Baltimore City Vulnerability Index

December 7, 2011

1. Introduction

B'More for Healthy Babies is an initiative to reduce the number of infant deaths, premature infants, and low birthweight infants in Baltimore City. Home visiting for pregnant and recently delivered women is one intervention strategy of B'More for Healthy Babies aimed at achieving reductions in poor birth outcomes. Home visiting is delivered by several community-based organizations in Baltimore City. In recognition of the growing need to implement standard models across home visiting, the Baltimore City Health Department (BCHD) and Family League of Baltimore City (FLBC) have recommended using home visiting models that are primarily evidence-based or promising practices. Moreover, BCHD and FLBC have recommended creating a vulnerability index that identifies risk factors for poor birth outcomes and appropriately triages perinatal women to home visiting models that will most effectively meet their needs.

2. Background: Baltimore City Home Visiting

A. Home Visiting Models in Baltimore City

Beginning in 2012, it is expected that four home visiting models will be used by Baltimore City home visiting programs:

Nurse-Family Partnership (NFP). NFP is a widely implemented home visiting model that uses nurses as home visitors. NFP is intended only for low-income first-time mothers who receive an initial home visit no later than the end of week 28 of pregnancy. In Baltimore City, NFP will be implemented by nurses with women who meet these criteria of low-income, first-time mother, and HV initiation < 28 weeks.

Nurse Home Visiting. Nurses and social workers will implement Nurse Home Visiting with women who need nurse/social worker services who do not meet criteria for NFP enrollment.

Healthy Families (HF). HF is a national home visiting model that uses paraprofessionals as home visitors. HF states its primary goals as promoting positive parenting, enhancing child health and development, and preventing child abuse and neglect. In Baltimore City, paraprofessional home visitors from several community-based organizations will implement the HF model. HF will use the Partners curriculum as their main parenting curriculum.

Healthy Start (HS). HS is a national home visiting model that also uses paraprofessionals as home visitors. HS states its primary goal as reducing infant mortality, with a explicit focus on increasing the likelihood of women having full-term infants given premature birth's strong association with infant mortality. In Baltimore City, paraprofessional home

visitors from Baltimore Healthy Start, Inc., will implement the HS model. HS will use the Partners curriculum as their main parenting curriculum.

Women across home visiting models will receive *Baby Basics* materials. In particular, all home visited women will receive the book, *Baby Basics: Your Month by Month Guide to a Healthy Pregnancy,* that provides pregnant women with information on various maternal and child health topics. Pregnant women will also be afforded the opportunity to join *Baby Basics'* "Moms' Clubs". These groups will be regularly occurring meetings throughout different geographic sections of Baltimore City. Moms' Clubs will also serve as a referral site for home visiting programs that do not have capacity to enroll new clients.

Women receiving nurse home visiting (not NFP), Healthy Families, or Healthy Start home visiting will use the Partners for a Healthy Baby parenting curriculum. Partners for a Healthy Baby is a comprehensive curricula that provides monthly guidance for home visitors working with pregnant women and their families. The Partners curriculum was updated in 2009-2010 to include up-to-date research on psychosocial risk factors, safe sleep, and family planning.

B. Home Visiting Capacity in Baltimore City

Each of the four models described in section 2A has a specified caseload per home visitor. These caseloads and the number of Baltimore City home visitors who will be implementing each model are specified in Table 1. The total number of home visiting families to be served by each model is also specified.

Table 1. Total Number of Families to be Served by Each Baltimore City Home Visiting Model

Home Visiting Model	Number of Home Visitors	Caseload Per Home Visitor	Total Number of Families to be Served by Model
Nurse-Family Partnership	4 FTE	25	100
Partners for a Healthy Baby	9 FTE (5 nurses, 4 social workers)	35	315
Healthy Families	28 FTE	25	700
Healthy Start	16 FTE	35	560
TOTAL			1675

3. Creation of a Vulnerability Index

In 2010, 4240 Maryland Prenatal Risk Assessment forms were completed for pregnant women in Baltimore City. These forms are intended to provide an assessment of risk factors associated with poor birth outcomes. Prenatal Risk Assessment forms are typically faxed to Baltimore Healthcare Access (BHCA) by prenatal care clinics. BHCA, thus, serves as the centralized intake and assessment site for these Prenatal Risk Assessments. Of the 4240 women on whom Prenatal Risk Assessments were conducted, 1478 (35%) were first-time mothers. For

the purposes of creating the Vulnerability Index, we anticipate that roughly the same number of live births will occur in 2011 and 2012. We also anticipate that the percentage of births to first-time mothers will stay approximately the same as in 2010.

The Prenatal Risk Assessment collects data in the following domains: (a) demographics (e.g., age, race/ethnicity, education level), (b) OB history (e.g., prior birth outcomes), (c) psychosocial risks (e.g., mental health, substance abuse), and (d) medical risks (e.g., STD's, diabetes). Given the available number of home visiting slots for each of the four models described in section 2B, criteria need to be established for triaging women into each home visiting model. To establish these criteria, three main considerations were used. First, Prenatal Risk Assessment data from 2010 was reviewed to determine the number of women exhibiting various risk factors for poor birth outcomes. Second, a review of other city and state models for conducting prenatal risk assessments was conducted to obtain guidance on approaches for triaging pregnant women to an appropriate level of home visiting services. Third, the training and skills of professional and paraprofessional home visitors were reviewed to determine risk factors that each set of home visitors would be best prepared to address.

Through a review of 2010 Prenatal Risk Assessment data, other models for triaging pregnant women to home visiting services, and assessing the skills of professional and paraprofessional home visitors, a vulnerability index has been created that consists of a four-tier hierarchy for risk factors most likely to be associated with a poor birth outcome:

Tier 1: Significantly Elevated Risk due to Previous Poor Birth Outcome(s). The risk factors that put a pregnant woman at greatest risk for a poor birth outcome are previous poor birth outcomes. Specifically, women who have a **history of (a) fetal or infant loss, (b) premature birth, or (c) low birthweight infant** are considered to be at significantly elevated risk for a poor birth outcome and are found in Tier 1 of the Vulnerability Index.

Tier 2: Elevated Risk due to Presence of High-Risk Medical Condition(s) or Early/Advanced Age. Certain medical conditions are also commonly associated with poor birth outcomes. Specifically, women who have (a) **sickle cell disease, (b) hypertension, (c) diabetes, and (d) vaginal bleeding after 12 weeks** are considered to be at elevated risk for a poor birth outcome. Additionally, **women $\leq$ 15 years old and $\geq$ 45 years old** are also considered to be at elevated risk and are found in Tier 2 of the Vulnerability Index. Women who do not self-report meeting one of these criteria on the Prenatal Risk Assessment, but are judged to have one of these high-risk medical conditions by the BHCA assessment worker conducting the Assessment will also be placed in Tier 2 of the Vulnerability Index.

Tier 3: Slightly Elevated Risk due to Presence of Low-Risk Medical Condition(s). Other medical conditions are less commonly associated with poor birth outcomes. Specifically, women who currently have **(a) syphilis or HIV, (b) asthma, or (c) a BMI < 18.5 or > 30** are considered to be at slightly elevated risk and are found in Tier 3 of the Vulnerability Index.

Tier 4: Slightly Elevated Risk due to Presence of Psychosocial Risk Factor(s). Many women in Baltimore City also have one or more psychosocial risk factors that are less commonly associated with poor birth outcomes. Specifically, women who (a) **have depressive symptoms, (b) use**

tobacco, (c) use alcohol or drugs, and/or (d) are in an abusive relationship are considered to be at slightly elevated risk and are found in Tier 4 of the Vulnerability Index. Related to alcohol/drug use, the BHCA assessment worker will determine the extent of the alcohol and/or drug use by the client. Clients who are determined to exhibit substance abuse/dependence will be triaged to Tier 2 of the Vulnerability Index.

These tiers will be used to triage women eligible for nurse home visiting and Healthy Families. It will also be used to triage women eligible for Healthy Start who do **not** live in the census tracts of 601, 602, 603, 802, 807, 1001, 1004, or 2610; women in these four census tracts will receive Healthy Start services that are provided through federal (Maternal and Child Health Bureau) funding, not B'More for Healthy Babies. The tiers listed above will not be used to triage women eligible for Nurse Family Partnership (NFP).

4. Using the Vulnerability Index to Triage Women into Baltimore City Home Visiting Models

A. Triaging Overview

The creation of the Vulnerability Index and associated triaging plan is based on the assumption that there will be no significant shifts in the number of (a) total live births and (b) total live births to first-time mothers in Baltimore City during the upcoming calendar years. It also assumes that approximately the same number of pregnant women will exhibit each risk criterion described above in subsequent calendar years. If these assumptions are correct regarding similar numbers of live births and similar percentages of women experiencing various risk criteria, we anticipate that the triaging process described below will closely align with the number of available slots for each home visiting program. These four tiers will be used by BHCA to triage women into the appropriate home visiting model.

Women in Tiers 1 and 2 will be referred to the nurse home visitation model while women in Tiers 3 and 4 will be referred to the Healthy Families and Healthy Start home visiting models. As noted above, there are two groups of pregnant women who will not be triaged in this manner. First, pregnant women in the census tracts served by federally-funded Healthy Start services will receive the Healthy Start home visiting model regardless of risk level. Second, women eligible for the Nurse Family Partnership (NFP) will not be triaged, but rather immediately referred to the NFP program. Eligible criteria established for NFP for B'More for Healthy Babies are: first-time pregnancy and age under 19 years.

B. Protocol for Re-Triaging Clients

While the Vulnerability Index is expected to effectively triage women to appropriate home visiting models, it is recognized that some women may increase their risk for a poor birth outcome after the initial assessment conducted by BHCA. In these instances, home visiting programs should re-triage women. Specifically, should a home visiting client initially triaged to Tier 3 or 4 be determined to have a risk factor placing her at higher risk for a poor birth outcome (see Section 3), the home visiting program should refer that client to the nurse

home visiting program serving Tier 1 and Tier 2 women. Although it is expected the majority of referrals from a Tier 3 or 4 program to a nurse home visiting program (Tier 1 or 2) will be based on a newly identified risk factor, this referral can also be based on the clinical judgment of the home visiting program. To ensure accurate documentation of the re-triaging process, the home visiting program referring a client to another home visiting program for nurse/social worker services should submit a referral form to both the (a) home visiting program to which the client is being referred and (b) Baltimore HealthCare Access. This referral form will document the reason for referral and date of referral.

C. Triaging If Home Visiting Enrollment is Closed

Because the number of available slots for each home visiting model is capped due to a set number of home visitors and their associated caseloads, it is possible that a woman will become eligible for a particular home visiting model but not be able to enroll in that program because there is no available slot for enrollment. In this event, a home visiting client would be referred to the next tier on the Vulnerability Index. For example, if a woman over the age of 18 meets criteria for Tier 1 due to a history of premature labor, but there are no available slots with the nurse home visiting model, this woman would then be referred to the Healthy Families or Healthy Start program. Additionally, any woman who meets criteria for the nurse home visiting program would be referred to the Healthy Start or Healthy Families home visiting model if the slots allocated for the nurse home visitation program are filled.

Although women eligible for the Nurse-Family Partnership model are not initially triaged through the tiered vulnerability index described in this document, it is possible that these women will need to be triaged to another home visiting model should there be no more available slots with NFP. In this case, women will be referred to the Nurse Home Visiting model should slots be available. If all Nurse Home Visiting slots are closed, then women meeting NFP criteria will be referred to either Healthy Start or Healthy Families Maryland.

Based on data provided by Baltimore HV programs to the Family League of Baltimore City and Baltimore City Health Department, it appears that there is considerable variability in the number of available home visiting slots across home visiting programs, with the percentage of available slots ranging from 0-71%. There is also great variability in HV programs' retention rates. Presently, it appears that 57% of clients enrolled by the M&I Nursing home visiting program continue to be active 12 months after enrollment, while 75% of clients enrolled by the various paraprofessional HV programs remain active at 12 months post-enrollment.

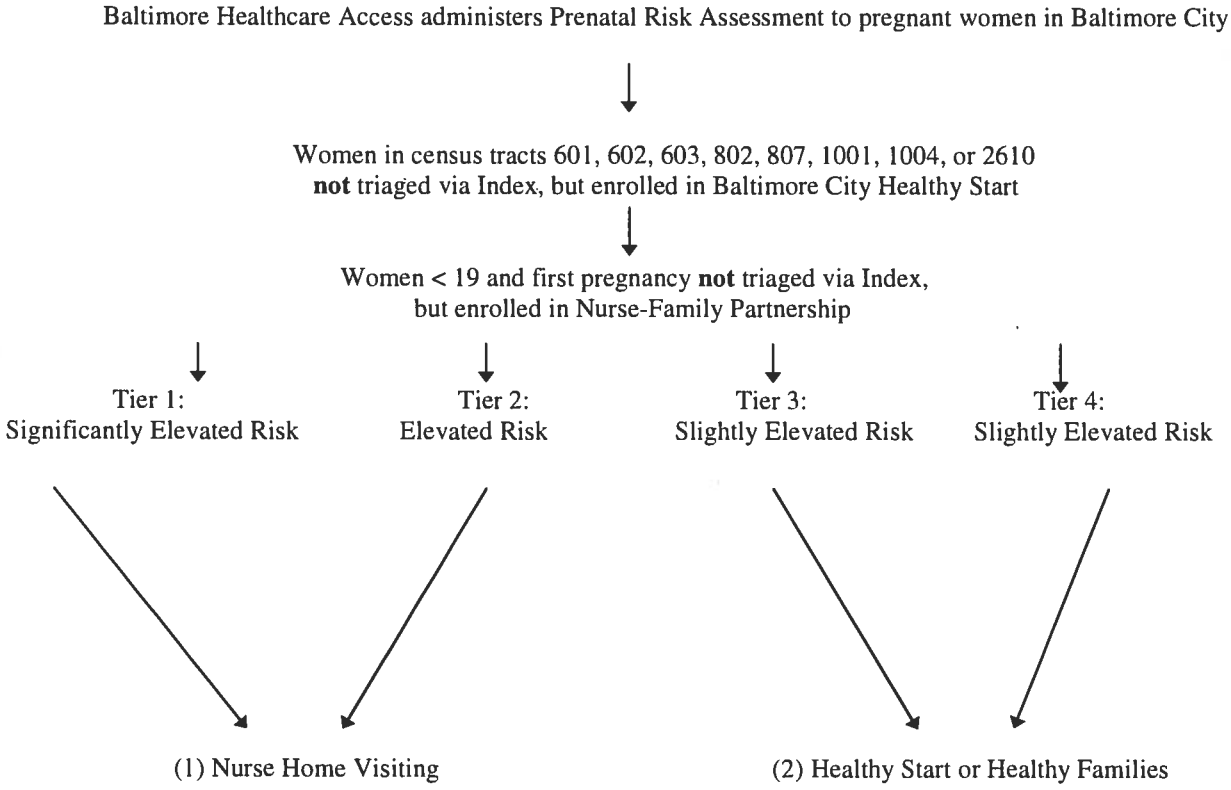
Figure 1 depicts the triaging process to be used by Baltimore Healthcare Access and Baltimore City HV programs.

5. Considerations for Baltimore HealthCare Access Assessment

In conjunction with the implementation of the triaging plan described in this document, it is recommended that changes be considered to the screening/assessment questions asked by BHCA. One reason for considering a change is due to the length of the BHCA assessment. Many

of the assessment questions are clearly related to risk factors for poor birth outcomes (e.g., previous pregnancy history, various medical conditions, psychosocial risks). However, there are also some questions that, while useful in more broadly understanding the social and economic factors faced by a pregnant woman, are less directly associated with poor birth outcomes such as homelessness, language barriers, and oral hygiene. A second reason for considering changes to the BHCA assessment is to replace some existing questions with more well-established screening tools. For example, a 2-question depression screening tool—the Patient Health Questionnaire 2-item version—is recommended to be used to screen for depressive symptoms. Additionally, revising questions on the BHCA assessment would allow for more precisely worded questions related to risk factors for poor birth outcomes. For example, questions related to previous pregnancy history could be reworded to make the intention of the questions clearer to respondents. Table 2 lists the proposed constructs and questions to be asked in a slightly modified version of the BHCA assessment.

Figure 1. Baltimore City Healthcare Access and Home Visiting Triage Process for New HV Enrollees



Note #1: If capacity is full in NFP, pregnant women will be referred to nurse home visiting. If there are no nurse home visiting slots available, women would then be referred to Healthy Start or Healthy Families

Note #2: If capacity is full in nurse home visiting, pregnant women will be referred to Healthy Start of Healthy Families

Note #3: If Healthy Start of Healthy Families determines that upon program enrollment, pregnant woman has risk factor placing her at higher risk or via clinical judgment that woman is at higher risk, referral will be made to nurse home visiting

Table 2. Proposed Constructs and Questions for the BHCA Assessment

SECTION	Proposed Question and Construct
DEMOGRAPHICS	1. How old are you right now? (Age) 2. What race do you consider yourself to be? (Race) 3. Have you graduated from high school or received a GED? (Education) 4. Are you currently working either part- or full-time? (Employment) 5. Are you married now? (Marital status)
PREGNANCY HISTORY	1. Is this your first pregnancy? (Parity) 2. How many previous times have you delivered a child? (Parity) 3. During any of your previous pregnancies, have you ever had a baby that was not born alive? (Previous infant loss) 4. During any of your previous pregnancies, have you ever delivered a baby that was born more 3 weeks or more before the due date? (Previous preterm birth) 5. During any of your previous pregnancies, have you ever delivered a baby that weighed less than 5 lbs, 8 ounces? (Previous low birthweight) 6. What was the date of your first prenatal care visit for this pregnancy? (PNC initiation)
PSYCHOSOCIAL RISK FACTORS	1. Over the past two weeks, how often have you been bothered by any of the following problems? Little interest or pleasure in doing things? (Depression, PHQ-2) 2. Over the past two weeks, how often have you been bothered by any of the following problems? Feeling down, depressed, or hopeless? (Depression, PHQ-2) 3. How often does your partner physically hurt you? (IPV, HITS) 4. How often does your partner insult or talk down to you? (IPV, HITS) 5. How often does your partner threaten you with harm? (IPV, HITS) 6. How often does your partner scream or curse at you? (IPV, HITS) 7. In the month before you knew you were pregnant, how much beer/wine/liquor did you drink? [Follow-up if any use] (Alcohol use) 8. In the month before you knew you were pregnant, how many cigarettes did you smoke per day? [Follow-up if any use] (Tobacco use) 9. In the month before you knew you were pregnant, how much marijuana or other drugs did you use? [Follow-up if any use] (Drug use)

MEDICAL RISK FACTORS	1. HIV/AIDS 2. STD 3. Uterine abnormalities 4. Lupus 5. Renal disease 6. Liver disease 7. Sickle cell disease/trait 8. Thyroid disease 9. Diabetes 10. Anemia 11. Chronic hypertension 12. Heart condition 13. Cystic fibrosis 14. Tuberculosis 15. Asthma 16. HIGH BMI < 18.5 or > 30