Low Birth Weight Outcomes and Disparities in Connecticut:

A Strategic Plan for the Family Health Section, Department of Public Health

by

Lisa Davis
Chief, Family Health Section
Director, Maternal & Child Health Block Grant

Carol Stone & Jennifer Morin
Epidemiologists, Family Health Section

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Preface

This strategic plan is the revision of an original plan prepared in May, 2008. The original plan was developed to address low birth weight outcomes in the state of Connecticut. This revision fully incorporates the recommendations for addressing racial and ethnic disparities in low birth weight, which are described in a document prepared by Jennifer Morin, Epidemiologist (Morin, 2008), prepared in September, 2008. The Report, entitled, "Addressing Racial and Ethnic Disparities in Low Birthweight for Connecticut," is located on the Department's website, and all contributors to the Report are acknowledged with gratitude.

Magnitude of the Problem

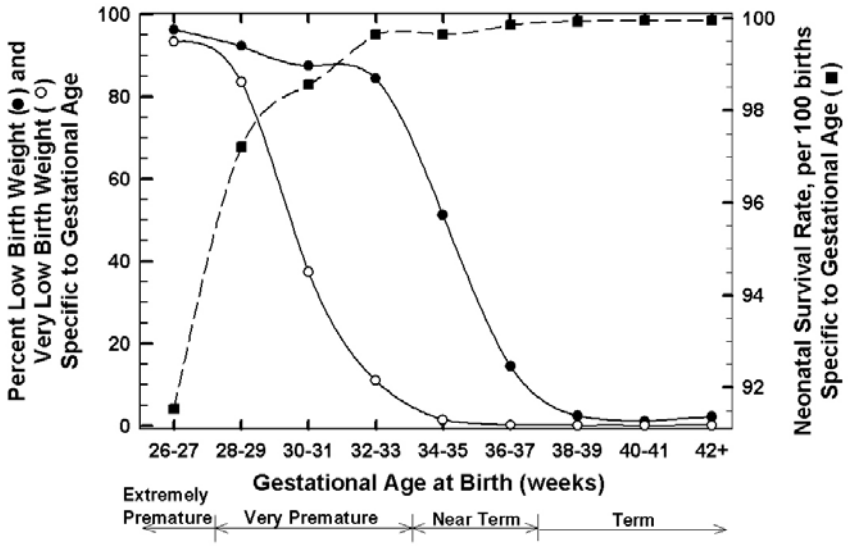
Low birth weight (LBW), or a birth weight of less than 2,500 grams, has been a public health problem in Connecticut for many years, with an overall percent LBW of 8.0 % in 2005 (3,312 LBW events; Gagliardi, 2008). The rate of LBW among non-Hispanic Black/African American women in the past 15 years has remained about twice that of non-Hispanic White/Caucasian women, showing only a slight decrease in trend since 1990. Among Hispanic women, the LBW rate is also elevated and has decreased slowly since 1999.

Births of low weight and very low weight (VLBW; less than 1,500 grams at birth) can occur among babies born with a normal gestation time of at least 37 weeks (small for gestational age), but most LBW events in Connecticut occur as a result of preterm birth (PTB) (Gagliardi, 2008). Whether classified as near term (34-36 weeks gestation), very preterm (28 to 33 weeks gestation), or extremely preterm (less than 28 weeks gestation), women of Black/African American race experienced significantly greater PTB than other race groups in the state in 2005 ($p < 0.001$; DPH, 2007).

There were more than 2,700 hospitalizations for LBW newborns in 2006, with total charges approaching $195 million (Connecticut Office of Health Care Access, 2008). On average, hospitalizations for LBW newborns were longer (16 days vs. 2.5 days) and more costly ($70,000 vs. $2,800) compared to "normal" weight infants (≥2500g). Low birth weight newborns were frequently transferred to other health care facilities or required home health services following hospital discharge, further adding to the associated healthcare costs.

Adverse birth outcomes such as LBW, VLBW, and PTB are directly related to neonatal mortality (see **Figure**). Public health programs that address LBW would also address VLBW, PTB and neonatal survival simultaneously. All four, therefore, are perinatal health indicators and are priorities monitored by Healthy People 2010 (Office of Disease Prevention and Health Promotion, 2007).

Selected Healthy People 2010 Perinatal Health Measures
By Gestational Age, Connecticut, 2005



Percent low birth weight (closed circles), very low birth weight (open circles), and neonatal survival rate, per 100 live births (closed squares) are shown for all births in Connecticut, 2005, by gestational age group.
Low Birth Weight – live birth at less than 2,500 grams.
Very Low Birth Weight – live birth at less than 1,500 grams.
Neonatal Survival Rate – number of infants surviving up to 28 days after birth, relative to all live births, X 100.

Source: C. Stone, from birth records, courtesy of L. Mueller and F. Amadeo, Health Care Quality, Statistics, Analysis, and Reporting, Connecticut Department of Public Health.

Risk Factors for Low Birth Weight

The causes of LBW are complex, and a multiple determinants model demonstrates the many health determinants that either alone or in combination are associated with LBW (**Scheme**). Health determinants are important not only among pregnant women (during the prenatal period), but also before pregnancy (during the preconception and inter-pregnancy periods). The broadly classified health determinants of LBW include specific risk factors with a strong or moderate association to LBW and/or PTB (Stone et al, 2007; Shah & Ohlsson, 2002). These risk factors include:

Medical Health: low weight gain during pregnancy[1]; chronic or pregnancy-induced hypertension[1]; previous medical history of LBW; maternal malnutrition; bacterial vaginosis; urinary tract infection; HIV infection; placental factors; multiple births

Social & Mental Health: Minority race and ethnicity[1]; lower educational status[1]; unmarried status[1]; first time pregnancy[1]; advanced maternal age[1]; pregnancy interval less than 18 months; chronic stress; low socioeconomic status; perinatal depression (Lundy et al, 1999; Orr et al, 2002; Federenko & Wadhwa, 2004)

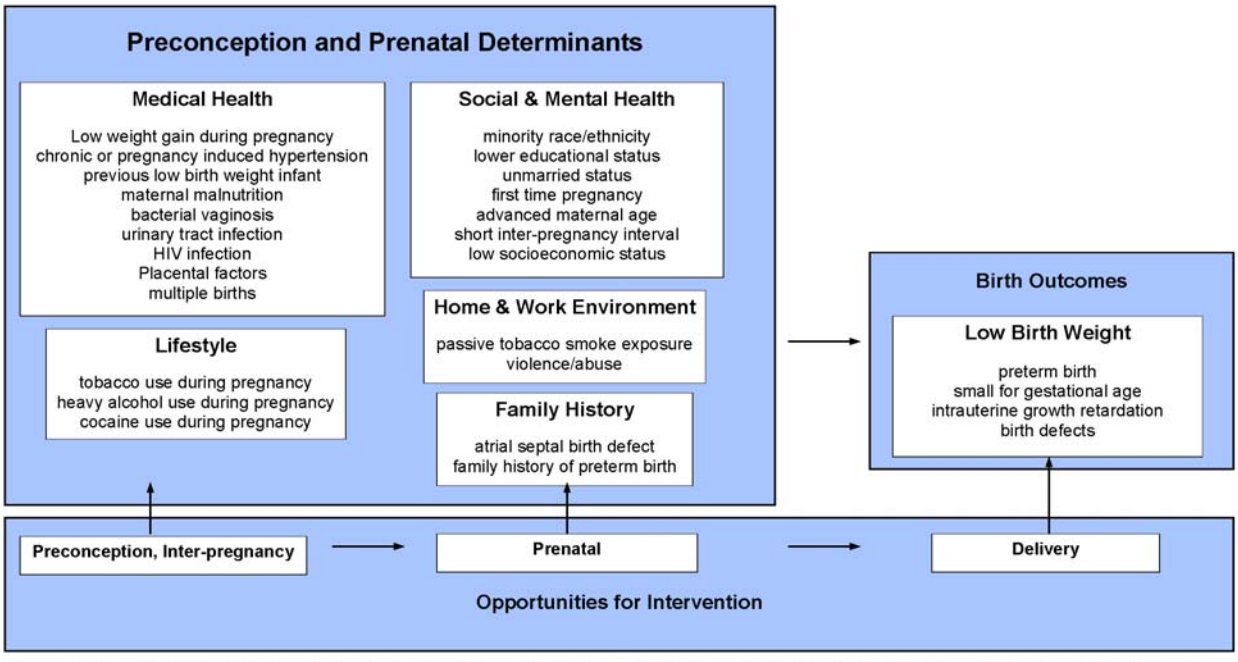
Lifestyle: tobacco use during pregnancy[1]; heavy alcohol use; cocaine use

Home & Work Environment: passive environmental tobacco smoke exposure; violence/abuse

Family History: atrial septal birth defect[1]; family history of preterm birth (Esplin, 2006)

Other, less well-documented risk factors have been studied for their association with LBW and PTB (Shah & Ohlsson, 2002). These risk factors include pregnancy intention, social support structure during pregnancy, short maternal height, low pre-pregnancy weight, heavy caffeine use, marijuana use, licorice ingestion, environmental pollution, noise, and occupational hazards and physically demanding work. In addition, periodontal disease may be associated with PTB (Xiong et al, 2006).

Determinants of Low Birth Weight Outcomes and Opportunities for Intervention



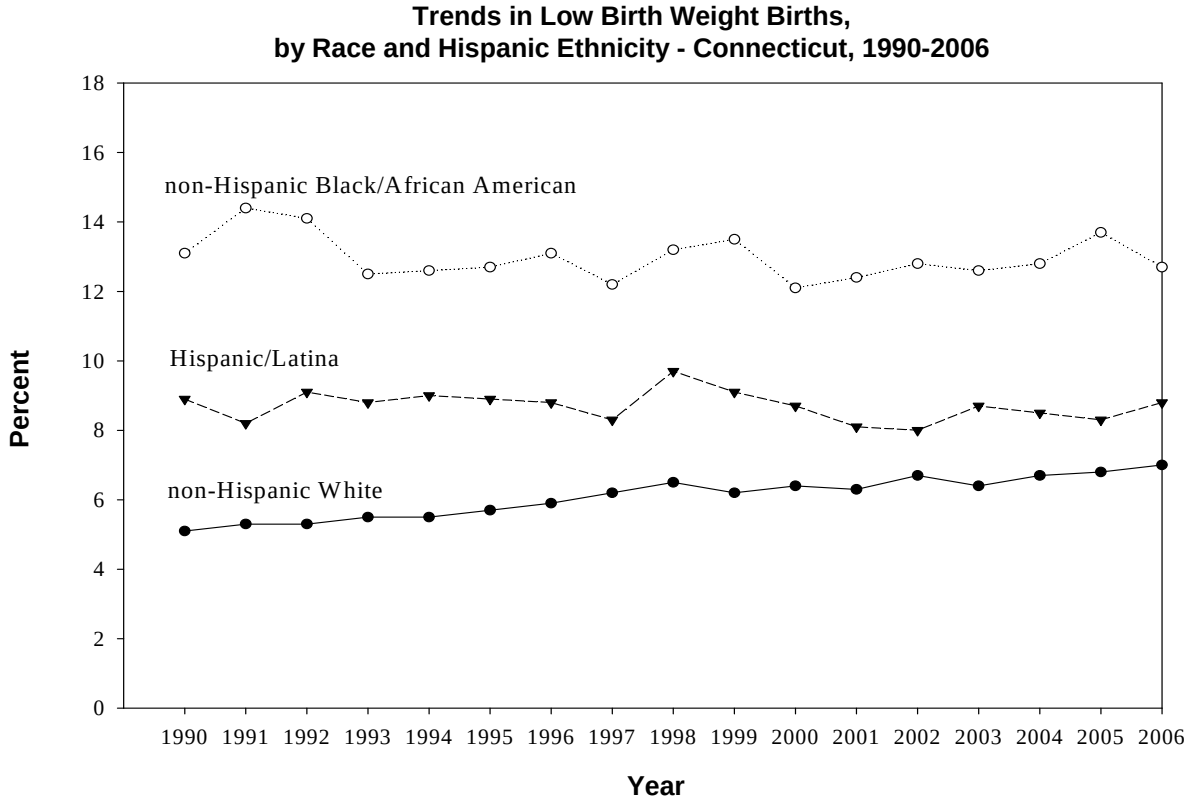
Source: C. Stone, Family Health Section. Determinants extracted from Shah & Ohlsson (2002), Stone et al. (2008), Gagliardi (2008), and deliberations of the MCH work-group of the Quality Assurance Subcommittee, Medicaid Managed Care Council (2007).

[1] Shown to be a risk factor in Connecticut (C. Liu, personal communication; Stone et al, 2007).

Racial and Ethnic Disparities and Associated Risk Factors

extracted from Disparities Report (Morin, 2008)

Non-Hispanic Black/African American and Hispanic women are two racial and ethnic groups that experience disproportionately high rates of LBW compared to others or to the state overall. There has been little improvement in the rates of LBW for these two racial and ethnic groups over time (see Figure, below). The disparity between non-Hispanic Black/African Americans and non-Hispanic Whites declined between 1990 and 2006 - with the ratios of their rates falling from 2.6 to 1.8 - yet it remains substantial. Although the gap has closed slightly, it is most likely related to the increase in LBW over time among non-Hispanic Whites rather than any true improvements for non-Hispanic Black/African Americans. The



Source: Annual CT Registration Report data, Office of Vital Records, CT DPH

disparity in the rates of LBW between Hispanic and non-Hispanic White women also lessened over this time period. The LBW rate ratio of Hispanics to non-Hispanic Whites declined from 1.7 to 1.3 between 1990 and 2006. The increasing rates among non-Hispanic Whites coupled with the small decline in LBW among Hispanics have resulted in this change. If only singleton births[2] are examined, the disparities for non-Hispanic Black and Hispanic women compared to non-Hispanic Whites are 2.3 and 1.6 times greater, respectively.

The increasing rates among non-Hispanic Whites and for Connecticut overall, combined with only small declines among non-Hispanic Black/African Americans and Hispanics, are worrisome. These trends underscore the importance of continued research to examine the determinants of LBW and racial and ethnic disparities, as well as the pursuit of innovative solutions for successful interventions.

[2] Born 28+ weeks gestation.

Risk Factors for Low Birth Weight with High Racial and Ethnic Disparities in Connecticut

Risk factors for LBW vary not only in their prevalence among population groups, but also seem to exert different effects upon them. Identifying these differences are an important component to an improved understanding of why rates of LBW are higher for some groups of women, and also how interventions might need to be targeted differently to successfully reduce adverse outcomes. Below are selected risk factors for LBW for which racial and ethnic disparities exist in Connecticut (Morin, 2008):

- Maternal Age: <20 years, 35+ years
- Late/No Prenatal Care
- Inadequate Prenatal Care
- Unmarried
- Educational attainment: <12 years
- Uninsured
- Medicaid insured
- Exposure to violence

As efforts continue, it is essential to understand that the problems of LBW and racial and ethnic disparities exist simultaneously, and while they may intersect at some points (e.g., sharing risk or associated factors), the points where they do not must also be identified to effect change. These areas may require separate and/or complimentary interventions to successfully reduce both the poor outcomes and the disparities.

Opportunities to address LBW overall, as well as racial and ethnic disparities in LBW, exist within the recommendations presented in this report. These recommendations represent a starting point from which the DPH and its statewide partners may move forward and also build upon in the future. If successful in implementing multi-level strategies, Connecticut may finally realize progress toward reducing LBW *and* eliminating racial and ethnic disparities in LBW. Further, because the factors associated with both LBW and other adverse outcomes such as preterm birth and infant mortality are strongly correlated with one another, it is anticipated that these strategies could also simultaneously improve these other outcomes.

Recommendations to Address Disparities in Low Birth Weight

1. Address Individual-level Factors

1a. Pursue ways to increase Preconception Care for all women of childbearing age (15-44 years).
1b. Promote the use of the CenteringPregnancy® model of prenatal care.
1c. Expand tobacco use cessation programs targeted to pregnant women.

2. Address Environmental-level and Community-level Factors

2a. Develop and implement measures for addressing psychosocial factors in women's lives.
2b. Maximize co-enrollment in WIC and Medicaid for all eligible women.
2c. Assure the quality of and access to health care services before, during, and after pregnancy.
2d. Engage and partner with medical providers.
2e. Increase activities around male involvement.

3. Address System-level Factors

3a. Identify funding to implement an ongoing PRAMS-like survey.
3b. Investigate the role of racial and ethnic discrimination as it relates to both acute and chronic stress in the lives of women, and how it impacts the health care they seek and receive.
3c. Conduct intragroup studies to better understand racial and ethnic disparities in health outcomes.
3d. Foster greater collaboration between State agencies, with a commitment to reduce health disparities in LBW in Connecticut and work collaboratively across programs.

Evidence-Based Interventions

Specific medical or public health interventions with proven or probable effectiveness for reducing LBW and/or PTB include (Shah & Ohlsson, 2002):

Medical Health: providing nutritional supplements and counseling (WIC enrollment) to pregnant women of limited resources[3]; providing coordinated medical support to young women of limited resources (Healthy Start)[2]; using the CenteringPregnancy model of group prenatal care[2]; treating infection; screening mothers with a medical history of LBW for infection; assessing the nutritional status of all pregnant women; administering glucocorticoids to mothers at high risk for PTB; promoting adequate weight gain during pregnancy; promoting optimal nutrition before pregnancy; providing antenatal care; enrolling pregnant adolescents early into prenatal programs; supplementing calcium for women at risk of pregnancy-induced hypertension; transporting high risk women to perinatal centers for delivery

Social and mental health: providing home visiting and psychosocial support for pregnant adolescents; providing psychosocial support to high-risk women experiencing chronic stress

Lifestyle: Smoking cessation during pregnancy.

A Maternal and Child Health (MCH) Workgroup within the Quality Assurance Committee of the Medicaid Managed Care Council was convened in 2007 by Senator Toni Harp. The group was charged with discussions to address LBW in Connecticut. Recommendations of the Workgroup included implementation of programs that address teen pregnancy and that ensure insurance among all women of childbearing years (Gagliardi, 2008). This Workgroup has subsequently been formalized as the Women's Health Subcommittee, with an initial focus on perinatal depression. These programs are particularly effective because they address multiple risk factors simultaneously. The Birth to Nine Committee of the State's Early Childhood Cabinet has also recently discussed the need to address LBW in the state.

Multiple risk factors are commonly associated with *teen pregnancy*, and include minority race/ethnicity, unmarried status, lower educational level, first time pregnancy, and lower socioeconomic status. Public health programs that encourage teens to delay pregnancy could address these multiple risk factors. Enhanced prenatal services to teens may also address LBW among this high-risk group of women in the state.

Many of the risk factors that contribute to LBW can be addressed with timely and adequate *prenatal care*. Further, a CDC Select Panel on Preconception Care recently recommended that all women of childbearing age receive *preconception/inter-pregnancy care* services to promote optimal health before pregnancy (CDC, 2006). Affordable access to these health services, both prenatal and preconception, requires insurance for all women of childbearing age before, during, and between pregnancies. Within Connecticut, a postpartum survey of women indicated that, among respondents, 24% of non-Hispanic Black/African American and 26% of Hispanic women did not have public or private health insurance just prior to pregnancy (J. Morin, personal communication). In contrast, only about 9% of non-Hispanic White/Caucasian women were without health insurance before pregnancy. These results indicate that women may not be entering pregnancy as fit and ready as they could be, and that programs are needed to ensure health care for women of childbearing age.

[3] Shown to be effective in Connecticut (Daponte et al, 2008; Ickovics et al, 2007; Stone et al, 2007).

Planned Activities within the Family Health Section

A variety of public health interventions are planned within the Family Health Section that address multiple health determinants associated with LBW and disparities in LBW, some of which are useful in the preconception as well as prenatal periods. The planned strategies are broadly classified as Health Care Services, Risk Assessment and Education, Coordination of Existing Programs, and Public Health Surveillance. Each is discussed separately below. Whereas some initiatives will be focused on the entire state, others will be focused on community-based health centers. Community-based health centers are an ideal location for many of the planned interventions, especially those implemented to address disparities, because 1) a high concentration of women of reproductive age receive services from the sites, 2) many pregnant women who receive services at the sites are at risk for LBW, 3) DPH provides funds and oversight to the centers, and 4) proven interventions have been tested at these sites. The interventions described in this document for community-based health centers may range from a single site to multiple sites in the state. In addition, a list of extracted activities determined to be "low-hanging" or "medium-hanging" are shown in the **Addendum**.

1. Health Care Services

Resources from the Family Health Section will be used to:

- Continue to monitor the transition of the statewide HUSKY program to assure quality and continued access to care before, during, and after pregnancy. The Quality Assurance Subcommittee of the Medicaid Managed Care Council will continue to monitor quality of care in the state's public insurance program, and FHS staff will continue to participate on the Subcommittee and the Council, and will also participate in the Women's Health Subcommittee, which has set LBW as a priority in the state;
- Support the Tobacco Cessation program, if needed, as it implements its 1-year $800,000 initiative to offer tobacco cessation to women of reproductive age at community-based health centers in the state, and evaluate the effectiveness of these programs. The risk of LBW among women who smoke during pregnancy is two times higher than that among women who don't smoke during pregnancy (Stone, et al, 2007). Tobacco cessation or tobacco-less programs could contribute significantly of lower rates of LBW in the state.
- Facilitate conversations with medical providers about using family health history as a risk factor for preterm birth, providing optimal treatment for pregnancies at risk of a preterm birth, and assuring the delivery of high-risk pregnancies in tertiary care hospitals. Currently, the national ACOG recognizes only a medical history of preterm birth as a risk factor for PTB, yet this necessitates that only women who have had a prior PTB can be classified as high risk. A set of risk factors and accompanying treatment options for women with a first-time pregnancy are needed. Conversations with medical providers will also include the encouraged use of tertiary hospitals for high-risk deliveries.

Many public health activities that involve personal health services are managed by other state agencies. A number of planned activities that address the determinants of LBW and/or PTB, but that require coordination with other agencies, include:

- Provide intensive case management and home visiting for pregnant teens and first time mothers, and enhanced case management for first-time pregnancies and women with low pre-pregnancy body-mass index;

- Treat sexually transmitted diseases, periodontal disease, and other diseases during and before pregnancy, with reimbursement by the HUSKY program. These health care services require coordination with DSS and staff directing the HUSKY program, and also require public funding.
- Facilitate evidence-based interventions that reduce alcohol and illicit drug use during pregnancy. These activities require coordination with the state's DMHAS and DSS staff.

Additional activities are planned within the FHS, but require funds. These activities include:

- Assess public awareness of biobanks for biomedical research, and evaluate public interest in a population-based biobank to study the genetics of preterm birth. Public health strategies specifically focused on preterm birth are lacking because the physiological events that lead to preterm birth are not known. Biomedical research is needed that can be quickly translated into public health practice. Funds will be sought from external sources to facilitate a biobank in the state from pregnant donors who wish to participate in a study to identify the genetic and environmental factors that contribute to preterm birth. **($35,000)**
- Continue to fund implementation of the CenteringPregnancy model at one community-based health center annually in the state. Using existing resources, two community-based health will soon implement the model. CenteringPregnancy, a group prenatal care model, promises to change the way in which uncomplicated prenatal care is offered. Developed by the founder of the Centering Healthcare Institute (Cheshire, CT), Sharon Rising, the model involves a small group of 10-15 women who gather monthly for group education, social support, and counseling. Individual support from a healthcare worker is provided at each group visit, but the degree of individual involvement is limited. The women become actively involved in their own pregnancies, monitoring their own weight and abdominal size, and supporting each other through some of the more difficult aspects of pregnancy. The model has been shown to reduce adverse birth outcomes (Ickovics et al, 2007), is especially effective among adolescents (Grady & Bloom, 2004), and has a high level of patient satisfaction (Baldwin, 2006), without added cost to the prenatal clinic (Ickovics et al, 2007). Whereas individual prenatal care can address many determinants of adverse birth outcomes, this intervention could address additional social determinants of LBW. The CenteringPregnancy model is endorsed by the March of Dimes. Funds are needed to expand the opportunity to other community-based health centers in the state, and may include renovations for space requirements. **($40,000 annually, excluding renovations)**
- Advertise the use of the 2-1-1 Infoline to assure referrals for prenatal care. The state's 2-1-1 Infoline is a comprehensive resource for any resident who calls its line. It can provide pregnant women with referrals for comprehensive prenatal care services, and awareness about this service needs to be enhanced. **($50,000)**
- Pilot a curriculum that addresses the need for family or father support during pregnancy. Working with Real Dads Forever, and DSS, and using MCH technical assistance from HRSA, a curriculum that supports fathers and other family members during a woman's pregnancy will be implemented in at least one community-based health center, and, with successful evaluations, will be expanded to one additional community-based health center annually. **($15,000)**

1. Health Care Services, February 2009

Activity	Geographic Focus Area		Estimated Cost to FHS ($)	
	CHC[1]	Across State	Short Term	Long Term
a. Monitor transition in HUSKY to assure continued quality & access to care	x	x	In-Kind	
b. Support the Tobacco program efforts to implement and evaluate evidence-based tobacco cessation programs during pregnancy	x		In-Kind	
c. Assess public awareness of and interest in a population-based biobank to study genetic-environmental interactions that lead to preterm birth		x	**$35,000**	
d. Facilitate intensive case management for high-risk pregnant teens, first time pregnancies, and women with low prepregnancy body-mass index	**x**		Multi-agency	
e. Assure treatment for STDs and other infections, including periodontal disease, throughout pregnancy	**x**		Multi-agency	
f. Facilitate evidence-based interventions that reduce alcohol & drug use during pregnancy	**x**		Multi-agency	
g. Facilitate conversations with medical providers to include family history as a risk factor for Preterm Birth		x		In-Kind
h. Coordinate with medical providers to ensure that high-risk pregnancies deliver in tertiary care hospitals		x		In-Kind
i. Coordinate with medical providers to ensure evidence-based treatment for pregnancies at risk of Preterm Birth	x	x		in-Kind
j. Fund the implementation of CenteringPregnancy in one CHC	x		**Aug 2009***	
k. Provide funding to promote CenteringPregnancy in at least one CHC per year, excluding renovations.	x			**$40,000 annually**
l. Advertise use of Infoline to assure referrals for early and regular prenatal care		x		**$50,000**
m. Pilot the Prenatal Early Attachment Curriculum, developed by Doug Edwards	x		**$15,000**	

Some interventions were extracted or adopted from: Perinatal Health Plan, FHS; Oral Health Plan, OPHOH.; Shah & Ohlsson (2002); Gagliardi (2008).

[1] - DPH-funded Community Based Health Centers

* - Targeted completion date

2. Risk Assessment and Education

Resources from within the Family Health Section will be used to:

- Study the clinical validity of family health history for PTB as a predictor or PTB, in the absence of a previous PTB. Through a sister grant of the MCHBG, called SSDI (State Systems Development Initiative), funds have been established to perform a twelve-month postpartum survey, starting Spring/Summer, 2009. Called PRATS, one of the questions on the survey will probe the association of family history with the incidence of PTB.
- Expand an infant mortality campaign to include messages about lifecourse theory. With HRSA funds from its First Time Motherhood Initiative, a culturally-sensitive social marketing campaign will be developed that increases awareness about health before pregnancy.
- Evaluate the effectiveness of the current piloted perinatal depression consultative line. Recently, the Family Health Section contracted with Yale University to pilot a consultative hotline to medical professionals in the state. Since implementation in July, 2008, a total of 26 calls have been received from professionals. All calls were transferred from Infoline 2-1-1. Of the calls received, 47% were for treatment referral, and another 38% were for medication questions. A final report for the pilot project will be available in February, 2009, and the results contained in the report need to be evaluated. In addition, 465 professionals have been trained on perinatal depression at grand round or inservice sessions held at 27 sites across the state. A web-based curriculum is also being developed by Yale University for healthcare professionals.

Activities that require coordination with multiple agencies include:

- Assess the nutritional status of women in the prenatal and preconception periods, and provide enhanced case management for women who exhibit serum biomarkers (such as folate, retinol and retinoic acid, or iron levels) indicating undernourishment or malnourishment. These services require coordination with the HUSKY program within the state's DSS and the WIC program within DPH.
- Ensure referral and treatment for women assessed with mental and emotional conditions and/or chronic stress in the pre-conception and prenatal periods. These activities require coordination with all case management programs that serve pregnant women.
- Facilitate implementation of the Medicaid Family Planning Waiver. This waiver would allow family planning services to be covered under Medicaid, and these services could be provided to all adult residents up to 185% of the federal poverty level. The Waiver could be used to offer preconception care services to women of childbearing years.

Activities that are planned, but for which funds are not available are:

- Convene a statewide symposium that achieves the following objectives: 1) review the usefulness of existing preconception screening tools; 2) identify billing codes for reimbursement of preconception care services; 3) and develop a consensus statement for best practice in preconception care. A self-administered *preconception risk assessment* toolkit was recent developed and piloted in New York state communities (GAP-Net, 2008), and endorsed by the March of Dimes, and other tools may be in use within the state. These existing tools need to be assessed and broadly used, if appropriate. **($25,000)**
- Disseminate preconception risk assessment tools to all community-based health centers in the state. With positive results from the pilot study for preconception screening described above, self-

administered risk assessment toolkits will be provided to all community-based health centers in the state. **($25,000**)

- Identify funding to sustain the professional perinatal depression consultative hotline. With positive results of the pilot project described above, funds are needed to support and sustain the hotline. ($**60,000 annually**)
- Disseminate a recently developed booklet on family health history to FHS programs. The booklet describes how family health history plays a role in inherited conditions such as sickle cell disease, hearing loss, and other genetic diseases that afflict newborns and adolescents transitioning into adulthood. **($10,000)**
- Disseminate information about recommended inter-pregnancy interval. The CDC recently produced a consensus recommendation that women adopt the optimal inter-pregnancy interval of at least 18 months. A public health awareness campaign will heighten awareness about this recommendation. **($50,000**)
- Strengthen existing parenting and family planning educational programs for adolescents, in collaboration with Planned Parenthood. Current programs focused on this subpopulation need to be evaluated and modified, as needed, and then implemented in the state. (**$100,000**)

2. Risk Assessment and Education, February 2009

	Geographic Focus Area		Estimated Cost to FHS ($)	
Activity	**CHC[1]**	**Across State**	**Short Term**	**Long Term**
a. Study the association between Family History of Preterm Birth with incidence of Preterm Birth		x	In-Kind	
b. Assess nutritional status and refer for treatment	x		Multi-agency	
c. Assess emotional, mental, and chronic stressors, and refer for treatment	x		Multi-agency	
d. Explore & Facilitate implementation of the Medicaid Family Planning Waiver	x		Multi-agency	
e. Convene statewide symposium to review existing preconception care packages, identify billing codes for preconception care, and develop consensus statement for best practice in preconception care, consistent with Life Course Theory	x		**$25,000**	
f. Expand the infant mortality campaign to incorporate the Life Course Theory	x	x		**Aug 2010***
g. Evaluate the perinatal depression consultative line		x	MCHBG	
h. Identify funding for ongoing perinatal depression consultative line		x		**$60,000 annually**
i. Purchase adequate supplies of the Family Health History Booklet for dissemination to FHS programs		x	**$10,000**	
j. Disseminate existing flyer about fish consumption (prepared by EEOH) to OB/GYN clinics		x	**Oct 2008***	
k. Disseminate information about recommended inter-pregnancy interval		x	**$50,000**	
l. Strengthen existing parenting and family planning programs for adolescents	x			**$100,000**

Some interventions were extracted or adopted from: Perinatal Health Plan, FHS; Oral Health Plan, OPHOH.; Shah & Ohlsson (2002); Gagliardi (2008).

[1] - DPH-funded Community Based Health Centers

* - Target completion date or actual completion date

3. Perceived Discrimination and Health Disparities

Health disparities are an overarching goal of the Maternal and Child Health Block Grant (MCHBG), and the reduction of disparities was identified as a state priority during the most current semi-decennial needs assessment for the Block Grant. All items prepared in this strategic plan, if focused on minority race/ethnicity populations, could address disparities in low birth weight. The action items described below relate directly to infrastructural or systems strategies to address racial and ethnic disparities.

Activities planned within the FHS, using existing resources, are:

- Support continued efforts of the Health Disparities Workgroup within the Public Health Initiative Branch. The workgroup recently prepared a report on disparities in low birth weight (Morin, 2008). Staff will contribute expertise and support for additional activities that seek to address disparities in other public health programs within the agency.

Activities planned within the FHS, but lacking funds, are:

- Evaluate the degree to which women of minority race and ethnicity perceive discrimination in their prenatal care, and the degree to which group prenatal care models address perceived discrimination. The degree to which perceived discrimination is associated with adverse health outcomes will also be evaluated. This research activity will use a mixed methods approach, combining quantitative results from population-based and focused surveys with qualitative results from focused surveys. **($7,500)**
- Evaluate existing and planned interventions within the Section for their ability to address perceived discrimination that may lead to reduced LBW. A thorough assessment is needed. With results of the assessment, the FHS will develop strategies to ensure that funded initiatives address language, culture, diversity, and health literacy appropriate to the focus group, and that each funded initiative document components that reduce disparities. **($20,000)**

3. Perceived Discrimination and Disparities, February 2009

	Geographic Focus Area		Estimated Cost to FHS ($)	
Activity	**CHC[1]**	**Across State**	**Short Term**	**Long Term**
a. Evaluate perceived discrimination in prenatal care, and the degree to which group prenatal care mediates perceived discrimination outcomes via quantitative and qualitative research activities.	x	x	**$7,500**	
b. Document that all initiatives address language, culture, diversity, and health literacy		x		In-Kind
c. Include process evaluation components in all initiatives to document advances to reduce disparities		x		In-Kind
d. Endorse the recommendations to address disparities in low birth weight, developed by Disparities Workgroup, within the Public Health Initiatives Branch		x	**Sept 2008***	
e. Facilitate continued efforts by the Disparities Workgroup, within the Public Health Initiatives Branch, to address health disparities in it programs.		x		In-Kind
f. Evaluate existing and planned interventions within the Section for their ability to address perceived discrimination.		x	**$20,000**	

Some interventions were extracted or adopted from: Perinatal Health Plan, FHS; Oral Health Plan, OPHOH.; Shah & Ohlsson (2002); Gagliardi (2008).

[1] - DPH-funded Community Based Health Centers

* - Completion date

4. Program Coordination

The following activities are planned with existing resources in the Family Health Section:

- Provide technical assistance to the Hartford Health Department to implement the strategies outlined in their preconception health plan for the City of Hartford.
- Facilitate efforts to receive funding for federal Healthy Start within the city of Hartford and other geographies in the state. Currently, the only federally-funded Healthy Start program is in New Haven. Family Health Section staff recently completed a proposal for a funded federal Healthy Start program in Hartford. Federal review of this proposal is pending.
- Encourage the use of Life Course Theory in MCH and other DPH programs. Life Course Theory within the MCH context states that events very early in a girl's life, even during fetal development, set the stage for conditions in adulthood that can affect a woman's health throughout her reproductive years (Kotelchuck, 2003). The concept of fetal programming or fetal imprinting, related to the theory, states that the environment experienced by a growing fetus creates a pattern of gene expression that is sustained throughout a person's life, from birth to adulthood (Wu, 2004). This imprinted pattern may lead to chronic diseases in adulthood. Life Course Theory forms a bridge from the Maternal and Child Health programs to chronic disease programs, as well as infectious disease programs. Existing programs that incorporate Life Course Theory, and new initiatives that incorporate the theory, would create a bridge from MCH to these other public health programs.

Activities that require multi-agency participation are:

- Ensure that all children born low birth weight are properly referred to the Birth-to-Three program through a data sharing agreement between DPH and the Department of Developmental Services.
- Support efforts by the Women's Health Subcommittee of the Medicaid Managed Care Council, as well as those of the Early Childhood Cabinet's Birth to Nine Committee, as they pursue efforts to address low birth weight in the state.
- Increase state funding for Healthy Start in the state. Evaluation of the state's Healthy Start program indicates that program participants deliver healthier infants. Increased funds are needed to expand its outreach prenatal care coordination services.
- Mandate tracking of WIC enrollment among pregnant women enrolled in the HUSKY program. Nearly one-third of all women enrolled in the HUSKY program are not enrolled in WIC during pregnancy, despite roughly equal eligibility. Increased co-enrollment is needed to reduce adverse birth outcomes. Existing programs in the state, such as WIC and Healthy Start, have been shown to reduce LBW (Stone et al, 2007; Daponte et al, 2008). These programs, in addition to the state's HUSKY program, focus activities on roughly the same group of pregnant women with limited resources. Co-enrollment in these programs needs to be optimized, and these programs need to be supported at both the local and statewide levels.

Additional planned activities within the FHS that require funds are:

- Modify risk assessment forms for case management programs funded by all state agencies to include follow-up activities that maximize co-enrollment in WIC and HUSKY. The forms will be modified to include a checkbox. **($10,000)**

- Partner with the WIC program to investigate why some women enrolled in WIC do not co-enroll in HUSKY. Issues of pride, convenience, and awareness may explain the lack of co-enrollment, but a thorough investigation is needed. **($35,000)**
- Develop and disseminate information about the state's WIC, Healthy Start, and Nurturing Families programs. A brochure that describes program services and eligibility requirements will be developed and disseminated statewide. This activity will require multi-agency collaboration. **($20,000)**

4. Program Coordination, February 2009

	Geographic Focus Area		Estimated Cost to FHS ($)	
Activity	**CHC[1]**	**Across State**	**Short Term**	**Long Term**
a. Facilitate reimbursement for perinatal depression screening	x		Multi-agency	
b. Provide technical assistance to Hartford Health Department in their pursuit of federal funding	x		In-Kind	
c. Provide technical assistance to community-based efforts for federal HEALTHY START funding	x			In-Kind
d. Ensure that all low birth weight infants are referred to the Birth-to-3 program		x	Multi-agency	
e. Support efforts by the Women's Health Subcommittee of the Medicaid Managed Care Council, as well as the Commission on Children, to address low birth weight		x	Multi-agency	
f. Encourage the use of Life Course Theory to coordinate MCH programs with others within DPH		x		In-Kind
g. Alter risk assessment forms for all DPH-funded case management programs to include a check-off box indicating referral to WIC	x		**$10,000**	
h. Increase funding for state Healthy Start program to expand service delivery	x		Multi-agency	
i. Partner with the WIC Program to investigate why some women eligible for coenrollment in WIC & Medicaid are not co-enrolled during pregnancy	x		**$35,000**	
j. Develop a master contract between agencies providing services to pregnant women enrolled in HUSKY to track co-enrollment in WIC.	x		Multi-agency	
k. Partner with the WIC and HEALTH YSTART programs to develop & disseminate brochure about coordinated benefits of WIC, HUSKY, and HEALTHY START during pregnancy	x		**$20,000**	

Some interventions were extracted or adopted from: Perinatal Health Plan, FHS; Oral Health Plan, OPHOH.; Shah & Ohlsson (2002); Gagliardi (2008).

[1] - DPH-funded Community Based Health Centers

5. Public Health Surveillance

Valuable information about the social, environmental, and genetic risk factors for LBW, combined with the wealth of information available in birth records, could be gathered from a fully implemented survey of postpartum women. The CDC uses a standardized postpartum survey tool called the Pregnancy Risk Assessment Monitoring System (PRAMS; CDC, 2007a). Thirty-seven states in the country are funded by CDC to conduct PRAMS (CDC, 2007b). Connecticut is not currently associated with the program. Although the state is not currently affiliated with PRAMS, the FHS offered two simpler point-in-time surveys, called the Pregnancy Risk Assessment Tracking System (PRATS). The surveys were performed once each in 2002 and 2003, over a four to five month time period.

Planned activities using resources provided by the Family Health Section include:

- Conduct a continuous PRATS for 12 consecutive months. Through SSDI, and in partnership with the HCQSAR unit, a monthly PRATS is planned, beginning Spring, 2009 and running for 12 months. The survey will be stratified by race and ethnicity to evaluate health disparities in maternal and infant health.
- Link PRATS responses to birth records and other infant health records within DPH. This public health research activity will provide information about the genetic, social, medical, and economic factors in the state that contribute to LBW. External funds are being pursued, in partnership with Dr. L. Mueller, HCQSAR, and a funding opportunity through HRSA may soon become available.

Additional planned activities within the FHS that require funding are:

- Sustain the monthly PRATS described above beyond the initial 12 months supported with SSDI funds. With the successful implementation of PRATS for 12 consecutive months, additional funds are needed to sustain the postpartum survey. **($100,000 annually)**
- Enhance epidemiology capacity in the FHS. The above planned activities and accompanying analyses require additional staff in the Epidemiology Unit, 1 FTE. **($100,000 annually)**

5. Public Health Surveillance, February 2009

	Geographic Focus Area		Estmimated Cost to FHS ($)	
Activity	**CHC[1]**	**Across State**	**Short Term**	**Long Term**
a. Conduct a monthly PRATS survey, from Spring, 2009 to Spring 2010		x	**June, 2010***	
b. Identify funding for ongoing PRATS, a postpartum survey program to monitor the effectiveness of programs that seek to reduce LBW, PTB, and SGA		x		**$100,000 annually**
c. Link PRATS to birth records & infant health records within DPH to evaluate & monitor the social, medical, and genetic determinants associated with adverse birth outcomes		x		In-Kind
d. Obtain additional FTE support for epidemiological surveillance of perinatal programs		x		**$100,000 annually**

Some interventions were extracted or adopted from: Perinatal Health Plan, FHS; Oral Health Plan, OPHOH.; Shah & Ohlsson (2002); Gagliardi (2008).

[1] - DPH-funded Community Based Health Centers

* - Target completion date

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ADDENDUM

Low-Hanging Action Steps to Address LBW and Its Disparities

(extracted action steps from LBW Plan, February, 2009)

Activity Item* (Plan's Action Item)	Action Item	Anticipated Outcome	Priority Criteria				
			Cost	Short Project Duration?	Size of Intended Population	Agency Coordination Required to Implement?	Legislative Activity Required?
1 (2i)	Purchase adequate supplies of the Family Health History Booklet for dissemination to FHS programs.	Among FHS programs: 1) understand how family health history plays a role in inherited conditions such as sickle cell disease, hearing loss, and other genetic diseases that afflict newborns and adolescents transitioning into adulthood; 2) distribute booklets to contractors and/or other statewide partners for client education.	$	Yes	5,000 partners & their clients	No	No
2 (3a)	Evaluate perceived discrimination in prenatal care, and the degree to which group prenatal care mediates perceived discrimination outcomes.	Among selected women receiving DPH-funded prenatal care: 1) an understanding of the degree to which pregnant women experience discrimination; 2) an estimate of the degree to which group prenatal care mediates perceived discrimination.	$	Yes	500 volunteers	No	No
3 (4k)	Partner with WIC and HEALTHY START programs to develop & disseminate brochure about coordinated benefits of WIC, HUSKY, and HEALTHY START during pregnancy.	Among women of childbearing age statewide: 1) increase awareness about their eligibility for WIC, HUSKY, and Healthy Start; 2) understand the benefits of co-enrollment in WIC, HUSKY, and Healthy Start during pregnancy; 3) increase co-enrollment and utilization of services from WIC, HUSKY, and Healthy Start during pregnancy.	$	Yes	10,000 eligible low income pregnant women	Yes	No
4 (2e)	Convene a statewide symposium with medical providers that links the importance of preconception care to LBW and infant development.	Among practitioners statewide: 1) understanding of the importance of preconception care for LBW and infant/child development; 2) reviewed usefulness of existing preconception tools; 3) identified billing codes for reimbursement of preconception care services; 4) consensus statement for best practice in preconception care disseminated statewide.	$	Yes	6,000 practitioners statewide	Yes multiple	No
5 (4g)	Alter risk assessment forms for all DPH-funded case management programs to include a check-off box indicating referral to WIC.	Among clients serviced by FHS-funded case management programs: increased enrollment in WIC.	$	Yes	1,500 clients	Yes	No
6 (1m)	Pilot the Prenatal Early Attachment Curriculum, developed by RealDadsForever, at selected community-based health agencies.	Among selected male supporters of pregnant women: 1) understand the value of a father in the life of his child; 2) understand a developing baby; 3) understand emotional, financial, and home preparations; 4) prepared for fatherhood.	$	Yes	20 selected male supporters	Yes RealDadsForever, DSS (Fatherhood Initiative), Children's Trust Fund (CTF)	No
7 (2d)	Explore a mechanism for the implementation of the existing Family Planning Waiver, through the HUSKY program.	Among women & men of childbearing age statewide who are enrolled in Medicaid: 1) family planning services for residents up to 185% FPL; 2) increased receipt of preconception care for women of childbearing age.	$	No	150,000 Medicaid enrollees of childbearing age	Yes DSS	No
8 (4j)	Execute an MOU with Managed Care Organizations and WIC to ensure pregnant women enrolled in HUSKY are co-enrolled in WIC.	Among women statewide who are enrolled in HUSKY during pregnancy: increased enrollment in WIC at least 12 weeks before delivery.	$	No	10,000 pregnant women in HUSKY	Yes DSS, DPH (WIC), CTF	No

* Activity items sorted by cost, project duration, and size of intended population.

ADDENDUM

Medium-Hanging Action Steps Addressing LBW and Its Disparities

(extracted from LBW Plan, February, 2009)

Activity Item* (Plan's Action Item)	Action Item	Anticipated Outcome	Priority Criteria				
			Cost	Short Project Duration?	Size of Intended Population	Agency Coordination Required to Implement?	Legislative Activity Required?
1 (3f)	Evaluate existing and planned interventions within FHS for ability to address perceived discrimination.	Among FHS-funded programs: 1) ability of program to address perceived discrimination.	$	No	1,500 clients	No	No
2 (4j)	Develop a master contract between agencies providing services to pregnant women enrolled in HUSKY to *track co-enrollment* in WIC.	Among women statewide who are enrolled in HUSKY during pregnancy: increased enrollment in WIC at least 12 weeks before delivery.	$	No	10,000 pregnant women in HUSKY	Yes DSS, DPH (WIC), CTF	No
3 (4d)	Institute an MOA with DDS to ensure that all low birth weight babies are referred to the Birth-to-Three program.	Among low birth weight babies statewide: 1) increased enrollment in the Birth-to-Three program; 2) increased access to early intervention services; and 3) reduced developmental delays.	$	No	4,000 LBW babies	Yes DDS	No
4 (2k)	Develop a health awareness campaign that encourages CDC-recommended interpregnancy interval of 18 months.	Among postpartum women statewide: 1) increase awareness of the health benefits of an inter-pregnancy interval of 18 months; 2) increased inter-pregnancy interval of 18 months for subsequent pregnancies.	$$	Yes	40,000 postpartum women statewide	No	No
5 (4h)	Increase funding to the state Healthy Start program for expanded outreach efforts.	Among eligible pregnant women and children in selected geographies: 1) increased intensive prenatal care coordination services; 2) increased use of medical home during childhood.	$$	No	500 **additional** low income preg women & children	Yes DSS	Yes
6 (5b)	Identify sustained funding for an ongoing PRATS, a monthly postpartum survey program.	Among postpartum women statewide: 1) a mechanism to monitor preconception, prenatal, and early postpartum socioeconomic indicators of health; 2) association of socioeconomic, medical, and demographic characteristics with adverse birth outcomes; 3) use information derived from PRATS to drive public health policy and planning.	$$$	No	40,000 pregnant women statewide	No	Yes
7 (1k, 1b)	Increase funding to community health centers for enhanced prenatal services.	Among community-based health centers in the state: 1) Renovations and startup costs needed to implement the CenteringPregnancy model; 2) Integration of tobacco cessation programs and oral health care services into prenatal care models.	$$$	No	10,000 low income pregnant women	No	Yes

* Activity items sorted by cost, project duration, and size of intended population.