L., Beavers, D., Jakicic, J.M., Kitabchi, A.E., Knowler, W.C., Wadden, T.A., Wing, R.R. & the Look AHEAD Research Group (2011). Effectiveness of lifestyle interventions for individuals with severe obesity and type 2 diabetes. Diabetes Care, 34, 2152-2157.
13. Foster GD, Borradaile KE, Sanders MH, Millman R, Zammit G, Newman AB, Wadden TA, Kelley D, Wing RR, Pi-Sunyer FX, Reboussin D, Kuna ST and the Sleep AHEAD Research Group of the Look AHEAD Research GroupA randomized study on the effect of weight loss on obstructive sleep apnea among obese patients with Type 2 Diabetes: The Sleep AHEAD Study. Arch Intern Med. 2009 September 28; 169(17): 1619–1626.
14. Kuna ST; Reboussin DM; Borradaile KE; Sanders MH; Millman RP; Zammit G; Newman AB; Wadden TA; Jakicic JM; Wing RR; Pi-Sunyer FX; Foster GD; Sleep AHEAD Research Group. Long-

term effect of weight loss on obstructive sleep apnea severity in obese patients with type 2 diabetes. SLEEP 2013;36(5):641-649.
15. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. http://www.cdc.gov/arthritis/resources/spotlights/kneereplacements.htm
16. Messier SP, Loeser RF, Miller GD, Morgan TM, Rejeski WJ, Sevick MA, Ettinger WH, Pahor M, Williamson JD. Exercise and dietary weight loss in overweight and obese older adults with knee osteoarthritis. the Arthritis, Diet, and Activity Promotion Trial. ARTHRITIS & RHEUMATISM 2004; 50 (5): 1501–1510.
17. Messier SP, Gutekunst DJ, Davis C, DeVita P. Weight loss reduces knee-joint loads in overweight and obese older adults with knee osteoarthritis. ARTHRITIS & RHEUMATISM 2004; 52 (7): 2026–2032.
18. Messier SP, Mihalko SL, Legault C,Miller GD, Nicklas BJ, DeVita P, Beavers DP, Hunter DJ, Lyles MF, Eckstein F, Williamson JD, Carr JJ, Guermazi A, Loeser RF. Effects of intensive diet and exercise on knee joint loads, inflammation, and clinical outcomes among overweight and obese adults with knee osteoarthritis: the IDEA randomized clinical trial. JAMA. 2013 September 25; 310(12): 1263–1273.
19. *Hunter DJ, Beavers DP, Ekstein F, Guermazi A, Loeser RF, Nicklas BJ, Mihalko SL, Miller GD, Lyles M, DeVita P, Legault C, Carr JJ, Williamson JD, Messier SP. The Intensive Diet and Exercise for Arthritis (IDEA) trial: 18-month radiographic and MRI outcomes. Osteoarthritis and Cartilage 2015; 23:1090-1098. This paper demonstrates that despite significant weight loss and improvements in symptoms and function, there are no changes in MRI or X-ray changes with knee osteoarthritis.
20. White DK, Neogi T, Rejeski WJ, Walkup MP, Lewis CE, Nevitt MC, Foy CG, Felson DT, Look ARG. Can an intensive diet and exercise program prevent knee pain among overweight adults at high risk? Arthritis Care Res (Hoboken). 2015;67(7):965-971.
21. Lazo M, Solga S, Horska A, et al and the Fatty Liver Subgroup of the Look AHEAD Research Group. Effect of a 12-month intensive lifestyle intervention on hepatic steatosis in adults with type 2 diabetes. Diabetes Care. 2010; 33(10):2156-63.
22. Promrat K, Kleiner DE, Niemeier HM, et al. Randomized controlled trial testing the effects of weight loss on nonalcoholic steatohepatitis. Hepatology.2010;51(1):121-129.
23. Kolotkin RL, Crosby RD, Williams GR, Hartley GG, Nicol S. The relationship between health-related quality of life and weight loss. Obes Res. 2001 Sep;9(9):564-71.
24. Williamson D, Rejeski J, Lang W, et al and the Look AHEAD Research Group. Impact of a weight management program on health-related quality of life in overweight adults with type 2 diabetes. Arch Intern Med. 2009 26;169(2):163-71.
25. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. Arch Gen Psychiatry 1961;4:561–571.
26. Faulconbridge L, Wadden T, Rubin R, et al and the Look AHEAD Research Group. One-year changes in symptoms of depression and weight in overweight/obese individuals with type 2 diabetes in the Look AHEAD study. Obesity 2012;20(4):783-93.
27. Rejeski WJ, Ip EH, Bertoni AG, et al. Lifestyle change and mobility in obese adults with type 2 diabetes. N Engl J Med 2012;366:1209-17.
28. Phelan S, Kanaya AM, Subak LL, et al. Weight loss prevents urinary incontinence in women with type 2 diabetes: results from the Look AHEAD trial. J Urol 2012;187:939-44.
29. Breyer BN, Phelan S, Hogan PE, et al and the Look AHEAD Research Group. Intensive lifestyle intervention reduces urinary incontinence in overweight/obese men with type 2 diabetes: results from the Look AHEAD trial. J Urol 2014 EPub: PMID 24533998.

30. Wing R, Rosen R, Fava J, Bahnson J et al. Effects of weight loss intervention on erectile function in older men with type 2 diabetes in the Look AHEAD trial. Journal of Sexual Medicine. 2010;7(1 Pt 1):156-65.
31. Wing RR, Bond DS, Gendrano IN, et al and the Sexual Dysfunction Subgroup of the Look AHEAD Research Group. Effect of intensive lifestyle intervention on sexual dysfunction in women with type 2 diabetes: results from an ancillary Look AHEAD study. Diab Care 2013;36:2937-2944.
32. Kiddy DS, Hamilton-Fairley D, Bush A, et al. Improvement in endocrine and ovarian function during dietary treatment of obese women with polycystic ovary syndrome. Clin Endocrinol (Oxf) 1992; 36:105.
33. Crosignani PG, Colombo M, Vegetti W, et al. Overweight and obese anovulatory patients with polycystic ovaries: parallel improvements in anthropometric indices, ovarian physiology and fertility rate induced by diet. Hum Reprod 2003; 18:1928.
34. Huber-Buchholz MM, Carey DG, Norman RJ. Restoration of reproductive potential by lifestyle modification in obese polycystic ovary syndrome: role of insulin sensitivity and luteinizing hormone. J Clin Endocrinol Metab 1999; 84:1470.
35. Boots C, Stephenson MD. Does obesity increase the risk of miscarriage in spontaneous conception: a systematic review. Semin Reprod Med 2011; 29:507.
36. Look AHEAD Research Group. Impact of an intensive lifestyle intervention on use and cost of medical services among overweight and obese adults with Type 2 diabetes. Diabetes Care 2014 Sep; 37(9): 2548-2556.
37. Sjöström L, Narbro K, Sjöström CD, Karason K, Larsson B, Wedel H, Lystig T, Sullivan M, Bouchard C, Carlsson B, Bengtsson C. Effects of bariatric surgery on mortality in Swedish obese subjects. New England journal of medicine. 2007 Aug 23;357(8):741-52.
38. The Look AHEAD Research Group; Wing RR, Bolin P, Brancati FL, Bray GA, Clark JM, Coday M, Crow RS, Curtis JM, Egan CM, Espeland MA, Evans M, Foreyt JP, Ghazarian S, Gregg EW, Harrison B, Hazuda HP, Hill JO, Horton ES, Hubbard VS, Jakicic JM, Jeffery RW, Johnson KC, Kahn SE, Kitabchi AE, Knowler WC, Lewis CE, Maschak-Carey BJ, Montez MG, Murillo A, Nathan DM, Patricio J, Peters A, Pi-Sunyer X, Pownall H, Reboussin D, Regensteiner JG, Rickman AD, Ryan DH, Safford M, Wadden TA, Wagenknecht LE, West DS, Williamson DF, Yanovski SZ. Cardiovascular Effects of Intensive Lifestyle Intervention in Type 2 Diabetes. New Engl J Med 2013 Jul 11;369(2):145-54.
39. *Look AHEAD Research Group, Gregg EW, Jakicic JM, Blackburn G, Bloomquist P, Bray GA, Clark JM, Coday M, Curtis JM, Egan C, Evans M, Foreyt J, Foster G, Hazuda HP, Hill JO, Horton ES, Hubbard VS, Jeffery RW, Johnson KC, Kitabchi AE, Knowler WC, Kriska A, Lang W, Lewis CE, Montez MG, Nathan DM, Neiberg RH, Patricio J, Peters A, Pi-Sunyer X, Pownall H, Redmon B, Regensteiner J, Rejeski J, Ribisl PM, Safford M, Stewart K, Trence D, Wadden TA, Wing RR, Yanovski SZ. Association of the magnitude of weight loss and changes in physical fitness with long-term cardiovascular disease outcomes in overweight or obese people with type 2 diabetes: a post-hoc analysis of the Look AHEAD randomised clinical trial. Lancet Diabetes Endocrinol. 2016 Nov;4(11):913-921. For patients who lost 10% or more in the first year of the study, there was a reduction in major cardiovascular events.
40. Garvey WT, Mechanick JI, Brett EM, Garber AJ, Hurley DL, Jastreboff AM, Nadolsky K, Pessah-Pollack R, Plodkowski R, and reviewers of the AACE/ACE Obesity Clinical Practice Guidelines. American Association of Clinical Endocrinologists and American College of Endocrinology Clinical Practice Guidelines for Comprehensive Medical Care of Patients with Obesity – Executive Summary. Endocr Pract. 2016 Jul;22(7):842-84. http://www.acog.org/About-ACOG/ACOG-Departments/Toolkits-for-Health-Care-Providers/Obesity-Toolkit accessed 2/22/2017.

41. Hennessey Lavery, S., Smith, M. L., Esparza, A. A., Hrushow, A., Moore, M., & Reed, D. F. (2005). The Community Action Model: A Community-Driven Model Designed to Address Disparities in Health. American Journal of Public Health, 95(4), 611–616. http://doi.org/10.2105/AJPH.2004.047704.
42. Active Living by Design. Community Action Model. http://activelivingbydesign.org/community-action-model.

APPENDIX 2:

Commission Member agencies, Louisiana Department of Education and Department of Health, Partner to Improve Health Outcomes for Louisiana students K-12.

Trainings for PE teachers help to ensure children on the path to health and physical literacy.

In 2017, The Louisiana Department of Education (LDOE) revised the new physical education standards. The new standards were developed by a group of practitioners and stakeholders with expertise in physical education and are unique to Louisiana.

Physical education (PE) is the foundation of a Comprehensive School Physical Activity Program and is intended to provide students with the ability and confidence to be physically active for a lifetime. With programs and resources developed by SHAPE America – Society of Health and Physical Educators' and others, Louisiana is poised to further advance professional practice related to physical education.

With the new standards in place, there was a clear need to support PE teachers in implementing quality physical education in schools. In August 2017, LDOE, Louisiana Association of Health, Physical Activity, Recreation, and Dance (LAPHERD), the Alliance for a Healthier Generation, and the Well-Ahead School Health Program joined forces to help coordinate training for PE teachers across the state.

LDOE, LAPHERD and members from the Healthy Schools Training Krewe lead trainings in nine parishes across the state. A total of 753 PE teachers attended the interactive training and received information and resources on implementing quality physical education. These trainings have the potential to positively impact approximately 213,171 students in Louisiana and are helping more Louisiana schools implement a Comprehensive School Physical Activity Program.

LDOE and The Healthy Schools Training Krewe will continue to provide free professional development to schools and school districts to support healthier schools.

Louisiana Team Nutrition

The Louisiana Department of Education and Well-Ahead Louisiana have teamed up to support healthier schools with funding from the U.S. Department of Agriculture's Team Nutrition Training Grant. The three-year grant will allow the Louisiana Department of Education and Well- Ahead Louisiana to support healthier school environments that are conducive to healthy eating and physical activity through resources, funding and professional development to schools.

Through a mini-grant application process, 15 schools will have the opportunity to be awarded $5,000 to implement the following strategies—incorporate nutrition education into the classroom, communicate health messaging across multiple channels, implement Smarter Lunchrooms strategies and other changes that will help create a healthier school environment. All awarded schools will receive on-going technical assistance.

Louisiana Team Nutrition will coordinate regional Smarter Lunchrooms trainings for all Louisiana school food service professionals and launch a culinary skills training series that is focused on enhancing the food preparation skills and knowledge of school food service professionals.

Healthy Schools Training Krewe

The Healthy Schools Training Krewe is a group of expert trainers from different organizations that have joined together to support the implementation of nutrition standards and physical activity policies and best-practices in schools. The partners include certified physical education teachers, child nutrition directors, Action for Healthy Kids, Alliance for a Healthier Generation, The Health Enrichment Network – EatMoveGrow, Louisiana Association for Health, Physical Education, Recreation and Dance, Louisiana Department of Education, Louisiana Department of Health, Louisiana Fit Kids, School Nutrition Association of Louisiana, Fuel Up to Play 60, and Well-Ahead Louisiana

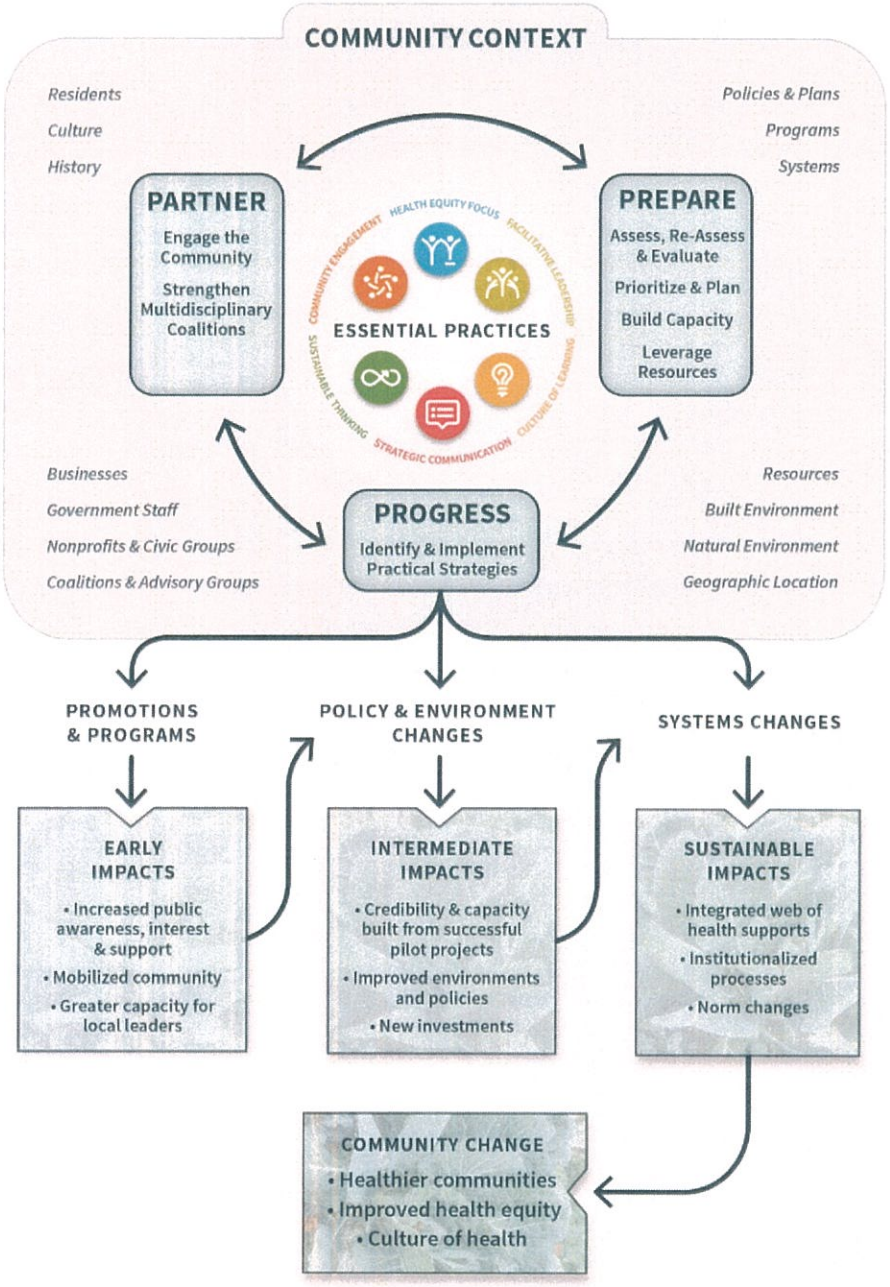
The primary mission of the group is to enhance the knowledge and skills of those working to create healthier schools. The group continues to provide free professional development to schools and school districts.

Louisiana School Health Advisory Council (SHAC)

The Louisiana School Health Advisory Council (SHAC) is an on-going statewide advisory group composed of individuals working to support healthier schools through the implementation of the Whole School, Whole Community, Whole Child model. The council is made up of key stakeholders in education, public health, and school health sectors. The group hopes to create greater alignment, integration, and collaboration between education and health to improve each child's cognitive, physical, social, and emotional development. Louisiana Department of Education and Louisiana Department of Health's Well-Ahead are serving as facilitators for the group. The group met for the first time on October 6, 2017.

APPENDIX 3:

Community Action Model developed by Active Living by Design



Community Action Model

ACTIVE LIVING BY DESIGN
Catalyst for a culture of health

Active Living By Design first developed the Community Action Model and 5P Strategies in 2003 as a framework for healthy community change. This updated model was developed from more than a dozen years of successful community change initiatives. For more information, visit activelivingbydesign.org.

APPENDIX 4:

A Look at Louisiana from a Community Context Perspective

Authored by: Commission Member Dr. Carolyn Johnson of the Tulane Prevention Research Center

The State of Louisiana is located in the southeastern region of the United States. It is the 31st state in the nation relative to size and is ranked 25th of the 50 states for habitation, with an estimated population of 4,781,666 as of July 1, 2016.2 The racial distribution is 63.2% white, 32.6% African American, 5.0% Hispanic, 1.8% Asian, and 0.8% American Indian and Alaska Native. The median household income for the year 2015 was $45,047, but 20.2% of the residents live in poverty.[1] The capital city is Baton Rouge and the largest city in the state is New Orleans. Other large metropolitan areas are Lafayette, Monroe and Shreveport. The political subdivisions of the state are called parishes (counties) of which there are 64. Forty-one parishes are governed by a council called a Police Jury. The other 23 have various other forms of government, including: president-council, council-manager, parish commission, and consolidated parish/city. The early heritage of the state is French and Spanish, which are both officially Roman Catholic. After the Louisiana Purchase in 1803, the area was roughly divided into the states we now have today, as well as the political divisions within the state. There is still a strong multicultural, multilingual heritage influenced by a mixture of French, Spanish, Native American and African cultures. After the Civil War, the pressure was increased for Anglicization and in 1921 English was made the sole language of instruction in Louisiana schools prior to a resurgence of multiculturalism in 1974. Following is an important observation: There has never been an official language in Louisiana, and the state constitution enumerates "the right of the people to preserve, foster, and promote their respective historic, linguistic, and cultural origins," whether English, French, Spanish, or otherwise. Interestingly, after the Civil War the state slowly evolved into distinct cultural entities, with the south and southeastern parts of the state retaining the French/Spanish influences along with the influx of displaced French Nova Scotians, who became known as Cajuns, while the northern part of the state became more Anglicized and largely lost its Roman Catholic traditions. The state is known as a "sportsmen's paradise" and is well known around the world for the quality of its culinary offerings, its abundant seafood, its primary crops, such as sugar, cotton, beans, pecans, etc, as well as for its music. It has more recently become a "go-to" place for the movie industry.[2]

---

[1]U. S. Census Bureau (2016). *Quick Facts Report.* Retrieved fromhttps://www.census.gov/quickfacts/

[2]Wikipedia. https://en.wikipedia.org/wiki/Louisiana.

Louisiana Department of Health
628 North Fourth Street, Baton Rouge, Louisiana 70802
(225) 342-9500
www.ldh.la.gov

 www.facebook.com/LaHealthDept.

 www.twitter.com/LADeptHealth