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Date

TEXT4TEENS
TEEN PREGNANCY LOW BIRTHWEIGHT BABY
INTERVENTION GRANT PROPOSAL

BY

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B.S. Ohio State University
M.B.A., Georgia State University
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An abstract of
A Thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
In partial fulfillment of the requirements of the degree of
Master of Public Health in the Career MPH program
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Abstract

TEXT4TEENS TEEN PREGNANCY LOW BIRTHWEIGHT BABY INTERVENTION GRANT PROPOSAL

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This thesis develops a public health grant proposal to reduce the incidence low birthweight baby occurrences among pregnant teens in Georgia. Georgia's low birthweight baby incidence rate is among the highest in the United States and worse than most of the developing world. The proposed Text4Teens grant proposal addresses the three primary causes of low birthweight baby occurrences--inadequate maternal healthcare, poor nutrition, and smoking. The Text4Teens grant proposal represents an innovation in traditional community engagement programs. The intervention methodology leverages social networking technology—texting—to connect teens to information and community services. The program outcomes target improved utilization of available social services; strengthened ties and collaboration between state and local prenatal care and prenatal nutritional services; and, improved birthweight outcomes for pregnant teens.

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PREFACE

Thesis Organization

This thesis consists of five chapters.

Chapter I – Part A develops an overview of an important public health problem—low birthweight babies (LBWB) and teen pregnancies resulting in LBWB.

Chapter I – Part B outlines how this problem can be addressed through a grant funded intervention program entitled Text4Teen (T4T). Chapter I – Part B introduces the T4T program components, and refers the reader to Appendix A: T4T Grant Proposal to obtain a detailed description of the T4T program, its goals, objectives, methods, timeline, and budget. Chapter I – Part B also reviews the significance and anticipated impact of the T4T grant proposal. It provides a definition of terms, and related information essential to understanding the context of the T4T proposal.

Chapter II provides an overview of the social networking research literature that was selected to support the grant proposal—including the methodology and approach.

Chapter III summarizes information about the nature of the Department of Health and Human Services (HHS) funding that covers this type of problem/issue and information about the HHS funding agency. Chapter III also describes the methodology of the grant proposal review and scoring process. This methodology was based upon the specific criteria typically used by HHS programs to review grant proposals in the area of maternal and child health.

Chapter IV presents the results of the grant review process. In the development of this thesis, the grant proposal was reviewed and scored by five subject matter specialists and one field advisor who are intimately familiar with the teen pregnancy LBWB problem areas. Their

critical review and comments constitute a critical step in the further development of the grant proposal and this thesis.

Chapter V is a discussion and synthesis about how the T4T grant proposal may be modified based on the reviewer scoring and comments.

The thesis includes two appendices. Appendix A is the Text4Teens (T4T) Grant Proposal. Appendix B is the Grant Proposal Scoring Instrument.

CHAPTER I

PART A: LOW BIRTHWEIGHT BABIES

Introduction

It is common sense that babies who are undernourished in the womb and who are born with a low birthweight face an increased risk of dying during their early months and year of life. In the past two decades, however, a medical and public health consensus has emerged that low birthweight is also one of the most important indicators of longer-term problems such as ongoing childhood illness, mental retardation, learning problems, cerebral palsy, vision and hearing loss, diabetes, heart disease, and lasting disability (IOM, 1985; CDC, 2011b, c, d). The weight of scientific evidence strongly suggests that low birthweight babies (LBWB) tend to have cognitive disabilities and a lower IQ, affecting their performance in school and their job opportunities as adults (CDC, 2011b, c, d). Studies also indicate that LBWB are likely to remain undernourished with reduced muscle strength; and, they may have impaired immune function and increased risk of disease throughout their lives. In short, birthweight is a strong indicator of a newborn's chances for survival, growth, psychosocial development long-term health and longevity (CDC, 2011d). Sadly, LBWB start life with a number of significant potential deficits which are not effectively addressed post-delivery. Even more tragic, from a public health perspective, LBWB occurrences are largely preventable (Freede, 1987; Foege, 1998; ACOG, 2007; GDPH, 2008; Child Info, 2010; CDC, 2011c, d; HMHB, 2011).

Prevalence in United States

Babies born weighing less than 2,500 grams (5 pounds, 8 ounces) are classified as LBWB (March of Dimes, 2011; CDC, 2010c; WHO, 2011). While low birthweight has traditionally been considered a public health problem associated with developing countries, about 1 in every 12 babies born in the U.S. is a LBWB. As illustrated in the below table, about 1.8 million LBWB are born in the United States (U.S.) each year (HRSA, 2010; CDC, 2010a, b). LBWB represent about 9.0 percent of all U.S. newborns (CDC, 2010a, b). Across the U.S., this rate can vary significantly and in some areas is over 15 percent (CDC, 2010a, b).

Table 1: United States Low Birthweight Baby Prevalence by Race/Ethnicity

Race/Ethnicity	Number	percent < 2500g
White, Not Hispanic	658,601	8.5
Black, Not Hispanic	395,929	13.2
Hispanic	642,783	7.1
American Indian/Alaska Native	16,581	8.2
Asian/Pacific Islander	48,281	8.9
Multiple Races	55,788	9.2
All Other	33,583	7.0
United States	1,851,546	9.0

* The U.S. ranks 32 among 33 industrialized nations for infant mortality.

Source: CDC (2011a)

The Healthy People 2010 objective for low birthweight established the target prevalence of five percent. In 2001, the U.S. prevalence of low birthweight (National Vital Statistics Reports, 2010) for all race/ethnicity groups was 7.7 percent--well above the Healthy People 2010 target of 5 percent (CDC, 2010a, b). Based upon reports produced from the Pediatric Nutrition Surveillance System and the Pregnancy Nutrition Surveillance System, using the ten most recent

years of available data, the overall U.S. national prevalence for LBWB is now 9.0 percent or approximately 1.8 million babies (CDC, 2010a, b). After a decade of effort, as a nation, we are still far from meeting Healthy People 2010 goals. To understand the serious implications of these data, a global context is useful.

Global Comparison - Low Birthweight and Infant Mortality

As illustrated in the Table 2: Selected WHO Low Birthweight Statistical Comparisons 2004, below, relatively more infants are born at low birthweight in the U.S. than in most other industrialized countries. The implications of this extensive: 1) a society's infant mortality rate is considered an important indicator of its overall health status; 2) infant mortality

Table 2: Selected WHO Low Birthweight Statistical Comparisons 2004

Selected Comparisons	LBWB Percent (%)
World	15.5
More Developed Countries	7.0
Less Developed Countries	16.5
Least Developed Countries	18.6
By Continents	
Africa	14.3
Europe	6.4
Northern America	7.7
Asia	18.3
Latin America and Caribbean	10.0
Oceania	10.5

Source: WHO (2011).

is highly correlated to birthweight distribution; and, 3) despite the high quality and widespread availability of neonatal intensive care technology in the U.S., the infant mortality rate for the U.S. remains higher than that of many developed nations (CDC, 2011d, f; WHO, 2011). This is a tragic situation as one could argue that given the high quality and widespread availability of neonatal intensive care in the U. S., a low-birthweight baby born in this country probably has a better chance of surviving than anywhere else in the world (Save the Children, 2010).

America may be the world's superpower, but its survival rate for newborn babies Among 33 industrialized nations, the United States is tied with Hungary, Malta, Poland and Slovakia with a death rate of nearly 5 per 1,000 babies, according to a new report. Latvia's rate is 6 per 1,000. "We are the wealthiest country in the world, but there are still pockets of our population who are not getting the health care they need," Mary Beth Powers (2010), a reproductive health adviser for the U.S.-based Save the Children, which compiled the rankings based on health data from countries and agencies worldwide.

Source: Save the Children (2010)

Despite excellent neonatal technology, more infants born in the United States die before they are a year old (WHO, 2010). The U.S. infant mortality rate is higher than most developed nations--including countries with significantly lower gross national products per capita, such as Ireland and Spain (WHO, 2011). 9 deaths per 1,000 live births, closer to rates in developing nations than to those in the industrialized world (AP, 2006). From a public health vantage point, little progress has been made in reducing U.S. low birthweight rates and accordingly infant mortality rates are disproportionately affected.

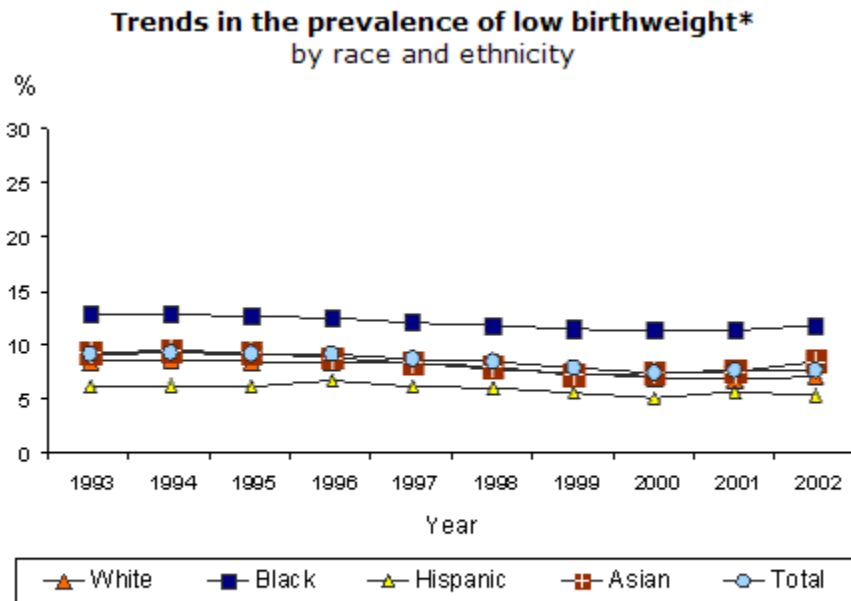
As shown in Figure 1: U.S. Trends in LBWB Prevalence, the U.S. LBWB rate has remained relative constant across all racial demographics suggesting new approaches are

universally needed to aid interventions.

LBWB in Georgia

Georgia's aggregate LBWB rate is 10.5 percent or 82,253 babies (GADPH, 2010a, b; CDC, 2011). Looking at racial demographics, for Blacks, it is over 13.5 percent in aggregate. (CDC, 2011e). In the U.S., the State of Georgia, in particular, is among the worst in the nation. Georgia experienced over 82,253 LBWB deliveries in 2010, and is ranked 45th out of 50 on a

Figure 1: U.S. Trends in LBWB Prevalence



* Low Birthweight includes VLBW < 1500 g and LBW = 1500- <2500 g.

Source: (CDC, 2011a)

nationwide basis (CDC, 2011d). Georgia's LBWB rate is believed to be growing. Statistics show that in 1996, Georgia's LBWB rate was about 8.5 percent of births (GDPH, 2011a). In 2006, the

rate had increased to 9.6 percent (GDPH, 2011a). In 2010, based upon Georgia state-wide surveillance data, it is believed that the aggregate LBWB rate may be 10.5 percent or higher (CDC, 2010a). For non-Hispanic Blacks including teens it is estimated at about 15 percent on a statewide basis. Teen pregnancies resulting in LBWB are believed to represent a significant factor in this escalation (GDPH, 2010; Child Info, 2010, March of Dimes, 2011). Georgia has the 13th highest teen birth rate in the nation (CDC, 2011a, b, d).

Table 3: Selective Comparison of Georgia LBWB to Other Geographies

Selected Geographies	Number	% < 2500g (Rank in U.S.)
Alabama	39,278	12.0 (48)
D.C.	5,014	11.2 (47)
Georgia	82,253	10.5 (45)
United States	1,851,546	9.0*

* The U.S. ranks 32 among 33 industrialized nations for infant mortality.

Source: CDC (2011a)

Table 3: Selective Comparison of Georgia to Other Geographies provides a selective comparison of LBWB births.

Economic Impact of Low Birthweight

For U.S. and State of Georgia policy makers, community leaders, and citizens these statistics should be troubling. LBWB represents an expensive problem. Preterm births cost the United States over \$26 billion a year. According to a 1998 study published in *Pediatrics*, each normal birth that occurs instead of a very low birth weight birth saves \$59,700 in the first year of care (The Health Baby Coalition, 2008). Annually low birthweight accounts for about 10 percent

of all pediatric medical costs, with an estimated \$5.5 to \$6 million in health care and special education devoted to problems that should have been prevented in the first place. While exact figures for teen pregnancy LBWB are unknown nationally or for Georgia, estimates reliably place the cost of each LBWB occurrence in the millions of dollars for each affected individual (HHS, 2010; GFCP, 2011).

Table 4: Very Low Birthweight Baby Death and Hospitalization Costs

Infants born weighing less than 3 lbs., 5 oz.	Rate	First-Year Costs
Died during the first day of life	23%	\$6,310
Died during the remainder of their initial hospitalization	10%	\$58,800
Survived initial hospitalization but died during the first year of life	3%	\$112,120
Survived the first year of life	64%	\$76,850

Source: GFC (2010).

A study by the Healthy Baby Coalition indicated that the average first year medical costs for a premature/low birth-weight baby are \$49,033 compared to \$4,551 for a baby without complications (Health Baby Coalition, 2008). A shift of one pound at birth saves approximately \$28,000 in first year medical costs. The Health Baby Coalition (2008) also indicates that annual Medicaid costs are reduced on average between \$12,000 and \$15,000 for every very low birth-weight incident prevented. In comparison to normal births, LBWB remain close to 11 days longer in the hospital— an additional cost of \$14,500 per infant. Newborns in the very low-weight (VLBWB) category — less than 3 lbs., 5 oz. — could avoid, with as little as eight ounces

added weight, initial year medical costs of \$14,000 on average. A baby weighing less than 2 lbs., 3 oz. will incur costs of \$65,500 on average in delivery and initial care. The smallest infants, weighing less than 1 lb. 10 oz., will average 98 days in the hospital.

Costs associated with LBW extend beyond the initial hospital stay. While exact medical costs can vary; one single axiom seems to hold true: costs increase as birthweight decreases.

Causes of Low Birthweight

Medical evidence suggests that LBWB occurrences stems primarily from 1) inadequate prenatal healthcare; 2) poor nutrition; and, 3) smoking. Early and regular prenatal care coupled with nutrition and environmental interventions may be able to mediate these factors. All expectant mothers—teens or otherwise--need to have regular prenatal care, quit smoking, and have a good diet. With regard to smoking, according to the U.S. Public Health Service, about 1 in 5 adolescent women are smokers (CDC, 2010). The Centers for Disease Control and Prevention (CDC) indicates that up to 25 percent of all low birthweight could be avoided if pregnant women did not smoke (CDC, 2010). Beyond smoking, inadequate weight gain in particular is a main cause of fetal growth retardation. Health care providers also recommend that a woman of normal weight gain 25 to 35 pounds during pregnancy. Women who gain less than 22 pounds are two to three times more likely to have a low birthweight baby than women who gain at least that amount (CDC, 2010).

Teen Pregnancy and LBWB

Since the 1980's, the preponderance of public health literature has established that teen pregnancies and childbearing-- with or without low birthweight--bring substantial short and

long-term social, economic, and health costs through impacts on teen parents, their children, and the communities in which they live (HMHB, 2011). LBWB occurrences magnify these costs and impacts. Low birthweight babies have profound, expensive, and long-lasting public health implications not only for the affected individuals but also for the family, community, state, and nation. Studies have repeatedly shown that low birthweight babies are at increased risk for both immediate and long lasting, serious and expensive chronic health problems, disabilities, and mortality (Child Info, 2010; CDC, 2011). Life complications resulting from LBWB occurrences for both the child and the mother generate an on-going cost in the millions of dollars for each incidence and burden to all levels of society (Child Info, 2010).

The CDC (2010) estimates that preventing teen childbearing could save the United States about \$9 billion per year; however, teens are becoming pregnant and will continue to become pregnant. Public health programs cannot pretend that this problem will vanish—teens need access to information and services. The current public health scientific consensus is clear: teen pregnancies resulting in LBWB are largely preventable.

Teenage birth rates in the United States are high, exceeding those in most developed countries. High teen birth rates are an important concern because teen mothers and their babies face increased risks to their health, and their opportunities to build a future are diminished. Teen mothers face higher rates of preterm birth, and their infants have higher rates of low birth weight, and infant death (March of Dimes, 2011). The offspring of teenage mothers have long been known to be at increased risk of infant mortality, largely because of their high prevalence of low birth weight (less than 2,500 grams) (March of Dimes, 2011).

Over 22,500 teen pregnancies occur each year in Georgia—that is 62 new teen pregnancies each day or over two teen pregnancies an hour (GDPH, 2010d). According to the

Georgia Department of Public Health, the teen pregnancy rate in Georgia is over 67 pregnancies per 1,000 girls ages 15 to 19. Nearly 28 percent of teen pregnancies in Georgia occur among girls who have already been pregnant at least once before (GDPH, 2010a). Georgia ranks second highest among the states in the rate of repeat births to teens (GCAPP, 2011). Clearly, additional attention is needed to address the problem of teenage pregnancies and the resulting LBWB outcomes.

Figure 2: Teen Pregnancy LBWB – Summary Data

- Teenage mothers are more likely to have a low birthweight baby.
- Most low-birthweight babies are born prematurely.
- The earlier a baby is born, the less she is likely to weigh.
- The risk is highest for babies of mothers under age 15.
- In 2005, 16.4 out of every 1,000 babies of women under age 15 died, compared to 6.8 per 1,000 for babies of women of all ages.
- In 2006, 10 percent of mothers ages 15 to 19 had a low-birthweight baby, compared to 8.3 percent for mothers of all ages.
- The risk is higher for younger mothers 11.7 percent of 15-year-old mothers had a low-birthweight baby in 2006 compared to 9.5 percent of 19-year-old mothers.

Source: GFCP (2011).

There was a strong association between young maternal age and high infant mortality and between young maternal age and a high prevalence of low birth weight. Neonatal mortality declined steadily with increasing maternal age. A baby born to a teenage mother is at higher risk than a baby born to an older mother for premature birth, low birthweight, other serious health

problems and death. Babies of teenage mothers are more likely to die in the first year of life than babies of women in their twenties and thirties (March of Dimes, 2010).

Babies who are premature and low birthweight may have organs that are not fully developed. This can lead to breathing problems, such as respiratory distress syndrome, bleeding in the brain, vision loss and serious intestinal problems. More than ten percent of all U.S. births in 2006 were to mothers under age 20. Most teenage births (about 67 percent) are to girls ages 18 and 19. Teen mothers are more likely than mothers over age 20 to give birth prematurely (before 37 completed weeks of pregnancy). Between 2003 and 2005, preterm birth rates averaged 14.5 percent for women under age 20 compared to 11.9 percent for women ages 20 to 29. Babies born prematurely face an increased risk of newborn health problems, long-term disabilities and even death (March of Dimes, 2011).

Teens are more likely than women over age 25 to smoke during pregnancy. In 2004, 17 percent of pregnant teens ages 15 to 19 smoked, compared to ten percent of pregnant women ages 25 to 34 (March of Dimes, 2011). Babies of women who smoke during pregnancy are at increased risk for premature birth, low birthweight and sudden infant death syndrome (SIDS). Women who smoke during pregnancy also have an increased risk for pregnancy complications, including placental problems (CDC, 2007).

Teens are least likely of all maternal age groups to get early and regular prenatal care. From 2000 to 2002, an average 7.1 percent of mothers under age 20 received late or no prenatal care, compared to 3.7 percent for all ages.

A teenage mother is at greater risk than women over age 20 for pregnancy complications, such as premature labor, anemia and high blood pressure. These risks are even greater for teens who are under 15 years old (Freede et al, 1987; CDC, 2007)).

Very low-birthweight babies (less than 3 1/3 pounds) are more than 100 times as likely to die, and moderately low-birthweight babies (between 3 1/3 and 5½ pounds) are more than five times as likely to die, in their first year of life than normal-weight babies (March of Dimes, 2011).

After adjusting for birth weight, the race-specific relative risks for babies born to mothers less than 16 years of age were still elevated from 11 to 40 percent, compared with babies born to mothers 25-29 years of age (Freede et al, 1987; March of Dimes, 2011).

Savings through Greater Collaboration

Georgia Family Connection (GFC) conducts ongoing research on the factors contributing to LBWB (GFC, 2010). GFC is a public-private nonprofit created and funded by the state of Georgia and investors from the private sector. GFC is a statewide network of 159 county collaborative organizations committed to improving the quality of life for children and families.

Recent findings from their Theory of Change workgroup indicate that although low birthweight has been on the rise in recent years, increases were smaller in Georgia counties with (GFC) collaborative organizations than in comparison with counties from other southeastern states (GFC, 2010; GFCP, 2011). Their research suggests that counties which targeted LBWB for at least two years had 50 fewer low-weight births than those that were not targeted (GFC, 2010). This equates annually to approximately \$725,000 in initial hospital cost savings, and \$3.7 million in total savings (GFC, 2010; GFCP, 2011). One implication which can be drawn from their research is that cost-savings are at least partially attributable to collaborative efforts (GFC, 2010). Each dollar that GFC invested in LBW returned more than three dollars in savings (GFC, 2010).

Definition of Terms

Cell phone. A cell phone (also known as a cellular phone, mobile phone or a smart phone) refers to a device that can make and receive telephone calls and send and receive text messages.

Cell phone texting. Text messaging, or texting, refers to the exchange of brief, written text messages between mobile phones or a computer network. Text messages are typically less than 160 characters long.

Department of Health and Human Services (HHS). The United States Department of Health and Human Services (HHS) is a Cabinet department of the United States government with the goal of protecting the health of all Americans and providing essential human services. Its motto is "Improving the health, safety, and well-being of America". HHS funds the vast majority of maternal and child health related grants. HHS is the agency that would fund the Text4Teens grant proposal.

Healthy Mothers, Healthy Babies Coalition of Georgia (HMHBGA). Founded in 1973, is a member of National Healthy Mothers, Healthy Babies, based in Washington, D.C. their mission is to improve access to healthcare for Georgia's women and children. HMHBGA advocates for improved preventive and curative health services and programs for women, children and families. HMHBGA serves State of Georgia communities through the PowerLine, Georgia's state-wide, toll-free, bilingual telephone information

and referral line for free and reduced-cost healthcare services. HMHBGA is Georgia's strongest state-wide voice for improved access to healthcare and improved maternal and child health outcomes. PowerLine is funded by the Georgia Department of Public Health.

Healthy Start (HS). Healthy Start refers to the Health and Human Services Healthy Start Initiative. HS provides funds to local agencies to promote health education and interconception care for women who are at risk for poor perinatal outcomes. At-risk women include racial or ethnic minorities, immigrants, or those with limited education or income. Healthy Start requires that the local programs provide women with support and education on smoking, sexually transmitted diseases, preterm labor, child sleeping positions, substance abuse prevention, and other risk factors or behaviors. Services are provided to women prenatally and are intended to continue for two years following delivery. Healthy Start encourages using a multidisciplinary team to provide comprehensive case management but does not have specific education or experience requirements for staff members.

Healthy People 2010. Healthy People 2010 refers to the nationwide health promotion and disease prevention plan started in 2000 by the United States Department of Health and Human Services that was to be achieved by the year 2010. Healthy People 2010 objectives include: physical activity; overweight and obesity; tobacco use; substance abuse; responsible sexual behavior; mental health; injury and violence environmental quality. The campaign identifies six major factors (Social Identities) that contribute to

disparities in the health of Americans including gender, race or ethnicity, education or income, disability, geographic location, and sexual orientation.

Low Birthweight Baby (LBWB). Low birthweight refers to babies, who are born weighing less than 2,500 grams (5 pounds, 8 ounces). In contrast, the average newborn weighs about 7 pounds.

Overall Impact Score. Refers to the HHS/NIH grant score where reviewers provide a single overall impact score to reflect their assessment of the likelihood for the project to exert a sustained, powerful influence on the research field(s) involved.

Overall Significance Score. Refers to the HHS/NIH grant score where reviews provide a single, overall score reflecting significance. Significance is judged by answering the following questions: Does the project address an important problem or critical barrier to progress in the field? If the aims of the project are achieved, how will scientific knowledge, technical capability, and/or clinical practice be improved? How will successful completion of the aims change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field?

PowerLine. (See Healthy Mothers Healthy Babies Coalition of Georgia.) PowerLine refers to Georgia's only bilingual toll-free telephone hotline that continues to connect low income families to the appropriate channels they need to receive healthcare in their communities. Through the PowerLine, consumers can obtain referrals from Georgia's

most extensive database of public health providers and facilities. Included in this database are physicians and clinics accepting Medicaid, reduced fees, low cost fees and also houses a number of free clinics and providers. The PowerLine number is 1-800-822-2539.

Preterm Birth. Babies born between 37 and 42 completed weeks of pregnancy are called full term. Babies born before 37 completed weeks of pregnancy are called preterm or premature. Full term pregnancies last approximately 40 weeks.

Scored Review Criteria (SRC). The HHS/NIH issued enhanced grant review criteria for evaluating the scientific and technical merit of grant applications, research grants, and cooperative agreements. SRC consists of a nine-point scoring system. The lower the number the higher the score.

Smart phone. (See cell phone). Smart phone refers to a high-end mobile phone that combines the functions of several electronic devices and a mobile phone. Some models also have portable media players, cameras, and high-resolution touch screens, Web browsers that can access, and properly display Web pages. Definitions can vary since many phones that are considered feature phones today can have capabilities that exceed those of phones that had been promoted as smart phones in the past.

Social Media. Refers to the use of Web-based and mobile technologies to turn communication into an interactive dialogue. Text messaging programs and other social media tools are intended to be part of a larger, integrated health communications program

SMS Texting. Short Message Service (SMS) is a text messaging component of mobile communication systems. SMS allows the exchange of short text messages between mobile phones and other devices. Message length cannot exceed 160 characters. SMS text messaging is the most widely used data application in the world, with 2.4 billion active users, or 74% of all mobile phone subscribers. The term SMS can be used as a synonym texting.

Very Low Birthweight Baby (VLBWB). Refers to babies, who are born weighing less than 1,500 grams (3 pounds, 4 ounces). The overall rate of very low birthweight babies in the U.S. is increasing. African-American babies are twice as likely to have very low birthweight as Caucasian babies. Teenage mothers (especially those younger than 15 years old) have a much higher risk of having a baby with very low birthweight.

Text4baby (T4B). Text4baby, a free health education text messaging service for pregnant women and new moms. Text4baby was developed by Voxiva, Inc. Its primary audience is medically underserved women. Pregnant and new moms who sign up for Text4baby (by texting BABY or BEBE to 511411) receive three or more text messages per week containing health tips and resources.

Text4Teens (T4T). T4T is a name that has been coined to title the program outlined in this thesis and grant proposal. T4T conceptualizes that Voxiva's Text4baby and text2quit offering can be further customized with information meaningful for pregnant teen audiences in the areas of prenatal care, nutrition, and quitting smoking. Additionally T4T messages will leverage content and connections to the HMHBGA PowerLine, the August area HS program, and other partnering applicants. The T4T grant proposal concept will be made freely available to all public health entities.

Text2quit (T2Q). Refers to the product developed by Voxiva, Inc, which uses text messages to have users quit smoking. T2Q uses mobile technology combined with evidence-based best practices to support quitting. T2Q also incorporates Surgeon General's smoking cessation guidelines and the key lessons from peer-reviewed studies demonstrating effectiveness in helping smokers quit via mobile phone.

Voxiva, Inc. Refers to the company based in Washington DC that provides public health agencies a novel approach to improving their citizen's health and wellness through our mobile-based solutions. Voxiva works with Health Departments and Ministries to incorporate their solutions into public health programs to educate, interact, and engage their citizens. Unlike device or platform specific approaches, Voxiva's solutions are enabled for most mobile phones, resulting in the broadest reach across your entire population. Texting is especially important for underserved communities that might not have easy and persistent access to the latest technologies. Voxiva has a range of solutions for many of the most common conditions that can be customized to specific needs. These

interactive solutions incorporate educational messages, health risk assessments, interactive surveys, and reminders.

Chapter I – Part A Summary

Georgia's teen pregnancy and LBWB occurrences are among the highest in the U.S. and worse than most of the developing world. Low birthweight babies experience significantly more morbidity and mortality, life-long learning disabilities, chronic diseases, and other expensive health problems. The impacts of low birth weight are not just to the babies—the ongoing consequences for teen mothers include health, economic, future pregnancy problems, and limitations to social and economic participation. The costs are in the millions of dollars over the life of each affected child. All of the factors mentioned above contribute to serious, complex, social and high-risk medical problems and perinatal health disparities, including smoking, teen pregnancy, pre-term and LBWB occurrences. If Georgia fails to act, the mounting burden of real and social costs will cripple the ability of public health to manage this problem. Failure to take action will add millions of dollars to state public health budgetary needs and future health care costs.

CHAPTER I

PART B: TEXT4TEENS (T4T) INTERVENTION

Introduction

Chapter I - Part A established that teen pregnancies resulting in low birthweight babies (LBWB) are a significant and costly problem for United States (U.S.) and the State of Georgia. Georgia's teen pregnancy LBWB incidence rate is among the highest in the U.S. and worse than most of the developing world. A large portion of LBWB occurrences may be preventable. The likelihood of teens (and all women) giving birth to LBWB can be greatly reduced if they:

- receive early and regular prenatal care;
- have adequate prenatal nutrition; and,
- do not smoke.

Chapter I – Part B, this section, introduces the contents of Appendix A. Appendix A is a grant proposal entitled Text4Teens (T4T). The Appendix A, T4T Grant Proposal should be read in its entirety. The supplemental information contained in this section is designed to provide insights into the key elements of the proposal and underlying thought processes. Readers not familiar with the use of social medial and cell phone text messaging may desire to also review the materials of the Chapter II Literature Review.

The purpose of the T4T public health grant proposal is to address the incidence LBWB occurrences among pregnant teens in Georgia. T4T is designed to be an innovative program. The program uses cell phone texting to connect pregnant teens with information and services. The program also integrates traditional public health intervention programs such as the Healthy

Mothers Healthy Babies Coalition of Georgia’s PowerLine, the in-person sessions offered by the Healthy Start program through a social media approach—cell phone text messaging. T4T targets the three primary causes of teen pregnancy low birthweight baby occurrences—inadequate maternal health, poor nutrition, and smoking. T4T delivers information and connections to programs and services that will assist them in making and sustaining healthy choices and will support alterations in behaviors, as needed. The program outcomes include improved teen utilization of available social services; strengthened ties and collaboration between state and local prenatal care and prenatal nutritional services; and, improved birthweight outcomes for pregnant teens. It is designed to be a three (3) year initiative tied to the Healthy Start program of McDuffie County, Georgia. The total program cost is projected to be \$600,000.00.

Major Components

The major components of the Text4Teens program are threefold:

- 1) text-based prenatal care and nutritional support designed to improve prenatal health and nutrition;
- 2) text-based smoking cessation support designed to aid quitting smoking and provide access to services which can assist smoking cessation during pregnancy; and,
- 3) linkages to information and services available traditionally through the exiting HMHB PowerLine and in-person services available through the McDuffie Country Healthy Start program.

As explained below, new proven and promising science and technology is featured in the development of the T4T proposal. This science and technology represents an important

innovation for public health programs—the use of social media and mobile phones to connect the community to information and services. The effectiveness of current teen pregnancy/low birth weight intervention strategies appear to have reached a plateau and LBWB incidence rates are increasing despite Healthy People 2010 goals. While the best approaches may be to improve the health of a woman or teen before she becomes pregnant; once pregnant, access to information and services becomes even more imperative. Relatively small changes in behavior can have large outcome effects (Pan, 2005; PPN, 2011).

The T4T grant proposal leverages the success of the award winning Text4baby program. The grant tailors specific components of Text4baby to be more meaningful to pregnant teens. In a number of respects, as discussed in the literature review, social media—cell phone text messaging may be more effective for teens than any other communications mechanism (Pew, 2010a, b; Preston et al, 2011).

T4T also seeks to combine two proven cell phone texting interventions --Text4baby and Text2quit in combination with other existing traditional program. The combination of these two programs along with modifications to allow greater integration of traditional existing programs such as the State of Georgia's PowerLine offers a unique opportunity to explore cost effective expansions of needed services. T4T, when combined with connections to services offered through the State of Georgia's Power Line, represents an important evolution for making communications relevant to teen audiences.

Text4baby Leveraging New Science

In 2010, the National Healthy Mothers Healthy Babies Coalition, the White House Office of Science and Technology, and a broad array of public and private partners launched a one of a

kind program called Text4baby (HHS, 2011f). Text4baby is a service that provides pregnant women and new moms with free text messages sent to their cell phones each week (Voxiva, 2011d). Text4baby is designed to give pregnant women and new moms critical health information to help keep themselves and their babies healthy (HHS, 2011a, f). These messages contain information on pregnancy and baby care health tips, birth defects preventions, car seat safety, drugs and alcohol, and a number of other areas. These messages are timed to a woman's due date (HHS, 2011a f) 2011). Women who sign up for the program provide their due dates (if pregnant) or their baby's birthday (if a mother of an infant under a year) and receive three text messages a week (Voxiva, 2011d). The messages, which were developed by Voxiva in coordination with CDC and other governmental health agencies, cover a wide range of topics relating to prenatal health and infant health, and are coordinated with the month of pregnancy or baby's age. Message contents can be in English or Spanish. Text4baby has some subscribership in all 50 states and in Washington, DC. Over 131,000 have enrolled in Text4baby (Voxiva, 2011d). Ninety-six percent of enrollees report that they would recommend the service to a friend (Voxiva, 2011d). An important feature of this service is that Text4baby messages can also connect women to local prenatal and infant care services and other resources. HHS is a partner in this innovative effort.

Mobile phones can play a significant role in health care by delivering information directly to those who need it most (HHS, 2011a, f). Text messaging can deliver the right health information at the right time to pregnant women and new moms, and can be particularly helpful in reaching underserved populations. While not everyone has access to the Internet, 90 percent of Americans have a mobile phone (Voxiva, 2011c). Text messaging is disproportionately higher among women of childbearing age and minority populations who face higher infant mortality

rates. In studies from around the world, mobile health services like Text4baby have demonstrated the ability to help improve health outcomes (Voxiva, 2011c). Text4baby is made possible through a broad, public-private partnership that includes government, corporations, academic institutions, professional associations, tribal agencies and non-profit organizations. Founding partners are HMHB, Voxiva, CTIA - The Wireless Foundation and WPP. Johnson & Johnson is the founding sponsor, and premier sponsors include WellPoint, Pfizer and CareFirst BlueCross BlueShield. U.S. government partners include the White House Office of Science and Technology Policy and the Department of Health and Human Services. The mobile health platform is provided by Voxiva and free messaging services are provided by participating wireless service providers (HHS, 2010a). As an innovative social media program, Text4baby was honored with a U.S. Department of Health and Human Services (HHS) *HHSinnovates* award, presented by HHS Secretary Kathleen Sebelius (HHS, 2011a; Voxiva, 2011a). It is an innovation that is both low-cost and effective in helping to close an important information gap for pregnant women and new mothers (HHS, 2011a).

Text4baby Program Overview

The Text4baby social media, short message service (SMS), texting program was created by Voxiva, Inc., to promote maternal and child health (CDC, 2011e). Each year in the U.S., more than 500,000 babies are born prematurely and an estimated 28,000 children die before their first birthday, signifying a national public health crisis. The infant mortality rate in the U.S. is one of the highest in the industrialized world. Low birthweight is often cited as being a leading cause of infant mortality. The Text4baby program can be leveraged by local, state, and national agencies including corporate, non-profit, and governmental agencies to address this problem. Text4baby

specifically targets improvements in maternal and child health and nutrition—key factors in LBWB occurrences.

Text2quit

Text2quit is an innovative cell phone based program that uses evidence-based best practices to help a person through the difficult stages of quitting smoking (Voxiva, 2011c). Developed in partnership with smoking cessation and health communication experts from the George Washington University through a grant from the National Cancer Institute, the service has gone through rigorous user testing over an 18 month development cycle (Voxiva, 2011c).

Text2quit incorporates key lessons learned from published studies that have demonstrated effectiveness in helping smokers quit by mobile-based interventions (Voxiva, 2011c).

Text2quit leverages evidence-based best practices to help a person through the difficult stages of quitting smoking. Developed in partnership with smoking cessation and health communication experts from the George Washington University through a grant from the National Cancer Institute, the service has gone through rigorous user testing over an 18 month development cycle (Voxiva, 2011c). The features of Text2quit include key lessons learned from published studies that have demonstrated effectiveness in helping smokers quit via mobile-based interventions (Voxiva, 2011c). Key features include:

- Four month program incorporating over 400 text-based messages;
- Multi-channel: SMS/text, email, and personal Web portal;
- Customized and personalized to an individual's health risk assessment and expected quit date;
- Interactivity with the system through educational tips, surveys, games, and Rx selector;

- Supports multiple quit attempts based on individual response and feedback;
- Personal Web portal including access to resources and charts to monitor one's smoking trends;

Text 2quit establishes a quit date, checks individual status and progress, provides reinforcements, access to services, and other assistance shown to be effective (Voxiva, 2011c).

As illustrated below, text2quit supports both a “pre-quit” and a “post quit” phase.

Figure 3: Illustration of text2quit Features

Frequent Status Check on Tobacco Use

- In pre-quit phase, users are asked to track their daily cigarette intake against a personal goal to cut down their intake before their quit date.
- In post-quit phase, users are asked to report whether they have stayed smoke free. If users relapse during the post-quit phase, they are encouraged to go back to being smoke free or to set a new quit date.



Source: Voxiva (2011c)

In connection with its evidence based features for Text2quit includes: communicating the Risks and Rewards associated with smoking; calculating the financial and life expectancy consequences to the smoker; tracking the benefits after quitting in both dollars and life years saved; providing practical education and social support--text2quit provides education to help users during their quitting process and provides practical advice timed around their quit date; a virtual “QuitPal” that provide users with a source of social support; personalized motivation--

users are encouraged to list their own personal reasons for quitting; medication support—information on FDA-approved medications and assists them in selecting a medication and educates them to use it properly; and, counseling resources—including call free quit lines and resources (Voxiva, 2011c).

Improving Access to Health Information and Services

The Healthy Mothers Healthy Babies Coalition of Georgia (HMHBGA) is an example of an organization that keeps pace with both the trends of public health as well as science and technology. HMHBGA has taken positive action to use social media to extend and make more effective, its traditional offerings. The National Healthy Mothers, Healthy Babies Coalition of Georgia (HMHBGA) was an early adopter of Text4baby and is the only coalition of its kind which acts as a catalyst for change by creating partnerships among community groups, nonprofit organizations, professional associations, businesses and government agencies. The Coalition promotes optimal health for mothers and babies, and works to strengthen families and build healthy communities (HMHBGA, 2011).

HMHBGA provides an essential public health service. It connects individuals with meaningful information and services. Through PowerLine, Georgia's only bilingual toll-free telephone hot line that connects low income families, teens, and others requiring information to the appropriate channels they need to receive healthcare in their communities (HMHBGA, 2011). Through the PowerLine, consumers can obtain referrals from Georgia's most extensive database of public health providers and facilities (HMHBGA, 2011). Included in this database are physicians and clinics accepting Medicaid, reduced fees, low cost fees and also houses a number of FREE clinics and providers (HMHBGA, 2011). The PowerLine also tracks data that

policymakers have relied on for years as important decisions are being made and considered. through the PowerLine, positive change in the maternal child health arena has been documented, legislated and changed. HMHBGA is actively exploring the future. HMHBGA recognizes that despite public awareness, community-based programs remain few and under-funded to meet the complex needs of women and teens in Georgia. Call centers are but one way to provide these services. Social media and other innovations must be used for Georgia to meet the needs of its citizens.

Text4Teen Target Audience

The general target populations for the Text4Teens intervention program are communities with entrenched problems, such as poverty, limited infrastructure, and minimal resources. For this specific grant proposal, the target population is pregnant teens between the ages of 13-19 contained in the target community of McDuffie County, Georgia. As described more fully in the grant proposal (Appendix A), McDuffie County comprises 266.3 square miles, making it the 117 of the 159 counties in Georgia (GA) in terms of land area. Its population is 21,743, making it the 82nd most populated Georgia County (GA County Guide, 2007). McDuffie County was selected as a representative case study for Georgia for pregnancies and pregnancy outcomes (Mobley, 2010, 2011).

Fifty-two percent of the population is female; of those, 47.9 percent (10,415) are women of reproductive age (WRA, 10-44 years) (Mobley, 2010). From a racial/ethnic perspective, the population is 60.8 percent white (12,905), 37.5 percent black (7,966), and 1.7 percent other races (360) (U.S. Census, 2000). About 1.3 percent (278) is Hispanic. Although whites are a large majority of the population, blacks have the fewest health-related resources. Eighteen percent of

the population is below the Federal Poverty Level (Mobley, 2010). Poverty affects blacks disproportionately--(35.1 percent; 8.1 percent white) (Mobley, 2010).

Recruitment

Pregnant teens will be both recruited and referred to the T4T program. Public relations and community awareness campaign will be conducted on an annual basis during the three year program period. Additionally, HMHBGA personnel, as well as, local HS personnel registered nurses, case managers, and associated personnel will be trained regarding the program components and enrollment. This team will promote the use of T4T, and they will actively recruit and suggest enrollment for pregnant teens. The T4T subscription number will be made widely available.

Enrollment

Enrollment and program registration for T4T will be designed to be very easy and can be done directly from the cell phone. For T4T, a user would type a simple word like TEEN to 511411, and follow the reply message prompts. Similar to Text4baby, teens would enter information relative to the baby's due date or the baby's birthday. They would also respond to a short series of questions regarding their smoking status and other factors. Once registered, the teen user would receive free messages with educational tips about their pregnancy and caring for themselves on a daily basis. Once their profile is established through interactive texting, they will receive around 7-to-12 SMS text messages each week, timed to their due date or baby's birth day and/or their smoking situation—similar to Text4baby. These messages will also provide

information on the HMHBGA PowerLine and HS programs. T4T will be completely free to participants who neither pay to send or receive messages.

Upon enrollment, each pregnant teen participant will answer a series of questions to self-qualify for services in the McDuffie County area. After self-qualification, the nature of the information and services they receive may vary depending upon their self-reported circumstances. Depending upon their circumstances, they may be asked to meet periodically with an HS representative; however, participation in the program is not dependent upon these meetings.

Service utilization tracking will be accomplished through cell phone use and self reported SMS survey responses.

Community Awareness Campaign

To market this program, existing McDuffie county, state, and federal services, including public health, schools, physicians' offices, the hospital, etc., will be made aware of the T4T programs interest in enrolling pregnant teens. The program will establish a T4T billboard in a prominent community area. The implementing agency will explain the Text4Teen program through personal staff contacts with each office, emails, and advisory and consortium community meetings. The implementing agency will establish with the help of Voxiva a Web presence that will encourage enrollment. The implementing agency will also use emails to tertiary hospital and clinics to promote knowledge about how easy it is to enroll.

Overcoming Barriers to Participation

As noted in Appendix A, overcoming potential barriers to participation will be accomplished by using community partnerships, outreach, education, and case management. The Text4Teens program will be added as a new service to the existing HMHBGA materials and PowerLine referral system, as well as the materials of the Healthy Start (HS) materials in McDuffie County, Georgia area. In addition to HS and HMHBGA participation, McDuffie County registered nurse case managers, who already provide pregnancy counseling will demonstrate and assist enrollment for interested teens.

The T4T program will also seek to address physical barriers to participation including transportation. Transportation is a major barrier which will interfere with attending health education sessions, making and keeping appointments. The grant provides funding so that the implementing agency can make arrangements to support the in-county transportation by county-funded services.

The T4T program can make teens aware of services that they are not currently aware of including PowerLine referrals and HS.

The long-term relationship of HS professional staff with participants will enhance informational and emotional support of participants. HS will encourage participants to examine other transportation options such as carpooling with other HS clients or with other planned trips to grocery, and so forth.

Ethical Considerations

The program commits to conducting its research consistent with HHS and Emory University guidelines for the conduct of research involving human subjects. All participants will

provide specific consent to their participation. Participant data will be deidentified for protection purposes. Participants can withdrawal from participation at any time for any reason.

The proposed T4T program will adhere to all related HHS directives. T4T will conduct ethical research and the rigorous evaluation of new approaches in science, health care, public health, and human services that reward efficiency, effectiveness, and sustainability (HHS, 2011).

Call for Innovations

As the HHS Maternal and Child Health Bureau celebrates its 75th Anniversary, this is an appropriate time to review and recognize the Nation's many successes in maternal and child health (MCH); as well as to identify health conditions and issues where challenges remain (HHS, 2011). This is also an appropriate time to use new scientific knowledge and approaches to promote better health for all, and to decrease health disparities (HHS, 2011b).

The question of where to focus public health efforts and resources in order to have the greatest possible impact on preventing low birth weight is important, timely, and complex. Since the U.S. lacks a single, unified health care system or approach, public health must be willing to keep pace and leverage the latest technologies to provide information and connection to services which hold promise for promoting better health outcomes (GADPH, 2008; HHS, 2010). T4T represents an innovation consistent with the spirit of these goals.

Chapter I – Part B Summary

Part B outlined the details an innovative program entitled Text4Teens (T4). Part B introduced the Appendix A, Text4Teen Grant Proposal. The details associated with the proposed T4T program were reviewed.

The purpose of the T4T grant proposal is to reduce the incidence of low birthweight baby occurrences among pregnant teens in McDuffie County, Georgia. The proposed T4T program addresses the three primary causes of teen pregnancy low birthweight baby occurrences-- smoking, poor maternal health, and poor nutrition. T4T uses cell phone texting to connect teens to information and community services. The program outcomes include improved teen utilization of available social services; strengthened ties and collaboration between state and local prenatal care and prenatal nutritional services; and, improved birthweight outcomes for pregnant teens. Low cost, widely-available social media can empower access to information and services. Part B outlined how cell phone texting can be combined with traditional services to leverage and extend their combined features. T4T is designed to be a three-year initiative with a total cost of \$600,000.

A major premise of this thesis is that social media approaches and in particular cell phone texting can be a powerful tool to help “on ramp” teens towards health information, services, behavioral changes, and other public health objectives. The evidence supporting this premise is reviewed in Chapter II: Literature Review.

CHAPTER II: LITERATURE REVIEW

Introduction

This chapter provides a literature review concerning the use of social media (texting) as a mechanism for public health interventions. The purpose of the literature review was to substantiate the premise that the inclusion of mobile text messaging will help attain the best outcomes associated with the reduction of LBWB incidence. The results of the literature review constitute important inputs to the Text4Teens (T4T) grant proposal contained in Appendix A.

Text messaging, also known as SMS (short message service), is a technology for sending and receiving messages to and from cell phones and other handheld devices (Hill, 2009). The concept of sending text messages was generally developed in Europe during the 1980's (Hill, 2009). The key idea for SMS was to use the telephone system to transport text messages during time periods when no voice conversations were taking place. In order to make the SMS concept work, it was necessary to limit the length of the messages to 128 characters (later improved to 160 characters) so that the messages could fit into the existing telephone signaling formats (HILL, 2009). Once developed, the technology was made freely available to all telephone carriers. The first SMS message was sent in the United Kingdom on December 3, 1992 (Hill, 2009). The first text message was "Merry Christmas" (Hill, 2009).

Text messaging has evolved significantly since 1992. Approximately 2.2 trillion text messages were sent in the U.S. in 2010 (Hill, 2009). Text messaging is particularly prevalent among teenagers, with nearly 90 percent of teenagers who have cell phones reporting that they use text messaging (with >50 texting daily) (Hill, 2009). In addition, among a sample of low-income households on Medicaid, 80 percent of patients report texting regularly.

As reflected below, a growing body of evidence from peer-reviewed journals and empirical field studies suggests that the use of mobile phone text messaging can be effective in improving health behaviors and health outcomes. Accordingly, the Department of Health and Human Services (HHS) has been actively exploring means to capitalize on the rapid proliferation of mobile phone technology and platforms, such as text messaging, to develop programs and/or partnerships with the overall aim of improving public health--including the existing Text4baby program described in Chapter I, Part B.

Methodology

The literature review consisted of a comprehensive electronic database search of relevant peer reviewed journal publications including such things as Medline, PubMed, and the American Public Health Association. Additionally, relevant government publications of HHS, CDC, NIH, as well as non-profit “think tank” publications including RAND, Vital Wave Consulting, Vodafone, and the Pew Foundation were also included. Publications and studies were generally limited to the past five years and published in English. Initial searches included a combination of the following search terms: texting, messaging, text messaging, cell phones, SMS, technology, health promotion, healthy behavior, and behavior change. This literature review strategy produced a large number of articles. Final searches were narrowed by adding the terms: texting, text messaging, teens, adolescences, and additionally, adding the term literature reviews.

Comprehensive literature reviews and Meta analytical studies were preferred to descriptions of separate studies as they were best able to represent the overall weight of evidence in this area.

In the final analysis, ten articles were selected which generally summarized the substantial foundation of evidence around the effectiveness of texting supporting public health interventions.

Relevant Studies

Cole-Lewis and Kershaw (2010), Text Messaging as a Tool for Behavior Change in Disease Prevention and Management. Cole-Lewis and Kershaw (2010) reviewed previously published data to assess the potential for mobile phones to be used in disease management and prevention. Their review summarized data from 17 articles representing 12 studies (five focused on disease prevention and seven focused on disease management). The authors examined the methodology used in each study and drew conclusions on the effectiveness of using mobile phones text messaging to change health behaviors. Cole-Lewis and Kershaw (2010) noted that mobile phone text messaging is a potentially powerful tool for behavior change because it is widely available, inexpensive, and instant. Their research provides one of the few systematic reviews of behavior change intervention research for disease management and prevention delivered through text messaging. Only those interventions using text message as the primary mode of communication were included in their review. Methodological issues and gaps in the literature were highlighted, and recommendations for future studies were provided.

Cole-Lewis and Kershaw (2010) noted that there are a number of flaws in published research. The results of their review indicated that there are many ways in which texting can be used in the health field, including disease and symptom monitoring, medication and appointment reminders, test delivery, data collection and remote diagnosis. Many of their studies concerned geographies outside the U.S. Mobile phones have had a considerable impact in developing

countries. Communication by mobile phone is less expensive than alternative options such as landline telephones or standard Internet. Across the world (in both developing and developed countries), people are gaining access to the Internet through mobile phones. For many, the mobile phone is currently the primary mode of accessing the Internet, which the Pew Internet & American Life Project suggests will be the case for the entire world by 2020. Cole-Lewis and Kershaw (2010) noted that in a recent survey, 23 percent of Americans reported accessing the Internet through their mobile phone on a typical day, reflecting a 64 percent increase from 2007. Mobile technology is also increasingly used to promote health and prevent disease.

Mobile health (mHealth) is the use of mobile phone technology to deliver health care. Mobile phone technologies that have been used for mHealth include, but are not limited to, text messaging, video messaging, voice calling, and Internet connectivity. mHealth innovations have been developed that address an array of issues such as improving the convenience, speed, and accuracy of diagnostic tests; monitoring chronic conditions, medication adherence, appointment keeping, and medical test result delivery; and improving patient-provider communication, health information communication, remote diagnosis, data collection, disease and emergency tracking, and access to health records. Text messaging is suitable for behavior change interventions because it allows for in-the-moment, personally tailored health communication and reinforcement.

Cole-Lewis and Kershaw (2010) specifically indicated that text messaging can be used as a way to deliver prevention components based on theoretical models such as the theory of planned behavior and the health belief model. Therefore, it can be viewed as an alternative approach to program delivery instead of personal or group-delivered programs. However, the process of text messaging itself may tap important constructs (e.g., cues to action, reinforcement,

social support) central to many behavioral theories even when the developer of the program did not explicitly base the content of the message on a theory. Studies have found that periodic prompts and reminders are an effective method to encourage and reinforce healthy behaviors. Therefore, increased communication, accountability, and reinforcement created by text messaging may increase the likelihood of remembering the changes that one should be making. Eight of the studies they reviewed found evidence supporting text messaging as a tool for positive behavior change, and useful for promoting positive change in health behaviors. Cole-Lewis and Kershaw (2010) indicated, however, that text messaging should not be considered a stand-alone model for behavior change but rather as a tool by which behavior change methods can be administrated. In their overall conclusions, Cole-Lewis and Kershaw (2010) indicated that there is ample evidence that text messaging can have an impact on health behaviors and disease management and prevention, it is important to continue to research in order to fill in the knowledge gaps. In particular, more research is needed to understand the mechanisms of change in order to build upon the way that text messaging works for behavior change.

Preston, Walhart, and O'Sullivan (2011). Prompting Healthy Behavior via Text Messaging in Adolescents: Literature Search. Similar to Cole-Lewis and Kershaw (2010), Preston et al (2011) reviewed results from research studies and pilot studies measuring positive health behaviors in response to SMS interventions. Unlike Cole-Lewis and Kershaw, it should be noted that several of the studies they reviewed did not show uniformly significant results.

Preston et al (2011) noted that in an experimental pilot study evaluating SMS feasibility and efficacy in smoking cessation, targeted smoking cessation support messages--the results showed no differences in smoking cessation between those receiving text messages and those without SMS support, but did reveal high user acceptance among participants in the intervention

groups. Although there was no significant reduction in smoking prevalence among the intervention groups, high acceptance and user rates suggested that SMS is a communication and information delivery tool appealing to young adults.

In their review of another pilot study involving diabetes treatment compliance, Preston et al (2011) noted considerable effectiveness; however, effect diminished over time. In this study, automated reminders were sent by text messaging to support adolescent and young adult patients with diabetes. Participants were randomized into groups to receive either SMS or e-mail reminders to check and enter blood glucose (BG) levels. Results at one month into the study showed that those receiving text messages reported their BG levels twice as often and more quickly (in less than 30 minutes) than those in the e-mail group (as an aside, female users were more likely than male participants to use either communication device). By the third month, response levels dropped in both groups: less than one third of SMS participants were still submitting BG at the end of the third month, and only ten percent of the original participants in the e-mail group were doing so. Additionally, there was no significant difference in glycemic control between the two groups or reduction in HbA1c levels of either group noted at the end of the study. Outcome results from the randomized controlled trial to evaluate the effectiveness of text messaging to increase physical activity in adolescents with type I diabetes also reflected inconsequential influence. The 12-week study compared results of a control group who received usual diabetic care with the intervention group who received text messages reminding them to engage in activity and wear a provided pedometer so researchers could measure activity levels. Adherence was low, with 37 percent of participants not wearing their pedometer by the end of the 12 weeks, and there was decreased activity at follow-up (though not significant) in both groups (Preston et al, 2011). Additionally, there were no significant improvements in glycemic

control or other outcome measures, such as quality of life, blood pressure, or BMI (Preston et al, 2011).

In their review of another study involving pediatric transplant patients, Preston et al (2011) found that SMS improved adherence and outcomes. A prospective research project aimed to improve therapy adherence among pediatric and young adult liver transplant patients using text messaging. The median age of study participants was 15 years, with a range of 1 to 27 years. Participant charts were reviewed to assess rejection episodes one year prior to the study and then again during the year of the study. At the study commencement, participants determined when they wanted their text message alerts to arrive based on their individual medications. During the study, a two-way SMS communication system included a medication alert and patient response indicating that the medication was taken. If participants did not respond within an allotted time, a text message was then sent to the designated caregiver determined at the study onset. Because many of the participants were young, 30 percent were given their medications by a caregiver throughout the study; however, self versus caregiver medication administration results were not statistically significant (Preston et al, 2011). Research data showed acute episodes of cellular rejection decreasing from 12 to 2 during the study year (Preston et al, 2011). Furthermore, results for blood tests to determine rejection risk showed a significant reduction in mean standard deviation, indicating improved medication adherence and decreased variance (Preston et al, 2011).

Preston et al (2011) concluded that enhancing healthy behaviors and improving disease management adherence are of utmost importance in ensuring optimum health outcomes. As such, determining the most effective and efficient means to influence patient behavior has been and will continue to be an ongoing area of research. As affordable cell phone subscription expands

worldwide, countries continue to embrace mobile technology as a means to discretely promote healthy behaviors in various patient populations. The on-the-go, discrete nature of mobile SMS is uniquely applicable to adolescent and young adult populations who are not only savvy users of SMS but who also live and make decisions in the moment (Preston et al, 2011).

Current literature presents mobile technology as a portal for interactive, realtime, individualized health promotion, and research has supported text messaging as an efficient health information delivery device and reminder tool with acceptability and high use in adolescent and young adult populations (Preston et al, 2011). However, the research stops short of concluding that mobile SMS interventions consistently influence healthy behaviors in adolescent and young adult populations: In fact, conclusive evidence remains scant, and results are varied (Preston et al, 2011).

Future research should establish the most effective number of messages, the type and timing of messages, and the length of SMS interventions for maximum benefit.

Another area of research consideration is how the individual's readiness for change affects the effectiveness of SMS in influencing healthy behaviors.

Finally, research assessing the realtime, portable nature of mobile technology to promote healthy behaviors in adolescent and young adult populations should be compared with other technologies such as Web-based programs, e-mail, and other SMS technologies such as Twitter (Preston et al, 2011).

Pew Internet and American Life Project (Per, 2010a; 2010b; 2010c; 2011). In 2010, The Pew Internet and American Life Project reported that the use of mobile phone for text messaging had become the centerpiece for teenage communication in the U.S. (Pew, 2010a, b). Daily text messaging among American teens has shot up from 38 percent of teens texting friends

daily in February, 2008, to 54 percent of teens texting daily in September 2009 (Pew, 2010a, b). Teens are sending and receiving enormous quantities of text messages. The Pew Internet and American Life Project indicates that half of teens send 50 or more text messages a day, or 1,500 texts a month, and one in three send more than 100 texts a day, or more than 3,000 texts a month. Most importantly, teen age girls 14 to 17 years of age average 100 messages a day for the entire cohort (Pew, 2010a, b). The Pew report concludes that “Text messaging has become the primary way that teens stay in touch, surpassing face-to-face contact, email, instant messaging and voice calling as the go-to daily communication tool for this age group” (Pew, 2010c).

The overall use of mobile technologies is growing exponentially (Pew, 2010a, b, c):

- In 2010, 91 percent of U.S. adults subscribed to a mobile service.
- Text message volume is now estimated to be 1.56 trillion (SMS) text messages—this is up from 81 billion in 2005.
- African Americans (48 percent) and Latinos (47 percent) are accessing the internet with handheld devices—since they are more affordable and more portable than personal computers.

While public health programs have started to leverage the use of social media into public health practice, the area of social media is advancing so rapidly that it is virtually impossible to characterize the effectiveness of all social media in all situations. The use of social media modalities is so new that there is an overall paucity of scientific information available to public health practitioners. Fortunately, however, the information that is available, suggests that mobile phone text messaging, in particular, provides a new and profoundly important mechanism for the communication of health information. The literature also suggests that there may some best practices which may aid leveraging these tools into the mainstream of intervention activities.

Kaiser Family Foundation Study (Kaiser, 2010). GENERATION M2 Media in the Lives of 8- to 18-Year-Olds. The Kaiser Family Foundation conducted a series of studies to foster understanding about young people's media use: which media they use, which they own, how much time they spend with each medium, which activities they engage in, how often they multitask, and how they differ from one another in the patterns of their media use. The goal was to provide a more solid base from which to examine media's effects on children and to help guide those who are proactively using media to inform and educate America's youth. The study noted that understanding the role of media in young people's lives is essential for those concerned about promoting the healthy development of children and adolescents, including parents, pediatricians, policymakers, children's advocates, educators, and public health groups.

The study is one of the largest and most comprehensive publicly available sources of information on the amount and nature of media use among American youth. The report is based on a nationally representative survey of 2,002 3rd–12th grade students, ages 8–18, including a subsample of 702 respondents who also volunteered to complete seven-day media use diaries (Kaiser, 2010). This is the third wave in a series of studies by the Kaiser Family Foundation about media use among 8- to 18-year-olds (Kaiser, 2010). The survey sample included students from public, private, and parochial schools, as well as an oversample of African American and Hispanic students (Kaiser, 2010).

The study provided a number of insights into the behavior of eight- to eighteen-year-olds. Eight-to-eighteen-year-olds spend more time with media than in any other activity besides (maybe) sleeping—an average of more than 7½ hours a day, seven days a week (Kaiser, 2010).

With regard to mobile phones and media-- over the past five years, the proportion of 8- to 18-year olds who own their own cell phone has grown from about four in ten (39 percent) to

about two-thirds (66 percent). The transformation of the cell phone into a media content delivery platform, and the widespread adoption of the iPod and other MP3 devices, have facilitated an explosion in media consumption among American youth. In previous years, the proliferation of media multitasking allowed young people to pack more media into the same number of hours a day, by reading a magazine or surfing the Internet while watching TV or listening to music (Kaiser, 2010).

With specific regard to text messaging--in a typical day, 46 percent of 8- to 18-year-olds report sending text messages on a cell phone. Those who do text estimate that they send an average of 118 messages in a typical day. On average, 7th–12th graders report spending about an hour and a half (1:35) engaged in sending and receiving texts. (Kaiser, 2010)

The total amounts of time 8- to 18-year-olds spend reading hard copies of books, magazines, and newspapers for pleasure has decreased by about five minutes a day (from an average of 43 minutes daily in 1999 and 2004 to 38 minutes in 2009) (Kaiser, 2010).

Health and Human Services Text4Health Task Force (2011). In November 2010, HHS established the Department-wide Text4Health Task Force “as part of our commitment to promoting innovation at HHS” (T4H, 2011). The Task Force was charged with identifying ongoing initiatives and proposals for feasible, new projects which would deliver health information and resources to users' fingertips via their mobile phones. The Task Force conducted a comprehensive review of literature and research and concluded that mobile phones and other portable health information technologies offer unprecedented opportunities to improve the health of the U.S. population and reach traditionally underserved subgroups including rural communities, low-income groups, and ethnic minority populations (T4H, 2011). Mobile phone use, in particular, has proliferated at an astounding rate. As of December 2010, there were more

than 302 million wireless subscribers in the U.S. and an estimated five billion mobile cellular subscriptions worldwide (T4H, 2011). Currently, 85 percent of U.S. adults own mobile phones, with 17 percent of them accessing health information using their mobile phones. Ethnic minority groups are more likely to own a mobile phone and use mobile phones to access health information; 75 percent of teenagers own a mobile phone (T4H, 2011). Because health text messaging is relatively new, however, application of this technology has been limited to just a few health issues (T4H, 2011). The Task Force showcased HHS' role in encouraging and/or developing health text messaging and mobile health programs in the future noting that health text messaging and mobile health technologies offer significant potential for addressing HHS key priority areas (T4H, 2011).

CDC Social Media Tool Kit (2011). CDC reported that in the last several years, the use of Facebook, YouTube, mobile phone texting, Twitter, and other social media tools to disseminate health messages has grown significantly, and continues to trend upward (CDC Social Media Toolkit, 2011). Using social media tools has become an effective way to expand reach, foster engagement, and increase access to credible, science-based health messages. CDC has indicated that social media and other emerging communication technologies can connect millions of persons to:

- Increase the timely dissemination and potential impact of health and safety information.
- Leverage audience networks to facilitate information sharing.
- Expand reach to include broader, more diverse audiences.
- Personalize and reinforce health messages that can be more easily tailored or targeted to particular audiences.

- Facilitate interactive communication, connection, and public engagement.
- Empower people to make safer and healthier decisions.

In other words, integrating social media into health communication campaigns and activities provides health communicators new ways to leverage social dynamics and networks to obtain public health goals (CDC Social Media Toolkit, 2011).

A research literature review conducted by the CDC in 2010 as part of this tool kit, indicated that interventions delivered by text messages have positive 23 short-term behavioral outcomes (CDC Social Media Toolkit, 2011).

CDC provided a number of examples how texting applications are being used to support the broad mainstream of public health activities. Some of these examples including CDC's text messaging campaign which allows subscribers to receive H1N1 flu and timely health information.

CDC indicates the emergence of body of knowledge and guidelines regarding best practices for text messages. These guidelines recommend that text messages should be short and concise and engaging; the entire message should be less than 160 characters, including spaces, punctuation, and allow for any branding or links to additional information; and so forth (CDC Social Media Toolkit, 2011).

RAND (Rand, 2011), Vital Wave Consulting(2008) and Vodaphone (2010) Reports on Mobile Health (mHealth). Although conducted independently, these three, consulting studies drew common conclusions around mobile health. "Mobile health", or mHealth, is not yet a term generally familiar to the mainstream of public health. However, within the military and Department of Defense settings, mhealth is a term used to describe the practice of using mobile technologies – mobile phones, text messaging services, or applications – to support health and

medicine (RAND, 2011). Regardless of how it is classified, mobile and cellular applications have made their way into the mainstream of life and offer remarkable opportunities for improving the health, safety, and preparedness of people in the U.S. and around the world (VWC, 2008; Vodafone, 2010; RAND, 2011). Because of their portability, affordability, and availability, the potential of mobile technologies for sharing health information and collecting disease/health data represents a tremendous opportunity for public health (RAND, 2011). Mobile technologies, particularly text messaging, are quickly becoming a tool of choice for the delivery of health information and engaging users to improve their health (Vodafone, 2010). This review is important because mHealth is a rapidly growing area of research with the potential to promote health equity. mHealth is quickly growing in practice as well, as health care professionals around the world continuously develop practical text message campaigns in the field to improve health behavior. In a recent global survey, 86 percent of workers in nongovernmental organizations reported use of a mobile phone in their job, and text messaging was the second most commonly used feature (83 percent) (VWC, 2008). Furthermore, mHealth appeals to health care consumers (VWC, 2008). A study found that nearly 8 in 10 Americans expressed interest in mHealth (RAND, 2011).

Other Noteworthy Studies

Nielsen (2009) noted that the growth in mobile phone texting application was being fueled by women and teens.

Leggatt (2009) noted that although Twitter was an SMS program, it was not teeming with teens. Twitter's lack of bidirectional communication capability was thought to make it more attractive to adult audiences.

Pachucki et al (2010) indicated that in some social networks, text messaging had eclipsed other forms of communication.

The literature review included a number of studies on the use of texting and social media around smoking cessation. In a study supporting Voxiva, Rodgers et al (2005, 2010) reported quit rates of 28 percent among the intervention group (those who received the text messages) compared to 13 percent among the control group (those who did not receive the text messages). The Rogers/GWU study also concluded that text-based interventions are two times more likely to help a smoker quit smoking than traditional approaches. The study did not include pregnant teens. (Note: the Text4Teen program will seek to replicate portions of the Rogers study measures but will specifically target the pregnant teen population. T4T will monitor self-reported weight gains and birth weight outcomes.)

Brendryen (2008) conducted a randomized control trial for smoking cessation. Their conclusion was that social media can have an effect in conquering smoking addiction. Fjeldsoe (2009) found similar evidence and deepened the variables around SMS texting. Free (2009) continued the research thread, and expanded the dimensions around social interaction and support.

Finally, in a series of experience which used similar SMS techniques but varied the disease Kim et al (2007, 2008) demonstrated that SMS texting could have significant effect as a sustainable intervention in obesity and type 2 diabetes.

Chapter Summary

Evidence-based public health is an approach that requires the examination of findings from systematic and published public health research that can be used to make decisions about

the best treatments for a specific population with a specific problem. A systematic evaluation of recent research was conducted. This evaluation placed an emphasis on sources which provided comprehensive reviews of peer-reviewed studies as well as think tank and government publications.

The literature review revealed that social media—including mobile phone text messaging-- represents a new paradigm. The literature reviewed the evidence around cell phone texting is limited but growing. Empirical evidence clearly demonstrates that cell phone texting improves the availability of information and may influence confidence and trust in the health messages delivered. Researchers, think tanks and government agencies have concluded that cell phone texting can be an effective tool. The research stops short of concluding that mobile SMS interventions consistently influence healthy behaviors in adolescent and young adult populations. More research is needed to document systematically the effectiveness of these approaches in public health settings—this observation reinforces the importance and significance of the T4T grant proposal contained in Appendix A. Enhancing healthy behaviors and improving health management adherence are of utmost importance in ensuring optimum health outcomes. As such, determining the most effective and efficient means to influence behavior will be an ongoing area of research. As cell phone affordability continues to expand worldwide, mobile technology will be embraced as a means to promote healthy behaviors. U.S. public health needs to position to be in the mainstream of these developments.

CHAPTER III: PROPOSAL REVIEW METHODOLOGY

Introduction

There is no universal method or standard used to evaluate, score, and then fund grant proposals (Miner & Miner, 2008; Hinman, 2011). The methods used to review, evaluate, score and then fund grant proposals can vary significantly. There are many funding agencies, including governmental, non-governmental, industry, non-profit, and so forth. Despite significant variance among agencies and approaches, a body of best practice knowledge has emerged which can guide funding agencies and researchers regarding the most effective methods for judging funding worthiness regardless of where funding may originate (Miner & Miner, 2008; Hinman, 2011).

Potential Funding

In the case of the Text4Teen grant proposal contained in the appendix of this thesis, it is anticipated that this grant would be submitted to Department of Health and Human Services (HHS). Within HHS, there are a number of areas where funding may be able to be obtained, including most prominently Health Resources and Services Administration (HRSA) programs, Maternal and Child Health Bureau (MCHB) state system development programs, and special programs funding as authorized by congress. Additionally, anticipated funding award amounts can vary significantly and range from \$100,000 to \$300,000 or higher. Also, it should be noted that funding from multiple sources can sometimes be used in augment certain elements across program areas.

Under the Department of Health and Human Services, the Office of Extramural Resources prepares materials and guidelines to assist both the construction and evaluation of

grant proposals. The Division of Grants Compliance and Oversight (DGCO) in the Office of Policy for Extramural Research Administration (OPERA), Office of Extramural Research (OER), National Institute of Health (NIH), acts as a focal point to advance objective grant evaluation, external compliance with policy and legislative mandates, and enhance compliance oversight by recipient institutions (HHS, 2011f). Accordingly, the discussion of grant applications, evaluations, and scoring resources was constructed around guidance and materials available from these organizations.

Funding for public health- related grant program sponsored by HHS is done on a competitive basis. In support of its mission, HHS awards grants for more than 300 programs and is the largest grant-awarding agency in the Federal government. HHS awards two types of grants: non-discretionary and discretionary (HHS, 2011g). Non-discretionary grants are those that a federal agency is required by statute to award if the recipient, usually a state, submits an acceptable State Plan or application and meets the eligibility and compliance requirements of the statutory and regulatory provisions of the grant program (HHS, 2011g). Discretionary Grants permit the federal government, according to specific authorizing legislation, to exercise judgment, or "discretion," in selecting the applicant/recipient organization, through a competitive grant process (HHS, 2011g). Information forecasting grant funded is programs is provided by HHS and is available through Internet access. Additionally, applications for grant funding are developed and then submitted through on-line access to the internet.

Six Expert Reviewers

Six highly qualified individuals were selected to be expert reviewers for the Text4Teens (T4T) grant proposal. The names and titles of these individuals are summarized in the table below.

Table 5: Text4Teens Expert Reviewers

Ms. Pam Gaston, MPA
 Executive Director
 Healthy Mothers, Healthy Babies Coalition of Georgia
 Thesis Field Advisor & Visiting Scholar

Heather G. Peebles, RD, LD
 Nutrition Services Director
 Southeast Health District (SEHD)
 Georgia Department of Public Health

Tonya E. Scott, RD
 Infant Nutrition and Feeding Practices
 Prenatal Nutrition
 Nutrition Services Director
 Coastal Public Health District

Rhonda R. Tankersley, RD, LD
 Nutrition Services Director –
 Women, Infants and Children’s Supplemental
 Nutrition Education Program
 Northwest Georgia Public Health

Jessica L. Curtis
 Social Media Coordinator
 Northrop Grumman Contractor to the
 Division of News and Electronic Media
 Office of the Associate Director for Communication
 Centers for Disease Control and Prevention

Juliette M. Merchant
 Assistant Director, Media Relations
 Emory University School of Medicine/Grady
 Health Sciences Communications
 Emory University/Emory Healthcare

Review Criteria and Scoring

The reviewers were asked to read, score, and independently comment on all aspects of the proposal consistent with guidelines that are contained in Appendix B: T4T Grant Proposal Scoring Instrument. Appendix B was developed to provide detailed instructions, review criteria, and scoring for the Appendix A: Text4Teens Grant Proposal.

HHS/NIH grant proposals are specifically evaluated according to a Scored Review Criteria (SRC) that may or may not be published in advanced of the grant application process. In general, however, the overall process does have consistency over a number of common elements. In accordance with the latest HHS procedures, Appendix B was designed to score for 1) overall impact; 2) significance; and, 3) the specific and additional SCR criteria review factors.

In general terms, the funding agency establishes the specific guidelines for the evaluation of grant applications. These guidelines may include a section-by-section checklist. The goal of each researcher submitting a grant proposal is to obtain the most favorable score possible (Hinman, 2011). To do this, the researcher must seek to conform to grant preparation guidelines. Additionally, the components of preparation must also reach certain scientific criteria and convey a compelling story (Hinman, 2011). A grant proposal is a request for funding and support. According, in many ways the grant proposal should be thought of as a “sales pitch” (Hinman, 2011). Accordingly, it is imperative for the grant application to present a clear and persuasive proposal. It must be well-crafted; it should be easy for reviewers to understand; it should fully meet the required response criteria; and, it should be easy for reviews to local the essential information needed to inform their scoring and evaluation (Hinman, 2011).

The instructions for preparing the grant proposal usually specify specific scored review criteria in the determination of scientific and technical merit. Most Funding Opportunity

Announcements have five scored review criteria, (e.g., Significance, Investigator(s) Qualifications, Innovation, Approach, and Environment). Additional review criteria may also be specified (e.g., Protections for Human Subjects, Inclusion of Women, Minorities, and Children, and so forth.) Accordingly, in constructing the review criteria for this grant, a checklist approach was taken. This detailed checklist was adapted from materials provided developed by Kiritz, at the Grantsmanship Center. Hinman (2011) has indicated that the Kiritz checklist is at least as rigorous and be more rigorous than those provided by HHS.

In accordance with Appendix B, reviewers were asked to determine the presence or absence of certain materials, as well as score and comment on each element of the grant proposal. All three of these criteria are considered when making funding decisions (HHS, 2011C, D, E; HHS/NIH, 2011).

Although variations are possible, many of the HHS/NIH grant applications use a nine-point scoring system scale for the overall impact/priority score and individual scores for (at least) five scored criteria (HHS, 2011c, d, e; HHS/NIH, 2011). It should be noted that for many HHS/NIH, the scoring system is somewhat counter-intuitive in that a score of 1 indicates an exceptionally strong application with essentially no weaknesses; whereas a score of 9 indicates an application with serious and substantive weaknesses with very few strengths. Five (5) is considered an average score (HHS, 2011c, d, e; HHS/NIH, 2011).

Accordingly to HHS/NIH guidelines, the determination of scores is purely a reviewer decision. No formula is used to derive the overall impact/priority score from the individual criterion scores, and reviewers are instructed to weigh the different criteria as they see fit in deriving their overall scores and rating in whole numbers only (no decimal ratings permitted ((HHS, 2011c, d, e; HHS/NIH, 2011). Also, in terms of scoring system procedures, reviewers

score a grant proposal as presented in its entirety, and may not modify their scores on the assumption that a portion of the work proposed will be deleted or modified or revised based upon review guidance (HHS, 2011c, d, e; HHS/NIH, 2011).

Overall Impact

In judging overall impact, reviewers were asked to provide an overall impact / priority score and critique to reflect their assessment of the likelihood for the project to exert a sustained, powerful influence on the research field(s) (HHS, 2011c, d, e; HHS/NIH, 2011).

In addition to the overall score, reviewers were asked to provide a paragraph summarizing the factors that informed their overall impact score. NIH indicates that a grant proposal does not need to be strong in all scored categories to be judged likely to have major scientific impact. In their written critique, reviewers were asked to use bullets to note strengths and weaknesses for each of the scored review criteria. Additionally, reviewers were required to write a paragraph summarizing the factors that informed their overall impact score (HHS, 2011c, d, e; HHS/NIH, 2011).

For overall impact, HHS/NIH suggests that reviewers provide an overall impact score to reflect their assessment of the likelihood for the project to exert a sustained, powerful influence on the research field(s) involved, in consideration of the core review criteria. Overall Impact takes into consideration, but is distinct from, the scored review criteria. Overall Impact is the synthesis/integration of the five core review criteria that are scored individually and the Scored Review Criteria which may or may not be scored individually (HHS, 2011c, d, e; HHS/NIH, 2011).

To evaluate overall impact, the reviewers made an assessment of the likelihood for the project to exert a sustained, powerful influence on the research field(s) involved, in consideration of the scored review criteria, and additional review criteria (as applicable for the project proposed). Likelihood (i.e., probability) was primarily derived from the investigator(s), approach and environment criteria (HHS, 2011c, d, e; HHS/NIH, 2011).

Public health related grants which reduce disease risks, add to the existing body of knowledge, reduce disparity, advancing understanding of new intervention methods, and/or to alleviate human disease and suffering are judged to have high overall impact (HHS, 2011c, d, e; HHS/NIH, 2011).

Overall Significance

Significance is evaluated and scored independently of the evaluation and scoring of Investigator(s), Innovation, Approach and Environment. The evaluation of significance assumes that the “aims of the project are achieved” and/or will be “successfully completed.” Reviewers evaluated the significance of the project within the context of their own research) field(s). Research field(s) may vary widely, so reviewers were asked to identify their respective areas in the comments.

Significance is usually gauged around the following types of considerations (HHS, 2011C, D, E; HHS/NIH, 2011): Does the project address an important problem or critical barrier to progress in the field? If the aims of the project are achieved, how will scientific knowledge, technical capability, and/or clinical practice be improved? How will successful completion of the aims change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field?

Public health grant proposals generally target advancing public health knowledge, as well as, improving outcomes within specific communities. Each grant proposal seeks to add to the existing body of knowledge, to advance understanding, and/or to alleviate human disease and suffering.

In summary, overall significance and overall impact were key considerations. In judging significance, the reviewers were asked to consider key questions, such as: Does the project address an important problem or critical barrier to progress in the field? If the aims of the project are achieved, how will scientific knowledge, technical capability, and/or clinical practice improve? How will successful completion of the aims change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field?

Scored Criteria Review

The reviewers were asked to evaluate the detailed components of the proposal per the scoring criteria provided. For many HHS grants, the proposal must follow the guidelines exactly or will be deemed non-responsive to the grant solicitation.

Review and Scoring Procedures

The procedures for reviewing the Text4Teens proposal were developed to conform to the general HHS/NIH grant review guidelines. The HHS/NIH scoring system was designed to encourage more consistent and reliable scoring of applications (HHS, 2011C, D, E; HHS/NIH, 2011).

To help ensure process uniformity, reviewers were provided a written copy of review instructions along with a copy of the proposal seven days in advance of their rating and

comments due date/time. Reviewers were also be given detailed instructions regarding how to conduct the review. Reviewers were asked to carefully consider the rating guidance provided in determining their scores. Reviewers were also instructed to provide comments to improve the communication of scientific and operational information.

Reviewers were asked to spend no less than four and no more than eight hours on their review tasks. No advance or additional preparation was required on their part.

Reviewers were instructed that critical, constructive comments were welcomed and expected. Reviewers were told that highly rating all sections of the grant—unless warranted-- would greatly diminish the ability of author to improve the proposal.

No group meeting was be held to arrive at a consensus—as may be typical of the actual grant review processes conducted by HHS or NIH.

Criterion Scoring

Reviewers provided evaluation scoring and written comments relative to three areas: overall impact; overall significance; and, specific Scored Criteria Review (SCR) review factors. The specific and additional SCR criteria were developed to ensure that the grant proposal contained all of the proper mechanics required to comply with representative grant requirements.

Reviewers used common directions, scoring criteria, and score sheets to provide their ratings and comments.

Reviewers independently read and reviewed the proposal, followed all reviewing directions. Each aspect of the grant contained in the score sheet received numerical impact, significance, and SCR review factor scores from all reviewers.

The overall impact score was based on each individual reviewer's assessment. The overall impact score included significance and SCR criteria. SCR criteria were scored; additionally, reviewers provided bulleted discussion notes explaining each rating. Reviewers were instructed that providing scores without providing comments in the review critique was discouraged—the rationale for rankings and notations regarding strengths, weaknesses and areas for improvement need to be clearly indicated.

It should be noted that individual criteria scores were not additive. The individual criterion scores were provided for evaluation, discussion, and proposal improvement purposes. The SCR scores were intended to provide additional information on how each assigned reviewer weighed a particular section so that individual perceptions of section strengths and weaknesses could be revised. The overall impact, significance, and SCR score were not intended to be an average of criterion scores. The score for each section appeared in a table at the front of the completed review document. Reviewers were instructed that they were free to use the full range of the rating scales values, as appropriate, to better discriminate the strengths and weakness of each section. Reviewers whose evaluations or opinions of the proposal fell outside the range of those presented by the other assigned reviewers were reported and discussed. Reviewers were to feel free to assign the score that they believe best represented the impact of the application, and not feel constrained to limit their scores to the upper half of the score range if they did not feel such a score was warranted.

Reviewers were asked to score each review criterion based on how important they felt each review criterion was to the work being proposed. Per the typical HHS/NIH guidance, a reviewer may give only moderate scores to some of the review criteria, but still give a high overall impact/priority score. A proposal does not need to be strong in all categories to be judged

likely to have major impact, e.g., a project that by its nature is innovative may be essential to advance a field. Conversely, a reviewer could give mostly high criterion ratings, but rate the overall impact/priority score lower because, based upon their experience, they found one criterion critically important to the proposal. Table 6: HHS/NIH New Grant Scoring Rubric, illustrates the criteria used by the reviewers to score the grant proposal.

Table 6: HHS/NIH New Grant Scoring Rubric			
Score	Impact	Descriptor	Description
1	High	Exceptional	Exceptionally strong with essentially no weaknesses
2	High	Outstanding	Extremely strong with negligible weaknesses
3	High	Excellent	Strong but with numerous minor weaknesses
4	Medium	Very Good	Strong but with numerous minor weaknesses
5	Medium	Good	Strong but with at least one moderate weakness
6	Medium	Satisfactory	Some strengths but also some moderate weaknesses
7	Low	Fair	Some strengths but with at least one major weakness
8	Low	Marginal	A few strengths and a few major weaknesses
9	Low	Poor	Very few strengths and numerous major weaknesses

Reviewers were asked to consider if the proposal appropriately translates technical terms and processes for non-experts in any specialized areas discussed in the proposal. Of particular note is the ability to demonstrate how this program was relevant to preventing low birthweight

baby occurrences. Other aspects included judgments regarding the capabilities of the overall capabilities represented in the proposal.

Reviewers were asked to comment on their impressions of the proposals congruence, logical connections, and flow among objectives, significance, methods, and analyses. Many content areas called upon the individual knowledge and judgment of the reviewer.

Reviewers were told that major concepts which required substantiation should be appropriately supported in the featured literature review. Also, that it was essential for the references to document significance in the application. Referenced materials were to be comprehensive, current, accurately represented, well synthesized, relevant to and congruent with the project aims, and support the purpose of the project. Critiques of the science and summaries of the various subsections of the literature review section were encouraged. Reviewers were told that the significance section should succinctly state what is known, what is not yet known, and the important gaps in knowledge the proposed study is intended to fill.

Written Critique

Reviewers used bullets to note strengths and weaknesses for each of the scored review criteria, and should provide context for their comments based on the project. Reviewers wrote a paragraph summarizing the factors that informed their Overall Impact score, Significance Score, and SCR scores.

Chapter Summary

It is anticipated that the Appendix A: Text4Teen Grant Proposal would be submitted to Department of Health and Human Services (HHS). Funding for public health- related grant

program sponsored by HHS is done on a competitive basis. Appendix B: T4T Grant Proposal Scoring Instrument was developed to enable scoring and improvement of the grant proposal consistent with HHS/NIH established criteria.

Six highly qualified individuals were selected to be expert reviewers for the Text4Teens (T4T) grant proposal. The reviewers were asked to read, score, and independently comment on all aspects of the proposal consistent with guidelines presented in Appendix B.

HHS/NIH grant proposals are specifically evaluated according to a Scored Review Criteria (SRC) that may or may not be published in advanced of the grant application process. Additionally, in accordance with the latest HHS procedures, grant applications were also scored for overall impact and overall significance.

CHAPTER IV: PROPOSAL REVIEW RESULTS

Introduction

Chapter IV reports the results of the review and scoring processes. The review process followed the procedures outlined in Chapter III, and Appendix B. Six reviewers provided input—five external reviews along with the thesis field advisor. All reviewers were given the draft grant proposal seven working days in advance of a due date. Reviewers reported that they spent between four and eight hours scoring the grant proposal. Reviewers reported that the grant scoring instructions were detailed and clear.

The proposal was evaluated using the Scored Review Criteria (SRC) which measures adherence to the grant proposal template, including required elements as described in Chapter 3, and fully contained in Appendix B of this document.

The grant proposal was scored in three areas: 1) Specific Criteria Review Factors; 2) Significance; and, 3) Overall Impact. Review scores and evaluation remarks were typed and provided in the scoring sheets spaces for each section. For all sections, the common, Master Scoring Rubric was utilized. (See Chapter 3, Table 6).

Summary of Results

Table 7: Summary of Selected Results by Reviewer provides a summary of scores by reviewer. Please note that the comments show in the table apply only to the Specific Criteria Review Factors which gauge compliance to the proposal response template. These comments do not go to the proposal's overall significance or overall impact. Comments regarding overall significance and overall impact are discussed separately in later sections of this chapter.

In the Master Scoring Rubric, a score of one (1) indicates an exceptionally strong response with essentially no weaknesses; whereas a score of nine (9) indicates an application with serious and substantive weaknesses with very little strength. Five (5) is considered an average score. Each reviewer’s evaluation and input stands on its own—there was no attempt to harmonize or drive consistency in the reviewer responses. Reviewers were asked to be critical and use the full range of scores available to them, as appropriate.

Table 7: Summary of Selected Results by Reviewer

	Specific Criteria Review Factors Trend comments on conformance to proposal outline: Cover Intro Problem Goals Meth Data Schedule	Overall Significance Score*	Overall Impact Score*
Reviewer 1	<ul style="list-style-type: none"> + Strong introduction + Partners well selected - Confusion between applicant and partners - Needs citations for statistical evidence especially teen pregnancy LBWB - Needs letters of support - No evidence of input from clients 	4	5
Reviewer 2	<ul style="list-style-type: none"> + Describes the problem well + Social media with other services is compelling - Not sure which partner is the applicant - Needs citations for statistical evidence - No evidence of input from clients 	2	2
Reviewer 3	<ul style="list-style-type: none"> + Excellent use of social media concepts - Needs letters of support - Made assumptions that all partners are co-applicants - Cost and time of proposed evaluation may be excessive 	2	1
Reviewer 4	<ul style="list-style-type: none"> + Compelling concept on an important problem - Grant applicant not clearly identified - Needs citations for statistical evidence - No evidence of support from partners - No evidence of input from clients 	3	3
Reviewer 5	<ul style="list-style-type: none"> + All required criteria is addressed + Project method is relevant and utilizes technological modalities popular to the target audience - Note error in your budget worksheet - Dietary instruction should not be given by nurses - Sustainability plan needed - No evidence of input from clients 	3	3
Reviewer 6	<ul style="list-style-type: none"> - No evidence of input from clients 	2	1

Results of the Specific Criteria Review Factors

The Specific Criteria Review Factors consisted of seven areas: 1 - Cover Page; 2 - Introduction; 3 - Problem Statement; 4 - Goals & Objectives; 5 - Methods; 6 - Data Analysis & Program Evaluation; and, 7 - Timeline & Budget. The purpose of the Specific Criteria Review Factors scoring was to ensure that the proposal was fully compliant with a typical Health and Human Services (HHS) grant proposal content template. The review and scoring of Specific Criteria Review factors was a very detailed area by area exercise. As shown in Table 12, there was remarkable consistency in the overall comments relative to template compliance and content. While the scores varied the overall patterns of observations among reviewers was consistent. The results for each specific area are discussed below.

1 - Cover Page: Specific Criteria Review Factors Worksheet. For HHS grant proposals, the information on the cover page is important and represents first impressions of compliance. Additionally, the cover page establishes the grant's value proposition. It is important that the cover page clearly and concisely summarize the applicant, the nature of request and the planned outcomes. All reviewers indicated that the summary represented a compelling call to action; however, all reviewers indicated that there was a lack of clarity around exactly who was submitting the grant application.

2 - Introduction. The purpose of the grant introduction is to describe the applicant agencies and their qualifications. Two of six reviewers noted that while the grant introduction did identify who was applying for funding, the descriptions of the applicants' mission statements, programs, activities, clients or constituents could be strengthened. In connection with this, there were some suggestions that providing more evidence of the applicant's accomplishments would result in a more compelling introduction to the proposal. Specifically, it

was noted that references to quotes, letters of endorsements or letters of support would be valuable in supporting these types of statements. (Note: Letters of support were listed as a missing component to the grant proposal with the thinking that they should be generated at the time the grant application was being made. In retrospect, draft or suggested letters of support could have been provided in proposal.)

It was noted that all reviewers indicated that the introduction led logically to the problem statement, and the problem statement to the methods, and so forth. Reviewers consistently scored the overall proposal introduction as a 1 to 3—meaning relatively high impact, and strong potential for success. Additionally, the introduction was appropriately brief, interesting, and was free from jargon.

Reviewers indicated that the ability to engage partnerships in program implementations is one of the keys to obtaining funding from HHS. Reviews felt that the introduction made obvious that HMHBGA, HS and Voxiva—all of the key partners were on board. Multiple reviewers indicated that by adding data from partners past accomplishments and direct quotes from leadership—these additions would add weight to the program’s perceived value and sustainability.

3 - Problem Statement. Reviewers reported that the problem statement was well crafted. The problem statement conveyed reasonable dimensions and was not trying to solve all problems. Virtually all reviewers indicated that while the problem statement was supported by statistical evidence; however, additional specific citation referencing is essential. Specifically, better referencing of CDC data would enhance perceptions that all of the data cited has a uniform authoritarian basis. (Note: Chapters I through III of this thesis contain a specific number of specific citations that can be used to correct this deficit.) Data around the needs and problems

was noted as being well developed; however, each portion of the problem statement should be examined so that there are no gaps in referencing.

Reviews reported that the problem statement made a compelling case. One reviewer indicated that a text box including anecdotal information regarding partner accomplishments might also be helpful.

4 - Goals and Objectives. The goals and objectives section of the grant proposal needed to accomplish two things: 1) describe the planned outcomes; and, 2) express the outcomes in measureable terms. In developing the grant proposal, there needs to be at least one objective for each problem committed to in the problem statement. Reviewers uniformly felt that these connections had been clearly established, and that objectives were measureable. There was good clarity around those populations that will benefit and the time by which objectives would be accomplished. One reviewer indicated that based upon her experience that the time required to conduct the program evaluation would be much greater than stated—these goals should be specifically re-examined.

Three of six reviews noted that the objectives for this project may not be as straightforward as stated or expected because the proposal focuses on a usage of a specific technology. One review wrote: “The writer may want to clarify whether he wants to focus on technology utilization or changing birth outcomes. Changing birth outcomes may be an added long-term goal that is outside of the scope of this three-year project. But utilization of a technology with a goal of connecting pregnant teens to services that will reduce their risk of having a LBWB in the future is certainly within the timeframe of this proposal. Is the goal to

reduce teens who participate in Tex4Teens to reduce the risk of LBWB for their current pregnancy? If so, this should be stated clearly.”

5 - *Methods.* In scoring the methods section, reviewers were asked to use their individual knowledge and judgment as a reviewer. All reviews reported that the methods section clearly described the activities to be conducted to achieve the desired objectives and that the methods flowed naturally from the problems and objectives described in the proposal. Sections of the grant proposal that dealt with the selection of activities and the sequence of activities were scored as a two (2) indicating high, outstanding impact. The methods section portion describing program staffing, clients and client selection, and the presentation of program scope were ranked as a one (1). Overall, the reviewers indicated that methods section presented a reasonable scope of activities that could be conducted within the time and resources of the program. With an overall ranking of one (1), the methods section was judged to be very strong and clearly stated.

6 - *Data Analysis and Program Evaluation.* As with prior sections, reviewers were asked to use their individual knowledge and judgment as a reviewer to note the strengths and weaknesses of the data analysis and program evaluation sections of the proposal. Reviewers indicated that these sections of the proposal presented a good plan for determining the degree to which objectives were being met, and for evaluating and modifying methods of the program. However, in reviewing the criteria for success reviewers varied their scores. In general, while there was clarity regarding how the data would be gathered and processed, it was indicated that the process for judging success was not as clearly explained as it could be. One reviewer indicated that: “The proposal does an outstanding job describing data analysis and evaluation. The only suggestion is a clear, concise statement on how the evaluators will measure program success. The proposal does include a discussion about a comparison of enrollment data to

outcomes data after the intervention. A brief statement addressing the measure of program success would only add to a well-thought evaluation.”

7 - *Timeline and Budget.* With regard to the timeline and budget, the Specific Criteria Review Factors asked reviewers to make a number of determinations including if these sections and materials were detailed enough to convey the sequence of the program and how funds would be expended. Specifically, the timeline and the budget must tell the same story as the proposal narrative. Reviewers ranked the proposal timeline and budget as sufficiently detailed; however, some areas for improvement were noted. It was specifically indicated that the footnotes described budget items that may not be clear. While the majority of program costs are related to technology, there were no explanations for certain miscellaneous or contingency expenses. The detailed budget did include all items asked of the funding source, shows all items paid for by other sources; and, appears sufficient to accomplish the tasks described in the narrative. One reviewer’s comments indicated that: “The budget gives a very detailed explanation of all costs. The majority of the expense results from implementing Voxiva’s SMS software products. The large capital outlay is understandable and expected given Voxiva’s products and history.” Another reviewer indicated that “No plan was presented regarding how the program could be continued beyond three years.” Comments of this nature were also noted in the significance and overall impact scoring.

Other comments regarding the Specific Scored Criteria included:

- Giving specific information on the LBWB incidence rate
- Consider elaborating on “social media”
- The information on the Cover Page may be too brief.

- Consider providing more information describing the applicant's agency programs, activities, purposes and goals.
- More data is specifically needed on teen LBWB.
- Need more specifics about outcomes and impact of previous initiatives by all partners.
- Provides quotes/endorsements in support of accomplishments.
- Consider more information on current interventions to address these problems. There is a statement that enhancements are needed to current interventions then the next sentence says current interventions have reached a plateau and that new interventions are needed. Which is it? Is this project an enhancement or is it new?
- The narrative says emotional and physical health will be improved. There are some indirect measures of physical health (weight gain, smoking) but nothing related to emotional health. Perhaps the definition of "health" both physical and emotional could be elaborated upon and how, if at all, it will be measured in the context of this project.
- With regard to how data will be gathered--focus groups are specifically mentioned, but there is no further information on how this will be accomplished?
- Strength – partnership with HMHB and HS through August Public Health. Texting is a key avenue to communication with the target audience.
- There is good information on the use of this technology as a means of message targeting. This population is at health risk which is well established

and they use this communication channel. Missing data on partner accomplishments which make them strong candidates to receive this funding. Missing data on the target population – perhaps focus groups or surveys to indicate that messages will be appropriate.

Significance Scoring

Significance was evaluated and scored independently from the above Specific Criteria Review Factors scoring. The evaluation of significance provides a single score representing an overall evaluation of how this proposal will further public health science. As stated in Chapter 3, significance scoring assumes that the aims of the project will be achieved and/or the project will be successfully completed.

Reviewers were asked to evaluate the significance within the context of the research field(s) it addresses as well as significance of the project based upon their overall knowledge of the grant proposal fields.

Overall Significance Score

As shown previously in Table 7, Summary of Selected Results by Reviewer, reviewers' overall significance scores ranged from two (2) to four (4).

Reviewers were asked to note and summarize their perceptions of overall significant strengths and overall significant weakness.

Overall Significant Strengths. Reviewer comments are summarized below.

- Program utilizes texting, a well-established, comfortable form of communication for the target audience.

- The proposal clearly established a need. The U.S. and more specifically Georgia and McDuffie County have seen a rise in LBWB when compared to developing nations. Obviously current programs are not making a marked impact, therefore an intervention that utilizes technology that is a ‘way of life’ for the most at risk population is both innovation and sensible.
- Recognizes texting popularity with target teens.
- Utilized statewide healthcare referral source/HMHB, local healthcare provider/HS, and technology provider/Voxiva wisely.
- Inclusion of existing Text4baby is good reality check.
- Overall this is a very strong grant proposal to address a serious public health crisis – teen pregnancy and low birth weight baby intervention. The information is presented in a logical and organized manner, highlighting key facts and a proposed action plan.
- Program utilizes texting, a well-established, comfortable form of communication for the target audience
- The proposal clearly established a need. The U.S. and more specifically Georgia and McDuffie County have seen a rise in LBWB when compared to developing nations. Obviously current programs are not making a marked impact, therefore an intervention that utilizes technology that is a ‘way of life’ for the most at risk population is both innovation and sensible.
- Strength – partnership with HMHB and HS through August Public Health. Texting is a key avenue to communication with the target audience.
- Sufficient data to support the need and projected success of the program.

- Willingly collaborative partners who are already doing the work for healthy outcomes.
- Ground work for social media already in place with outcome evaluation to prove success.
- Project meets the age of technology, is cutting edge for the target audience and trend of electronics.
- Identified problem clearly and effectively. Identified ways to improve and impact. Realistic goals and timeline. Clear budget.
- Utilization of relevant and effective platform that will reach client.

Overall Significant Weaknesses. Reviewer comments regarding overall weaknesses are as follows below.

- Key partner commitments should include leadership comments and accomplishments need to be more detailed.
- If at all possible clients who have received partner services should be included.
- No Sustainability Plan. If assumed DPH will fund once evaluation proves success in 3 years, should state.
- I think part of this proposal should address family planning for the teen mother.
- The causes of low birth weight babies are multifaceted and largely unknown. Still the greatest predictor for a low birth weight baby is a mother who has previously delivered one. According to Dr. Al Brann Jr., a leading

neonatologist at Emory University School of Medicine, timing pregnancies less than 18 months could raise the odds of the second baby being born prematurely, at low birth weight, or small for gestational age. This is because with too short an interval, a mother's body needs more time to recover from the stress and depleted nutrients of the first pregnancy; with longer spacing.

- Key partner commitments should include leadership comments and accomplishments need to be more detailed.
- If at all possible clients who have received partner services should be included.
- Consider next steps for interfacing data for usage and improved outcomes through electronic smart phone surveys to eliminate the need for labor intensive manual data management.
- Deeper insight into the use of Social Media.

Overall Impact Scoring

In judging the overall impact of the grant proposal, reviewers were asked to provide a single score and written comments. The overall impact score is based on each individual reviewer's overall assessment of the proposal. The score should include all of the considerations that have been previously scored including the Specific Criteria Review Factors, and Significance. As shown in Table 7, reviewers' overall impact scores ranged from one (1) to five (5). To evaluate overall impact, the reviewers make an assessment of the likelihood for the project to exert a sustained, powerful influence on the research field(s) involved.

Overall Impact Score. As noted above Overall Impact Scores can range from one (1) to nine (9). Reviewers' scores ranged from one (1) to five (5). (See Table 7).

Reviewers were also required to write a paragraph summarizing the factors that informed their overall impact score.

Overall Impact Strengths. Review comments are provided below.

- The project has engaged partners who have a historical, well-established infrastructure including relationships with community agencies and individual clients.
- The budget is reasonable and well-defined; all line items are directly related to program activities. The largest portion is attributed to the technical partner, which is expected and understandable. Including technical partners and budgeting true costs will illustrate (to funders) the monetary requirements needed to fund innovative, forward thinking projects.
- There is a large potential for transferability of this proposal if the appropriate partners unite and funders acknowledge and fund the possibilities.
- Utilization of social media/texting is the wave of the future. When public health accommodates citizen behavior, outcomes will improve.
- Teen pregnancy is one of the most critical issues facing America today. As highlighted in this proposal, babies born to young teen mothers have a higher risk of serious health problems. Physical and mental birth defects affect many babies born to very young women. The teenage mother is more likely to be undernourished and suffer premature labor. During the first three months of pregnancy; seven out of ten pregnant teenagers do not see a doctor or go to a

clinic. Poor eating habits, smoking, alcohol and drugs increase the risk of having a baby with health problems. Teen mothers present significant challenges to programs designed to help them avoid or postpone a subsequent pregnancy – I believe this grant proposal offers a realistic action plan to address this public health crisis.

- Project has engaged partners who have a historical, well-established infrastructure including relationships with community agencies and individual clients.
- The budget is reasonable and well-defined; all line items are directly related to program activities. The largest portion is attributed to the technical partner, which is expected and understandable. Including technical partners and budgeting true costs will illustrate (to funders) the monetary requirements needed to fund innovative, forward thinking projects.
- There is a large potential for transferability of this proposal if the appropriate partners unite and funders acknowledge and fund the possibilities.
- There is good information on the use of this technology as a means of message targeting. This population is at health risk which is well established and they use this communication channel.
- All required criteria is addressed.
- Project method is relevant and utilizes technological modalities popular to the target audience.
- Guaranteed method of communication to improve prenatal care and distribute health prevention information as well. It is evident through the supporting data

and stats there is a need for the Text 4 Teens Program. By utilizing a Social Media tool, SMS (text messaging), to reach teens, can decrease the rate of LBWB. Not only will it help young teenage mothers to be, but it will also save billions of dollars in healthcare.

- This grant was filled with accurate data and facts, and also reliable sources, depicted the problem of LBWB in a way that the reviewer can sympathize with and see the need for this program. The budget was clear, and gave a sense for how money would be allocated. The timeline was realistic coupled with effective evaluation and bench marking of the success of the program.

Overall Impact Weaknesses.

- The project focuses on a single county in Georgia, although Georgia and this area have higher rates of LBWB when compared to the national average, a one county focus could appear as a weakness.
- A one county implementation suggests “pilot” status. No Sustainability Plan and current economy/lack of replication funding could “shelf” this project.
- Teen mothers are more likely than older mothers to have short inter-pregnancy intervals, and the associated risks. A short inter-pregnancy interval poses considerable risks for the infant, including prematurity, low birth weight, cerebral palsy, and poor developmental outcomes. According to the CDC, estimated repeat pregnancy rates for teen mothers range from 32 to 42% within two years after delivery, even among girls electing to use

contraception. Individual, social and contextual factors are all important to consider in the prevention of repeat teen pregnancy.

- To ensure significant impact, it is imperative that this grant include future family planning for the teen mother with post partum messaging. Also, African American and Hispanic teens are at disproportionate risk for teen pregnancy - will there be culturally sensitive messages developed for this target population?
- The project focuses on a single county in Georgia, although Georgia and this area have higher rates of LBWB when compared to the national average, a one county focus could appear as a weakness.
- Missing data on partner accomplishments which make them strong candidates to receive this funding. Missing data on the target population – perhaps focus groups or surveys to indicate that messages will be appropriate.
- Need solid descriptor of how text4teens will retain participants. Care is needed to adapt text module to meet their demographics vs. those in place for Text4baby and text2quit (adapted for general audience).
- Careful not to include funding for work already funded and provided for with collaborative partners.
- Keep with all professional's scope of practice. Allow more time and funding for Registered Dietitians if needed to complete individualized dietary instruction.
- Include a plan of sustainability to convince grantor that this project can continue beyond funding timeline.

- More details for criteria for success
- Need client inputs--feedback from pregnant teens on the Text 4 Teens program, if they would be interested, behavioral changes, etc.

Chapter Summary

Six expert reviewers provided a detail review and scoring of the Appendix A: Text4Teens grant proposal. The proposal was found to be compliant with a typical, idealized, HHS grant template. Reviews pointed out strengths and weaknesses. Strengthens included the compelling use of partners and the innovative use technology to provide a meaningful public health intervention. Weakness included the need to correct technical deficiencies by through more effective use of statistical source citations, and attention to detail in the budget; better showcasing partner capabilities, and addressing the issue of sustainability.

Reviewers' overall significance scores ranged from two (2) to four (4)—indicating how this proposal will further public health science.

Reviewers' overall impact scores ranged from one (1) to five (5)—indicating the likelihood for the project to exert a sustained, powerful influence on the research field(s) involved.

Grant proposals in these ranges are judged to generally have high/excellent impact but also contain numerous minor weaknesses.

CHAPTER V: RECOMMENDED PROPOSAL MODIFICATIONS

Introduction

Chapter IV provides a number of important considerations to inform improvements to the Appendix A: T4T Grant Proposal. It is noted that any revisions to the T4T proposal should first consider the actual grant guidance published by the funding organization. With that understanding, organizations desiring to leverage Appendix A as a substantially complete grant response, may wish to selectively consider modifications based upon the Chapter IV information in order to maximize their ability to obtain high scores. Accordingly, potential changes to Appendix A are reviewed below.

Cover Page

The cover page should be modified to conform to any specific grant guidance. The correct use of terminology is important. While the nature of request, planned outcomes, duration and cost are all presented in a satisfactory manner, the current cover page needs to more clearly identify the applicant(s) and partners. In connection with this, a careful and clear distinction needs to be made between applicants and partners throughout the proposal.

Introduction

The portions of the introduction that deal with the applicants' mission statements, programs, activities, clients or constituents should be strengthened. The inclusion of specific,

additional evidence of the applicant's accomplishments referencing letter of support will result in a more compelling introduction to the proposal. Consideration should be given to collecting letters of endorsements or letters of support, or quotations from community leaders—any of these would be valuable in creating an introduction which might score higher among reviewers.

The ability to use partnerships in program implementations is one of the keys to obtaining funding from HHS-- adding data from partners past accomplishments and direct quotes from leadership—these additions would also add weight to the program's perceived value and sustainability of the proposal.

Problem Statement

The problem statement conveyed reasonable dimensions but could be improved through the greater use of citations. Reviewers consistently noted the presence of statistics; however, the sourcing of the data was wanting. Specifically, better referencing of CDC and State of Georgia teenage LBWB incidence data is needed. Other HHS data in addition to CDC and State of Georgia data would enhance perceptions that all of the data cited has a uniform authoritarian basis.

Goals and Objectives

There was good clarity around those populations that will benefit and the timeframes by which objectives would be accomplished. Depending upon the funding agency, organizations leveraging, this proposal may wish to restate some of the objective around either focusing on the effectiveness of technology vs. changing birth outcomes. Utilization of texting technology

with the goal of connecting pregnant teens to services that will reduce their risk of having a LBWB is a novel concept, but the objectives must be easily measurable.

Methods

Sections of the T4T grant proposal that dealt with the methods, the selection of activities, and the sequence of activities were well understood. Overall, the reviewers indicated that methods section presented a reasonable scope of activities that could be conducted within the time and resources of the program—accordingly, few changes may be warranted. The use of focus groups and qualitative case studies was mentioned in the proposal as ways to broaden and enrich the quantitative data which will be collected regarding T4T service use. Accordingly, depending upon space and page limit requirements, it may be desirable to expand the discussion of methods relative to the focus group and qualitative inputs.

Data Analysis and Program Evaluation

The sections on data analysis and program evaluation were judged to good clarity and high impact. One suggestion to strengthen this area was to add a clear, concise statement on how the evaluators will measure program success. A brief statement addressing the measure of program success would add to a well-thought evaluation.

Timeline and Budget

Budget details may vary for each individual submission.

The current provided budget assumptions were based upon data provided by the Augusta Health Start program (courtesy of Dr. Sandra Mobley, 2010).

Consideration should be given to negotiating with Voxiva. While the majority of program costs are related to technology, personnel, overhead, and miscellaneous expenses may vary significantly.

Overall Significance Scoring

The overall significance of this program is a product of its initial conceptualization and approach. Accordingly, improving the overall significance scoring is problematic. The evaluation of significance provides a single score representing an overall evaluation of how this proposal will further public health science. This score reflects the components of conceptualization as well as contributions to science. To the extent that research questions can be further refined and outcomes can be accurately measured, it may be possible to improve the overall significant score modestly. The fact that the T4T approach integrates the information and services from multiple partners provides a foundation for some modifications to research questions—if desired.

Overall Impact Scoring

To evaluate overall impact, reviewers made an assessment of the likelihood for the project to exert a sustained, powerful influence on the research field(s) involved. Like significance, the overall impact of the T4T proposal was judged to be generally above average. A better explanation of partners/partner capabilities along with statements around the ability to demonstrate stronger integration of information and services—including mechanisms to foster sustainability could improve the overall impact scoring. The degree to which these factors can be manipulated will depend upon the communities in which the program is to be implemented.

Chapter Summary

The Appendix A: Text4Teens Grant Proposal can be improved. From Chapter IV reviewers' reported overall significance and impact scores ranging one (1) to five (5). Grant proposals in this range are judged to generally have high/excellent impact but also contain numerous minor weaknesses. A road map for correcting these weaknesses was synthesized in this chapter.

The roadmap for improvement emphasizes the need to elevate the visibility of applicant partners and their capabilities; make adjustments to the grant proposal contents to enable better reviewer understanding; and, reframes elements of the proposal around sustainability concerns.

The most important elements of the Text4Teens program were not challenged. Teen pregnancy/LBWB is largely preventable. Teens lack knowledge and connections to the information and programs that could help prevent LBWB occurrences. More needs to be done in this area to make sure that all women—teens included--can receive proper and timely care for themselves and their unborn child. New science and new technology—cell phone texting to provide information and services--can be leveraged to accomplish these goals.

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APPENDIX A: COVERPAGE TEXT4TEENS GRANT PROPOSAL

Abstract

The purpose of this public health grant proposal is to reduce the incidence of low birthweight baby occurrences among pregnant teens in McDuffie County, Georgia. Georgia's teen pregnancy low birthweight baby incidence rate is among the highest in the United States and worse than most of the developing world. The proposed Text4Teen program addresses the three primary causes of teen pregnancy low birthweight baby occurrences--smoking, poor maternal health and poor nutrition. Text 4Teens uses social media to connect teens to information and community services. The program outcomes include improved teen utilization of available social services; strengthened ties and collaboration between state and local prenatal care and prenatal nutritional services; and, improved birthweight outcomes for pregnant teens.

Three (3) year initiative

Total cost: \$600,000.00

Submitted by:

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INTRODUCTION

The purpose of this public health grant proposal is to reduce the incidence low birthweight baby occurrences among pregnant teens in McDuffie County, Georgia, through an innovative program—Text4Teens. The proposed Text4Teens program addresses the three primary causes of teen pregnancy low birthweight baby (LBWB) occurrences: 1) smoking, 2) poor maternal healthcare, and 3) poor nutrition. Georgia teen pregnancy incidence resulting in LBWB is among the highest in the nation (Georgia Department of Public Health, 2010). Georgia also ranks in the top 10 states for the highest number of teen pregnancies (95 per 1000). Low birthweight babies have profound, expensive, and long-lasting public health implications not only for the affected individuals but also for the family, community, state, and nation. Studies have repeated shown that low birthweight babies are at increased risk for both immediate and long lasting, serious health problems, disabilities, and death as

Figure A-1: LBWB Quick Summary

- Georgia’s teen pregnancy low birthweight baby occurrences are among the highest in the U.S. and worse than most of the developing world
- Low birthweight babies experience significantly more morbidity and mortality, life-long learning disabilities, chronic diseases
- Impacts are not just to the babies—ongoing consequences for teen mothers include health, future pregnancy problems, and limitations to social and economic participation
- Costs are in the millions of dollars over the life of each affected child
- Current effectiveness of intervention strategies have reached a plateau incidence rates are increasing despite Healthy People 2010 activities
- Evidence has identified that new social media approaches hold promise for reducing low birthweight incidence rates—especially among vulnerable populations
- Failure to take action will add millions of dollars to state public health budgetary needs and future health care costs
- A public/private approach is needed to innovate intervention approaches.
- The Healthy Mothers, Healthy Babies Coalition of Georgia, Augusta District Public Health, and Voxiva, Inc. are well-positioned to align and coordinate and sustain grant activities to meet these needs.

newborns, infants, adolescents, and adults. Low birthweight is also associated with the onset or development of mental retardation, learning problems, cerebral palsy, vision and hearing loss, diabetes and heart disease in adulthood (CDC, 2010). Life complications resulting from LBWB occurrences for both the child and the mother generate an on-going cost in the millions of dollars for each incidence and burden to all levels of society. Low birthweight stems primarily from smoking, poor maternal health and poor prenatal nutrition. If Georgia fails to act, the mounting burden of real and social costs will cripple the ability of public health to manage this problem.

Team Approach

Supporting the implementation of this grant proposal brings together a collation of partners in a collaborative and innovative approach to the problem of teen pregnancy low birthweight babies. Healthy Mothers, Healthy Babies Coalition of Georgia; the Augusta Georgia Public Health District; Voxiva Inc; and,


Dr. Frederic Grant, a certified public health technical program manager.

Healthy Mothers, Healthy Babies Coalition of Georgia (HMHBGA).

HMHBGA has decades of experience working in this area. The Executive Director has fully empowered to support this grant through her organization. Since

1984, HMHBGA has operated a “PowerLine” –a toll-free bilingual phone line to access healthcare. The Georgia Department of Public Health contracts with HMHBGA to provide this federally mandated service. In fiscal year 2009-10, HMHBGA received 27,192 calls and made

Figure A-2: Healthy Mothers Healthy Babies Coalition of Georgia


	<ul style="list-style-type: none"> – Provides the Georgia PowerLine federally mandated service – Proven experience connecting women with state and federal services. – Leverages advanced technologies into public health practice, (e.g.: mobile/cellular, high performance computing, social networking).
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over 58,244 referrals to community services. PowerLine data has proven to be an invaluable tool in supporting legislative reform. HMHBGA is a strong powerful statewide voice for maternal and infant health policy issues.

Augusta Public Health District. The Augusta Georgia Public Health District has

decades of public health intervention experience in MCH. The Augusta Public Health District director and staff are experts in maternal health, teen pregnancy and related programs. As the primary architect for the Augusta-Richmond County Community Partnership for Children and Families, Inc., this area is one of 96 communities in the United States to receive Healthy Start Initiative grants, intended to reduce high infant



Figure A-3: Augusta Public Health District

	<ul style="list-style-type: none"> – Healthy Start Director – Extensive clinical, administrative and scientific experience – Proven track record of managing large, multi-year HHS grants with outstanding outcomes – Numerous peer-reviewed publications
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mortality rates and other health problems related to pregnancy and women's health. The Healthy Start Initiative focuses on the contributing factors which research shows influence the perinatal trends in high risk communities. The Augusta Public Health District has experience managing large complex grants, including the Healthy Start initiative. This involved a four year, with \$1,120,000 awarded each year. This award was granted by the Maternal and Child Health Bureau through the Health Resources and Services Administration, of the U.S. Department of Health and Human Services. With this funding, the Community Partnership has concentrated on high risk women and their infants.

Voxiva, Inc. Voxiva is a pioneer in using social media (cell phone texting) to create public health intervention impacts. Voxiva has committed support for tailoring its well-established Text4baby technology and leveraging a newly approved HRSA reviewed texting program called Text2quit, to create an integrated offering meaningful to pregnant teen audiences.

Text2quit is a new, innovative mobile-based program that combines evidence-based best

Figure A-4: Voxiva, Inc.	
	<ul style="list-style-type: none"> – Proven experience with innovative social media—designer of Text4baby. – Text2quit –a new product, uses social media to support the most effective methods of smoking cessation. – Together as an integrated offering, Voxiva provides the newest and most advanced approaches to supporting positive behavioral changes through social media (e.g.: mobile/cellular, high performance computing, social networking).
	

practices to help a person through the difficult stages of quitting smoking. Developed in partnership with smoking cessation and health communication experts from the George Washington University through a grant from the National Cancer Institute, this service has gone through rigorous user testing over an 18 month development cycle.

Dr. Frederic Grant, Program Manager. Dr. Frederic Grant, will serve as the technology

**Figure A-5: Principal Investigator Qualifications
Frederic J. Grant, PhD, MBA, PMP**



- Chief Scientist – Public Health Division for a \$200 mil private organization.
- Proven experience with state and federal strategic initiatives to align people, process, and new technologies with public health practice needs.
- Leverages advanced technologies into public health practice, (e.g.: mobile/cellular, high performance computing, social networking).

program manager. Dr. Grant began his public health career in 1980 supporting the USAID World Round of the Census including Women’s Issues in Public Health and has a proven track record leveraging new and advanced technologies to public health problems and has since held a number of executive positions in public health.

PROBLEM STATEMENT

Low Birthweight

According to the March of Dimes (2010), babies born weighing less than 2,500 grams (5 pounds, 8 ounces) are considered low birthweight babies (LBWB). In the past two decades, a medical and public health consensus has emerged that low birthweight--a birth weight of 2500 grams or less-- is one of the most important indicators and contributing factors to

Figure A-6: Georgia Teenage Pregnancy Low Birthweight Baby Problem Statement

- Georgia's teen LBWB rates are among the highest in the U.S.
- LBWB experience more morbidity and mortality including life-long learning disabilities and chronic diseases
- Costs are in the millions of dollars for each LBWB
- Current effectiveness of intervention strategies have plateaued
- There is a need for new approaches to reduce LBWB incidence rates

neonatal and infant death, childhood illness, and on-going malnutrition (CDC, 2010). Studies have repeatedly shown that LBWB are at increased risk for serious health problems, lasting disabilities, and death as newborns, infants, adolescents, and adults. Low birthweight is also associated with the onset or development of mental retardation, learning problems, cerebral palsy, vision and hearing loss, diabetes and heart disease in adulthood (CDC, 2010). Birthweight is a strong indicator not only of a birth mother's health and nutritional status but also a newborn's chances for survival, growth, long-term health and psychosocial development. Low birthweight is a public health problem in most developing countries, in which an estimated 15 to 16 percent of births result in low-birthweight babies. Babies who are undernourished in the womb face increased risk of dying during their early months and years. Low birthweight babies may have impaired immune function and increased risk of disease; they are likely to remain undernourished with reduced muscle strength throughout their lives, and to suffer a higher

incidence of diabetes and heart disease. Low birthweight babies tend to have cognitive disabilities and a lower IQ, affecting their performance in school and their job opportunities as adults (CDC 2010).

Problem Prevalence

In the United States about 21 million LBWB are born each year (CDC, 2010). They represent about 8.2% of all United States (U.S.) newborns. About 1 in every 12 babies is a LBWB (HRSA, 2010). It is noted that this rate is much higher in non-Hispanic Blacks-- about 14 percent. The 8.2 to 14 percent figures for the U.S. can be compared to the 7 to 9 percent rate for sub-Saharan Africa, North Africa, Latin America, East Asia, and many other industrialized countries.

It is surprising and shocking that the U.S., and Georgia, in particular, fairs far worse for LBWB occurrences than many developing counties in the world. A goal of Health People 2010 was to reduce the rate of LBWB on a national basis; however, statistics show that in 1996, Georgia's LBWB rate was about 8.5 percent of births. In 2006, the rate had increased to 9.6 percent. Based upon state-wide surveillance data, it is believed that the rate may be approaching 10 percent or higher (CDC, 2010). Additionally, mortality and morbidity rates among LBWB in Georgia are higher than most states. For Georgia policy makers and community leaders, these statistics should be troubling. Enhancements are needed to the approaches which have been implemented to date.

Prevalence statistics indicate that the effectiveness of current interventions seems to have reached a plateau—new approaches to intervention are required.

Causes of Low Birthweight

Medical evidence suggests that LBWB occurrences stems primarily from 1) smoking; 2) poor maternal health; and, 3) poor nutrition. Early and regular prenatal care coupled with nutrition and environmental interventions may be able to mediate these factors. Expectant mothers need to have regular prenatal care, quit smoking, and have a good diet. Inadequate weight gain in particular is a main cause of fetal growth retardation. The CDC indicates that up to 25 percent of all low birthweight could be avoided if pregnant women did not smoke (CDC, 2010). According to the U.S. Public Health Service, about one in five adolescent women are smokers (CDC, 2010). Health care providers also recommend that a woman of normal weight gain 25 to 35 pounds during pregnancy. Women who gain less than 22 pounds are two to three times more likely to have a low birthweight baby than women who gain at least that amount.

Economic Impact of Low Birthweight

Preterm births cost the United States over \$26 billion a year. The exact figures for teen pregnancy LBWB are unknown. Estimates reliably place the cost of each LBWB occurrence in the millions of dollars for each affected individual (HHS, 2010). The average first year medical costs for premature/low birth-weight baby is \$49,033 compared to \$4,551 for a baby without complications (Healthy Baby Coalition, 2008). A shift of one pound at birth saves approximately \$28,000 in first year medical costs. The Healthy Baby Coalition (2008) also indicates that annual Medicaid costs are reduced on average between \$12,000 and \$15,000 for every very low birth-weight incident prevented.

Teen pregnancy and childbearing-- with or without low birthweight--bring substantial social and economic costs through immediate and long-term impacts on teen parents and their

children. These costs are believed to be substantial but are largely undocumented. Teen mothers face higher rates of preterm birth, and their infants have higher rates of low birth weight, and infant death. The CDC (2010) estimates that preventing teen childbearing could save the United States about \$9 billion per year. According to a 1998 study published in *Pediatrics* (The Healthy Baby Coalition (2008), each normal birth that occurs instead of a very low birth weight birth saves \$59,700 in the first year of care. Annually LBW accounts for about 10 percent of all pediatric medical costs, with an estimated \$5.5 to \$6 million in health care and special education devoted to problems that should have been prevented in the first place.

Teen Pregnancy/LBWB is Preventable

The current public health scientific consensus is clear: teen pregnancy/LBWB is largely preventable. Teens largely lack knowledge and connections to the information and programs that could help prevent LBWB occurrences. More needs to be done in this area to make sure that all women—teens included--can receive proper and timely care for themselves and their unborn child.

GOALS & OBJECTIVES

Improving Health Outcomes

The goal and objective of this proposed Text4Teens program is to reduce the incidence of teen pregnancy LBWB by communicating information and supporting positive behavioral changes associated with 1) quitting smoking during pregnancy; 2) improving prenatal care during pregnancy; and 3) improving nutrition during pregnancy. The program also furthers the evidence base around the effectiveness and use of social networking technology (i.e., texting) in public health interventions. These goals and objectives will be accomplished over a three year period.

Communicating Information

The Pew Foundation Internet and American Life Project (2010) indicates that teen texting has risen dramatically since 2008, eclipsing cell phone calls and talking face-to-face as methods of communication. Pew (2010) indicates that over three-fourths of young people between the ages of 12 and 17 now own cell phones and of those that do, girls typically send or receive 80 text messages per day and boys, 30 per day. Texting is now the central hub of influential communication in the lives of teens today (Pew, 2010). A key goal of this intervention is to improve communication of information by leveraging texting—a form of social networking. This goal will be measured by analyzing the rate and duration of service utilization from enrollment

Figure A-7: One-third of U.S. teens with phones text 100 times a day...



Source: Pew Foundation (2010)

through three months post birth.

Supporting Positive Behavioral Changes

To reduce the incidence of LBWB, three positive behavioral changes will be supported: 1) quitting smoking during pregnancy; 2) improving prenatal care during pregnancy; and, 3) improving nutrition before, during, and after pregnancies. Text4baby has a proven track record in improving prenatal care and nutrition. Text4baby uses an array of correlational measures relating text message information to service utilization and self-reported measures.

To support smoking cessation, a new program Text2quit will be utilized. Text2quit content and behavioral protocols are based on the Surgeon General's Clinical Practice Guidelines for prenatal care and nutrition and treating tobacco use and dependence. Text2quit adopts key lessons learned from studies that have demonstrated text messaging as an effective smoking cessation intervention. Rodgers et al (2010) recently reported quit rates of 28 percent among the intervention group (those who received the text messages) compared to 13 percent among the control group (those who did not receive the text messages). The Rogers study also concluded that text-based interventions are 2 times more likely to help a smoker quit smoking than traditional approaches. The study did not include pregnant teens. The Text4Teen program will replicate the Rogers study measures but will specifically target the pregnant teen population. It will also monitor self-reported weight gains and birth weight outcomes.

Key Research Questions

Public health science needs additional research and formalization around the use of social networks in public health interventions. Key research questions for the Text4Teens intervention

are: 1) how effective can these technologies be in reducing the burden of teen pregnancy/LBWB on the individual and the community; 2) can the use of texting establish an improved alignment of community resources, local policies and eliminate many of the barriers to action that are preventing problem mitigation; and, 3) is the Text4Teens approached less embarrassing, more private, and more effective way to become connected, informed, and then use public health resources? The key research question for the text2quit component is: 1) how does pregnancy affect Text2quit baseline outcomes relative to established literature?

METHODS

Major Components

The major components of the Text4Teens program are threefold: 1) Text-based prenatal care support designed to provide prenatal healthcare information and promote access to services which will improve prenatal care during pregnancy including linkages to information and services available through the existing Healthy Mothers, Healthy Babies (HMHB) PowerLine; and, linkages to in-person information and services available through the existing Healthy Start (HS) program. 2) Text-based smoking cessation support designed to aid quitting smoking and/or provide access to services which can assist smoking cessation during pregnancy, including linkages to information and services available through the existing HMHB PowerLine; and, linkages to information and in-person services available through the existing HS program. 3) Text-based nutritional support designed to provide information and promote access to services and information which will improve nutrition during and after pregnancy including linkages to information and services available through the existing HMHB PowerLine; and, linkages to information and in-person services available through the existing HS program. The program will run over a three year period.

Target Audience

The target population for Text4Teens is pregnant teens between the ages of 13-19 contained in the target community of McDuffie County, Georgia, as described below. McDuffie County comprises 266.3 square miles, making it the 117 of the 159 counties in Georgia (GA) in

terms of land area. Its population is 21,743, making it the 82nd most populated Georgia county (GA County Guide (2007)).

Fifty-two percent of the population is female; of those, 47.9 percent (10,415) are women of reproductive age (WRA, 10-44 years). From a racial/ethnic perspective, the population is 60.8 percent white (12,905), 37.5 percent black (7,966), and 1.7 percent other races (360) (U.S. Census, 2000). Only 1.3 percent (278) are Hispanic. Although whites are a large majority of the population, blacks have the fewest health-related resources. 18.4 percent of the population is below the Federal Poverty Level (FPL). Poverty affects blacks disproportionately (35.1 percent; 8.1 percent white). Children under the age of 18 and female heads of households fare even worse, with 26.0 percent of all children under 18 below the FPL (7.7 percent of white children and 47.1 percent of black children). 43.8 percent of female heads of households with related children under 18 are below the FPL. The preponderance of these women are black (50 percent; 25.3 percent white). Combining all female-headed households with children under 18 below the FPL, 74.1 percent were black.

Roughly 75 percent of whites over the age of 25 are believed to have at least high school graduates, compared to 50.0 percent of blacks. The median family income for whites is \$48,418 compared to \$24,548 for blacks. The per capita income is \$21,059 for whites and \$13,433 for blacks. The median value for owner-occupied homes is \$83,400 compared to \$61,100 for blacks. Thus, by all risk indicators, black female heads of households and their children are likely to have (and do have) the poorest health outcomes.

No exact figures currently exist for smoking prevalence but it is believed to be high over 25 percent and in line with other social demographic indicators which indicate higher than

average smoking prevalence rates. The need for reducing this health disparity is well-documented and is currently a major focus for public policy and health promotion.

McDuffie County statistics represent a good case example for Georgia for pregnancies and pregnancy outcomes. A table of these statistics is included in the Attachments.

Nutritional instruction to teens is very limited. With the exception of the Healthy Start program, few to no nutritional programs exist which are available to the general population of women in McDuffie County. (It is noted that the Healthy Start program may be the only program in Georgia capable of currently providing these services.) It is believed that teens are particularly at risk for poor nutrition—teen obesity rates are believed to be very high. For older populations that are WIC eligible and participate in the WIC program, some instruction is provided at WIC visits by RNs, and occasionally by a registered dietician—but none is targeted to teens. Many women who qualify for these services are unaware that they are available or unable to use them because of barriers to utilization related to complex social problems.

The target population for this research program is a community with entrenched problems, such as poverty, limited infrastructure, and minimal resources. Despite public awareness, community-based programs remain few and under-funded to meet the complex needs of women in the county. All of the factors mentioned above contribute to serious, complex, social and high-risk medical problems and perinatal health disparities, including smoking, teen pregnancy, pre-term and LBWB occurrences.

Recruitment

Pregnant teens will be both recruited and referred to the Text4Teens program. As described in the sections below, a public relations and community awareness campaign will be

conducted on an annual basis during the three year program period. Additionally, HMHB personnel, as well as, local HS personnel registered nurses, case managers, and associated personnel will be trained regarding the program components and enrollment. They will promote the use of Text4Teens, and they will actively recruit and suggest enrollment for pregnant teens. Depending upon the circumstances of the individual teens, HMHB and HS personnel will in all cases also provide access to existing services and programs, additional services, and case management, as appropriate. Additionally, in the Augusta area, HS seeks and receives referrals from public health, prenatal providers, hospitals, social agency staff, other means—including through word-of-mouth, as well as via personal outreach.

Both HMHB and HS employ the following strategies to strengthen outreach: ongoing training of staff, contracted instructors, and counselors in cultural sensitivity and awareness, annual patient satisfaction surveys to ensure that clients are receiving quality services to meet their needs.

HS services currently include health assessment, health risk level determination; care plan development, education, monitoring, and can include disease management with home visiting through two years postpartum. Assessments (medical, dietary, psychosocial [depression, domestic violence, and substance abuse], environmental, and health literacy), risk determination, strengths, and resources are considered in developing the plan of care. Individual health education includes parenting, life skills, and women's health. Monitoring of service utilization includes women's health, mental health, WIC, and other referrals. HS services currently include postpartum home visiting includes mother/baby assessment and education related to IC maternal care, infant development, and child topics. HS impacts LBWB by providing pre-maternal care knowledge, social support, practical assistance, and education.

Enrollment

Enrollment and program registration will be easy and can be done directly from the cell phone. A user simply texts the word **BABY** (or **BEBE** for Spanish) to 511411, enters the baby's due date or the baby's birthday and their Zip code. Once registered, the user receives free messages with educational tips about their pregnancy and caring for their baby. Once their profile is established through interactive texting, they will receive around 7 to 10 SMS text messages each week, timed to their due date or baby's birth day and/or their smoking situation (Voxiva, 2011). These messages will provide information on HMHB PowerLine and HS programs. Text4Teens will be completely free to participants who neither pay to send or receive messages thanks to the generous support of the mobile operators (Voxiva, 20100).

Initial enrollment size is projected at about 50 to 150 pregnant teens in the first year based on estimates provided by the Augusta Public Health. Enrollment size is not constrained. Higher than anticipated enrollment can be accommodated without administrative action or system adjustment. Over a three year period, the total intervention group could be as large as 450 teens.

Upon enrollment, each pregnant teen participant will answer a series of questions to self-qualify for services. After self qualification, the nature of the information and services they receive may vary depending upon their self-reported circumstances. Depending upon their circumstances, they may be asked to meet periodically with an HS representatives, however, participation in the program is not dependent upon these meetings.

Service utilization tracking will be accomplished through cell phone use and self reported SMS survey responses.

Community Awareness Campaign

To market this program, Project staff will alert all the existing McDuffie county, state, and federal services, including public health, schools, physicians' offices, the hospital, etc., of our interest in enrolling pregnant teens into this program. Project staff will establish a Text4Teens billboard in a prominent community area. Project staff will explain the Text4Teen program via personal staff contacts with each office, emails, and advisory and consortium community meetings. Project staff will establish with the help of Voxiva a Web presence that will encourage enrollment. We will also use emails to tertiary hospitals and clinics to promote knowledge about how easy it is to enroll.

Overcoming Barriers to Participation

Overcoming potential barriers to participation will be accomplished by using best practice activities of community partnerships, outreach, education, and case management. The Text4Teens program will be added as new services to the existing Healthy Start (HS) initiative in McDuffie County, Georgia. In addition to HS and HMHB participation, McDuffie County registered nurse case managers (RNCMs), who already provide pregnancy counseling will demonstrate enrollment to interested teens.

The Text4Teens program will also seek to address physical barriers to participation including transportation. Transportation is a major barrier which will interfere with attending health education sessions, making and keeping appointments. Arrangement will be made to support the in-county transportation by county-funded services for about \$5.75 per trip.

It is believed that the Text4Teens program can make teens aware of services that they are not currently aware of including Healthy Start. The long-term relationship of HS professional

staff with participants will enhance informational and emotional support of participants. HS will encourage participants to look at other transportation options such as carpooling with other HS clients or with other planned trips to grocery, etc.

Ethical Considerations

The program commits to conducting its research consistent with HHS and Emory University and Medical College of Georgia guidelines for the conduct of research involving human subjects. All participants will provide specific consent to their participation. Participant data will be de-identified for protection purposes. Participants can withdraw from participation at any time for any reason.

Text4Teens will adhere to all related HHS directives. Text4Teens will conduct ethical research and the rigorous evaluation of new approaches in science, health care, public health, and human services that reward efficiency, effectiveness, and sustainability (HHS, 2011).

KEY APPLICANT PARTNERS & PERSONNEL

This program partners three organizations in a new, unique way to leverage technology, capitalize on the strengths of each organization, and to extend the reach and cooperation of smoking cessation, prenatal care, and nutritional services to pregnant teens.

- Voxiva Inc. Text4Teens will combine Voxiva's Text4baby SMS service and text2quit service. Text4baby was designed by the national Healthy Mothers Healthy Babies Coalition to promote maternal and child health and provides pregnant women and new moms with the information they need to take care of themselves and give their babies the best possible start in life (Voxiva, 2011). Voxiva is both a partner and the technology solution provider in this grant proposal. Voxiva will assign account management, technical management personnel upon grant award.
- Augusta Public Health District. In 1991, the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) funded 15 urban and rural sites in communities with infant mortality rates that were 1.5 - 2.5 times the national average to begin the Healthy Start (HS) initiative. Augusta Public Health District was selected to participate in this initiative and has since established a long track record of programmatic success. The program began with a five-year demonstration phase to identify and develop community-based systems approaches to reducing infant mortality by 50 percent over the five-year period and to improve the health and well-being of women, infants, children and their families. Since their inception, the Augusta Public Health District's program have done well with a tract record of program success and high retention. The common principles underlying the Healthy Start program are: innovations in service

delivery; community commitment and involvement; personal responsibility demonstrated by expectant parents; integration of health and social services; multi-agency participation; increased access to care; and public education. The Augusta Public Health, McDuffie County Healthy Start (HS) program is recognized in the community as an effective, contributing partner. With a minimal level of funding, the HS program can provide interventions addressing the three behavior components of this grant. It is noted that prenatal nutrition group classes are currently scheduled at the McDuffie County HS on a monthly basis. Using grant funds, the number of classes will be expanded to four times monthly with the goal of each participant attending two classes. Expansion of nutrition group classes will provide greater convenience for participants, and, hopefully, reduce the barrier of lack of personal or public transportation. Topics will include such things as: food and energy, the importance of fruits and vegetables, high caloric foods to avoid, wise shopping, folic acid intake to reduce the likelihood of future neural tube defects, how being overweight is connected to diabetes and hypertension, restaurant training with a review of local menus, grocery store training with activities and exercises at grocery store, etc. Classes will be primarily taught by a registered dietician, a RN, and/or credentialed health educator. Other credentialed community agency staff, will be invited to participate as guest instructors (HS, 2011). Participants who attend at least two classes per month will be eligible for a monthly drawing for a free manicure (HS, 2011).

- Healthy Mothers, Healthy Babies (HMHB) Coalition of Georgia. HMHB PowerLine is a Statewide 800 number. It provides statewide healthcare referrals and information (800-822-2539), it is available Monday through Friday, 8:00AM-6:00PM. PowerLine is a proven, fast way to find exactly the care needed. PowerLine is a free service, funded by the Georgia

Department of Public Health. One simple call can put the person in contact with: Medicaid doctors, dental referrals, low-cost health resources for the uninsured, WIC, Children 1st and Babies Born Healthy, low-cost prenatal referrals, referrals for breastfeeding questions, referrals to HIV testing, and many other public health programs. The staff of HMHBGA are key and critical to this project. Maintaining and strengthening linkages to current information channels and services is of fundamental importance.

Collaboration with Other Agencies and Programs

While the primary partnerships are with Voxiva, HS, and HMHBGA, additional collaborations will occur with multiple agencies in the county and state to receive referrals and facilitate the ongoing care of program participants.

DATA ANALYSIS & PROGRAM EVALUATION

Data Collection

Data collection will occur through three methods: 1) Text4Teens SMS participation (Voxiva mobile data collection, custom, database platform including mini-surveys and brief self assessments); 2) data collected from Healthy Start (HS) caseworkers; and 3) purposefully selected, qualitative case study data (n=5, at 15 months and at 30 months).

In order to provide the Text4Teens program with more specific content and connect them to local services, Voxiva and HMHBGA have created a customizable version of the Text4baby service for State and Local Health Departments, Health Plans and Health Delivery Networks. Custom Text4baby clients have the ability to modify a subset of the Text4baby SMS messages so that messages relating to resources and service delivery can include appropriate local content. Custom Text4baby SMS also provides a portal interface, providing in depth real-time analysis into the usage patterns of the end users. Over 30 different charts are pre-configured in the system and the underlying data can be exported for further analysis. Data will be collected and maintained by Voxiva. Data will be periodically downloaded for analysis purposes.

Data Analysis and Evaluation Plan

The data analysis and evaluation plan will be a prospective design. It will feature repeated measures, pre-post intervention, and comparisons occurring over the same timeframes as the intervention. The data analysis evaluation will include outcome and process, correlational measures, and qualitative case study assessments. Data analysis can be conducted real-time

using the Voxiva data dashboard and/or downloaded to a statistical program such as Excel or SAS for additional analysis.

As shown in the below table. It is expected that this program will generate a rich dataset for analysis and study in each of the three intervention areas: 1) smoking cessation; 2) prenatal care; and, 3) nutrition.

Figure A-8: High Level Variables and Data Points								
Three Relational Datasets 1 – Smoking 2- Prenatal Care 3- Nutrition	Key Program Indicators Will be Reported at 6 Month Intervals							
	Varied or On-demand	6m	12m	18m	24m	30m	36m	Total Program
Rich set of hundreds of variables broken out by the three main dataset areas above.								
Client demographics	X	X	X	X	X	X	X	X
Pregnancy information	X	X	X	X	X	X	X	X
Smoking information	X	X	X	X	X	X	X	X
Prenatal Care information	X	X	X	X	X	X	X	X
Nutritional information	X	X	X	X	X	X	X	X
Service availability	X	X	X	X	X	X	X	X
Service utilization	X	X	X	X	X	X	X	X
Progress surveys	X	X	X	X	X	X	X	X
Appointment information	X	X	X	X	X	X	X	X
Appointment schedule reminders	X							
Appointment attendance post confirmation	X							
Linkages to HS information								
Linkages to HS services	X		X		X		X	X
HS service utilization								
Linkages to HMHB information	X		X		X		X	X
Linkages to HMHB services	X		X		X		X	X
HMHB service utilization	X		X		X		X	X
Informed Consent	X	X	X	X	X	X	X	X
Withdrawals	X	X	X	X	X	X	X	X
Medical Risks	X		X		X		X	X
Weight Gain	X		X		X		X	X
Behavioral Outcomes	X		X		X		X	X
Medical Outcomes	X		X		X		X	X

The analysis dataset elements permit analysis of information processes, tailored behavioral considerations, behavioral information, behavioral outcomes, and service variables. To determine the extent to which program objectives are being met, baseline participation assessment data will be collected and reviewed at 6 month intervals.

To determine to the extent outcomes can be attributed to the project, smoking status, prenatal care status, and nutritional status will be compared at program enrollment and then on a temporal basis during the duration of pregnancy and/or program participation, as appropriate.

Data collection and simplification will be managed through electronic record keeping enabled by the Text2quit and Text4baby mobile data collection. Additionally, data will be collected by HS during case encounters, and by the HMHB PowerLine call center.

Six Month Assessment Measures - Program Management

Once the program has been initiated, regular monthly communication after initial meetings will occur with the evaluation team (director, clinical data manager, outcomes evaluator, and research associate). The HS and HMHB directors, the Clinical Data Manager, and the CM team will communicate via emails and monthly conferences. Process measures related to program implementation timeline, participant enrollment, measures collected, etc., will be tracked over time and used to enhance participation, retention, and completeness of data.

Method for Tracking Program Progress

As shown below, system status can be reported on-demand, utilizing the standard, Voxiva service dashboard. In addition to this, program progress will be tracked at six month intervals by downloading data associated with specific information and service utilization.

Figure A-9: Illustration of Text4baby Analytical Data

Source: Voxiva (2011a)

The tracking of messages, interventions, and appointments is already well-established due to the refinement of the Voxiva database through their related system implementation experience. The Voxiva products have a well-established and tested database. Voxiva along with the Principal and Co-principal investigators will develop an understanding about how to best interpret the data, reports and other system generated information to report progress appropriately.

Final Analysis & Report

Analysis and interpretation of the final data will be completed by the Principal Investigator in cooperation with HMHBGA, HS, and Voxiva.

It should be noted that for all practical purposes, Dr. Frederic Grant should be considered an outside evaluator. He has no affiliation with Voxiva, HMHB Coalition, or the Augusta Health District or the Healthy Start program.

Anticipated Outcomes

It is anticipated that many beneficial outcomes will come from this project. Community impacts will include improvement of the physical and emotional health status of participants, new programmatic linkages, and a demonstration that new expanded SMS intervention can be integrated into women's health services.

Adding the social medical support to HS and HMHBGA programs will further insure improvement of the health status of clients. Also, by virtue of overlaying the program on an existing HS program that serves to expand and assure comprehensive women's health services and linkages, we will be demonstrating a model of integration of services as we work across community agencies and providers. Improving the emotional and physical health of local teens before childbirth will bring the importance of addressing pre-term and birthweight issues to the attention of the general citizenship. As this project evolves, HS staff, participants, partners, and the community will become more knowledgeable about the importance of not smoking, prenatal care and healthy diet on the prevention of LBWB occurrences.

Publicity will be sought via newspaper articles, HS and HMHBGA web articles, and related consortium meetings.

Capacity Building

The community partnership aspects of this proposal will contribute to capacity building. For example, the combination of health, smoking cessation, nutrition education, and prenatal care programs working in concert with pregnant teens will teach the staff of each agency more about the other staff capabilities and program objectives of each agency, thus potentially permitting other partnerships to benefit the community. In addition, staff knowledge at each agency will increase. This program will coordinate messages in such a way as to maximize utilization of existing programs and available resources. Text4Teens service referrals will include women's health services provided by private and public providers, WIC, social and educational services, and employment agencies. These linkages are reinforced by relationships that are sustained thru consortium-building activities. Ideas from these various agencies may merge along with actions to benefit disadvantaged, pregnant teens (HS, 2011).

Dissemination of Results

The results of this project may be national in scope. Dissemination will occur via presentations and journal manuscript submissions. The principal and co-principal investigators will submit abstracts for presentations at state, regional, and national meetings.

Voxiva, Healthy Start, and the Healthy Mothers, Healthy Babies Coalition of Georgia will all agree to share lessons learned. Lessons learned will also be shared with local community agencies, general practices communities via Healthy Start Consortium and the Healthy Mothers, Healthy Babies annual meetings and agency staff meetings. Abstracts will be submitted to share promising practices and lessons learned at national meetings. Manuscripts will also be submitted to peer-reviewed journals.

TIMELINE

Overview

This is a three year program. The program timeline and tracking of administrative activities; fiscal activities; contract management; service delivery; recruitment and enrollment; and data collection and evaluation are crucial to overall competent management of this program for effective results. The below table provides a Schedule at a Glance overview of the program.

Figure A-10: Text4Teens Schedule at a Glance

	Year 1				Year 2				Year 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q3	Q4	End
Establish T4T Systems	XXX											
Community Awareness Campaigns	XXXX XXX			XXXXXX				XXXXXX				
Enrollment & Data Collection	XX											
Data Analysis for Trends	XX											
Program Focus Group Inputs		X		X		X		X		X		
Final Data Analysis									XXXXXXXXXXXX			
Qualitative Case Studies				XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX								
Final Report										XXXXXXXXXX		

The above schedule activities have been meaningfully grouped around the following activities: Administration; System Installation and Training; Data Management and Reporting; and, Data Analysis and Evaluation. Program administration has a number of tasks that are “front-end” loaded and which must be accomplished within the first days of the project. The contract with Voxiva, their work to establish the Text4Teens program services, and the work to

familiarize HS and HMHB staff with the Text4Teens program will all require intensive initial efforts. System installation will largely all be accomplished by Voxiva; however, system training will be conducted by the principal and co-principal investigators. System installation will also include structuring the messages which comprise hard linkages to HS and HMHB services. Data management and reporting will be accomplished on the data analysis schedule (in general, at six months intervals). Data Analysis and Program Evaluation activities will be ongoing to insure that the program is meeting its objectives, the efforts associated with a comprehensive analysis of data and the final program evaluation will begin around month 24 and continue through month 36. Please see the Attachment for detailed information.

YEAR 1-3 BUDGET

Table A-11: Text4Teens Program Budget Summary		
Year 1		
Voxiva Contract¹		
Text2quit		\$80,000
Text4baby		\$50,000
Personnel²		
Healthy Start	2 RNs ³	\$9,893
	2 Dietitians	\$6,600
PowerLine	4 Call Center	\$9,893
Project Director	.2 FTE	\$22,072
Co-project		
Director	.2 FTE	\$18,000
Clinical Data Mgr	.1 FTE	\$2,300
Accountant/Clerk	.1 FTE	\$1,200
Travel ⁴		\$2,140
Equipment		\$0
Community Awareness Campaign		\$8,000
Office Supplies		\$176

¹ Voxiva Inc. The standard fee is \$80,000/year for 1,000 annual user licenses. This includes: \$25,000 set-up fee to customize the service: Set-up and configure instance; Co-brand; customized some web content, including resources and Terms and Conditions. \$55,000 annual subscription fee (\$4,583/month) Includes 1,000 participant licenses for unlimited use of the system throughout the contract; Inclusive of detailed reporting and analytics via a secure web portal; and, Service, maintenance, and support. Text4baby is at same but 20% reduced pricing.

² Fringes include health and life insurance, taxes, short-/long-term disability, tuition reimbursement, annual performance incentive, and retirement. Indirect cost of 29% is calculated on the total direct cost at current approved rate for non-research grant participation on campus.

³ Two RN, BSN, RN Case Managers, McDuffie County (50 participants x \$25.53/hr. x 7.75 hrs. total time per Participant) (0.09 FTE (50 participants x 7.75 hrs. = 387.5 hrs.; 387.5 hrs./4,160 hrs. typical work schedule for a year for 2 full time individuals).

⁴ To attend MCHB-sponsored grantee meetings to Washington, DC, or other MCHB sponsored meetings, for 2 staff members estimated at: hotel \$160 x 3 nights, airfare \$360, meals \$35 x 4 days, taxi \$40, airport parking \$50; total of \$1,070 each, \$2,140 total cost.

Misc ⁵	
Postage	\$175
Supplies for Nutritional Services	\$3,600
Flyers	\$350
Total Year 1	\$214,399
Year 2 - No material Changes from Year 1	\$214,399
Year 3 - No material Changes from Year 2	\$214,399
Total Years 1 thru 3	\$643,197

Budget Overview

The proposed budget includes the costs of the Principal and Co-Principal Investigators and all other associated staff. It also includes the direct service cost for HS nurse case managers, and HMHB call center personnel, including the time related to obtaining consents, explaining the T4T program, making referrals, performing dietary instruction, and tracking the activities of participants. A PhD level Clinical Data Manager (0.10 FTE) will monitor collection of all data for completeness and outliers, account for enrollment and informed consents, provide data summaries for federal data reports, and assist in completion of federal reports. This person will

⁵ Under Misc--copier cost is approximately \$0.03/copy for administrative office copies related to this grant. Printing cost includes cost of printing and binding the final report color flyers for promotion / enrollment of participants. Also included is the cost for 2 newsletters per year printed in color with inspirational stories for participants and community. Funds have been included for color cartridges for color printer in the administrative office to print in house. Postage is for mailing to participants and agencies and includes FedEx, UPS, etc. Supplies for nutritional instruction during group education classes, calculated at \$3.00 x 50 participants/class x 24 classes/year = \$3,600. Goal is to have no more than 25 in each class. This rough estimate includes possible attendance of partner or significant family member. Fees for Registered Dietitian planning, food purchasing & food preparation = 1.25 hr.; teaching class & leading the interaction = 1.00 hr.; average travel time to and from class for classes or travel from another county to teach = 0.50 hr., for a total of 2.75 hr. per class (maximum). A total of 48 classes are to be offered during the year (4 classes/month). Total cost is 2.75 hr. x 48 classes x \$50/hr. = \$6,600.

also prompt case managers on required collection of information at the 6 month intervals shown on the master schedule. The time for all personnel will be tracked by the Accountant assigned to the project. The methodology and procedures for tracking all activities are already in use with an intramural grant. We will insure that all personnel are billed for only 1.0 FTE from all funding sources. This budget includes an estimate of other cost related to this grant's needs, including copy, printing, etc. An Accountant/Clerk (0.10 FTE) will be assigned to establish an accurate accounting for the project including contract management, receipts, expenses, and fiscal reporting. This person will also account for any donations or incentive purchases for participants, and handle all administrative components of the program. The PI (0.20 FTE), will assure the project direction and integrity through administrative oversight for the entire project with the assistance of the Frederic Grant, PhD, Co-PI, a Clinical Data Manager, an Accountant, and an evaluator. Major functions will be to provide oversight and coordination of all administrative activities, facilitate the actual implementation of services, monitor progress of the project, provide budgetary management, and chair meetings as necessary.

Second and Third Year Costs

The proposed second and third year costs contain no structural, systems, experiential, or salary increases. The agreements covering all systems and personnel will cover the entire three years of the grant proposal schedule.

ATTACHMENT: GUIDE TO MISSING COMPONENTS

The following components are missing from this proposal template and should be supplied by the applicant organization.

- Memorandum of Agreement with Voxiva
- Voxiva Systems Descriptions (Detailed)
- CVs of the key personnel named in the grant
- Letters of support and endorsement

ATTACHMENT: VOXIVA SYSTEMS DESCRIPTIONS

<http://www.voxiva.com/>



VOXIVA™

**THE POWER OF THE INTERNET,
THE REACH OF THE PHONE**

Follow Us  

Home

Solutions

Sectors

Services

Company

Contact

Health Engagement

- ✦ Maternal Health
- ✦ Smoking Cessation
- ✦ Diabetes

Custom Solutions

Maternal Health



text4baby™

The U.S. has one of the highest infant mortality rates in the developed world. Nearly 500,000 births each year are also born pre-term and an estimated 28,000 children annually die before their first birthday, signifying a national public health crisis. Glaring disparities also exist within certain populations.

The national text4baby™ program (www.text4baby.org) was launched in response to this public health priority. Mobile phones have potential to play a significant role in health care by delivering information directly to those who need it most. Text messaging can deliver the right health information at the right time to pregnant women and new moms, and can be particularly helpful in reaching underserved populations.



text4baby™

Voxiva is both a founding partner and the technology solution provider of this award winning national initiative. We leverage the ubiquity of mobile phones and Voxiva's robust platform to reach pregnant women and new moms across the nation to educate and engage them during this critical moment in the mother and baby's life. The program is delivered as a free-to-end-user service through the support of all major U.S. mobile carriers, and is the largest mobile health service in the U.S. with thousands of public and private partners supporting this important campaign.

Registration is easy and can be done directly from the cell phone. A user simply texts the word **BABY** (or **BEBE** for Spanish) to **511411**, enters the baby's due date or the baby's birthday and their Zip code. Once registered, the user receives free messages with educational tips about their pregnancy and caring for their baby.

In addition to managing this program, Voxiva also offers custom versions of our maternal health service specifically for public health agencies, health plans, employers, and life sciences partners. Based on Voxiva's robust platform, we help our customer deliver a meaningful maternal and infant health engagement solution to meet their program priorities and help improve the health of pregnant mothers and newborns.



Health Engagement

- ✦ Maternal Health
- ✦ **Smoking Cessation**
- ✦ Diabetes

Custom Solutions



Smoking Cessation



There are approximately 46 million smokers in the United States and nearly 1.2 billion around the world. Smokers are at a much higher risk of serious medical conditions, resulting in high costs and loss in productivity. While many smokers try to quit, the process is often challenging—the average successful quitter has attempted quitting 7 times before.

Voxiva's Text2Quit™ is a novel mobile health service designed to help smokers through the quitting process. With content developed by smoking cessation experts from the George Washington University Medical Center, Text2Quit combines cutting edge technology with evidence-based approaches to smoking cessation. The Text2Quit program is made up of a series of interactive SMS (text) messages that are personalized to a participant's profile and sent out over the course of a four month period - both before and after their quit date. The text program is supported by a personalized web portal, which acts both as a resource center and a record of their progress, and targeted emails, which provides further evidence-based guidance and resources on how to quit.

Key features include:

Enrollment:

Participants can self-register for this service via mobile phone or web, or they can be enrolled by a third party sponsor such as an employer or health plan.

Individualized Profile

Once enrolled, the smoker completes a basic health risk assessment to provide demographic information such as age, geography, as well as smoking history. The Text2Quit system customizes the quit plan and personalizes the experience because no two smokers are the same.

ATTACHMENT: HEALTHY MOTHERS HEALTHY BABIES

<http://www.hmhbga.org/index.php/services>



HEALTHY MOTHERS, HEALTHY BABIES

Coalition of Georgia

[Forgot your password?](#) [Forgot your username?](#)

- Home
- Advocacy
- Events
- Resources
- Our Supporters
- Services**
- Contact Us
- Volunteer

[PowerLine](#) | [Powerline Statistics](#) | [Materials Order Form](#) | [Breastfeeding Classes](#)

PowerLine



P O W E R L I N E

The Healthy Mothers, Healthy Babies PowerLine is
your source for statewide healthcare referrals and information.

Metro Atlanta 770-451-5501

Statewide 800-822-2539

Monday through Friday

8:00AM-6:00PM

Powerline is a fast way to find exactly the care you need.

ATTACHMENT: HEALTHY START

<http://www.arccp.net/HealthyStartWP3.asp>

Augusta-Richmond County Community Partnership for Children and Families, Inc.

Healthy Start

- Home
- About Us
- Benchmark Goals & Objectives
- Data Portal
- The Consortium
- Children's Week
- Activities & Special Events
- Calendar
- How You Can Help
- Programs
- Healthy Start
- Drug Free Communities
- Publications
- INCA
- Site Map

[Healthy Start Services](#) | [Eligibility](#) | [The PELI Initiative](#)

The Healthy Start Initiative

The Augusta-Richmond County Community Partnership for Children and Families, Inc. is one of 96 communities in the United States to receive Healthy Start Initiative grants, intended to reduce high infant mortality rates and other health problems related to pregnancy and women's health. The Healthy Start Initiative focuses on the contributing factors which research shows influence the perinatal trends in high risk communities.

The ARCCP is currently in Year 1 of Phase IV of the Healthy Start Initiative. The phase, or project period, is four years, with \$1,120,000 awarded to the ARCCP each year. This award is granted by the Maternal and Child Health Bureau through the Health Resources and Services Administration, of the U.S. Department of Health and Human Services. With this funding, the Community Partnership will concentrate its efforts on high risk women and their infants residing in Richmond County. The three focus areas include:

1. Eliminating disparities in perinatal health.
2. Providing interconceptional care.
3. Improving women's health through screening and intervention for depression and intimate partner violence during and around the time of pregnancy.

Gern, Robert V
RE: Follow-ups at
Hey Fred,
I didn't get a cha

ATTACHMENT: MCDUFFIE COUNTY PERINATAL STATISTICS

<i>McDuffie County 2005 Perinatal Statistics (Percentages)</i>					
	IMR	LBW	Premature	Births to Women <20	Births to Women <18
Total	15.2	10.2	19.5	39.6	19.6
White	5.6	6.2	11.4	31.5	13.9
Black	26.8	15.0	21.0	49.4	26.3

Source: OASIS (2010). <http://oasis.state.ga.us/>

ATTACHMENT: DETAILED SCHEDULE

Program Timeline			
Project Components	Activity	Organizations Responsible	Target Date
<u>Administration</u>			
Contracts	Finalize, route, and forward contracts	Principal Investigator	Days 1 thru 30
Personnel	Modify job descriptions to include Text4Teens duties. Assign coordinating personnel.	HS HMHB	Days 1 thru 45
Meetings & Community Awareness Campaign	Plan PR Campaign Locate Billboard Plan calendar for the year Distribute calendar	HS HMHB	Day 1 thru 45
Purchasing	Designed and order campaign flyer copies and distribute	HS HMHB	Days 1 thru 60
Expense Tracking	Set up Excel worksheet for to track expenditures related to this grant	Principal Investigator	Days 1 thru 60 then ongoing
<u>System Installation and Training</u>			
Voxiva Contract & Service Implementation	Review contract deliverables and performance		At project start then at six month intervals
Voxiva Text4Teens System Set-up and Configuration	Requirements finalized. Program server technology is set up. Services are configured. Enrollment number for Text4Teens is established. Use cases are tested.	Principal Investigator Voxiva	Days 15 thru 45

HS and HMHB Staff Orientation to System	Plan content and schedule	Principal Investigator HS HMHB	Days 15 thru 30
Community Agency Overview to Program	Present Text4Teens overview at HS and HMHB Advisory Meetings	Principal Investigator	Month 46 thru 60
Test Voxiva Text4Teens System	Allow dummy enrollments, test system use bases and parameters. Test ability to download data.		Days 46 thru 60
Initiate Enrollments	Initiate enrollment of participants and data collection	Principal Investigator HS HMHB	Month 2 then ongoing
Schedule Nutrition Classes	Prepare class calendar, beginning Month 2 for 12 months	HS - Registered Dietician	Month 2 then ongoing With reviews each 12 months
HS & HMHB Staff Inputs	Begin enrollment of participants and collection of data	Principal Investigator HS HMHB	Month 6 Month 12 Month 18 Month 24 Month 30 Month36
Enrollee on-line survey	5 question survey to enrollees.	Principal Investigator Voxiva	Month 6 Month 18 Month 30
<u>Data Management and Reporting</u>			
Six month Reviews Data Quality	Monitor database for orphan records, faulty data, nonsensical data	Voxiva	Month 6 then Ongoing
Federal Report	Run queries and format for Annual Federal Report	Principal Investigator Voxiva	Upon Request

<u>Data Analysis & Program Evaluation</u>			
Periodic reports	Evaluation team will provide analysis of data at 6 month intervals for prior 6 months and each project year across time	Administrative assistant	At 6 month intervals and upon request
Final Report and Publications	Final quantitative data analysis will be Month 24 and run thru Month 36. Qualitative Case Recruitment may begin as early as Month 12 and run thru Month 24. Final Case Study Report Due Month 36.		Starts Month 24 and runs thru Month 36

APPENDIX B: T4T GRANT PROPOSAL SCORING INSTRUMENT

Name:

Date:

Instructions

Please type your name and date above. Please read the entire proposal before you begin scoring. Please plan on spending between 4 and 8 hours on this review and evaluation activity.

This grant proposal is to be evaluated using the Scored Review Criteria (SRC) contained in this document. The application will be scored in three areas: 1) Specific Criteria Review Factors; 2) Significance; and, 3) Overall Impact. Specific directions for scoring each of these areas is provided in the appropriate sections and will guide your review. You will use this document to record all of your scores, make comments, and provide feedback. Please type your responses into the spaces provided in each section.

Please see the Master Scoring Rubric below. For all sections of this grant, a 9-point scoring scale is utilized.

Table B-1: Master Scoring Rubric			
Score	Impact	Descriptor	Description
1	High	Exceptional	Exceptionally strong with essentially no weaknesses
2	High	Outstanding	Extremely strong with negligible weaknesses
3	High	Excellent	Strong but with numerous minor weaknesses
4	Medium	Very Good	Strong but with numerous minor weaknesses
5	Medium	Good	Strong but with at least one moderate weakness
6	Medium	Satisfactory	Some strengths but also some moderate weaknesses
7	Low	Fair	Some strengths but with at least one major weakness
8	Low	Marginal	A few strengths and a few major weaknesses
9	Low	Poor	Very few strengths and numerous major weaknesses

As shown in the Scoring Rubric Table, a score of 1 indicates an exceptionally strong response with essentially no weaknesses; whereas a score of 9 indicates an application with serious and substantive weaknesses with very few strengths. Five (5) is considered an average score. Please note that the scores you record are not additive. You will not total the scores associated with your responses. Your review is to be done independently of others. No group meeting will be held to arrive at a consensus on the evaluation. Your evaluation will stand on its own. Upon completion of your review, you will return the completed document (via email only, please) to:

You are free to use the full range of the rating scales values, as appropriate, to better discriminate the strengths and weakness of each section. Highly rating all areas, if not appropriate, will greatly diminish the future usability of the proposal's content. Please note that in addition to numerical scores, summary comments reflecting areas of strength and weakness are encouraged where appropriate. Critical, constructive comments are welcomed and expected.

Specific Criteria Review Factors

The purpose of the Specific Criteria Review Factors is to insure that the proposal fully complies with the content template. This is a very detailed area by area review. The scoring outline may or may not follow the proposal outline in a sequential fashion. Accordingly, you may have to use your best judgment regarding the presence or absence of content signifying a Yes or No for content presence and then providing a score relative to its overall strength or weakness.

Table B-2: Cover Page: Specific Criteria Review Factors Worksheet				
Please use your individual knowledge and judgment as a reviewer. Please use bullets to note strengths and weaknesses, where appropriate.				
Abstract and Summary: Clearly and concisely summarizes the request	YES	NO	1-9	Comments
1. Appears at the beginning of the proposal				
2. Identifies the grant applicant				
3. Includes at least sentence on purpose				
4. Includes at least one sentence on the problem				
5. Includes at least one sentence on objectives				
6. Includes at least one sentence on methods				
7. Includes total cost, funds already obtained or amount requested				
8. Is brief				
9. Is clear				

Table B-2: Cover Page: Specific Criteria Review Factors Worksheet

Please use your individual knowledge and judgment as a reviewer. Please use bullets to note strengths and weaknesses, where appropriate.

Abstract and Summary: Clearly and concisely summarizes the request	YES	NO	1-9	Comments
10. Is interesting				
Comments on Summary:				

Table B-3: Introduction - Specific Criteria Review Factors Worksheet

Please use your individual knowledge and judgment as a reviewer. Please use bullets to note strengths and weaknesses, where appropriate.

Introduction: Describes the applicant agency and its qualifications	YES	NO	1-9	Comments
1. Clearly establishes who is applying for funds				
2. Describes applicant's agency purposes and goals				
3. Describes applicant's programs and activities				
4. Describes applicant's clients or constituents				
5. Provides evidence of the applicant's accomplishments				
6. Offers statistics in support of accomplishments				
7. Offers quotes/endorsements in support of accomplishments				

Table B-3: Introduction - Specific Criteria Review Factors Worksheet				
Please use your individual knowledge and judgment as a reviewer. Please use bullets to note strengths and weaknesses, where appropriate.				
Introduction: Describes the applicant agency and its qualifications	YES	NO	1-9	Comments
8. Supports qualifications in area of activity in which funds are sought (e.g., research, training)				
9. Leads logically to the problem statement				
10. Is as brief as possible				
11. Is interesting				
12. Is free of jargon				
Comments on Introduction:				

Table B-4: Problem Statement - Specific Criteria Review Factors Worksheet				
Please use your individual knowledge and judgment as a reviewer. Please use bullets to note strengths and weaknesses, where appropriate.				
	YES	NO	1-9	Comments
Problem Statement or Needs Assessment				
1. Relates to purposes and goals of the applicant agency				
2. Is of reasonable dimensions—not trying to solve all problems				
3. Is supported by statistical evidence				
4. Is supported by statements from authorities				

Table B-4: Problem Statement - Specific Criteria Review Factors Worksheet				
Please use your individual knowledge and judgment as a reviewer. Please use bullets to note strengths and weaknesses, where appropriate.				
	YES	NO	1-9	Comments
Problem Statement or Needs Assessment				
5. Is stated in terms of clients' needs and problems—not the applicant's				
6. Is developed with input from clients and beneficiaries				
7. Makes no unsupported assumptions				
8. Is free of jargon				
9. Is interesting to read				
10. Is as brief as possible				
11. Makes a compelling case				
Comments on Problem Statement or Needs Assessment:				

Table B-5: Goals and Objectives - Specific Criteria Review Factors Worksheet				
Please use your individual knowledge and judgment as a reviewer. Please use bullets to note strengths and weaknesses, where appropriate.				
Program Objectives: Describes the outcomes in measurable terms	YES	NO	1-9	Comments
1. At least one objective for each problem or need committed to in the problem statement				
2. Objectives are outcomes				
3. Describes the population that will benefit				
4. States the time by which objectives will be accomplished				
5. Objectives are measurable				
Comments on Program Objectives:				

Table B-6: Methods - Specific Criteria Review Factors Worksheet				
Please use your individual knowledge and judgment as a reviewer. Please use bullets to note strengths and weaknesses, where appropriate.				
	YES	NO	1-9	Comments
Methods: Describes the activities to be conducted to achieve the desired objectives				
1. Flows naturally from problems and objectives				
2. Clearly describes program activities				

3. States reasons for the selection of activities				
4. Describes sequence of activities				
5. Describes staffing of program				
6. Describes clients and client selection				
7. Presents a reasonable scope of activities that can be conducted within the time and resources of the program				
Comments on Methods:				

Table B-7: Data Analysis and Program Evaluation - Specific Criteria Factors Worksheet

Please use your individual knowledge and judgment as a reviewer. Please use bullets to note strengths and weaknesses, where appropriate.

Data Analysis & Program Evaluation:	YES	NO	1-9	Comments
Presents a plan for determining the degree to which objectives are met				
1. Presents a plan for evaluating accomplishment of objectives				
2. Presents a plan for evaluating and modifying methods of the program				
3. Tells who will be doing the evaluation and how they were chosen				
4. Clearly states criteria of success				
5. Describes how data will be gathered				
6. Explains any test instruments or questionnaires to be used				

7.Describes the process of data analysis				
8.Describes any evaluation reports to be produced				
Comments on Evaluation:				

Table B-8: Timeline and Budget - Specific Criteria Review Factors Worksheet

Please use your individual knowledge and judgment as a reviewer. Please use bullets to note strengths and weaknesses, where appropriate.

Is detailed enough to convey the sequence of the program and how funds will be expended	YES	NO	1-9	Comments
1.Timeline and budget tell the same story as the proposal narrative				
2. Are detailed in all aspects				
3. Project costs that will be incurred at the time of the program				
4 Contains no unexplained amounts for miscellaneous or contingency				
5. Includes all items asked of the funding source				
6. Includes all items paid for by other sources				
7. Includes all volunteers				
8.Details fringe benefits, separate from salaries				
9. Includes all consultants				
10.Separately details all non-personnel costs				
11. Includes indirect costs where appropriate				

Table B-8: Timeline and Budget - Specific Criteria Review Factors Worksheet

Please use your individual knowledge and judgment as a reviewer. Please use bullets to note strengths and weaknesses, where appropriate.

Is detailed enough to convey the sequence of the program and how funds will be expended	YES	NO	1-9	Comments
12. Is sufficient to perform the tasks described in the narrative				
Comments on Budget:				

Table B-9: Timeline and Budget - Specific Criteria Review Factors Worksheet

Please use your individual knowledge and judgment as a reviewer. Please use bullets to note strengths and weaknesses, where appropriate.

Timeline & Budget: Contains a budget. Describes a plan for continuation beyond the grant and/or the availability of other resources	YES	NO	1-9	Comments
1. Presents a specific plan to use the budget. Discusses future funding if program is continued				
2. Describes how other funds will be obtained, if necessary				
3. Has minimal reliance on future grant support				
4. Is accompanied by letters of commitment, if necessary				

Table B-9: Timeline and Budget - Specific Criteria Review Factors Worksheet

Please use your individual knowledge and judgment as a reviewer. Please use bullets to note strengths and weaknesses, where appropriate.

Timeline & Budget: Contains a budget. Describes a plan for continuation beyond the grant and/or the availability of other resources	YES	NO	1-9	Comments
Comments on Future Funding:				

Significance Scoring

Significance is evaluated and scored independently of the evaluation and scoring of the Specific Criteria Review Factors. The evaluation of significance is a single score representing an overall evaluation of how this proposal will further public health science. The evaluation of significance assumes that the aims of the project will be achieved and/or the project will be successfully completed. Reviewers should evaluate the significance of the project within the context of the research field(s) it addresses. Reviewers should evaluate the significance of the project based upon their overall knowledge of the field(s).

Significant should be gauged around the following types of considerations (HHS/NIH, 2011):

- Does the project address an important problem or critical barrier to progress in the field?
- Given that the aims of the project will be achieved, how will scientific knowledge, technical capability, and/or public health practice be improved?
- How will successful completion of this project change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field?

Table B-10: Significance Scoring Rubric			
Score	Impact	Descriptor	Description
1	High	Exceptional	Exceptionally strong with essentially no weaknesses
2	High	Outstanding	Extremely strong with negligible weaknesses
3	High	Excellent	Strong but with numerous minor weaknesses
4	Medium	Very Good	Strong but with numerous minor weaknesses
5	Medium	Good	Strong but with at least one moderate weakness
6	Medium	Satisfactory	Some strengths but also some moderate weaknesses
7	Low	Fair	Some strengths but with at least one major weakness
8	Low	Marginal	A few strengths and a few major weaknesses
9	Low	Poor	Very few strengths and numerous major weaknesses

Table B-11: Overall Significance Worksheet Please use your individual knowledge and judgment as a reviewer. Please use bullets to note comments regarding strengths and weaknesses, where appropriate. You may continue your comments on to additional pages.	
Overall Significance Score 1 to 9	
Overall Significant Strengths	
Overall Significant Weaknesses	

Overall Impact Scoring

In judging overall impact, reviewers are asked to provide a single score and written comments reflecting the proposals overall impact.

Table B-12: Overall Impact Scoring Rubric			
Score	Impact	Descriptor	Description
1	High	Exceptional	Exceptionally strong with essentially no weaknesses
2	High	Outstanding	Extremely strong with negligible weaknesses
3	High	Excellent	Strong but with numerous minor weaknesses
4	Medium	Very Good	Strong but with numerous minor weaknesses
5	Medium	Good	Strong but with at least one moderate weakness
6	Medium	Satisfactory	Some strengths but also some moderate weaknesses
7	Low	Fair	Some strengths but with at least one major weakness
8	Low	Marginal	A few strengths and a few major weaknesses
9	Low	Poor	Very few strengths and numerous major weaknesses

The overall impact score will be based on each individual reviewer's overall assessment of the proposal. The overall impact score will include all of the considerations that have been previously scored including the Specific Criteria Review Factors, and Significance.

It should be noted that individual criteria scores are not additive. The individual criterion scores are provided for evaluation, discussion, and proposal improvement purposes. The overall Impact Score is not intended to be an average of the other scores.

Reviewers are required to write a paragraph summarizing the factors that informed their overall impact score (HHS, 2011c, d, e; HHS/NIH, 2011).

The Overall Impact Score to reflect their assessment of the likelihood for the project to exert a sustained, powerful influence on the research field(s) involved, in consideration of the core review criteria. Overall Impact takes into consideration, but is distinct from, the scored review criteria. Overall Impact is the synthesis/integration of the five core review criteria that are scored individually and the Scored Review Criteria which may or may not be scored individually.

To evaluate overall impact, the reviewers make an assessment of the likelihood for the project to exert a sustained, powerful influence on the research field(s) involved, in consideration of the scored review criteria, and additional review criteria (as applicable for the project proposed). Likelihood (i.e., probability) is primarily derived from the investigator(s), approach and environment criteria (HHS, 2011c, d, e; HHS/NIH, 2011).

Public health related grants which reduce disease risks, add to the existing body of knowledge, reduce disparity, advancing understanding of new intervention methods, and/or to alleviate human disease and suffering are judged to have high overall impact. (Source: http://grants.nih.gov/grants/peer/guidelines_general/scoring_system_and_procedure.pdf)

You should assign the score that they believe best represents the impact of the application, and not feel constrained to limit their scores to the upper half of the score range if they do not feel such a score is warranted

Reviewers will score an application as presented in its entirety, and may not modify their scores on the assumption that a portion of the work proposed will be deleted or modified according to the SRG's recommendations

Reviewers will be asked to score each review criterion based on how important they feel each review criterion is to the work being proposed. Accordingly, per the typical HHS/NIH guidance, a reviewer may give only moderate scores to some of the review criteria but still give a high overall impact/priority score. A proposal does not need to be strong in all categories to be judged likely to have major impact, e.g., a project that by its nature is innovative may be essential to advance a field. Conversely, a reviewer could give mostly high criterion ratings but rate the overall impact/priority score lower because, based upon their experience, they found one criterion critically important to proposal.

Table B-13: Overall Impact Worksheet Please use your individual knowledge and judgment as a reviewer. Please use bullets to note comments regarding strengths and weaknesses, where appropriate. You may continue your comments on to additional pages.	
Overall Impact Score 1 to 9	
Overall Significant Strengths	
Overall Significant Weaknesses	