

# Addressing Psychosocial Determinants of Poor Birth Outcomes: Enhanced Screening in Family Medicine Obstetrics

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## Abstract

Maternal stress is correlated with premature delivery and lower birth rate, both of which are leading causes of infant mortality. Early detection of maternal stressors should be of utmost importance, especially in communities affected by high rates of infant mortality. However, in-depth screening for these risk factors is not a part of routine prenatal care. Missing thus far is a comprehensive psychosocial screening tool that can be used in a supportive setting by skilled providers. As part of the Perinatal Patient Safety Collaborative Pilot Project, a preliminary screening tool was developed and implemented to identify many of the psychosocial risk factors implicated in poor pregnancy outcomes. This approach to screening attempts to address many of the challenges and concerns that have been identified with existing assessments and the current approach to perinatal care, all of which would benefit from focused research.

## Introduction

Low birth weight and infant mortality are more prevalent in the United States than in most of its industrialized peers. Attempts to gain a better understanding of the biomedical factors that cause or contribute to these undesirable outcomes have borne little fruit, nor have our efforts at treatment and prevention. We do know that the burden of suffering does not fall equally on all women and children, but rather affects racial and ethnic minorities at several times the background rate. There is considerable evidence to suggest that the volume controls, or epigenes, for the genetic link to poor birth outcomes are essentially switched on and off, or dialed up or down, by factors including psychosocial distress.

The association between maternal stress, preterm birth, and lower birth weight is well established in the literature.<sup>1-5</sup> Pre-

mature delivery and low birth weight are two leading causes of infant mortality.<sup>6-7</sup> In addition, it has been suggested that the fetal and early postnatal environment can have effects that extend well into the adulthood of the offspring by permanently altering the hypothalamo-pituitary-adrenal axis of the fetus through prolonged exposure to glucocorticoids.<sup>8</sup> Maternal stress can have both immediate and long-lasting impacts on the fetus in terms of birth outcome, gestational length, fetal neurodevelopment, brain and organ morphology, and even behavioral problems and academic achievement.<sup>9</sup> Therefore, the early detection of maternal stressors should be of the upmost importance if our goal is to reduce infant morbidity and mortality and subsequent, potentially lifelong impairment and disability.

In light of the evidence, health professionals need to be in collaboration with expectant mothers, as well as those contemplating a pregnancy, to recognize psychosocial risk factors and intervene with an effective stress management plan. In fact, from a public health perspective, the relative risk and prevalence of low birth weight and infant mortality is such that our emphasis on screening for and “treating” psychosocial risk factors should be just as robust as any other aspect of preconception and perinatal care. However, to realize this goal, we need comprehensive screening tools and accessible, cost-effective interventions for psychosocial risk factors.

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## Psychosocial Determinants of Maternal Stress

Research has consistently demonstrated a correlation between maternal stress and various psychosocial factors. The psychosocial determinants implicated in maternal stress thus far include depression, finances and intimate partner violence, catastrophic events, and pregnancy-specific stressors such as relationship strains, anxiety over body changes, and inability to cope with

**Figure 1:** The Edinburgh Post-Partum Depression Scale

## Instructions for users

1. The mother is asked to underline the response which comes closest to how she has been feeling in the previous 7 days.
2. All ten items must be completed.
3. Care should be taken to avoid the possibility of the mother discussing her answers with others.
4. The mother should complete the scale herself, unless she has limited English or has difficulty with reading.
5. The EPDS may be used at 6-8 weeks to screen postnatal women. The child health clinic, postnatal check-up, or a home visit may provide suitable opportunities for its completion.

## EDINBURGH POST NATAL DEPRESSION SCALE (EPDS)

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Name: \_\_\_\_\_

Address: \_\_\_\_\_

Baby's age: \_\_\_\_\_

As you have recently had a baby, we would like to know how you are feeling. Please UNDERLINE the answer which comes closest to how you have felt IN THE PAST 7 DAYS, not just how you feel today. Here is an example, already completed.

I have felt happy:

Yes, all the time

Yes most of the time

No, not very often

No, not at all

This would mean: "I have felt happy most of the time" during the past week. Please complete the other questions in the same way.

In the past 7 days:

**1. I have been able to laugh and see the funny side of things**

As much as I always could

Not quite so much now

Definitely not so much now

Not at all

**2. I have looked forward with enjoyment to things**

As much as I ever did

Rather less than I used to

Definitely less than I used to

Hardly at all

**\* 3. I have blamed myself unnecessarily when things went wrong**

Yes, most of the time

Yes, some of the time

Not very often

No, never

**4. I have been anxious or worried for no good reason**

No, not at all

Hardly ever

Yes, sometimes

Yes, very often

**\* 5. I have felt scared or panicky for no very good reason**

Yes, quite a lot

Yes, sometimes

No, not much

No, not at all

**\* 6. Things have been getting on top of me**

Yes, most of the time I haven't been able to cope at all

Yes, sometimes I haven't been coping as well as usual

No, most of the time I have coped quite well

No, I have been coping as well as ever

**\* 7. I have been so unhappy that I have had difficulty sleeping**

Yes, most of the time

Yes, sometimes

Not very often

No, not at all

**\* 8. I have felt sad or miserable**

Yes, most of the time

Yes, quite often

Not very often

No, not at all

**\* 9. I have been so unhappy that I have been crying**

Yes, most of the time

Yes, quite often

Only occasionally

No, never

**\*10. The thought of harming myself has occurred to me**

Yes, quite often

Sometimes

Hardly ever

Never

Response categories are scored 0, 1, 2, and 3 according to increased severity of the symptom. Items marked with an asterisk are reverse scored (i.e., 3, 2, 1, and 0). The total score is calculated by adding together the scores for each of the ten items. Users may reproduce the scale without further permission providing they respect copyright (which remains with the British Journal of Psychiatry) by quoting the names of the authors, the title, and the source of the paper in all reproduced copies.

the physical symptoms of pregnancy.<sup>10-13</sup> In addition, observational and anecdotal experience suggests that factors like the “wantedness” of a pregnancy and the general perception of the expectant mother’s own childhood are significant indicators. It has also been suggested that clinicians need to focus on chronic, pre-pregnancy life stressors in addition to events occurring throughout the perinatal period. Long-term elevated levels of stress hormones including cortisol have been shown to generate an “allostatic load” that can significantly alter the body’s physiological responses to stress such that the normal adaptive responses are in a refractory state.<sup>14</sup> Examples of ongoing, chronic life stressors, including experience and perceptions of racism, persistently low socioeconomic status, and exposure to violence, have recently been proposed as causal to the persistent disparities in infant mortality among various races.

Infant mortality rates are particularly troubling in the African-American community. The rate of pregnancies ending in low birth weight (less than 2.5 kilograms) is roughly twice as high in African-American populations in comparison to Caucasian populations; rates of extremely low birth weight (less than 1.5 kilograms) are almost three times as high, and the rates of infant mortality are twice as high.<sup>15</sup> There appear to be specific psychosocial factors that play an especially important role in African-American populations. For instance, focus groups with African-American women have identified compelling perceptions surrounding persistent racism, previous unsatisfying clinical experiences, lack of knowledge about pregnancy symptoms, and lack of social support as factors that contribute significantly to maternal stress and inhibit African-American women from seeking prenatal care.<sup>16-17</sup> Michael Lu and Neal Halfon examine the situation in another manner by proposing the life-course perspective for thinking about racial disparities in infant mortality rates. Their life-course model is a synthesis of two existing models: the aforementioned allostatic-load model and the early programming model, in which experiences in critical periods early in the life of the mother, as early as when the mother herself was a fetus, affect reproductive potential years later.<sup>18</sup> Within the life-course perspective, there are sensitive periods of rapid decline in reproductive potential interspersed within a larger gradual decline due to increased allostatic load. Lu and Halfon hypothesize that African-American women start out with lower reproductive potential due to intergenerational effects and throughout the course of their lives are exposed to more risks than women of other races.

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## Screening for At-Risk Pregnancies

Despite the overwhelming evidence that links psychosocial risk factors to low birth weight and infant mortality, screening for these risk factors is not a routine part of prenatal care. The content of prenatal care has been increasingly reliant on technological advances involving the use of radiographic and serum biochemical measures focused on detecting genetic anomalies and malformations. The conditions these methodologies attempt to detect are significant and certainly warrant our attention. However, serum markers and radiologic evaluations do not allow the physician to identify potentially preventable adverse outcomes.

Therefore, there is a clear and present need for comprehensive screening tools that allow clinicians to detect the presence of psychosocial risk factors that are associated with poor perinatal outcomes. Of note, there has been considerable and much needed attention given to screening for postpartum depression and, to a lesser extent, depression among women in the antepartum period. This effort has raised awareness of the need for enhanced clinical skill, treatment, and supportive services for depressive disorders in the context of maternity care.

Currently, the Edinburgh Post-Partum Depression Scale (EPDS) and the Patient Health Questionnaire-9 (PHQ-9) are the major psychosocial assessments used by clinicians. The EPDS was developed in 1987 as a “10-item self-report scale” to specifically screen for post-natal depression (Figure 1).<sup>19</sup> The PHQ-9 is also self-administered but differs from the EPDS in that it both screens for depression and can measure its severity (Figure 2).<sup>20</sup> These tests have been extensively validated as useful screens for depression, with the EPDS focusing on the postpartum timeframe and the PHQ-9 focusing on a more general population.<sup>21-23</sup> Both screening tools have value. In the practice we describe, the PHQ-9 has been incorporated at several points along the continuum of care. However, the utility of the EPDS and the PHQ-9 is limited by their exclusive focus on depression and also by their reliance on an impersonal, self-reporting approach to assessment. Other methods or chart tools are used to screen for recognized social and psychological risk factors such as the use of tobacco, alcohol, or illicit substances. It is noteworthy that the clinician’s approach to screening for conditions such as these can significantly impact the sensitivity. Missing from the content of perinatal care thus far is a comprehensive psychosocial screening tool that can be deployed in a supportive setting by skilled providers in an effort to increase the sensitivity.

Inherent in the usefulness of any screening test is the availability of acceptable, affordable, and effective interventions or treatment. It is necessary to identify and address problems as early as possible in order to maximize the health of both the mother and the fetus. There is both evidence and experience to support interventions such as case management, care coordination, cognitive behavioral therapy, supportive counseling, integrated behavioral health, facilitating success with self management goals, community nursing, and lay outreach. There are three common ways to implement these interventions, although we advocate the integrated approach. First, the physician can refer the patient to an external healthcare professional, such as a psychologist or counselor, who might be more equipped to deal with the issue that has been identified. The major disadvantage to an external referral is the low compliance rate. The extra effort and time required to attend additional appointments and unfamiliarity with the provider and site are among the deterrents for many patients. However, if physicians generate close relationships and contacts with area agencies and follow up to ensure that their patients are receiving the necessary care, the referral model can become more effective. Co-location, a situation in which various healthcare professionals share the same physical office space, is the second option. This can be better

**Figure 2:** Patient Health Questionnaire-9 (PHQ-9)

Over the last two weeks, how often have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite—being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3
(For office coding: Total Score ____ = ____ + ____ + ____)				

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?			
Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*From the Primary Care Evaluation of Mental Disorders Patient Health Questionnaire (PRIME-MD PHQ). The PHQ was developed by Drs. Robert L. Spitzer, Janet BW Williams, Kurt Kroenke, and colleagues. For research information, contact Dr. Spitzer at rls8@columbia.edu. PRIME-MD is a trademark of Pfizer Inc. Copyright 1999 Pfizer Inc. All rights reserved. Reproduced with permission.*

than an external referral because the social worker or counselor is physically on site and is therefore more accessible to the patient. However, it is still essentially a referral, and the patient may still fail to adhere in the transition from the physician.

The ideal choice, therefore, is an integrated approach in which physicians, counselors, and other health care professionals are partnered in the same practice. Within such a context, the healthcare professionals are more familiar with each other, are more likely to collaborate and communicate, and have a better capacity to help the patient transition across the different modes of care. There is considerable literature in support of this model for integrated behavioral health. It has become customary for clinicians, particularly those in family medicine, to

advocate for the use of interventions and services such as these and to be inclined to prescribe or recommend them when indicated. There is considerable need for further research and development around effective interventions for psychosocial risk factors. We contend, however, that there is already sufficient knowledge and experience with the use of integrated behavioral health, care coordination, and use of service agencies through referral to warrant their use for identified risk factors.

### **Comprehensive Perinatal Psychosocial Screening**

In response to the needs and opportunities identified above, an approach has been developed to help to identify psychosocial

Figure 3: The PCC Stress Screening Form

Your answers to these questions will be kept confidential, like the rest of your medical information. We want to help you and your developing baby to be as healthy as possible. Studies have shown that too much stress can negatively affect a mother's health and a baby's development during pregnancy. We want to help you with any psychosocial issues that you identify as stressful. Please complete the questions below.

Date \_\_\_\_\_

### About You

#### 1. What is your address?

\_\_\_\_\_  
\_\_\_\_\_

#### 2. What is the best phone number to reach you at most of the time?

\_\_\_\_\_

#### Alternate contact number?

\_\_\_\_\_

#### 3. Who do you live with?

\_\_\_\_\_

#### 4. What type of home do you live in?

- Apartment  
 House  
 Other \_\_\_\_\_

#### 5. Over the past year, have you moved two or more times? no \_\_\_ yes \_\_\_

#### 6. What is your race? (may check more than one)

- Black / African American  
 White  
 Asian  
 Hawaiian / Pacific Islander  
 Native American / Alaska Native  
 Other  
 I prefer not to answer

#### 7. Hispanic ethnicity? (please check one)

- I am Hispanic  
 I am not Hispanic  
 I prefer not to answer

#### 8. What is your primary language?

\_\_\_\_\_

#### 9. What is the highest level of education you have completed?

- Less than high school  
 Some high school  
 Finished high school  
 Some college  
 Finished college  
 Graduate studies or beyond

#### 10. What is your occupation? \_\_\_\_\_

\_\_\_\_\_

#### 11. What is your religion, if any? \_\_\_\_\_

\_\_\_\_\_

#### 12. What is your marital status?

- Single  
 Married  
 Divorced  
 Other

#### 13. What type of insurance do you have?

\_\_\_\_\_

#### Do you receive any public assistance?

\_\_\_\_\_

### About Your Pregnancy

#### 14. What best describes this pregnancy?

- I was trying to become pregnant.  
 I was not trying to become pregnant.  
 This pregnancy is not wanted.

#### 15. Who is the father of your baby?

\_\_\_\_\_

#### How supportive is he of you and the pregnancy?

\_\_\_\_\_

#### Other than the father of the baby, who is supportive to you?

\_\_\_\_\_

#### 16. Are there things that you constantly worry about? no \_\_\_ yes \_\_\_

#### If so, what \_\_\_\_\_

\_\_\_\_\_

#### 17. Do you have fears that something terrible is about to happen? no \_\_\_ yes \_\_\_

#### If so, what \_\_\_\_\_

\_\_\_\_\_

#### 18. Do you or any members of your household go to bed hungry? no \_\_\_ yes \_\_\_

#### If so, how often? \_\_\_\_\_

#### 19. Before you knew you were pregnant, did you drink alcohol? no \_\_\_ yes \_\_\_

#### If so, please describe how much and how often \_\_\_\_\_

\_\_\_\_\_

#### Have you had alcohol during this pregnancy? no \_\_\_ yes \_\_\_

#### If so, please describe how much and how often \_\_\_\_\_

#### 20. Before you knew you were pregnant, did you ever use recreational drugs? no \_\_\_ yes \_\_\_

#### If so, what \_\_\_\_\_

#### Have you used drugs during this pregnancy? no \_\_\_ yes \_\_\_

#### If so, what \_\_\_\_\_

#### 21. Does your partner have a problem with alcohol or drugs? no \_\_\_ yes \_\_\_

#### Has either of your parents had a problem with alcohol or drugs? no \_\_\_ yes \_\_\_

#### 22. Have you or your parents ever been involved with DCFS? no \_\_\_ yes \_\_\_

#### 23. Which best describes your smoking status:

- I have never smoked or have smoked fewer than 100 cigarettes in my lifetime.  
 I stopped smoking before I found out I was pregnant, and I am not smoking now.  
 I stopped smoking after I found out I was pregnant, and I am not smoking now.  
 I smoke some now, but I have cut down the number of cigarettes I smoke since I found out I was pregnant.  
 I smoke regularly now, about the same as before I found out I was pregnant.

#### 24. Within the last year, have you been hit, slapped, kicked, shoved, strangled, forced to have sex, called names or profanities, or otherwise been hurt by someone? no \_\_\_ yes \_\_\_

#### If yes, when and by whom? \_\_\_\_\_

\_\_\_\_\_

#### 25. Are you or have you been raped, sexually abused, or assaulted? no \_\_\_ yes \_\_\_

#### If yes, when and by whom? \_\_\_\_\_

\_\_\_\_\_

#### 26. Over the past year:

- a. have you felt unsafe where you live? no \_\_\_ yes \_\_\_  
b. experienced a high stress level? no \_\_\_ yes \_\_\_  
c. had problems keeping appointments? no \_\_\_ yes \_\_\_  
d. had problems getting transport to appointment? no \_\_\_ yes \_\_\_

#### 27. How would you describe your childhood?

\_\_\_\_\_

#### 28. Has anything happened to make you worry about yourself or your baby? no \_\_\_ yes \_\_\_

#### If yes, what? \_\_\_\_\_

\_\_\_\_\_

#### 29. If you have had any of these or other problems, have you received any assistance or counseling? no \_\_\_ yes \_\_\_

#### If yes, what? \_\_\_\_\_

\_\_\_\_\_

Your provider is willing to discuss any problems you may be having.

Provider follow-up: PHQ/EPDS Score \_\_\_\_\_

Provider Signature \_\_\_\_\_

Date \_\_\_\_\_

Patient Name \_\_\_\_\_

DOB \_\_\_\_\_

risk factors in a large, urban, and underserved maternal/child population which obtains care in a network of community health centers (CHC) in Chicago, Illinois. In 2005, the PCC Community Wellness Center joined four other CHCs in the Perinatal Patient Safety Collaborative Pilot Project in an effort to reduce disparities in MCH outcomes. This was supported by an Inter-Agency-Agreement between the Health Resources Services Administration (HRSA) and the Office of Minority Health, US Department of Health and Human Services. This included in-kind contributions from HRSA for the infrastructure of the internet-based Knowledge Gateway for sharing of insights and data as well as the in-kind contribution of staff time, travel, and activity of Dr. Ahmed Calvo and other HRSA staff. It is important to note that information in this manuscript cannot be construed to represent the opinions of the federal government or any of its agencies. A more detailed review of this pilot project can be found in a companion paper in this issue of the *American Journal of Clinical Medicine*, "Improving Maternal and Child Health Outcomes: Family Medicine Obstetrics and the HRSA Perinatal Collaborative Project." Among the "lessons learned" from the perinatal pilot was a realization that a better screening tool was needed but did not exist.

Through the collaborative process an identified need emerged for a psychosocial screening tool that looked at behavioral health beyond an isolated focus on postpartum depression. Specifically, the goal was to assess overall social risk in broader terms than the customary "yes or no" inquiries regarding exposure to violence, the use of addictive substances, and level of education attained. This requires the use of an assessment tool in an effort to identify many of the psychosocial risk factors implicated in poor pregnancy outcomes including race, socioeconomic status, anxiety levels, use of tobacco/drugs/alcohol, intimate partner violence, and attitude towards childhood. A draft of a psychosocial screening tool that encompasses these risk factors is included as Figure 3.

The screening tool presented here was developed in collaboration with the PPSCP expert faculty panel and was drawn from a variety of published and unpublished evidence-based sources. For example, the 5A Tool Kit from the American College of Obstetricians and Gynecologists (ACOG) was thought to be useful pertaining to smoking cessation in pregnancy, and the Case Management assessment tools from the Illinois Department of Human Services (IDHS) appeared most appropriate among options for questions regarding intimate partner violence. Some of the questions and focus areas have evolved in various permutations over the course of several years and were selected because of their relevance to known determinants of risk and based on their particular utility for our patient population.

The dimensions of psychosocial stress are sensitive, complex, and influenced by culture, age, and geography. Performing a competent assessment of psychosocial risk factors requires more than a simple checklist and, as is the case with most other aspects of the clinical encounter, is best done in collaboration with an engaged patient. This approach allows the clinical team to gain a more accurate understanding of the patient's

life course and experiences and to identify more individualized risks and recommendations. Inherent in this approach is the need to perform the screening in a supportive setting where patients feel comfortable discussing sensitive issues, and where a therapeutic response to identified concerns and needs can be arranged. This is an ideal application for the emerging model of Integrated Behavioral Health.<sup>24</sup>

The clinic system described here provides care for a population that includes approximately 1,200 births each year and a clinical staff that is mostly family physicians, many of whom have advanced MCH OB fellowship training. The family medicine clinical team is significantly enhanced by a variety of health care disciplines including those in behavioral health and community outreach. Funding for the staff and enhanced programs is derived from the usual blend of clinical encounters and program grants. It should be noted that, while a large and diverse care team has many advantages, it is also clear that even the smallest sites can be successful in identifying and managing the broader range of psychosocial risk factors. A detailed description of specific interventions, internal support services, referral, and outreach strategies are beyond the intended scope of this paper but can be described as those generally directed toward indicators surrounding adherence, coordination of care, inadequate resources, interpersonal relationships and family discord, anxiety and depressive disorders, unwanted pregnancy, challenges with housing and shelter, alcohol/drug/tobacco use, domestic violence, sexual assault, and availability of assistance programs.

## Conclusion

There is currently a disconnect between the importance of psychosocial factors in influencing pregnancy outcomes, validated through extensive research, and the availability of comprehensive psychosocial screening tools. This presents a barrier to the timely identification of maternal stressors and may be a contributor to the overreliance on technology and biochemical tests. As should be the case with any screening effort, a variety of factors must be considered when developing and implementing such tools in order to optimize their utility and efficiency. Priority should be directed toward identifying the most important psychosocial factors, asking all of the relevant questions to obtain a more comprehensive patient picture, training the clinical staff to competently perform the psychosocial assessments that are developed, and keeping the patient informed and involved in the recommendations and treatment plan. At the same time, it is necessary to recognize the importance of usability and acceptance with respect to topics covered, questionnaire length, wording and language, cultural beliefs and expectations, and respect for patient privacy.

The Perinatal Psychosocial Screening Questionnaire described here attempts to address many of the challenges and concerns that have been identified with existing tools and the current approach to perinatal care. We should emphasize that this is a work in progress with ongoing development and has not been formally validated. Focused research will be required to assess

its effectiveness and ability to be extrapolated to the general population. However, screening methods such as this can, and should, be adapted to the specific clinical setting and patient population for which it is intended to be used. In the meantime, we hope that this focus on developing an individualized, affordable, and non-invasive process for screening can help identify at-risk pregnancies and lead to risk stratification and interventions that will ultimately minimize adverse pregnancy outcomes, especially in populations that are disproportionately affected by infant mortality.

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