

## Markers of Maternal Depressive Symptoms in an Urban Pediatric Clinic

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**Objective** To identify markers of maternal depressive symptoms in medical records of children aged 1-6 years. **Study design** Using a case-control methodology, mothers who were screened for depressive symptoms with the Quick Inventory of Depressive Symptomatology Self-Rated Questionnaire (QIDS-SR) at well-child visits between June 2006 and June 2008 in an inner-city pediatric clinic were grouped into cases with depressive symptoms (QIDS-SR score  $\geq 11$ ) and controls with no symptoms (QIDS-SR score  $\leq 5$ ). Potential markers for maternal depressive symptoms were collected from the children's medical record and grouped into 3 domains: (1) child health and development (eg, maternal concerns/negative attributions regarding the child's behavior); (2) child health care utilization (eg, missed appointments); and (3) maternal psychosocial factors (eg, single parent). The association between maternal depressive symptoms and each factor was determined using multiple logistic regression to calculate aORs.

**Results** Maternal depressive symptoms were significantly associated with reports of concerns/negative attributions about the child's behavior (aOR, 2.35;  $P = .01$ ) and concerns about speech (aOR, 2.40;  $P = .04$ ) and sleep (aOR, 7.75;  $P < .001$ ); these were identified at the visit when the depression screening was done. Other associations included history of maternal depression (aOR, 4.94;  $P = .001$ ) and a previous social work referral (aOR, 1.98;  $P = .01$ ).

**Conclusion** Information readily available to pediatricians was associated with maternal depressive symptoms and can serve as clinical markers to help identify at-risk mothers during well-child visits. (*J Pediatr* 2013;162:189-94).

Maternal depression is a highly prevalent problem, with rates of 12%-35% reported in women of childbearing age and even higher rates in low-income women.<sup>1-3</sup> Recognition of this potentially debilitating condition is important for the well being of the child as the detrimental effects of maternal depression on children's biology,<sup>4,5</sup> physical health,<sup>6,7</sup> and development, behavior, and mental health<sup>8-11</sup> are well known. In 2010, the American Academy of Pediatrics Committee on Psychosocial Aspects of Child and Family Health issued a clinical report on the management of perinatal and postpartum depression stating that depression screening could be appropriately integrated at well-child (WC) visits but offering no suggested intervals beyond the postpartum period.<sup>12</sup> Despite this report and the availability of Web-based resources,<sup>13</sup> maternal depression continues to be underrecognized in pediatric settings, particularly after the postpartum period.<sup>14-16</sup> Screening after the postpartum period is rarely performed owing to common barriers, such as lack of time and training to identify and treat maternal depression, concerns about liability coverage, poor reimbursement for detection of maternal symptoms, lack of available resources for mothers exhibiting depressive symptoms, and difficulty in identifying at-risk mothers in populations of women with multiple risk factors.<sup>16,17</sup> Pediatricians are in a unique position to identify maternal depression because of their frequent contacts with mothers during WC visits.

Limited studies have demonstrated key associations between maternal depression and factors identified during routine pediatric WC visits that can be used for surveillance. These factors can be grouped into 3 major domains: (1) child health and development (eg, children whose weights fall across 2 major percentile curves<sup>18</sup>); (2) patterns of child health care utilization (eg, incomplete immunization at age 2 years<sup>19</sup>); and (3) maternal psychosocial factors (eg, self-reports of poor financial status and poor health status<sup>17</sup>). Mandl et al<sup>20</sup> reported a 3.2-fold greater risk of depression in mothers who brought their child to the emergency department (ED), and Chee et al<sup>1</sup> reported a similar risk of depression in mothers who brought their child for 3 or more sick visits. Despite the high prevalence of depression in mothers of young children, few studies have examined markers for maternal depression identifiable in pediatric settings. Moreover, the existing studies are limited by their focus on postpartum depression and on mothers with children aged  $< 2$  years.

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ED	Emergency department
QIDS-SR	Quick Inventory of Depressive Symptomatology Self-Rated
WC	Well-child

The aim of the present study was to determine whether there are key factors associated with maternal depression that can be identified in the pediatric setting and may be an important addition at surveillance visits to alert pediatricians of the need to inquire about maternal depression. We focused on the known association between maternal depression and child behavior problems and hypothesized that the proportion of mothers with depressive symptoms would be higher in a group reporting concerns or negative attributions about their child's behavior.

## Methods

This was a case-control study examining markers identified in the pediatric medical records. Cases were mothers who screened positive for moderate to very severe depressive symptoms, and controls were mothers who screened negative. The sample was derived from a dataset of mothers who were screened for depression when bringing their children for routine pediatric visits.<sup>3</sup> Factors were identified in pediatric medical records before and on the date of screening, and associations between these factors and reported maternal depression were examined.

The mothers in this study cohort were screened for depression in English or Spanish using the Quick Inventory of Depressive Symptomatology Self-Rated Questionnaire (QIDS-SR).<sup>21</sup> Screening was completed between June 2006 and June 2008 during children's WC visits at Yale–New Haven Hospital's Pediatric Primary Care Center, a hospital-based inner-city pediatric clinic that serves low-income families primarily from minority populations. Women were eligible for screening whose child was at least 1 year of age. Methodologic details of the screening study are available elsewhere.<sup>3</sup> Mothers who reported suicidal ideation or severe symptoms were referred to a social worker, offered emergency services, and referred to a psychiatrist.

All of the subjects in the present study were birth mothers whose child was aged 1-6 years. We focused on this age range because this is when the majority of WC visits recommended by the American Academy of Pediatrics occur. Cases were mothers who reported moderate to very severe depressive symptoms, as indicated by a QIDS-SR score  $\geq 11$ . Controls were mothers who had a negative screen (QIDS-SR score  $\leq 5$ ). To select a comparable control group, 2 controls per case were systematically identified using the month ( $\pm 1$ ) and year of screening of the corresponding case (Figure; available at [www.jpeds.com](http://www.jpeds.com)). The Yale School of Medicine's Institutional Review Board approved this study.

## Measures

The QIDS-SR is derived from the 30-item Inventory of Depressive Symptomatology Self-Rated Questionnaire<sup>21</sup> and comprises 16 items that rate the 9 diagnostic symptom domains of a major depressive episode.<sup>22</sup> For each item, the participant is asked to rate the severity and frequency of the specific symptom present over the previous 7 days on a scale of 0-3, with 0 indicating absence of the symptom. Total score

ranges from 0 to 27, and symptom severity is based on the following cutoff scores: 0-5, none; 6-10, mild; 11-15, moderate; 16-20, severe; and  $\geq 21$ , very severe. This screening instrument is a standardized measure of depressive symptoms and has demonstrated adequate psychometric validity.<sup>23</sup> For this study, maternal depression was defined as the presence of moderate to very severe depressive symptoms, to identify those women most likely to have depression as opposed to milder mood disturbances. If a mother was screened more than once during the 2 years of the study, we only used the score of the first screen.

Along with the QIDS-SR, participants completed a brief demographic questionnaire, which included the child's ethnicity and the mother's educational level, marital status, and employment.

## Variables

Potential markers of maternal depression were selected after a review of the relevant literature and a pilot review of pediatric records. Child health and development domain factors<sup>6,7,9-11,18</sup> included age, birth weight ( $< 2500$  g or  $\geq 2500$  g), gestational age (preterm [ $< 37$  weeks], term [ $37-40$  weeks], or postterm [ $> 40$  weeks]), weight  $< 5$ th or  $> 95$ th percentile at the date of screening, maternal concerns or negative attributions about the child's behavior (eg, "My child is stubborn"), speech concerns (eg, "My child has no words yet"), sleep concerns (eg, "My child has trouble sleeping"), developmental concerns (eg, "My child is not yet walking"), speech delay diagnosis, developmental delay diagnosis, and neurodevelopmental or genetic disorders (eg, trisomy 21, fragile X, cerebral palsy). Other than birth weight and gestational age, these variables were dichotomized as present or absent. For the factors related to maternal concerns about the child's behavior, speech, sleep, and development, the analysis focused exclusively on data that were abstracted from the WC visit note when the mother was screened. We used this approach to explore the potential link between the mother's reported concerns and her current emotional state.

Child health care utilization domains<sup>1,19,20,24</sup> explored included number of WC visits during the first year of life, age of completion of vaccines recommended before the first birthday, phone calls to the advice line, missed appointments, urgent care visits, ED visits, and hospitalizations. The recommended vaccines before the child's first birthday were based on the Centers for Disease Control and Prevention's 2008 recommendations.<sup>25</sup>

Maternal psychosocial domain factors<sup>17,26,27</sup> included maternal age at delivery, single parent status at the time of screening, history of postpartum depression (defined as depression within 1 year after delivery), history of depression (defined as depression before or during pregnancy, or beyond 1 year after delivery), referral to social work service, provider concerns about child abuse or neglect in previous WC visits, referral to Child Protective Services, and any chronic maternal medical illness. Except for maternal age, these variables were dichotomized as present or absent.

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