Healthy Moms at Healthy Weights:
A Project Plan for Reducing Maternal Obesity in Kern County

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Executive Summary

Kern Maternal Child Adolescent Health (MCAH) submitted a project plan to develop and implement a strategic approach to improve maternal morbidity and mortality rate in Kern County. Kern MCAH will focus on maternal obesity because it increases the risk of many diseases and health conditions. Research has shown that obesity can cause serious pregnancy-related complications and increases the risk of adverse outcomes for mother and baby.

Kern MCAH will develop a specific guideline to medical providers at Clinica Sierra Vista (CSV) and National Health Services Incorporated (NHSI) to effectively monitor and manage the pregnancy. Pregnant women that are obese need to be informed about the appropriate weight gain and made aware about the issues surrounding their condition and how to manage the potential risks to mother and baby if weight is not controlled. The Social Ecological Model is applied to explain how to reduce obesity rate.

Kern MCAH’s goal is to improve and reduce maternal obesity through healthful eating and physical activity with medical guidance and support. The solution to the problem requires stakeholders to be involved to bring about change. Pregnant women and medical providers should work together to assess and address maternal obesity before, during and after pregnancy.
Chapter 1: Purpose and Significance of Study

Introduction

Health is a lifestyle—whether it is going to the gym or relaxing after a stressful day. People are now living longer because they are more educated about healthy lifestyle than ever before. Advances in medicine and technology have also increased people’s life expectancy. The widespread knowledge of the importance of prenatal care has improved health outcomes for mothers and infants. Despite the widespread knowledge of maintaining healthy lifestyles and availabilities of public and private funded programs in Kern County, maternal morbidities and mortalities continue to be a problem.

Background of the problem

President Franklin Delano Roosevelt signed legislation to reduce maternal and infant mortality more than 70 years, and the Title V of the Social Security Act into law to improve the health of maternal and child. Title V also provides programs for maternity care, infant care, and childcare (“Title V,” n.d.). The MCAH Program was later implemented by providing services to ensure better health for mothers and children (“Title V,” n.d.).

The MCAH Program is a division of the Department of Public Health in Kern County. The primary function of the program is to provide health services to infants, mothers, fathers, children, adolescents, and their families in Kern County. In addition, the MCAH program works in collaboration with community based organizations to meet community needs. There are various programs and units within the MCAH: Black Infant Health (BIH), Childhood Lead Poisoning Prevention Program (CLPPP), Comprehensive Perinatal Services Program (CPSP),
Fetal Infant Mortality Review (FIMR) Program, Perinatal Outreach Program (POP), and Sudden Infant Death Syndrome (SIDS) Program.

In 2006, the California Maternal Quality Care Collaborative (CMQCC) was developed due to an increased pregnancy-related mortality rates in California. Recently, the CMQCC expanded its program and developed the Local Maternal Care Quality Improvement (LCMQI) pilot projects to improve and reduce the maternal mortality rate in California. The projects will strengthen partnerships among Local Health Jurisdictions (County Public Health Departments), hospitals, medical providers, the Regional Perinatal Programs of California (RPPC), community leaders, and the California Department of Public MCAH.

Since 2000, maternal mortality has been increasing in California and racial disparities for maternal mortality are large (California Department of Public Health [CDPH]). Maternal mortality or maternal death occurs during pregnancy or within a year after the end of pregnancy due to pregnancy complications (“Maternal mortality,” n.d.). There are numerous contributing factors associated with pregnancy-related mortality rates, and the project plan will primarily focused on maternal obesity in Kern County.

The goal of a healthy pregnancy is to have a healthy baby but not all pregnancies and deliveries avoid complications. The Healthy People 2010 goal is to reduce the maternal mortality ratio to 3.3 maternal deaths per 100,000 live births overall and <5.0 maternal deaths per 100,000 living births among African-American women (“Kern County,” 2003). In the United States, two to three women die from complications in childbirth daily (“Healthy babies,” 2004). Maternal mortalities in the United States could have been prevented through early diagnosis and appropriate medical treatment of pregnancy complications (“Child trends,” n.d.).
Statement of the Problem

Many women continue to die as a result of pregnancy and childbirth complications despite the availability of new technologies, and advanced medical and diagnostic testing. In 2002, the United States ranks 21st in the world in maternal mortality rate and 28th in the world in infant mortality rate (“Uninsured women,” n.d.). The infant mortality has decreased steadily but no improvement for maternal mortality (“Uninsured women,” n.d.). According to the CDPH (2007), in 2003, there were 15.2 pregnancy-related deaths per 100,000 live births in California, compared to 12.1 for the United States. The CDPH (2007) reported that in 2002-2004, black women continue to have three times the risk for dying from complications of pregnancy and childbirth compared to white women.

The United States has not reached a declined in maternal mortality rate due to various contributing factors. Some pregnancy complications cannot be prevented such as pregnancy induced hypertension, placenta previa, and thromboembolism. Indirect maternal death is a preexisting or newly medical condition (i.e. anemia, HIV/AIDS and cardiovascular disease) that affects or complicates the pregnancy (“The consequences,” n.d.). For each maternal death, there are approximately 10 near-miss deaths and an estimated 1,000 severe maternal morbidity cases (CDPH, 2007).

The 2005 World Health Organization (WHO) found that maternal deaths are caused by the following direct complications: severe bleeding/hemorrhage (25%), infections (13%), eclampsia (12%), obstructed labour (8%), complications of abortion (13%), other direct causes (8%), and indirect causes (20%) (“Maternal mortality,” n.d.). In 2003, California’s delivery hospitals had postpartum hemorrhage rates of 2.6 percent for live singleton deliveries, with almost 14,000 cases of hemorrhage and over 2,000 cases of maternal infection (CDPH, 2007).
Furthermore, about 10% of maternal deaths may occur late, that is after 42 days after a termination or delivery, and 60% of pregnancy-related deaths occurred after a live birth (“Underreporting of,” n.d.).

According to the Census Bureau, 73% of pregnant Kern County residents received prenatal care within the first trimester of pregnancy in 1993-2002. Research studies show that women who start prenatal care early tend to have fewer pregnancy complications and deliver healthier babies than women who delay or have no prenatal care (Schramm, 1992; Buesher, Roth, & Goforth, 1991). Prenatal care may reduce the chances of poor birth outcomes such as low birth weight, preterm delivery, infant mortality, maternal illness and complications due to pregnancy (Schramm, 1992; Buesher et al, 1991).

More than half of all maternal deaths may be prevented through early diagnosis and appropriate medical care of pregnancy complications. However, there is still a lack of access to and use of health-care services for early diagnosis and effective treatment. For every woman who dies, approximately 20 more suffer injuries, infection and disabilities in pregnancy or childbirth (“Maternal mortality,” n.d.). These complications can occur at any time during pregnancy and childbirth without warning. They need immediate medical intervention to a physician and obstetric services (i.e. medications, blood transfusions, and to perform Caesarean sections and other surgical intervention). Furthermore, the factors that cause maternal morbidity and death also affect the survival chances of the fetus and newborn, leading to an estimated 8 million infant deaths a year occurring just before or during delivery or in the first week of life (“Goal: improve,” n.d.).

The Henry J. Kaiser Family Foundation reports that increased access to health insurance coverage for pregnant women would reduce the maternal rate. Medi-Cal remains an important
funding resource to low-income pregnant women; yet, there are some women who are not qualified for MediCal due to their income. The Mothers and Newborns Health Insurance Act (MNHIA) also offers insurance coverage for low-income pregnant women to ensure better outcomes and healthier mothers and children ("March of," n.d.). The MNHIA provides insurance coverage for prenatal care, delivery, and post-partum care to low-income pregnant women, and newborns until one year of age ("March of," n.d).

Although Medi-Cal and MNHIA remains an important funding resource to low-income pregnant women, there are some women who are not qualified for these assistance due to their income. The March of Dimes indicated that the number of uninsured women of childbearing age continued to rise in 2001, increasing by 260,000 to 11.5 million ("Highlights of," 2004). In 2001, nearly one in five women of childbearing age were uninsured—a higher rate than other Americans under the age of 65 ("Highlights of," 2004). Despite the minimal availability of governmental assistance to uninsured pregnant women, the maternal mortality continues to rise.

Purpose of the Study

The purpose of the study is to develop and implement a strategic plan to improve the maternal morbidity and mortality rate in Kern County. Because maternal morbidity and mortality has various contributing factors, the study will focus on improving and reducing maternal obesity rate in Kern County.

Kern MCAH is one of the 18 local health jurisdictions (LHJ) who received $10,000 as an initial payment to develop a plan based on a Scope of Work specified by MCAH/OFP (Office of Family Planning) to address the reduction of maternal morbidity and mortality rate. Kern MCAH program will “identify and implement targeted, evidence-based quality improvement strategies in the project plan” (CDPH, 2007, p. 2). The overall objectives for the Regional
Maternal Care Quality Improvement (RMCQI) Pilot Projects are to reduce maternal morbidity and mortality between racial/ethnic groups in California in partnerships with various community organizations or agencies.

During the recent years, the RMCQI, a MCAH/OFP Branch pilot project has started several projects addressing the need to reduce maternal morbidity and mortality in California. Presently, the MCAH/OFP Branch will launch a pilot RMCQI project in collaborations with CMQCC and five LHJ. Kern MCAH submitted this project plan on April 30, 2008. The CMQCC will analyze and evaluate all LHJ project plans that were submitted, and will recommend the Top 5 LHJ plans to the MCAH/OFP in June 30, 2008. The MCAH/OFP will choose the top five LHJs, and the top five will participate in the pilot project in Year 2.

The study will provide useful information to the public, board of supervisors, community organizations, medical health professionals, MCAH program staff and upper management, and various stakeholders in the county and state level of the MCAH Branch. This researcher is interested in acquiring knowledge about previous research and implements any ideas that can decrease the maternal obesity rate in Kern County. This researcher is also interested in challenges that prevent pregnant mothers from obtaining prenatal care in Kern County.

Methods and procedures of the study

The CMQCC recommended that the LHJ choose 1 out of the 4 priority funding topics, and each of the funding topics has set goals. Based on the funding topic, the Kern MCAH submitted a project plan to the CMQCC on April 30, 2008. Kern MCAH used a CMQCC format to develop the project plan. A gap analysis was included in the proposal which described the difference between the desired goal and existing problem with regard to maternal health in Kern County. The scope of work described the project aim statement, major objectives,
functions, tasks, activities, timelines, and performance measures. Kern MCAH also used the Social Ecological Model to help organize the analysis and planning process.

Kern MCAH worked closely within the various units of its programs to develop the project plan. For example, the Fetal Infant Mortality Review (FIMR) is a group of health professionals who meet quarterly to review fetal and infant deaths in Kern County. The group reviews various factors that may have contributed to maternal deaths, including the quality of medical care and systemic problems in the health-care delivery system. The primary goal is to improve community resources and services delivery system, and develop appropriate interventions to reduce the number of infant and maternal deaths.

During the preparation of the project plan, this researcher reviewed and analyzed current and past literature reviews on maternal obesity and the effectiveness of prenatal care and fetal intervention. In the project plan, this researcher would like to investigate if there are any particular similarities in findings, particular trends and gaps, biases and methodology of the literature reviews. Kern MCAH will be contacting and working with various community agencies such as NHSI and CSV in improving the maternal obesity in Kern County.

Importance of the Study

The study is important because it will enable the MCAH program in collaboration with the state level and various community agencies to act on improving the reduction of maternal obesity rate in Kern County. Do pregnant have poor education on eating healthy meals or making healthy choices before, during and after pregnancy? Are women getting inadequate prenatal care or lacking access to health care? How effective is the Healthy Choice Tool Kit? The answers to these questions and positive actions taken on the results outweigh the importance of knowing the exact maternal mortality rate.
The study is important because it will show the effectiveness and efficiency, the outcomes, and the impact, of the MCAH program on how it has helped women and children in Kern County. This research will also show that prenatal care is a reasonable investment because adequate prenatal care contributes to reducing maternal and infant mortality rates; as a result, there is less medical expense for the mother and newborn. Advanced medical technology makes it possible in managing disorders if treatment begins early. The study will identify barriers that are preventing mothers from obtaining prenatal care.

Furthermore, the study is relevant to various stakeholders such as the board of supervisors, public, community organizations, medical health professionals, health insurance agencies, MCAH program, and state and political level. Because maternal mortality continues to rise, society needs to implement strategies to improve maternal and infant care. A quality health and family planning service is essential to tackle the problem. The stakeholders have to realize that pregnancy and childbirth can and should be made safer. Various stakeholders need to commit their time and effort in reducing the maternal mortality.

In summary, Kern MCAH submitted a project plan to develop and implement a strategic approach to improve maternal morbidity and mortality rate in Kern County. Kern MCAH will primarily focused on maternal obesity because it increases the risk of many diseases and health conditions throughout the antenatal and postpartum periods. In addition, obesity on pregnant women affects their current and future management of care. To ensure adequate weight management guidance and support, action is needed from various stakeholders in Kern County.
Chapter 2: Statement of the Problem

Definition of the problem

Maternal obesity is one of the contributing factors in many maternal deaths. Maternal obesity is associated with increased rates of serious medical complications and, even worse, can lead to maternal death. Figure 1 illustrates the associated factors related to maternal obesity. More than half of all women of childbearing age are overweight or have obesity; this makes obesity the most common health problems for pregnant women (“Obesity increases risks,” 2006). Obesity in pregnant women also influences the prevalence of birth complications.

Obese women have a higher risk of developing complications during pregnancy. Maternal obesity is associated with increased rates of complications such as pregnancy-related hypertension, stillbirth, cesarean delivery, infections, deep vein thrombosis (DVT) and shoulder dystocia which is illustrated in Figure 1 (“Obesity increases risks,” 2006 and Rosenberg, Garbers, Lipkind, & Chaisson, 2005). Maternal obesity also increases the risk of delivering a child large for gestational age, who is in turn at an increased risk of subsequent childhood obesity (Rosenberg et. al., 2005). Obesity can make it difficult to estimate gestational weight, and diabetes is likely to develop among the mother. However, early detection and management can detect early signs of pregnancy complications. For instance, monitoring blood pressure and urine testing detects symptoms of pre-eclampsia.

Furthermore, Figure 1 shows that the more overweight a woman is, the riskier the Cesarean-sections become. Cesarean section is a complicated surgery for an obese mother due to excess adipose tissue, which makes it difficult to administer an epidural or anesthesia during labor (“Up to date,” n.d.). Obese women are more likely to suffer excessive blood loss, wound
infections (slower rate of healing) and reduced mobility (“Obesity increases risks,” 2006). Furthermore, specific equipment such as special operating tables and hydraulic lifts are needed to move the patient (“Up to date,” n.d.). A large cuff is also required to monitor blood pressure for an accurate reading.

In addition, the therapeutic effects of medications change because obese patients have a larger volume of distribution for drugs (“Up to date,” n.d.). As a result, the problems with obesity lead to the need for increased pain relief. Intravenous access is difficult to find due to the location of anatomic landmarks and the distance from skin to vessel is greater than normal (“Up to date,” n.d.).

When a pregnant woman is obese, there can also be a poor image on the ultrasound making it difficult to detect fetal abnormality. Obesity-related risk increases in the range of 20% to 50% were seen for heart defects, limb abnormalities, and diaphragmatic hernia (“Obesity increases birth,” 2007). Various studies confirmed that there is a link between maternal obesity and neural tube defects (i.e. spina bifida) (“Obesity increases birth,” 2007). Each year, an estimated 2,500 babies are born with neural tube defects, and many other affected pregnancies end in miscarriage and stillbirth (“Obesity increases risks,” 2006). Furthermore, maternal obesity can produce babies who are also more likely to be admitted to neonatal intensive care units (“Obesity increases risks,” 2006).

Kern MCAH collects body mass index (BMI) for the Perinatal Outreach Program (POP). Of the women enrolled with identified BMI’s, 24.7% had BMI’s from 25.0 to 29.9 (overweight); and 20.3% had BMI’s of 30 and above (obese range). The highest BMI was 61.
Kern MCAH has also collected BMI data on some women with previous pregnancies in the POP Program. Only 7% of women with previous BMI’s recorded were categorized as underweight. In the normal range, 31.1% of women remained in the same range and 59.1% women had increases (average 1.7 points). Of women classified as in the overweight range, 61.3% had increases (average 2.9 points). The greatest increases were with women in the obese category. Of those, 76.3% had increased BMI’s (average 6.1 points). The range of increases in the obese category was from 1 point to 17 points.

Major Stakeholders

Various stakeholders, as shown in Figure 4, are involved in reducing maternal obesity in Kern County and they are discussed in detail in the following paragraphs. Figure 5 illustrates the target population of the study. Individuals are responsible in making healthy choices but at the same time, they need support from their families in maintaining healthy lifestyle. In Kern County, there are 33 active CPSP sites. CPSP is a program that provides enhanced prenatal services to Medi-Cal eligible pregnant women, consisting of Health Education, Nutrition and Psychosocial assessments and interventions. Figure 3 shows there are 2 clinic systems, CSV with 12 sites, and NHSI with 10 sites. As part of quality assurance activities for 2006-2007 at NHSI CPSP sites, sampled charts were also reviewed for several perinatal indicators, including height and pre-pregnancy weight. A BMI was calculated for each patient, using the on-line BMI calculator on the Center for Disease Control web site. This is a small sample of pregnant women receiving CPSP services, but in discussions with providers and clinic staff, overweight /obesity is an area of concern for all.
Because of the concern of providers from these clinics, initially partnering with CPSP clinics was a natural choice. The relationship between the Perinatal Services Coordinator (PSC) and CPSP clinics is already established and working well. Kern MCAH hopes to be able to extend the strategies and materials developed in the Kern MCAH project to all prenatal care providers.

In the future, there is potential for including other Central Valley counties (Tulare, Kings, Fresno, Madera and Merced) that have similar demographics in tracking data and in offering the strategies to their pregnant women. The PSC has an on-going relationship with the PSC’s in those counties, and a model currently being used in the region to address poor breastfeeding rates, the Regional Quality Improvement Network, could be used in sharing information and project strategies. The San Joaquin/Sierra Regional Perinatal Program of California (RPPC), Region 5, convenes The Regional Quality Improvement Network and continues to provide support and guidance in their partnership with Public Health.

Other stakeholders include both Medi-Cal Managed Care Plans, Kern Health Systems, the local initiative and Health Net, the commercial plan. Health Educators at both plans have been included in discussions and are willing to assist with data and in provider education. They would be able to distribute materials and provider education through their provider network.

Collaboration among the medical health professionals involved in the mother’s prenatal care is essential for an effective management and treatment plans. The community clinics, medical providers, and managed health care plans must expand their efforts to take action in reducing maternal obesity. Obstetricians and nutritionists should work collaboratively with the Department of Public Health and other medical professionals to identify and decrease barriers to
the health of pregnant women in the community. The Kern MCAH is limited in their ability to move forward without any support from the medical health professionals and community leaders.

These stakeholders are in the position to take corrective action and to improve the quality care of maternal health outcomes. It is essential to empower health professionals to critically evaluate current practices and change them, if needed. Because action is the primary goal for the project plan, it is important that those with the ability to implement the recommended changes are actively involved in the process. Obesity is a public health crisis, and needs solutions from the community.

Goals and Objectives

The vision statement of Kern MCAH is to reduce the negative impact of maternal obesity on chronic illnesses and medical costs, and improve the quality life for mothers and babies. The mission statement is that by two years, Kern MCAH will prevent and reduce obesity rate through improved nutrition, physical activity and supportive community by partnering and collaborating among various organizations in Kern County. The Healthy People 2010 Objective will be used as a benchmark to achieve its mission and vision.

There are four funding topics recommended by the CMQCC. The topic selected by Kern MCAH is to inform and educate the public and families about maternal issues related to reducing morbidity and mortality, specifically focusing on maternal obesity. The following are the goals and objectives in reducing maternal obesity in Kern County which is briefly described in Table 1:

Goal 1 states that Healthy Mom in Kern County will develop a specific guideline to doctors and other health professionals at CSV and NHSI to effectively monitor and manage the
pregnancy. This is achieved by developing a standardized guideline for CPHW and medical health professionals on how to discuss the basic importance of healthy eating with pregnant women during initial visit, second and third trimester and postpartum care. The CPHW and medical health professionals will educate all pregnant patients on the basics of healthy eating during pregnancy, and they will provide health educational pamphlets to all pregnant women.

CPHW and medical health professionals will also refer pregnant patients to WIC or Nutritionist for dietary counseling. The medical health professionals will assess and closely monitor pre-pregnancy weight, trends of BMI, blood pressure, blood sugar level and urinalysis in the medical chart. In achieving Goal 1, Kern MCAH will also provide a Healthy Choice Tool Kit to CSV and NHSI. Medical staff will use the tool kit for effective management on overweight/obese pregnant women.

Goal 2 states that Kern MCAH will improve healthy lifestyle in overweight/obese pregnant women by changing behaviors, attitudes and knowledge. CPHW and medical health professionals will promote early to prenatal care to pregnant patient. CPHW and medical health professionals will encourage patients to increase fluid intake, eat appropriate servings of healthy meal, exercise as directed by physician, get adequate sleep and abstain from caffeine, cigarettes, smoking, drinking alcohol and/or illegal substance use.

Goal 3 states that Kern MCAH will provide services that will result in a healthy pregnancy outcome and lifestyle. This goal will be met by providing all pregnant patients Eat to be Healthy Class and refer patients to community agencies (i.e. Kern County Mental Health, Substance Abuse Treatment Program).

Goal 4 states that Kern MCAH will increase community awareness on healthy eating, regular physical activity and responsible individual healthy choices. This goal will be achieved
by promoting healthy eating during pregnancy through marketing campaigns (i.e. newspaper, radio, local news, bill boards and health educational pamphlets). Kern MCAH will also provide conference/training to CPHWs and medical health professionals to increase understanding on effective interventions, and the risk of maternal mortality, obesity, and health complications for mother and baby. Lastly, Kern MCAH will participate in Health Fairs and other community events.

Evaluations

At every three-month interval, the MCAH coordinator will monitor and evaluate the progress of each goals and objectives. Kern MCAH will track the progress by performing quarterly chart audits in both clinics. The MCAH Coordinator will meet with the MCAH staff, CSV and NHSI staff on as needed basis to address any problems or concerns.

We will also provide pre and post test for patients and medical providers. The pre and post test will consist of 15 true and false questions. We will measure how much they have learned and if they have changed their behaviors in making healthy choices. Both patients and medical provider will score at least 80% or better. In addition, we would like for the medical providers including the Comprehensive Perinatal Health Workers (CPHW) to complete an evaluation form to get their input and/or recommendations to the Healthy Choice Tool Kit and the protocol on how to manage overweight/obese pregnant patients. Figure 6 shows a list of items that are in the Healthy Choice Tool Kit.

At the end of the year, the MCAH Coordinator will then report outcomes to the stakeholders including the CMQCC and the MCAH at state level. The report will include success stories, total number of obese pregnant women enrolled in the WIC program or to a dietician in another agency, average BMI, and pregnancy and birth outcomes. At postpartum,
the mothers complete a survey, and the mothers will provide input on the effectiveness of the treatment plans, including the nutrition counseling and nutrition classes during their prenatal care.

Potential Solutions

Figure 2 shows that there are various community challenges that involve individuals, medical providers/clinics, hospitals and officials. For instance, there is no standardized protocol in managing overweight/obese pregnant women in community clinics or medical providers in Kern County. Another challenge is that there is a lack of access to dietician/nutritionist on site. These challenges need to be worked on to improve and reduce maternal obesity in Kern County.

To handle the challenging and important issue on maternal obesity, a potential solution is for medical health professionals to gain a deeper understanding of the current status and trends in obesity. Those responsible for in-service training should provide appropriate training to medical health professionals. The training should inform medical health professionals that the leading causes of pregnancy-related deaths (i.e. hemorrhage, embolism, infection, and pregnancy-induced hypertension) are preventable. The training should also include ways to improve dietary practices and physical activity for patients because these are effective strategies for preventing many of the chronic diseases.

Another potential solution is preventive implementation. Medical providers should inform their patients about the negative effects of extra weight during preconception. During prenatal care, mothers should be provided with assistance to maintain a healthy weight, including psychological support, nutrition counseling, and simple exercise classes. In order to do this effectively, medical health professionals should be aware of the available resources in the
community. There should be consistent maternal nutrition guidelines available for medical health professionals.

Pregnant women that are obese need to be informed about healthy eating and adequate weight gain. Furthermore, pregnant women that are obese need to be aware about the problems with their condition and how to manage the potential risks to mother and baby if weight is not controlled. At the same time, medical providers need to be sensitive to their patients so that patient’s dignity is maintained. On the other hand, obese pregnant women need to realize that they must take responsibility by managing their body weight.

Collaboration among the medical health professionals involved in the mother’s prenatal care is essential for an effective management and treatment plans. The community clinics and hospitals must expand their efforts to take action in reducing maternal obesity. Obstetricians and nutritionists should work collaboratively with the Department of Public Health and other medical professionals to identify and decrease barriers to the health of pregnant women in the community.

In summary, obesity in women can cause serious pregnancy-related complications. Research has shown that obesity increases the risk of adverse outcomes, such as those described above, for both mother and baby. The overall goal of Kern MCAH is to improve and reduce maternal obesity through healthful eating and physical activity with medical guidance and support primarily from medical providers. The solution to the problem requires various stakeholders to be involved to bring about change. Pregnant women and their health care providers should work together to assess and address this important health issue before, during and after pregnancy.
Chapter 3: Project Plan

Social Ecological Model

Many people believe that overweight and obesity is a personal responsibility. To some degree they are right, but it is also a community responsibility. Individual behavior is also determined to a large extent by community norms, and values, regulations, and policies (Centers for Disease Control, 2007). The Social Ecological Model will be applied to explain how to reduce maternal obesity rate in Kern County.

Implementing the recommended proposal plan will require the involvement of various stakeholders. Figure 6 illustrates that the social ecological model involves all levels—individuals, interpersonal, organizational, community and public policy—to work together in improving healthy lifestyle choices. It is important to involve the families, medical providers and communities because the environment influences individuals’ behaviors (“Social-Ecological, n.d.). The Socio-Ecological Model is the most effective approach to look at all levels of influence that can be addressed to support healthy choices (Centers for Disease Control, 2007).

Many factors contribute to maternal obesity. Some of these factors are modifiable behaviors; this means that they reflect individual health behaviors. Some of the deaths in Kern County can be attributed to unhealthy lifestyle such as tobacco use, sedentary lifestyle, poor diet, and not getting preventive screenings like blood glucose and cholesterol tests (CHIS, 2003). Many of these health behaviors are risks for several chronic diseases such as diabetes, hypertension, and cardiac diseases. By changing lifestyle behaviors, the risk of developing chronic disease for Kern County can be reduced.
When new or expectant mothers are not educated about the healthy eating choices, this is a community responsibility. Communities and medical providers can support and promote health behaviors through policies and environmental factors such as healthy vendor machine at the worksite, insurance coverage for preventive services and a safe walking path. Barriers to healthy behaviors are shared among the community as a whole (“Social-Ecological,” n.d.). As these barriers are removed, behavior change becomes more achievable and sustainable (“Social-Ecological,” n.d.).

The socio-ecological model is a set of conceptual and methodological principles targeting environmental, behavioral, and social policy changes that help individuals make healthy decisions in their lifestyle (“Social-Ecological,” n.d.).

Strategies to intervene at the individual level include:

- Achieve a healthy weight;
- Increase consumption of fruit and vegetables;
- Increase water intake at least 8 glasses of water a day;
- Limit the intake of sugars; and
- Increase physical activity - at least 15 to 30 minutes of regular (or as ordered by physician). Engage in and promote more healthful dietary intakes and active lifestyles such as increased physical activity, reduced television and computer time, and more healthful dietary behaviors.

At the interpersonal level, people can:

- Walk, garden and cook healthy meals with their family and friends;
• Participate in a Health Wellness Group, Greenfield Walking Group and other community programs;
• Encourage each other to make healthy choices;
• Encourage each other to choose a healthy lifestyle by educating themselves on healthy food, exercise and the dangers of smoking and excess alcohol used;

The organizational level includes health care professionals such as insurers, accrediting groups, pediatricians, family physicians, nurses and other clinicians to engage in the prevention of childhood obesity.
• Medical providers should routinely monitor weight and body mass index; offer relevant evidence-based counseling and guidance; serve as role models; and provide leadership in their communities for obesity prevention efforts (“Social Ecological,” n.d.);
• Professional organizations should disseminate evidence-based clinical guidance and establish programs on childhood obesity prevention (“Social Ecological,” n.d.);
• Health care networks and accrediting organizations should stressed the importance of screening and obesity preventive services in routine clinical practice and should provide incentives for maintaining a healthy body weight (“Social Ecological,” n.d.);
• Apply for grant funding on public health interventions to increase physical activity, promote healthy eating, and reduce obesity and chronic diseases;
• Develop assessment tools and databases for effective interventions.

The strategies to intervene at the community level include:
• Participate in neighborhood, community, and transportation groups;
• Support for bicycle paths, parks, recreation centers and swimming pools;
• Join or start a walking group in the neighborhood;
• Support policies to promote healthy eating (e.g. disclosing the calorie content of restaurant food);
• Join a coalition or task force to promote eating healthy;
• Organize a Farmer’s Market in the neighborhood;
• Let community leaders and elected officials know that you support healthy and active communities.

The strategies to intervene at the public policy level include:
• Support individual action by providing leadership;
• Develop a clear, coherent and effective health message to ensure that consumers have accurate and adequate information to make informed decisions about improving their health (“Social Ecological,” n.d.);
• Identify and address research gaps;
• Address the epidemic (e.g., food industry, health care network and the medical providers) by bringing together various stakeholders (“Social Ecological,” n.d.).
• Coordinate private/public campaigns;
• Provide training and education materials to address the epidemic.

Program Activities

The project plan proposes for Kern MCAH to implement the project to pregnant women receiving prenatal care at CSV and NHSI enrolled in the Comprehensive Perinatal Services Program (CPSP). Both clinics served at least serve 80 to 100 new pregnant patients a month. Pregnant women will obtain health educational information and pamphlets from medical
providers. Pregnant women will also be offered to participate in the Eat to be Healthy Class to learn to prepare healthy meals for themselves and their families. Families and friends will be encouraged to support pregnant women by exercising with them, cooking healthy meals at home and attending the Eat to be Healthy Class.

The first phase of the project will be using four clinic sites, two from each clinic system that serve similar populations in outlying areas and in Bakersfield. Figure 3 illustrates that one clinic will be given materials and teaching tools (Healthy Choice Tool Kit), and the matched clinic will continue to offer services as they have been doing. The Healthy Choice Tool Kit consists of a standardized overweight / obese protocol folder, BMI / EDC Wheel, pregnancy weight chart, prenatal record card (a small card that has patient’s medical information and it will be given to the patients), an oversize blood pressure cuff, health educational pamphlets and community resource directory.

Kern MCAH will develop and implement a standardized protocol on how to manage overweight and obese mothers. Kern MCAH will consult and collaborate with CSV and NHSI medical providers in developing the protocol. Once completed, it will be given and discussed to medical professionals at both Sites #1. Kern MCAH will provide training to the medical providers, nurses, and outreach workers to both Sites #1 at CSV and NHSI on how to use the tool kit.

Kern MCAH hypothesized that if we provide a standardized protocol on how to manage overweight/obese pregnant patients, and a Healthy Choice Tool Kit, and proper training for medical providers to educate themselves and their patients, then we should see a better improvement on patient’s health and birth outcome. Figure 5 illustrates the targeted population
that is involved in the project plan. To evaluate the effectiveness of the change project, we will collect data such as pre-pregnancy weight, weight at last prenatal care visit, existing medical conditions, WIC referral, birth outcomes, and entry to prenatal care, and participation to the cooking class. We will be able to compare the results to Sites #2 for CSV and NHSI.

The second phase will be including other CPSP clinics and providers in project activities, as well as private providers who are interested in using strategies that have been successful during the first phase. In discussions with other providers, they have also expressed frustration and the growing problem of overweight/obesity and its impact on the health of the mother and the infant.

Sites will be compared for effectiveness of education and support given to pregnant women identified as being overweight or obese, or who are at risk for excess weight gain during the pregnancy. Strategies would be evaluated for ease of use and effectiveness in encouraging women to gain a healthy amount of weight during the pregnancy.

Resources

Kern MCAH requests for CMQCC to fund this project for $93,900.00 for fiscal year 2008/2009 and 2009/2010. Table 2, 3 and 4 shows a break down on personnel, operating expenses, and other costs for the project plan. Kern MCAH (MCAH Coordinator, CPSP Coordinate, Perinatal Outreach Public Health Nurse and Perinatal Investigator) will be working in partnership with CSV and NHSI. The MCAH director and coordinator will oversee the project plan. Kern MCAH requests funds to hire a full time Program Technician to develop handouts such as health educational pamphlets, pre and post tests, evaluation report, patient satisfaction
survey, perform chart audits, and data collection and entry. The Program Technician will be teaching the cooking classes for the patients in both clinics.

The funding will include direct operating expenses such as trainings, travel and office supplies. Office materials will include papers, pens, binders and stamps. Kern MCAH is requesting $500.00 a year on promotional items and marketing of the project plan. In fiscal year 2008/2009, Kern MCAH will spend $800.00 for the Healthy Choice Tool Kit. Kern MCAH is requesting $400.00 to replenish the Healthy Choice Tool Kit and replace any broken blood pressure cuffs for CSV and NHSI. For completing the Eat to be Healthy Class, Kern MCAH will provide a $25.00 gift certificate to pregnant women. The gift certificate can be spent to healthy food store.
Chapter 4: Alternative Selection

Criteria

As discussed earlier, it is important to strengthen individual knowledge and skills in making healthy choices. It is also essential to promote community education and to educate providers in combating the obesity epidemic. Criteria for recommending other alternatives should promote a realistic approach in maintaining appropriate weight. At the same time, intervention strategies must support eating proportionately, making healthy choices, and maintaining an active lifestyle. Criteria for recommending alternatives should also include promoting coalitions and networks, changing organizational practices, and influencing policy and legislation.

Comparison

In comparison of the program proposal to the status quo, Kern MCAH has chosen six objectives from Healthy People 2010 as benchmarks to achieve the mission and vision of the proposed plan. In the California Health Investigation Survey (CHIS), Kern County’s experience is compared to national benchmarks, known as Healthy People 2010 Objectives.

The Healthy People 2010 objective is to increase prenatal care to 90 percent of live births (CHIS, 2003). Adequacy of prenatal care is one of the frequently used preventive health services. It promotes healthy growth and development through reduced maternal mortality, morbidity, and fetal complications. According to the Census Bureau, 73% of pregnant Kern County residents received prenatal care within the first trimester of pregnancy in 1993-2002. Research studies shows that women who start prenatal care early tend to have fewer pregnancy complications and deliver healthier babies than women who delay or have no prenatal care (Schramm, 1992; and Buesher, Roth, & Goforth, 1991). Prenatal care may reduce the chances
of poor birth outcomes such as low birth weight, preterm delivery, infant mortality, maternal illness and complications due to pregnancy (Schramm, 1992; Buesher et al., 1991).

During the three-year period from 2002 to 2004, CHIS reports that an average of 84 percent of births was born to mothers with early (first trimester) prenatal care. The American College of Obstetricians and Gynecologists (ACOG) recommends that women receive at least 13 prenatal visits during a full-term pregnancy. In Kern County, 75.9 percent of births were to mothers who received adequate/adequate-plus prenatal care (CHIS, 2003).

Because obese women are at higher risk for preterm births, another objective in the Healthy People 2010 is to reduce preterm births to a rate of 7.6 per 100 live births (CHIS, 2003). Preterm birth is the leading cause of neonatal deaths not associated with birth defects. Premature babies are at increased risk for newborn health complications such as cerebral palsy, lung and gastrointestinal problems, and vision and hearing loss. The specific causes of preterm delivery is unclear but it is associated with various behavior risk factors such as the use of alcohol, tobacco, or other drugs during pregnancy and low pregnancy weight or low weight gain during pregnancy (CHIS, 2003). In Kern County, 13 percent of live births were preterm births (1,570 births) (CHIS, 2003).

Furthermore, the Centers for Disease Control (CDC) and Prevention estimated that the two leading causes of preventable deaths in the United States are tobacco, poor diet and physical inactivity (CHIS, 2003). Poor diet and physical inactivity are contributing factors of obesity. The Healthy People 2010 objective is to increase the proportion of adults who engage regularly, preferably daily, in moderate physical activity for at least 30 minutes per day to 30% (CHIS, 2003). Scientific evidence shows that regular, moderate-intensity physical activity lead to health benefits (CHIS, 2001). Furthermore, higher rates of sedentary behavior combined with poor
nutritional practices have contributed to the increase in obesity in adults nationally (CHIS, 2001). In Kern County, there are 69 percent of adults (18 years and older) engaged in some vigorous/moderate physical activity in the past seven days (CHIS, 2001).

During the past twenty years, obesity among adults has increased in the U.S. (“Obesity increases risks,” 2006). Another objective of the Healthy People 2010 is to reduce the proportion of adult age 20 years and older who is obese to no more than 15% (CHIS, 2003). In Kern County, there are 29 percent of adults (26 percent of males and 32 percent of females) are obese (CHIS, 2003). In terms of obesity prevalence, Kern County is ranked 52 (58 is worst) of California counties (“Community needs,” 2006). In 2006, the United Way’s need assessment reports that there are 25% girls and 32% women who are obese in Kern County (“Community needs,” 2006). The following are prevalence of obese women by racial/ethnic group: 48% of Caucasian women, 67% of African American women and 79% of Latina women (“Community needs,” 2006).

CHIS (2003) reported that obesity is a major risk factor for illnesses and premature deaths, and it can be quite costly to medical care and insurance claims. A recent study reported that in year 2000, physical inactivity, obesity and overweight cost California an estimated $21.7 billion in direct and indirect medical care ($10.2 billion), worker’s compensation ($338 million), and lost productivity ($11.2 billion) (CHIS, 2003).

Poor diet and physical inactivity is now the second leading cause of preventable deaths following tobacco (CHIS, 2003). Based on results from the 2003 CHIS, 29 percent of adults in Kern County are obese. The Healthy People 2010 objective is to increase the proportion of adults who are at a healthy weight to 60%. The CHIS in 2003 reported that 32 percent of adults (26 percent of males and 37 percent of females) are at a healthy weight in Kern County. It is
important to have a healthy weight “to reduce the burden of illness, and its consequent reduction in quality of life and life expectancy” (CHIS, 2003, p. 25). Overweight and obesity are caused by many factors such as inherited, metabolic, behavioral, environmental, cultural, and socio-economic components (CHIS, 2003). As weight increases, the prevalence of health risks increases as well.

Because obesity is an associated factor to hypertension, the objective of the Healthy People 2010 is to reduce the proportion of adults age 20 years and older who have high blood pressure to 16% (CHIS, 2003). Hypertension can lead to heart attack, coronary heart disease and stroke. It is called a "silent killer," because it does not usually cause symptoms while it is causing damage to the body. In the United States, there are about 50 million adults who have high blood pressure and most people with high blood pressure do not know that they have hypertension (CHIS, 2003). In Kern County, 29 percent of adults age 20 years and older (27 percent of males and 31 percent of females) have a diagnosis of high blood pressure (CHIS, 2003).

Diabetes is another contributing factor of obesity. The Healthy People 2010 objective is that only 2.5 percent of the population will have clinically diagnosed diabetes. Diabetes affects an estimated 17 million adults and children in the U.S. with approximately 800,000 new cases diagnosed each year (CHIS, 2003). The prevalence of diabetes among adults 18 years and older increased by 50% between 1990 and 2000 (CHIS, 2003). Due to the increase in the prevalence of diabetes, the complications and cost associated with diabetes continue to be a problem (CHIS, 2003).

Diabetes is a serious medical problem for both children and adults. In Kern County, 7.3 percent of adults were diagnosed with diabetes in 2003 (CHIS, 2003). This rate was almost three
times higher than the Healthy People 2010 objective of reducing the proportion of adults who have clinically diagnosed diabetes to only 2.5 percent of the population (CHSI, 2003).

Provisions for Monitoring and Evaluations

Kern MCAH will use a pre and post test, where patients are asked a series of questions on what they know about healthy eating on the beginning of the program (pre test) and then again at the program’s completion (post test). The pre and post test will measure changes in the patient’s knowledge, attitudes, or behaviors regarding making healthy choices. The pre and post test will consist of 15 true and false questions. Pretest will be given to patients on the initial prenatal care visit. Post test will be given at postpartum care. Both tests will address the need to assess patient changes with attitudes and behaviors from program beginning to completion. Patients will score at least 80% or better.

On a quarterly basis, Kern MCAH will randomly review 30 charts to ensure pre-pregnancy weight, BMI, blood pressure, blood sugar level and urinalysis are documented in the patient’s chart. Kern MCAH will also review and monitor charts on the amount of water intake, servings of healthy meal such as fresh fruits and vegetables, total minutes of exercises per week, total hours of sleep, and any use of alcohol, cigarette and substance use. The internal auditing will help improve the program’s operation, and accomplish its goals and objectives.

On a quarterly basis, Kern MCAH will monitor how many pregnant women are receiving WIC or dietary counseling. The goal is at least 90% of pregnant women will receive WIC or dietary counseling. Other referrals will also be monitored such Mental Health, Substance Abuse Counseling and other community services. Community clinics and medical providers (i.e. obstetricians and nutritionists) should work collaboratively with the Department of Public Health and other medical professionals for effective management and treatment plans.
Surveys will be given to both staff and patients. The annual survey will measure the medical staffs’ feedback by measuring the level of satisfaction on the tool kit. For instance, did the tool kit made a difference in providing care to their patients? A customer satisfaction survey will be given to all pregnant women at their postpartum care appointments. Both surveys will measure their level of satisfactions and gather feedback for opportunities of improvement.

The Kern MCAH will invite an expert guest speaker to discuss maternal obesity for medical health care professionals to increase the understanding of effective interventions and the risk factors affecting maternal mortality, obesity, and health complications for mother and baby. At the end of the training, the attendees will complete an evaluation form to get their input on the usefulness of the training.

To evaluate community awareness, Kern MCAH will take attendance at health fairs and events and obtain at least 40 people or more signatures who attend the booth. By the end of June 2009, Kern MCAH will participate in at least three events.

At every three-month interval, the MCAH coordinator will monitor and evaluate the progress of each goals and objectives. This is done through chart audits as described earlier. The MCAH Coordinator will be available for MCAH staff and both community clinics on as needed basis to address any problems or concerns. At the end of the fiscal year, the MCAH Coordinator will then report outcomes to the stakeholders including the CMQCC and the MCAH at state level. The report will include success stories, total number of obese pregnant women enrolled in the WIC program or to a dietician in another agency, average BMI, and pregnancy and birth outcomes.
Limitations and Unanticipated Consequences

There are several limitations and unanticipated consequences of this research. Because obesity is a complex problem, it will take several approaches to help people reduce and improve their weights. We need to understand what people need to do, what they want to do and what they will do to make themselves healthy. Many people believe that those who are overweight or obese feel that it is the responsibility of the individual to make healthy choices. Yet there are others who believe that it is the community’s responsibility.

A pregnant woman eats to have a healthy pregnancy and a healthy newborn. However, pregnant women are eating more than they normally should. The idea of eating for two allows mother to believe that overeating is a good idea but this is not a healthy practice for the mother. Another limitation is that a person’s lifestyle, diet, sleep, and exercise patterns, drug use and genetics contribute to obesity. Psychological factors may also influence eating habits such as stress and depression.

Furthermore, there is lack of support from the community. Some doctors do not currently play an active role in the weight loss process for their patients. There are also negative stigma attached to obesity and most obese people still face prejudices in life. A person’s environment (i.e. televisions, computers, escalators, cell phones, dishwashers, and video games) also plays a significant part in promoting sedentary life.

Another limitation is that many low-income communities do not have access to healthy food options. Even if there are options, healthy foods are usually more expensive than their processed competitors (“Social Ecological,” n.d.). People are eating out at fast food restaurants more often, so they have less control over how much fat, sugar, and salt is in their food. Fast food restaurants also encourage super-sizing of meals, adding unnecessary calories.
In Kern County, several prenatal care programs assist pregnant women. However, women do not obtain the adequate medical care that they need for themselves and their babies. Several obstacles such as lack of transportation, long waiting time, and lack of childcare may prevent them from obtaining prenatal care. The lack of health coverage continues to be a major problem in accessing prenatal care. The poorest women either have their medical care paid for by MediCal or have no insurance coverage at all.

Although Medi-Cal and the Mothers and Newborns Health Insurance Act (MNHIA) remain an important funding resource to low-income pregnant women, there are some women who are not qualified for these assistance due to their income. The March of Dimes indicated that the number of uninsured women of childbearing age continued to rise in 2001, increasing by 260,000 to 11.5 million (“Highlights of,” 2004). In 2001, nearly one in five women of childbearing age were uninsured—a higher rate than other Americans under the age of 65 (“Highlights of,” 2004).

The long term externalities of the research include medical expenses of hospital, prenatal and postnatal care which are quite costly for overweight mothers than for normal-weight mothers, and infants of overweight mothers require admission to neonatal intensive care units more often than do infants of normal-weight mothers. There are also long-term complications include worsening of maternal obesity and development of obesity in the infant.

In summary of this chapter, body weight is determined by a combination of genetics, personal behavior, environment, culture, and socioeconomic status. The Healthy People 2010 will be utilized by Kern MCAH as a benchmark in developing an effective program to improve health in Kern County. The primary focus of this proposal plan is to improve health of overweight/obese pregnant mothers—not weight loss—in a realistic approach. The plan will
benefit overweight and obese women understand the importance of eating healthy foods and getting adequate exercise. When overweight/obese mothers have the knowledge and skills in making healthy choices, Kern MCAH hopes that the mothers practice healthy choices in their lifestyle as well.
Chapter 5: Summary, Conclusion, and General Recommendations

Summary

Maternal obesity is one of the contributing factors in many maternal deaths. Maternal obesity is associated with increased rates of serious medical complications and, even worse, can lead to maternal death. About 60 percent of pregnancy-related deaths occurred after a live birth (“CDC media,” 2003). More than half of all women of childbearing age are overweight or have obesity; this makes obesity the most common health problems for pregnant women (“Obesity increases risks,” 2006). In terms of obesity prevalence, Kern County is ranked 52 (58 is worst) of California counties (“Community needs,” 2006). In 2006, the United Way’s need assessment reports that there are 25% girls and 32% women who are obese in Kern County (“Community needs,” 2006).

The purpose of the proposed plan is to develop and implement a strategic plan to reduce and improve the maternal obesity rate in Kern County. Kern MCAH is one of the 18 local health jurisdictions (LHJ) to develop a plan based on a Scope of Work specified by MCAH/OFP (Office of Family Planning) to address the reduction of maternal morbidity and mortality rate. Kern MCAH is partnering with CSV and NHSI for the proposed plan.

The vision statement of Kern MCAH is to reduce the negative impact of maternal obesity on disease burden and medical expenditures, and especially, the quality life for both mothers and babies. The mission statement is that by two years, Kern MCAH will prevent and reduce obesity rate in Kern County through improved nutrition, physical activity and supportive environment by integrating, coordinating and collaborating among community agencies that share expertise and maximize resources of existing programs and partnerships. The Healthy People 2010 Objective will be used as a benchmark to achieve its mission and vision.
Because of the concern of providers from various community clinics, partnering with CPSP clinics was a natural choice. The relationship between the Perinatal Services Coordinator (PSC) and CPSP clinics is already established and working well. Kern MCAH hopes it will be able to extend the strategies and materials developed in the Kern MCAH project to all prenatal care providers.

Conclusions

Based on current trends, it is predicted that the levels of obesity will continue to rise unless action is taken now. Medical providers in the community have expressed frustration about the growing problem of overweight/obesity and its impact on the health of the mother and the infant. The Woman Health Organization (WHO) reported that the growth in the number of severely overweight adults is expected to be doubles that of underweight during 1995-2025.

Kern MCAH provides the tool to manage obesity for medical providers, which includes a standardized protocol on how to manage overweight/obese pregnant patients, Healthy Choice Tool Kit, and trainings for medical providers. If the tool works well, then we should see improvements on patient’s healthy choices, and better pregnancy and birth outcomes.

Dietary restriction and physical activity are frequently misunderstood and misapplied by many individuals. It is also not an easy task to cut down on unhealthy habits. Some people may argue that the proposed plan may fail in the long-term due to various reasons: 1). individuals lack motivation and support; 2). individuals are not monitored on a regular basis and do not feel accountable for their progress; and 3). they are not including long term lifestyle change as a priority.

Childbirth is an event for mothers and families to celebrate. The stakeholders have to realize that pregnancy and childbirth can, and should be made safer. For positive results on the
proposed plan, it is important to ensure that patients are ready and enthusiastic about making healthy choices. Effective interventions also require cooperation and support from medical providers and the community. Overall, medical providers, various stakeholders and the community need to commit their time and effort in reducing maternal obesity through education and community awareness.

Recommendations

MCAH is faced with challenges and needs urgent search for solutions in the hopes of improving maternal obesity rate. Preconception counseling, careful prenatal management, and careful monitoring of weight gain could minimize the social and economic consequences of pregnancies in overweight women. The following are recommendations to reduce and improve maternal obesity in Kern County: to develop specific guidelines for nutritionists/dieticians and physicians on how to care for obesity in pregnant women; to increase community awareness on healthy eating, regular physical activity and healthy choices through traditional media campaigns (i.e. television, local news, radio, and billboards); and to improve healthy lifestyle in obese pregnant women by monitoring fluid intake and healthy eating during prenatal and postnatal care.

The Socio-Ecological Model is the most effective approach to look at all levels of influence that can be addressed to support healthy choices (“Social Ecological,” n.d.). This involves all levels—individuals, interpersonal, organizational, community and public policy. It is important to involve the families, medical providers and communities that create the environments in which the individuals live and their behaviors are formed. Lessons may be learned from previous successful campaigns for long-term social change, such as seat belt law, tobacco control and the promotion of breastfeeding.
Medical health professionals need to gain a deeper understanding of the current status and trends in obesity. Guidelines and training should be developed for obesity care during pregnancy, which include ways to improve dietary practices and physical activity for patients because these are effective strategies for preventing many of the chronic diseases. Clinicians should inform their patients about the negative effects of extra weight during preconception, and provide mothers with assistance to maintain a healthy weight during prenatal care, including psychological support, nutrition counseling, and simple exercise classes.

Pregnant women need to be informed about eating healthy and adequate weight gain so that they take responsibility for managing their body weight. They need to be aware about the problems with their condition and how to manage the potential risks to mother and baby if weight is not controlled. Medical providers and the community need to be sensitive and supportive of overweight/obese women.

Most of the maternal deaths are preventable even where resources are limited; however, the right kinds of people need to be involved to improve the quality care of maternal health outcomes. It is essential to empower health professionals to critically evaluate current practices and change them, if needed. Because action is the primary goal for the proposal plan, it is important that various stakeholders such medical providers, MediCal Managed Care and community agencies actively participate in the recommended changes.
References


Appendix 1: IRB Approval
Table 1

Goals and objectives to meet Kern MCAH’s mission and vision

<table>
<thead>
<tr>
<th>Goal: #1</th>
<th>Kern MCAH will develop a specific guideline to doctors and other health professionals at Clinica Sierra Vista and National Health Services Incorporated to effectively monitor and manage the pregnancy.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objectives</strong></td>
<td><strong>Tasks/Functions/Activities</strong></td>
</tr>
<tr>
<td>#1: To develop a standardized guideline for Comprehensive Perinatal Health Workers (CPHW) on how to discuss the basic importance of healthy eating with pregnant women</td>
<td>CPHW will educate all pregnant patients on the basics of healthy eating during pregnancy.</td>
</tr>
<tr>
<td></td>
<td>CPHW will provide health educational pamphlets to all pregnant patients (e.g. food pyramid, healthy choices and exercises).</td>
</tr>
<tr>
<td></td>
<td>CPHW will refer all pregnant patients to WIC or Nutritionist.</td>
</tr>
<tr>
<td>#2: To develop guidelines for medical health</td>
<td>Medical health professionals will closely monitor prepregnancy weight, trends of prenatal care</td>
</tr>
<tr>
<td>Professionals (e.g. nutritionists/dieticians and physicians) on how to care for obesity in pregnant women</td>
<td>BMI, blood pressure, blood sugar level and urinalysis in the ACOG form.</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>Medical health professionals will assess patients’ medical history (i.e. diabetes, hypertension and frequent history of urinary tract infection), and any existing medical conditions will be documented on the ACOG forms.</td>
<td>Initial prenatal care visit</td>
</tr>
<tr>
<td>Medical health professionals will need to discuss the importance of eating healthy during pregnancy and mild exercise such as a daily walk to lower blood pressure.</td>
<td>Medical staff will use the tool kit for effective management on overweight/obese pregnant women. The Healthy Choice Tool Kit will consists of a flip card BMI/EDC Wheel, oversized blood pressure cuff, Blue Card (medical information on patient that includes their EDC, OB/GYN provider, blood pressure, weight, blood type...), pregnancy weight chart, health</td>
</tr>
<tr>
<td>Medical health professionals will refer patients to WIC or nutritionist/dietician, and this will be documented on the ACOG form.</td>
<td>The annual survey will measure the medical staffs’ feedback by measuring the level of satisfaction on the tool kit (for instance, did the tool kit made a difference in providing care to the patients?).</td>
</tr>
</tbody>
</table>
**Goal #2: Improve healthy lifestyle in overweight/obese pregnant women by changing behaviors, attitudes and knowledge**

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Tasks/Functions/Activities</th>
<th>Timeline</th>
<th>Performance Measures/Impact Measures/Deliverables</th>
</tr>
</thead>
<tbody>
<tr>
<td>To promote early prenatal care</td>
<td>CPHW will educate all patients with positive pregnancy test on the importance of entering early prenatal care</td>
<td>On initial family planning visit</td>
<td>On a quarterly basis, Kern MCAH will randomly audit 30 charts per clinic to ensure at least 90% of pregnant women enter first trimester</td>
</tr>
<tr>
<td>To increase fluid intake at least 8 ounce glasses of water a day</td>
<td>Patients will drink at least 8 ounce glasses of water a day. Patients will report the amount of water drank a day.</td>
<td>On every recommended prenatal care visits</td>
<td>CPHW will monitor and record the amount of water intake. On a quarterly basis, Kern MCAH will randomly audit 30 charts per clinic to ensure the amounts of water intake are documented in the chart.</td>
</tr>
<tr>
<td>To eat appropriate servings of healthy meal including fruits and vegetables based on the dietary guidelines</td>
<td>Patients will eat appropriate serving of healthy meal. Patients will report the type of servings of meal to WIC or the nutritionist.</td>
<td>On every recommended prenatal care visits</td>
<td>WIC or the nutritionist will monitor the servings of healthy meal. On a quarterly basis, Kern MCAH will randomly audit 30 charts per clinic to ensure appropriate servings of fruits and vegetables are documented in the chart.</td>
</tr>
<tr>
<td>To exercise at least 15 to 30 minutes or as</td>
<td>Patients will exercise at least 30 minutes or as recommended by physicians. Patients will</td>
<td>On every recommended prenatal care</td>
<td>CPHW will record the total minutes of exercises per week.</td>
</tr>
</tbody>
</table>
To get at least 8 hours of sleep a day

Patients will sleep at least 7-8 hours a day. Patients will report the total hours of sleep to the CPHW.

On every recommended prenatal care visits

CPHW will record the total hours of sleep per day.

On a quarterly basis, Kern MCAH will randomly review 30 charts per clinic to ensure the total hours of sleep are documented in the chart.

To abstain from caffeine, cigarettes smoking, drinking alcohol and/or any illegal substance use

Patients will abstain from caffeine, cigarettes smoking, drinking alcohol and/or any illegal substance use. CPHW will ask patients for any use.

On every recommended prenatal care visits

CPHW will record any use of caffeine, cigarettes smoking, drinking alcohol and/or any illegal substance use. On a quarterly basis, Kern MCAH will randomly review 30 charts per clinic to ensure any use of caffeine, cigarettes smoking, drinking alcohol and/or any illegal substance use is documented in the chart.

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**Goal #3: Provide services that will result in a healthy pregnancy outcome and lifestyle**

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Tasks/Functions/Activities</th>
<th>Timeline</th>
<th>Performance Measures/Impact Measures/Deliverables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kern MCAH will develop an Eat To Be Healthy</td>
<td>Kern MCAH will develop an Eat To Be Healthy Cooking Class consisting of three sessions. Each session will last</td>
<td>First and third week of October and first week of</td>
<td>Pre and post test will be given to patients. It will consist of 15 true and false questions regarding healthy choices. Post</td>
</tr>
</tbody>
</table>
Cooking Class consisting of three sessions. Each session will last one hour. Patients will learn how to cook and prepare healthy meals for themselves and their families, read food labels, and shop nutritious food. After completion of 3 sessions, each participant will receive a certificate of completion and a $20 gift certificate to Trader’s Joe. This class is voluntary.

Refer patients to community agencies such as Kern County Mental Health, Health Wellness Program, Substance Abuse Treatment and other appropriate services needed.

Medical staff and CPHW will identify patients needing services.

Initial prenatal care to postpartum care

CPHW will monitor number of referrals given to patients on a monthly basis.

November 2008.
First and third week of February and first week of March 2009

Test will be given at Session 3, and patients will score at least 80% or better.

**Goal #4: Increase community awareness on healthy eating, regular physical activity and responsible individual healthy choices.**

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Tasks/Functions/Activities</th>
<th>Timeline</th>
<th>Performance Measures/Impact Measures/Deliverables</th>
</tr>
</thead>
<tbody>
<tr>
<td>To inform individuals and families especially women about</td>
<td>Kern MCAH will work in collaboration with HPPI department to develop a health educational pamphlet</td>
<td>By end of September 2008</td>
<td>A Customer Satisfaction Survey will be given to all pregnant women at CSV and NHSI at their postpartum care</td>
</tr>
<tr>
<td>Description</td>
<td>Action/Outcome</td>
<td>Timeframe</td>
<td>Notes</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Pregnancy health complications through marketing campaigns, such as newspaper, radio, local news, bill boards, and health educational pamphlets</td>
<td>Provide a conference/training for medical health care professionals to increase understanding on effective interventions, and the risk of maternal mortality, obesity, and health complications for mother and baby at least once a year</td>
<td>By end of July 2008</td>
<td>Kern MCAH will allow staff in the Department of Public Health to participate in developing a “catchy logo” for Kern MCAH. The MCAH staff will select a winner, and the winner will receive a $30 gift basket.</td>
</tr>
<tr>
<td>A Customer Satisfaction Survey will be given to all pregnant women at CSV and NHSI at their postpartum care appointments.</td>
<td></td>
<td></td>
<td>Kern MCAH will invite an expert guest speaker to discuss maternal obesity for medical health care professionals to increase understanding of effective interventions and the risk factors affecting maternal mortality, obesity, and health complications for mother and baby. Continuing education may be offered. Changes in behavior and clinical practice are difficult to achieve without widespread promotion and support from well-respected advocates, professionals, and various organizations.</td>
</tr>
<tr>
<td>To participate in Health Fairs and other community events</td>
<td></td>
<td>By end of June 2009</td>
<td>Kern MCAH will participate in Health Fairs and community events such as Public Health Week.</td>
</tr>
<tr>
<td>Kern MCAH will take attendance at the health fairs and events and obtain at least 40 people or more attending the booth. By end of June 2009, Kern MCAH will at least participate in 3 events.</td>
<td></td>
<td></td>
<td>Kern MCAH will take attendance at the health fairs and events and obtain at least 40 people or more attending the booth. By end of June 2009, Kern MCAH will at least participate in 3 events.</td>
</tr>
</tbody>
</table>
Table 2

*Kern MCAH Budget for FY 2008/2009 and FY 2009/2010*

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Personnel:</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Program Technician-(FTE)</td>
<td>Annual Salary $40,000</td>
<td>Annual Salary $40,000</td>
<td>$80,000.00</td>
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<tr>
<td>Operating Expenses:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Travel</td>
<td>$1,000.00</td>
<td>$1,200.00</td>
<td>$1,800.00</td>
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<tr>
<td>Training</td>
<td>$2,000.00</td>
<td>$2,000.00</td>
<td>$4,000.00</td>
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<tr>
<td>Office</td>
<td>$3,000.00</td>
<td>$1,500.00</td>
<td>$4,500.00</td>
</tr>
<tr>
<td>Capital Expenditures:</td>
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<td></td>
</tr>
<tr>
<td>Other Costs:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promotional Items/Marketing/Advertising</td>
<td>$500.00</td>
<td>$500.00</td>
<td>$1,000.00</td>
</tr>
<tr>
<td>Healthy Choice Tool Kit</td>
<td>$800.00</td>
<td>$400.00</td>
<td>$1,200.00</td>
</tr>
<tr>
<td>Gift Certificates for completion of cooking class</td>
<td>$500.00</td>
<td>$500.00</td>
<td>$1,000.00</td>
</tr>
<tr>
<td>Total Costs</td>
<td>$47,800.00</td>
<td>$46,100.00</td>
<td>$93,900.00</td>
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</tbody>
</table>
Table 3

*Kern MCAH Budget Justification for FY 2008/2009*

I. Total Personnel Expenses
   1 full time employee to develop handouts (i.e. pre and post tests and evaluations) reports, audits, and charts. $40,000.00

II. Operating Expenses

   Travel—includes private mileage, commercial auto rental and actual costs ($.485 per mile for Local travel $1,000.00
   
   Training— This is for medical health professionals Includes a guest speaker--fee, mileages, lodging, meals Includes meals for attendees $2,000.00
   
   Office—postage, duplication, other office expenses New computer set up for Program Technician $3,000.00

**Total Operating Expenses** $4,500.00

III. Capital Expenses

IV. Indirect Expenses

V. Other Expenses

Promotional Items/Marketing/Advertising $500.00

Healthy Choice Tool Kit—Includes 6 oversize blood pressure cuffs BMI/EDC Wheels, prenatal blue cards $800.00

Gift Certificates for completion of cooking class--$25.00 gift Certificate to a health food store, a total of 20 participants in Classes #1 and #2. $500.00

**Total Costs** $47,800.00
Table 4

*Kern MCAH Budget Justification for FY 2009/2010*

I. Total Personnel Expenses
   1 full time employee $40,000.00

II. Operating Expenses

   Travel—includes private mileage, commercial auto rental and actual costs ($0.485 per mile for local travel $1,200.00

   Training—This is for medical health professionals Includes a guest speaker--fee, mileages, lodging, meals Includes meals for attendees $2,000.00

   Office—
   Technician postage, duplication, other office expenses $1,500.00

*Total Operating Expenses* $4,700.00

III. Capital Expenses 0

IV. Indirect Expenses 0

V. Other Expenses

Promotional Items/Marketing/Advertising $500.00

Healthy Choice Tool Kit—Includes 2 oversize blood pressure cuffs for replacements, BMI/EDC Wheels, prenatal blue cards $400.00

Gift Certificates for completion of cooking class--$25.00 gift Certificate to a health food store, a total of 20 participants in Classes #1 and #2. $500.00

*Total Costs* $46,100.00
Figure 1: Maternal Obesity Associated Factors

Maternal Obesity (Pregnancy Related Complications)

Gestational Diabetes Mellitus
- Gestational Diabetes Mellitus

Preterm Birth
- Prolonged Labor

Pregnancy Induced Hypertension

Infant
- Macrosomia
- Shoulder Dystocia
- Hypoglycemia
- Neural tube defect

Cesarean Section
- Slower Healing
- Postpartum Hemorrhage
- Urinary Tract Infection
- Thromboembolism
- Endometritis

Infant
- Seizure
- Liver Rupture
- Intracranial Bleeding
- Poor Fetal Growth
- Stillbirth
Figure 2: Stakeholders’ Challenges

<table>
<thead>
<tr>
<th>Individuals</th>
<th>Medical Providers/Clinics</th>
<th>Hospitals</th>
<th>Community Officials</th>
</tr>
</thead>
</table>
| - Poor eating habits
- Genetic
- Sedentary lifestyle
- Mental Health Problem | - No standardized protocol in managing overweight/obese pregnant women
- Lack of access to medical equipment (no access to oversized blood pressure cuffs, weighing scale)
- Lack access to dietician / nutritionists on site
- Inadequate monitoring on pregnancy weight and body mass index
- Minimal or no training in maternal obesity | - No standardized protocol in managing overweight/obese pregnant women
- Frequent ER visits
- Repeat C/Section
- Poor IV access
- Difficulty with intubation & placement of spinal and epidural anesthesia, detecting fetal hear tones
- Safety Issues for patients and staff (lifting & transporting, bed size capacity)
- Lack of access to oversized blood pressure cuffs
- Post Operation Complications after C/Section
- Minimal or no training in maternal obesity | - Minimal or no knowledge in maternal obesity
- Budgetary constraints
- Maternal Obesity not a priority at this time |
Figure 3: Implementation of Tool Kit

Community Clinics

Clinica Sierra Vista
- Site #1 Tool Kit
- Site #2 NO Tool Kit

National Health Service
- Site #1 Tool Kit
- Site #2 No Tool Kit

**Healthy Choice Tool Kit**
- Standardized Protocol Folder
- BMI / EDC Wheel
- Pregnancy Weight Chart
- Prenatal Record Card (Medical Record)
- Blood Pressure Cuff (Extra large sizes)
- Health Educational Pamphlets
- Community Resource Directory
Figure 4: Stakeholders Involvement

- Community Clinics: CSV and NHS
- MediCal Managed Care: Kern Family Health Care, Health Net, Kaiser Permanente
- Community Agencies: Kern County Mental Health, WIC
- Community Officials (i.e. board of supervisors)
- State: MCAH LCMQI /CMQCC

Figure 5: Target Population

- Target Population
  - Pregnant Women
  - Medical Health Professionals: Doctors, nurses, nutritionists /
  - Paraprofessionals: Outreach Workers
Figure 6: Socio-Ecological Model

- Public Policy
- Community
- Organizational
- Interpersonal
- Individual