

**Strategic Plan within the Family Health Section
Addressing
Low Birth Weight Outcomes in Connecticut**

**A Report to Dick Edmonds
Chief, Public Health Initiatives Branch**

by

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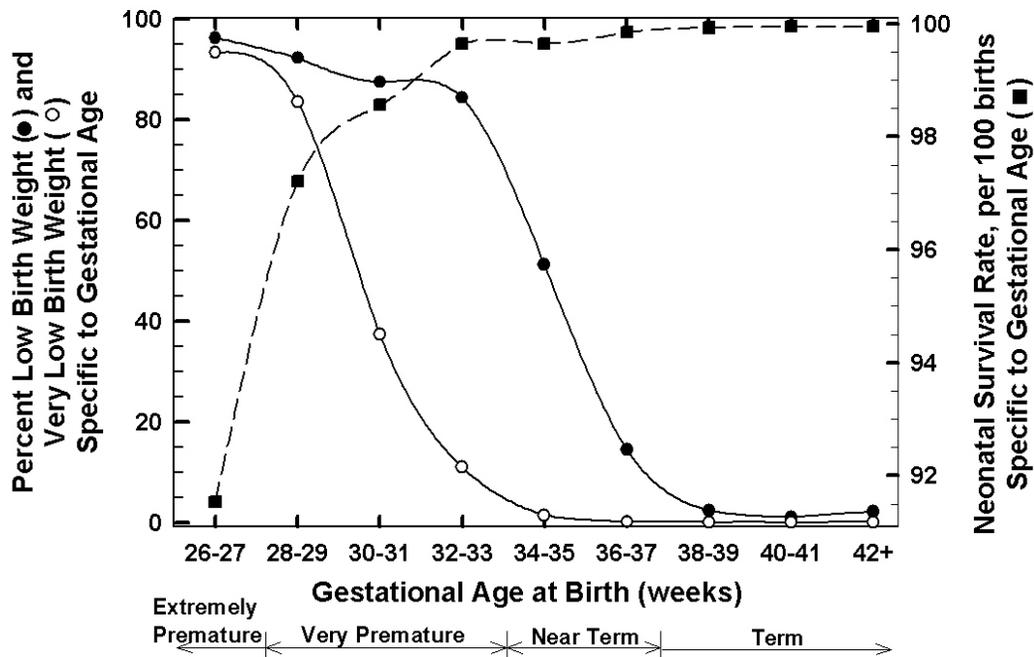
Magnitude of the Problem

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).

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 pregnancy¹; chronic or pregnancy-induced hypertension¹; previous medical history of LBW; maternal malnutrition; bacterial vaginosis; urinary tract infection; HIV infection; placental factors; multiple births

Social & Mental Health: Minority race and ethnicity¹; lower educational status¹; unmarried status¹; first time pregnancy¹; advanced maternal age¹; pregnancy interval less than 18 months; chronic stress; low socioeconomic status; perinatal depression (Lundy et al, 1999; Orr et al, 2002; Federenko & Wadhwa, 2004)

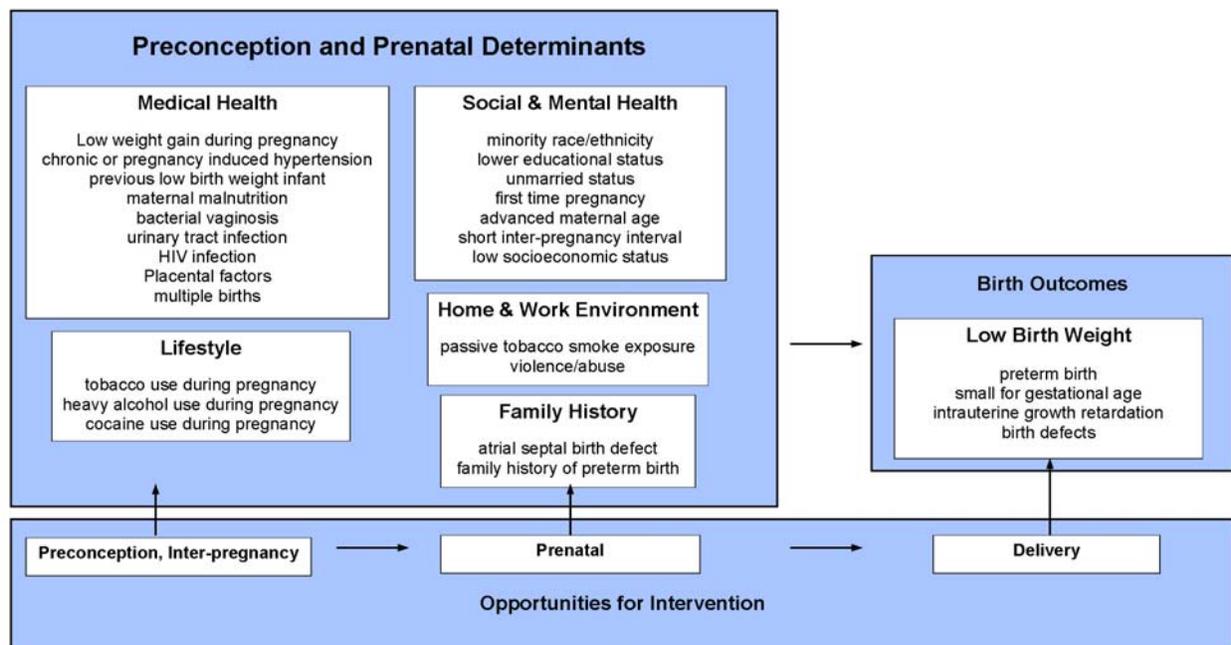
Lifestyle: tobacco use during pregnancy¹; heavy alcohol use; cocaine use

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

Family History: atrial septal birth defect¹; 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).

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 resources²; providing coordinated medical support to young women of limited resources (HealthyStart)²; using the CenteringPregnancy model of group prenatal care²; 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 recently 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). These programs are particularly effective because they address multiple risk factors simultaneously. The Infant and Toddler Workgroup 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.

² 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, 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, Perceived Discrimination and Disparities, 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, 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.

Health Care Services

Resources from the Family Health Section, including the Maternal and Child Health Block Grant (MCHBG), will be used to address the health care needs of women in the state. Existing resources will be used to:

- Continue to monitor 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 MCH Workgroup of the Subcommittee, which has as a priority LBW in the state;
- Support the Tobacco Cessation program, if needed, as it implements its 1-year \$800,000 initiative to offer tobacco cessation during pregnancy at community-based health centers in the state. 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.
- Fund implementation of the CenteringPregnancy model in at least one community-based health center. 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.
- 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 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.

- Develop a strategic plan for a statewide biobank to study the genetics of preterm birth. Public health strategies specifically focused on PTB are lacking because the physiological events that lead to PTB 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 PTB.

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 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:

- Continue to fund implementation of the CenteringPregnancy model at one community-based health center annually in the state. As indicated above, the CenteringPregnancy model promises to revolutionize prenatal care in the state. Existing MCHBG funds will be used to fund implementation of the model in a single community-based health center. With success of this strategy, additional funds are needed to expand the opportunity to other community-based health centers in the state. **(\$25,000 annually)**
- Study the effectiveness of tobacco cessation programs within the CenteringPregnancy model. CenteringPregnancy has been shown to provide a strong social support structure for pregnant women, and a strong support structure is needed for women who attempt to reduce or stop smoking during pregnancy. A pilot study is needed and planned within the CenteringPregnancy model that includes a smoking cessation component, and it is hypothesized that a cessation program within the model will be more effective than a program within the traditional individual care model. **(\$35,000)**
- 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)**
- Develop 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 annually)**

Planned Health Care Interventions

Activity	Geographic Focus Area		Estimated Cost to FHS (\$)	
	CHC ¹	Across State	Short Term	Long Term
Monitor transition in HUSKY to assure continued quality & access to care		x	In-Kind	
Support the Tobacco program efforts to implement evidence-based tobacco cessation program during pregnancy	x		In-Kind	
Develop strategic plan for a population-based biobank to study genetic-environmental interactions that lead to Preterm Births		x	External Funding	
Facilitate intensive case management for high-risk pregnant teens, with home visits		x	Multi-agency	
Assure treatment for STDs and other infections, including periodontal disease, throughout pregnancy		x	Multi-agency	
Facilitate enhanced case management for first-time pregnancies		x	Multi-agency	
Provide enhanced case management for women with low prepregnancy body-mass index		x	Multi-agency	
Facilitate evidence-based interventions that reduce alcohol & drug use during pregnancy		x	Multi-agency	
Facilitate conversations with medical providers to include family history as a risk factor for Preterm Birth		x	In-Kind	
Coordinate with medical providers to ensure that high-risk pregnancies deliver in tertiary care hospitals		x	In-Kind	
Coordinate with medical providers to ensure evidence-based treatment for pregnancies at risk of Preterm Birth		x	in-Kind	
Fund the implementation of CenteringPregnancy in one CHC	x		MCHBG	
Provide funding to promote CenteringPregnancy in at least one CHC per year	x		\$25,000 annually	
Evaluate the effectiveness of tobacco cessation programs in a group healthcare setting	x		\$35,000	
Advertise use of Infoline to assure referrals for early and regular prenatal care		x	\$50,000	
Fund program components that are family-centered & that include fathers	x		\$15,000 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

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 of 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, 2009. Called PRATS, one of the questions on the survey will probe the association of family history with the incidence of PTB.
- Review the usefulness of preconception tools within community-based health centers. A self-administered *preconception risk assessment* toolkit was recently developed and piloted in New York state communities (GAP-Net, 2008), and endorsed by the March of Dimes. The toolkit allows women to complete a questionnaire that is shared with a medical provider. This piloted program will be evaluated for its ease of use and effectiveness.
- Evaluate the effectiveness of the current piloted perinatal depression consultative line. A recent study was conducted with federal funds to compare two assessment tools useful for medical professionals to screen for perinatal depression. The MCHBG was also successful in incorporating automatic screening for perinatal depression among women who use the state's 2-1-1 Infoline. Recently, the Family Health Section contracted with Yale University to pilot a consultative hotline to medical professionals in the state. This strategy needs to be evaluated.

Activities that require coordination with multiple agencies include:

- Assess the nutritional status of women in the prenatal period, and particularly in the preconception period, and provide enhanced case management for women who are undernourished or malnourished. These services require coordination with the HUSKY program within the state's DSS and the WIC program within DPH.
- Assess the mental and emotional state and degree of chronic stress experienced by women in the preconception and prenatal periods, and ensure treatment for these conditions. These activities require coordination with the HUSKY program.

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

- 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. **(\$75,000)**
- Identify funding to sustain the professional 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 a flyer about fish consumption during pregnancy. The flyer was developed by the Environmental Health Section within DPH and describes the limits of fish consumption and types of fish acceptable for pregnant women. The flyer will be disseminated to prenatal clinics in the state. **(\$5,000)**

- Provide parenting and family planning programs for adolescents. Current programs focused on this subpopulation need to be evaluated and modified, as needed, and then implemented in the state. **(\$100,000)**
- Sustain an infant mortality program. Through the Fetal and Infant Mortality program, and working with the New Haven federal Healthy Start program, as well as the Hartford Health Department, a social marketing campaign is currently underway to heighten awareness of infant mortality. The campaign is currently limited to these geographic areas and needs to be expanded. **(\$50,000 annually)**
- 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. **(\$20,000)**

Risk Assessment and Education Interventions

Activity	Geographic Focus Area		Estimated Cost to FHS (\$)	
	CHC ¹	Across State	Short Term	Long Term
Study the association between Family History of Preterm Birth with incidence of Preterm Birth		x	In-Kind	
Assess nutritional status and refer for treatment	x		Multi-agency	
Assess emotional, mental, and chronic stressors, and refer for treatment	x		Multi-agency	
Review piloted preconception care packages & assess feasibility of replicating in other communities	x		External Funding	
Facilitate regular use of self-reported preconception screening tool, based on the Life Course theory	x			\$75,000
Evaluate the perinatal depression consultative line		x	MCHBG	
Identify funding for ongoing perinatal depression consultative line		x		\$60,000 annually
Purchase adequate supplies of the Family Health History Booklet for dissemination to FHS programs		x	\$10,000	
Disseminate existing flyer about fish consumption (prepared by EEOH) to OB/GYN clinics		x	\$5,000	
Provide parenting and family planning programs for adolescents	x			\$100,000
Allocate funds annually to sustain infant mortality campaign		x		\$50,000 annually
Disseminate information about appropriate interpregnancy interval		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

Perceived Discrimination and Health Disparities

Health disparities are an overarching goal of the MCHBG, and the reduction of disparities was identified as a state priority during the most current semi-decennial needs assessment for the block grant.

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

- Support the Disparities Workgroup within the Public Health Initiative Branch. The workgroup is currently addressing disparities in LBW, and is examining ways to address racial and ethnic social disparities. Staff will contribute expertise and support for these activities.
- Evaluate perceived discrimination during prenatal care. Funds are being sought, in partnership with the University of Connecticut Center for Translating Research into Practice and Policy, to evaluate the degree to which women of minority race and ethnicity perceive discrimination in their prenatal care. A mixed model approach will be used, including questions on the state’s planned PRATS survey, as well as information from focus groups. The degree to which perceived discrimination is associated with adverse health outcomes will also be evaluated.

An initial activity planned within the FHS, but lacking funds, is:

- 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)**

Perceived Discrimination and Disparities Interventions by FHS

Activity	Geographic Focus Area		Estimated Cost to FHS (\$)	
	Selected CHC ¹	Across State	Short Term	Long Term
Evaluate perceived discrimination in prenatal care and the association of perceived discrimination on adverse health outcomes		x	External Funding	
Evaluate the degree to which group prenatal care mediates perceived discrimination in prenatal care	x		External Funding	
Evaluate existing and planned interventions for their ability to address perceived discrimination and lead to improve birth outcomes		x	\$20,000	
Document that all initiatives address language, culture, diversity, and health literacy		x		In-Kind
Include process evaluation components in all initiatives to document advances to reduce disparities		x		In-Kind
Facilitate efforts by the Disparities Workgroup, within the Public Health Initiatives Branch, to address health disparities in it programs.		x		In-Kind

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

Coordination of Existing Programs

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.

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

- Provide technical assistance to the Hartford Health Department, as needed. The local department has applied for funding to initiate a federal Healthy Start program in the city and is developing a preconception care plan for its residents. FHS staff will assist with these efforts.
- Support participation of WIC personnel on the Quality Assurance Subcommittee of the Medicaid Managed Care Council during its focus on coordination of HUSKY and WIC enrollment. In 2000, only about two-thirds of eligible women enrolled in HUSKY A were co-enrolled in WIC (Stone, 2007). A future focus topic of the Subcommittee may be to optimize co-enrollment of women in both the WIC and HUSKY programs, and active participation by WIC staff is needed.
- 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 women'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.

Additional planned activities within the FHS that require funds are:

- Modify risk assessment forms for case management programs funded by DPH to include the assessment of 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 prenatal programs. A brochure that describes the state's program services and eligibility requirements will be developed and disseminated statewide. **(\$20,000)**

Program Coordination Efforts

Activity	Geographic Focus Area		Estimated Cost to FHS (\$)	
	CHC ¹	Across State	Short Term	Long Term
Facilitate reimbursement for perinatal depression screening	x		Multi-agency	
Provide technical assistance to Hartford Health Department in their pursuit of federal funding	x		In-Kind	
Provide technical assistance to community-based efforts for federal HEALTHY START funding	x		In-Kind	
Support the appointment of a representative from WIC to attend Quality Assurance Subcommittee meetings of Medicaid Managed Care Council		x	In-Kind	
Encourage the use of Life Course Theory to coordinate MCH programs with others within DPH		x	In-Kind	
Alter risk assessment forms for all DPH-funded case management programs to include a check-off box indicating referral to WIC		x	\$10,000	
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	
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

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 two-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)**

Public Health Surveillance

Activity	Geographic Focus Area		Estimated Cost to FHS (\$)	
	CHC ¹	Across State	Short Term	Long Term
Conduct a monthly PRATS survey, from Spring, 2009 to Spring 2010		x	x	SSDI
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
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	External Funding	
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

References

- Baldwin, KA (2006) Comparison of selected outcomes of CenteringPregnancy *versus* traditional care. *J Midwifery Womens Health* 41(4):266-272.
- CDC (2006) Recommendations to improve preconception health and health care – United States: a report of the CDC/ATSDR Preconception Care Work Group and the Select Panel on Preconception Care. MMWR 55(RR-6), Centers for Disease Control and Prevention, Atlanta, Georgia.
- CDC (2007a): Pregnancy Risk Assessment Monitoring System (PRAMS), <http://www.cdc.gov/PRAMS/index.htm>, accessed on May 7, 2008.
- CDC (2007b): Pregnancy Risk Assessment Monitoring System (PRAMS): Participating PRAMS States, <http://www.cdc.gov/PRAMS/states.htm>, accessed on May 7, 2008.
- Daponte, BO, Lagana, G, McDevitt, S, Wood, P (2008) An examination of Connecticut’s Healthy Start program, 2006-2007, Department of Social Services, Hartford, Connecticut; *in preparation*.
- DPH (2007) Feasibility study for a statewide biobank to study preterm births and birth defects. Connecticut Department of Public Health, Hartford, Connecticut, http://www.ct.gov/dph/lib/dph/BIOBANK_Final_Report_111407.pdf, accessed on June 6, 2008.
- Esplin, MS (2006) Preterm birth: a review of genetic factors and future directions for genetic study. *Obstet Gynecol Surv* 61(12):800-806.
- Federenko, I. & Wadhwa, P. (2004) Women’s mental health during pregnancy influences fetal and infant developmental and health outcomes. *CNS Spectrums*, 9, 198-206.
- Gagliardi, A. (2008). Women’s Health Before, During and After Pregnancy: The relationship between women’s health and birth outcomes, child development and school readiness. Maternal and Child Health Workgroup, Quality Assurance Subcommittee, Medicaid Managed Care Council, Hartford; *in preparation*.
- GAP-Net (2008) Preconception Tool, <http://www.gap-net.org/Preconception%20Tool.htm>, accessed on May 7, 2008.
- Grady, MA, Bloom, KC (2004) Pregnancy outcomes of adolescents enrolled in a CenteringPregnancy program. *J Midwifery Womens Health* 49(5):412-420.
- Ickovics, JR, Kershaw, TS, Westdahl, C, Magriples, U, Massey, Z, Reynolds, H, Rising, SS (2007) Group prenatal care and perinatal outcomes: a randomized controlled trial. *Obstet Gynecol* 110(2 Pt 1):930-939.
- Kotelchuck, M (2003) Building a life-course perspective in maternal and child health. *Mat Child Health J* 7(1):5-11.
- Lundy, B., Jones, N., Field, T., Nearing, G., Davalos, M., Pietro, P. (1999). Prenatal depression effects on neonates. *Infant Behavior and Development*, 22, 119-129.
- Office of Disease Prevention and Health Promotion (2007) Healthy People 2010, Maternal, Infant, and Child Health (Chapter 16), U.S. Department of Health and Human Services, <http://www.healthypeople.gov/Document/pdf/Volume2/16MICH.pdf>, accessed May 7, 2008.
- Orr, S. T., James, S. A., & Prince, S. B. (2002). Maternal prenatal depressive symptoms and spontaneous preterm births. *American Journal of Epidemiology*, 156: 797–802.
- Scholl, T., Johnson. (2000) Folic Acid: Influence on Pregnancy Outcome. *American Journal of Clinical Nutrition*. 7(5):1295s-1303s.
- Shah, P, Ohlsson, A (2002) Literature Review of Low Birth Weight, Including Small for Gestational Age and Preterm Birth. Department of Pediatrics, Mt. Sinai Hospital, Toronto, Ontario, http://www.toronto.ca/health/low_birth_weight/pdf/lbw_lit_review.pdf, accessed on May 7, 2008.
- Stone, CL, Strobino, DM, Mueller, LM (2007) WIC Participation and Improved Low Birth Weight Outcomes in Connecticut: Analysis of a Birth-WIC-HUSKY A Linked Dataset, *manuscript in preparation*.
- Stone, CL (2007) WIC Participation and Improved Birth Outcomes, Connecticut, 2000. Connecticut Department of Public Health, Hartford CT.
- Wu, G, Bazer, F, Cudd, TA, Meininger, CJ, Spencer, TE (2004) Maternal nutrition and fetal development. *J. Nutr.* 134: 2169–2172.
- Xiong, X, Buekens, P, Fraser, WD, Beck, J, Offenbacher, S (2006) Peridontal disease and adverse pregnancy outcomes: a systematic review. *BJOG* 113(2):135-143.