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Title: Perceived Barriers to Treatment for Adolescent Depression

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Abstract: Background and Objective: Adolescent depression is common, disabling, and is associated with academic, social, behavioral, and health consequences. Despite the availability of evidence-based depression care, few teens receive it, even when recognized by primary care clinicians. Perceived barriers such as teen worry about what others think or parent concerns about cost and access to care may contribute to low rates of care. We sought to better understand perceived barriers and their impact on service use.

Design: After completing an eligibility and diagnostic telephone interview, all depressed teens and a matched sample of non-depressed teens recruited from 7 primary care practices were enrolled and completed telephone interviews at baseline and 6 months (August 2005 to September 2006).

Participants: 368 adolescent patients aged 13-17 (184 depressed and 184 non-depressed) and 338 of their parents.

Measures: Perceived barriers to depression care and use of services for depression (psychotherapy and antidepressant medication).

Results: Teens with depression were significantly more likely to perceive barriers to care compared with non-depressed teens. Parents were less likely to report barriers than their teens; perceived stigma and concern about family member response were among the significant teen

barriers. Teen perceived barriers scores were negatively associated with any use of antidepressants ($p < .01$), use of antidepressants for at least 1 month ($p < .001$), and any psychotherapy or antidepressant use ($p < .05$) at 6 months.

Conclusions. To improve treatment for adolescent depression, interventions should address both teen and parent perceived barriers and primary care clinicians should elicit information from both adolescents and their parents.

Word Count: 250

Key Words: Adolescents, barriers, depression, primary care.



September 16, 2008

Dear Dr. Chaney:

Thank you for another opportunity to respond to the remaining issues that you and the reviewers have identified. These additional changes further strengthen the manuscript and we hope that you will again consider my manuscript entitled, "Perceived Barriers to Treatment for Adolescent Depression" (MDC-D-08-00177R1) for publication in *Medical Care*. We have carefully reviewed the comments and provide a point-by-point response. Reviewer comments are shown in *italics* and our responses in plain font. New changes in the body of the manuscript are shown in boldface.

Response to Reviewers

On page 5, the authors could add one or two more citations about youth access. For example, Glied, regarding insurance status and access.

We now cite 2 Glied papers (citations #30 & 31) on p. 6 as well as one of them in the discussion about the significant effect of private insurance (vs. public or no insurance) on p. 19 (citation #31).

The insertion of text on the Wisdom reference could be reworded for clarity.

We have re-worded that section (now on p. 6) so that it reads more clearly.

Regarding the Health Belief Model (HBM): The authors explore only barriers, with only one question on stigma. Please cite and justify why you used only one part of the HBM.

The reviewer is correct that our study did not assess all of the concepts of the HBM. To more accurately convey our more limited reference to the model, as opposed to indicating that we fully employed the model, we have restated the sentence (bottom of p. 6) about framing our study around that model to, "Perceived barriers are an important component of the Health Belief Model, in which individuals weigh the perceived barriers against the perceived benefits of taking some action to influence decisions about treatment-seeking which ultimately affects receipt of care." We also add Janz & Becker (1984) back as a citation (#34) to the model (it was mistakenly dropped from the original submission).

Was knowledge of depression queried along with treatments for depression, whether anyone they knew, including family, had received treatment, and whether they thought depression would get better on its own?

We did not ask teens about whether they knew of others close to them who had received treatment for depression. We did include a battery of items to elicit knowledge about depression treatments but none asked generally about whether depression would get better on its own. These items are being analyzed for another paper being prepared from this study.

On the issue of race, since the majority of your sample was Black or Hispanic, why were these combined in the analysis to compare to whites? Please more fully justify why you are making a white/non-white comparison.

In bivariate analyses of the 4-category specification of race/ethnicity (white, Black, Hispanic, and other, shown in Table 1) we found no significant differences by race/ethnicity in perceived barriers or use of services. We therefore combined those minority groups for parsimony given our small sample size.

Regarding the issue of private versus public insurance, was public insurance not broken out from no insurance because of small numbers? Please explain your rationale and in the frequency table, provide numbers for uninsured and publicly insured? Also, consider adding to your limitations that you do not have data on the child's insurance in cases where the child was publicly insured. (A child can have SCHIP and parent be uninsured).

We combined no insurance with public insurance for two reasons. First and foremost, there were only 14 patients with no insurance and 94 with public insurance compared with 219 who had private insurance. Secondly, there were no significant differences across groups in bivariate analyses. We now show the original 3-group breakdown in Table 1 and add as a limitation (on p. 20) that we do not have data on teen insurance.

On page 13-14 the authors describe the findings from their qualitative interviews. Did the authors probe what the youths meant by other responsibilities getting in the way of care? Did they ask about office hours for appointments? The first sentence on the top of page 14 is confusing. "Access was another type of barrier." The first part of the sentence appears to duplicate "responsibilities" as barriers, while transportation to appointments is a different type of issue. Consider reorganizing the paragraph.

One of the main reasons for complementing the quantitative analyses with these qualitative data was to probe further about the meaning of "other responsibilities" in the survey. We described these other responsibilities at the bottom of p. 14, "responsibilities at school, recreational activities, and work." More detailed explanation about what teens and parents mentioned as other responsibilities include: "school counts [time away for therapy] as tardy even though mom has been giving school notes from the therapist," "it takes me away from class too much," and "I've been busy with the school play and piano recitals." However, this level of detail was not included in the manuscript due to space limitations.

We have reorganized the paragraph at the bottom of p. 14/top of p. 15 to clarify the different types of barriers we classified.

Results section, page 15. Odds ratios are discussed as being significant while the 95% confidence intervals cross one. (See Table 5.)

We thank the reviewer for catching an error in how the confidence intervals were calculated. We have corrected those numbers in Table 5.

Page 16, last paragraph, sentence starting in bold, "However, because," consider revising.

We have revised this sentence (now at the bottom of p.,17) to now read, “However, parents and teens also perceived external barriers such as cost, poor access, and resistance to obtaining care.”

Page 18. At the top of the page, the authors write that concerns re: medication side effects might explain the association between perceived barriers and antidepressant use. Is this based on interview information about fears of side effects of medications?

No, this statement was not based on data from the interviews. Rather, we attempted to explain our finding with support from the literature. This finding was based on the Wisdom article and we had cited this paper (#33).

Page 19, there is a typographical error in the last sentence of the first paragraph.

We have removed the extra “i” in that sentence.

Page 20. The recommendation for training in shared decision making does not appear to be supported by the results. Again, in the final sentence, while pediatricians truly should address depression with parents and teens, the findings don't seem to directly support this need.

We have downplayed this recommendation (now on p. 21) by rewording that sentence to now read, “This patient-centered approach may also be relevant for teens with depression particularly because teens tend to be less involved in medical decisions.”

Table 3. Please insert the N.

We have inserted the Ns for the non-depressed and depressed teens in Table 3.

As noted before, the manuscript is for review solely by *Medical Care* and is not being submitted elsewhere for publication or electronic medium. There are no conflicts of interest and all persons acknowledged in this manuscript have approved the mention of their names.

If you have any questions or concerns, please email me (lisa_meredith@rand.org) or call 310.393.0411, x7365.

Sincerely,



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Perceived Barriers to Treatment for Adolescent Depression

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September 16, 2008

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Brief Title: Barriers to Adolescent Depression Care

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An earlier version of this paper was presented at the annual meeting of AcademyHealth's Child Health Services Research section, Washington DC, June, 2008.

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Abstract

Background and Objective: Adolescent depression is common, disabling, and is associated with academic, social, behavioral, and health consequences. Despite the availability of evidence-based depression care, few teens receive it, even when recognized by primary care clinicians. Perceived barriers such as teen worry about what others think or parent concerns about cost and access to care may contribute to low rates of care. We sought to better understand perceived barriers and their impact on service use.

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Results: Teens with depression were significantly more likely to perceive barriers to care compared with non-depressed teens. Parents were less likely to report barriers than their teens; perceived stigma and concern about family member response were among the significant teen barriers. Teen perceived barriers scores were negatively associated with any use of antidepressants ($p < .01$), use of antidepressants for at least 1 month ($p < .001$), and any psychotherapy or antidepressant use ($p < .05$) at 6 months.

Conclusions. To improve treatment for adolescent depression, interventions should address both teen and parent perceived barriers and primary care clinicians should elicit information from both adolescents and their parents.

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Introduction

Depression in adolescents is common and disabling [1, 2], with an estimated 15-20% of youth experiencing a depressive disorder by the age of 18 [1]. Adolescent depression is associated with a range of negative academic, social, and health outcomes, including adult depression, suicide completed, substance abuse, pregnancy, early parenthood, and impaired social and school functioning [1, 3-8].

Several psychosocial and pharmacological treatments have been shown to be efficacious in treating depression in adolescents. These include cognitive-behavioral therapy, interpersonal psychotherapy, and some selective serotonin reuptake inhibitors (SSRIs) [3, 9-15]. Despite the availability of evidence-based care for depression, most teens with depression do not receive treatment [3, 16-18], with primary care clinicians (PCCs) providing the majority of care to those who are treated [19-21]. Studies have documented that there is often a multi-year time lag between the onset of mental health symptoms in children and adolescents and their receipt of appropriate treatment [22].

Improvement in care for depressed adults has been achieved in the primary care setting [23-27], and similar efforts have been shown to be an effective way to improve care and outcomes for depressed adolescents [28]. Thus, primary care is a promising venue for improving access to care for depressed teens. However, barriers to care can interfere with both receipt and continuity of care.

Although there has been extensive work on barriers to depression care for adults [29], few studies have examined barriers to adolescent depression care. The **perceived** barriers that have been identified include adolescent or parent concerns about revealing an adolescent's emotional problems (stigma), barriers to access

including insurance limitations [30, 31], parental lack of awareness, PCC's lack of knowledge and discomfort with treating adolescent's depression itself can contribute to the under-treatment of adolescent depression. Further, perceptions of adolescents and their parents about the availability and effectiveness of treatment and the social stigma associated with revealing emotional problems are critical to the decision to seek treatment [32]. Wisdom and colleagues [33] identified three key themes that affect teen health care seeking for depression. **Depression adversely affects teens' self-perception making them feel abnormal, disconnected, and dependent on others. These challenges, in turn, make it difficult for teens to seek care.** As these studies suggest, examining barriers to care in adolescents may be more complicated than in adults because many adolescents will likely rely on their parents for both material support (transportation, money) and emotional support (agreement that treatment is important and valid) for depression care. Thus, barriers to depression care for adolescents may stem from several sources: adolescent patients, their parents, their PCCs, and systemic factors.

We sought to better understand the perceived barriers of adolescents and their parents in the primary care setting, and to understand to what extent perceived barriers affect receipt of care during the 6 months after depression is detected. **Perceived barriers are an important component of the Health Belief Model [34] in which individuals weigh the perceived barriers against the perceived benefits of taking some action to influence decisions about treatment-seeking which ultimately affects receipt of care.** This study addressed 2 research questions:

1. What are the perceived barriers to adolescent depression care as reported by adolescents (with and without depression) and their parents?
2. Are fewer perceived barriers associated with use of depression treatments (counseling and antidepressants) for adolescents with depression during the 6 months after depression is detected?

Methods

Settings and Participants. Data are from 368 adolescents aged 13-17 (184 depressed and 184 non-depressed) and 338 of their paired parents who participated in the Teen Depression Awareness Project (TDAP). TDAP was designed to study the impact of depression on adolescent and family functioning and the effect of a motivational intervention on care for depression in primary care settings. We conducted the study in collaboration with 7 primary care health care organizations in Los Angeles and Washington D.C. (3 of these sites each had more than 1 participating medical office for a total of 11; 2 contributed no patients, yielding data from 9). We selected these clinic partners because they represent a wide range of public and private healthcare settings that deliver care to teens from diverse backgrounds.

Adolescent and Parent Recruitment. Teens visiting primary care medical offices and 1 of their parents were recruited to participate in the study from January 2005 through March 2006. Teens and parents were approached in waiting rooms and recruited into the study sequentially within each site. Teens and parents were provided information about the study, and those who consented (in-person if present at the time of the visit or by phone and mail) were subsequently contacted by phone and completed an eligibility/diagnostic interview. All depressed teens and a non-depressed matched sample were asked to continue to participate in the longitudinal study, and to complete a baseline computer assisted telephone interview (CATI). Eligibility for the study included current school attendance within 2 years of expected grade level, currently living with parent/guardian, not currently pregnant, English-speaking, and not having a sibling enrolled in the study.

Teens were assessed via telephone for participation in the project using the Diagnostic Interview Schedule for Children [35-37] depression module. Teens who met criteria for depression were invited to participate further in the study. We defined teens as “depressed” if they met criteria for a depressive episode of 2 weeks or more in the prior 6 months, and reported at least 3 depressive symptoms in the prior two weeks. We defined teens as “non-depressed” if they reported 2 or fewer symptoms in the prior 6 months. Teens who were between these two levels of depression were defined as “subthreshold” and were thanked for their participation, but not invited to continue in the study. After a depressed teen was enrolled, the next teen that screened as non-depressed from the same clinic and of the same gender was invited to participate, yielding matched pairs of depressed and non-depressed teens by clinic and gender. One parent or legal guardian of each participating teen was also invited to participate in the study; in nearly all cases, this was the parent who provided consent for the teen to participate.

Participating teens and parents were interviewed at baseline and 6 months after the baseline assessment (August 2005 through September 2006) and compensated for time and efforts associated with participation. Spanish speaking parents were provided materials in Spanish. A total of 5,687 teens expressed interest in the study, and 5,084 assented to participate and received parent consent. Of these, 4,856 completed a full screening assessment, and 4,710 of these teens were eligible for the study. This recruitment strategy resulted in equal numbers of depressed and non-depressed teens from each clinic (roughly matching on demographic, insurance, and socioeconomic factors) and in a similar gender ratio in the 2 groups (n=368, response rate 368/375

eligible=98%). Figure 1 illustrates the sample flow. All study procedures were approved by the RAND IRB and the IRB's of collaborating health care organizations.

TDAP Intervention. All participating teens in both the depressed and non-depressed groups, and their parents, received an educational brochure about depression in teens. After depression was detected via the diagnostic telephone interview and baseline interviews were completed, teens, parents, and clinicians were all informed that the teen was likely depressed. A random half of teens with depression were contacted to participate in a motivational interview that encouraged them to think through next steps in understanding and getting help for their depression, seeking to move teens from considering depression care to acceptance of care and ultimately, to actual treatment. These teens were also sent a guide to local mental health resources. However, as the 2 groups of depressed teens did not differ from one another in terms of subsequent use of mental health services, they are considered together for the purposes of this paper.

Measures. *Barriers to Care.* Teen perceived barriers to care were assessed in the baseline interviews with questions adapted from several studies of depression in primary care among adults [38] and teens [39]. Teens were asked to imagine that they needed or wanted care for emotional or personal problems 6 months in the future. Then they were asked to rate 7 barriers on a 5-point Likert agreement scale with “ I might not get care because...” as the stem to each statement: 1) it would cost too much, 2) of what others might think, 3) of difficulties finding or making an appointment with a doctor or therapist, 4) of problems that come up due to my personal responsibilities at school, home, or work, 5) I wouldn't want my family to find out about

my depression (asked of teens only), 6) there isn't good care available to me, and 7) I just don't want to. We report these barriers individually and also using an aggregate scale derived by summing across all items. We created 2 scale versions for teens: one with all 7 items (Cronbach's $\alpha=.79$) and another with only the 6 parallel items asked of both teens and their parents (Cronbach's $\alpha=.75$). The 6-item parent perceived barriers scale (Cronbach's $\alpha=.83$) was scored identically to the teen version

To complement the quantitative data on perceived barriers, we conducted 45-minute telephone interviews with a purposive sample of 16 teen-parent dyads (75% of teens and parents called) after baseline assessment and delivery of the motivational interview. Dyads were selected to include approximately equal numbers spanning the 2 study locations, the 2 intervention arms, teen gender and ethnicity, and whether or not the teen had previously received treatment. The semi-structured interview included questions about barriers to, experience with, and receipt of care.

Use of Treatments for Depression. We assessed teens' receipt of depression treatment during the 6 months between identification of the depression (baseline assessment) and the follow-up assessment using 6 binary indicators representing receipt of counseling and use of antidepressant medications or some combination of the two. Any use of counseling for depression was defined as positive if a teen reported having received counseling or therapy for personal or emotional problems from a mental health specialist like a psychiatrist, psychologist, social worker or family counselor in a mental health clinic or office, and that at least one of the counseling visits was related to their feeling sad or depressed. We also specified a more conservative measure, any use of depression counseling with the added criterion of having received at least 4

counseling sessions. This operationalization has been used in other studies in primary care settings [40]. We defined any use of an antidepressant as positive if a teen reported using any antidepressant for depression and also examined a more conservative measure of antidepressant use for at least one month in the last 6 months. We refer to these stricter measures as “regular” use compared with “any” use. We also looked at any depression treatment (any depression counseling or use of antidepressants for depression) as well as regular depression treatment (at least 4 counseling visits or antidepressants for at least 1 month in the past 6 months).

Covariates. We created binary indicators for teen gender, race/ethnicity (white vs. non-white), and insurance type (private vs. public or none) with male, non-white and public/no insurance specified as the reference categories in the models.

Statistical Analysis. Analyses focused on the association between baseline perceived barriers data (collected prior to implementation of the motivational interview intervention) and use of treatments for depression at follow-up. We performed bivariate descriptive analyses to present the percent reporting different types of perceived barriers for teens and their parents stratified by depression status using the whole sample. We used bivariate analyses (cross-tabs with Kappa statistics) to assess consistency between linked teen and parent reports. We also stratified these analyses by depression for the whole sample. Specifically, for each barrier, we calculated the percent of teens for whom both the teen and parent both reported that they “somewhat agreed” or “strongly agreed” that it was a barrier.

We also examined the relationship between perceived barriers and use of treatments for depression measured at the 6-month follow-up interview among

depressed teens. We present unadjusted bivariate treatment rates and adjusted multivariable logistic regression analyses to evaluate that relationship after adjusting for intra-cluster correlation among clients within treatment site [41] and the covariates. SAS PROC GLIMMIX [42] was used to adjust for clustering in the models by accommodating study clinic as a random effect. We examined the effect of teen and parent perceived barriers, the difference between their perceptions, and also the moderating effect of teen barriers on service use indirectly through parent perceptions. We present the adjusted odds ratios and 95% confidence intervals for each model coefficient including the standardized score for the perceived barriers scales to illustrate the effect on each measure of treatment use.

The rate of missing information per variable was very low, with 22 (13%) teens with missing data on at least one measure used in our multivariable models. Missing data were imputed using multivariate normal-based multiple imputation as implemented by SAS PROC MI to impute missing data at the item level. The bivariate and multivariate analyses were repeated on five imputed datasets and results were combined using standard multiple imputation rules [43, 44] as implemented in SAS PROC MIANALYZE to obtain parameter estimates and their adjusted standard errors that accounted for the uncertainty due to imputation. Of the 184 teen respondents, 162 were eligible for multivariate analyses because parent data were also available. Of these 162 respondents, 16 (10%) had at least one missing predictor variable.

Results

Teen and Parent Characteristics. Table 1 shows the sociodemographic characteristics of study teens and parents. Teens averaged 15.2 years of age, were mostly female (78%), and predominantly black (32.7%) or Hispanic (49.3%). Parents averaged 43.8 years of age, were also mostly women (89.1%), and predominantly black (33.9%) or Hispanic (45.8%). Forty-six percent of the parents had at least some college education and 37.9% reported household incomes of at least \$50,000. The majority of parents had more than one child or adult living in the household (60.7% and 79.6%, respectively), and were married (55.9%).

Perceived Barriers. Table 2 shows the mean and standard deviation for the aggregate perceived barriers scale, as well as the percent of teens and parents reporting that they “strongly agreed” or “somewhat agreed” with each of the perceived barriers items. These data are stratified by whether or not the teen was depressed. There is a clear and consistent pattern that depressed teens are significantly more likely to perceive barriers to care compared with non-depressed teens. For parents, this pattern is less pronounced with significant differences only for the cost and access items as well as for the overall scale.

The qualitative interviews among a subgroup of teens with depression provide a more in-depth picture of the specific barriers reported in this study. The most often mentioned barriers for teens and parents were that other responsibilities at school, recreational activities, **needing to baby-sit for other children**, or **difficulty getting time off** work made it difficult to get care (mentioned by 12 of 16 teens). Perceived stigma was also a concern (mentioned by 4 teens). Specifically, they were not

comfortable talking with anyone about their feelings. Access was another type of barrier mentioned by several teens and parents with lack of transportation, **long distance to the clinic, or hours the counselor is available**. Three parents and 2 teens discussed reluctance to take antidepressants or difficulty adhering to them and 2 teens mentioned that they preferred counseling. A few parents also noted insurance coverage problems.

Patterns of concordance between teens and their parents in their perceptions of each of the 6 perceived barriers are shown in Table 3. Concordance is low on nearly all barriers for teens with and without depression. Kappa statistics are near-zero for all barriers except access (“trouble making an appointment” with a Kappa of .21) among the non-depressed teens. However, agreement was slightly higher among the depressed group (3.0-6.6% for non-depressed teen dyads and 4.7-12.9% for depressed teen dyads).

Relationship between Barriers and Use of Treatments among Depressed Teens. Overall, 55% of the depressed teens reported receiving any depression counseling and even fewer (26%) received at least 4 counseling sessions during the 6 months after depression was identified. Fewer than 1 in 5 teens with depression (17%) reported receiving an antidepressant medication and only 7% reported regular antidepressant use (regular use for at least 1 month in the past 6). The percent of depressed teens receiving any treatment was 56%, and 29% received any regular treatment. There are bivariate associations (Table 4) between three of the 7 teen perceived barriers and their reported use of counseling and/or antidepressants 6 months following baseline. Teens who perceived stigma (about what others might think) were less likely to report use any antidepressants or any treatment and there was

a trend toward less use across all of the treatment measures. Stigma about family's perceptions was also consistently associated with lower use of depression treatment. Perceiving that good quality care is not available was associated with less use of counseling and treatment. Barriers reported by teens concerning cost, access, other responsibilities, or not wanting care were unrelated to use of treatments for depression.

In multivariate analyses, we found no effect for parent perceptions either directly or as a mediator of teen perceptions and therefore present data only for the teen barriers (Table 5). Teens with higher scores on the perceived barriers scale had a significantly lower odds of receiving an antidepressant ($p < .01$), of receiving a regular course of antidepressant therapy ($p < .001$), and of receiving any regular treatment, whether counseling or medication ($p < .05$). There were a few effects for the covariates; non-minority white teens were more likely to report using an antidepressant (any or regular) and any regular treatment. Girls and the privately insured were less likely to report a regular course of antidepressants.

Discussion

In this study of teens with and without depression sampled from primary care medical offices, perceptions of barriers were common, particularly for those with depression. Teens and their parents' perceptions of barriers were discordant, and teens with depression who reported more barriers were less likely to receive care. Prior studies [30, 42] have examined how barriers influence provider decisions to treat teen depression and how teen attitudes predict depression treatment need, but we believe ours is the first study to examine the consistency of teen and parent perceptions of barriers to depression treatment and the association of barriers with use of treatments for depressed teens.

Given the wide endorsement of barriers by teens (including stigma), it may be especially important for PCCs to discuss treatment reluctance and treatment preferences with teens themselves, and ultimately with both the teen and parent. Specifically, better understanding the reasons for the teen's reluctance and preferences can help move the teen toward feeling comfortable with treatment options, and involving parents in such discussions will help parents understand teen's feelings and facilitate parents' role in supporting subsequent treatment or referral to a mental health specialist. Enhancing PCC skills for addressing teen concerns may be a promising strategy for engaging more teens to **accept depression** treatment. **However, parents and teens also perceived external barriers such as cost, poor access, and resistance to obtaining care. This suggests that, in addition to enhanced PCC communication skills, broader efforts to expand access to services are needed. These broader**

efforts include public education and outreach as well as eliminating financing barriers.

The greater endorsement of barriers among depressed teens may reflect negative cognitive biases (e.g., helplessness, hopelessness) associated with the experience of depression. In contrast, perceived barriers reported by parents of depressed teens were similar to the barriers reported by parents of non-depressed teens. One explanation for this contrast is that parents' perceptions are unaffected by their teens' depression and thus could serve as an important leverage point or “reality check” for their teens, who see many obstacles to receiving care. An alternative explanation for this pattern is that parents are “out-of-touch” with the issues their teens are facing, and that depressed teens have more accurate, experiential-based perceptions of barriers.

We found little consistency between teens and their parents' with regard to perceived barriers especially for the depressed group suggesting that PCCs should target communications about how to seek care both with the teen and the parent, since they are concerned about different barriers, and talking with just one will not cover the diverse issues that might get in the way of the teen receiving care. This finding, of the importance for PCCs to communicate with the family (teen and parent), is consistent with other work that has found that the family plays a significant role in provider motivation to treat [45].

Teens who reported more barriers were less likely to receive any regular treatment for depression 6 months later. While reduced odds of receiving counseling were not significant, receipt of antidepressant medications and any regular treatment

were significantly lower. Teens may perceive more barriers to taking medications because of the desire to feel normal and concerns about losing their identities e.g., if they take a pill, they must be sick [33], or because of concerns about side effects, such as weight gain and also stigma about medication in particular. This could explain the stronger association between perceived barriers and use of antidepressants.

The finding that girls and those with private insurance were less likely to receive a regular course of antidepressants was counterintuitive. **Consistent with previous explanations [31]**, it is possible that public insurance plans provide better coverage for antidepressant medications than some private plans. Another explanation is that side effects of many commonly used SSRIs, for example, weight gain may be associated with lower acceptance of medication among girls. However, additional research would be needed to test these hypotheses.

Study limitations include reliance on self-reports of barriers because reports by those with no treatment-seeking experience may be less accurate. These perceptions, even if inaccurate, are important however, as moving from not getting treatment toward being ready to seek and eventually to receive treatment is the goal. In fact, all depressed teens and their parents received feedback about depression regardless of whether they were seeking treatment. Thus, while findings may not generalize to all treatment seekers, they do generalize to depressed teens who are aware of their symptoms. Our estimates of which barriers were most problematic are conservative given that teens with depression (and their parents) report more barriers to care. In addition, we relied on self-reported assessment of service use. While self-reported survey measures of service use in the past 6 months have previously been used in

studies of teens, the accuracy of these reports relative to medical records is not known. Another limitation is that teens with more prevalent depression and/or previous treatment experience may be more likely to report barriers, particularly as a means for refusing care. Our sample size limited the power for detecting associations with service utilization, particularly since treatment rates were low. The sample size also restricted the number of covariates that could be examined in multivariate models even after missing values were imputed. We selected health care organizations serving a diverse patient population with particular ethnic and minority groups in 2 geographic areas which may not represent other areas of the country. Our study was restricted to teens recruited from primary care waiting rooms, which may under-represent adolescents who tend not to be regular users of health care. **Finally, we did not obtain information about the teen's insurance and it is possible that some uninsured parents have patients with public insurance (e.g., through the State Children's Health Insurance Plan or SCHIP).**

Depression is a serious threat to adolescent health and its identification and treatment are public health priorities. National surveys and guidelines find that depression is common among U.S. students in grades 9 through 12 [46] and call for the identification of adolescents at increased risk for suicide including those experiencing depressive symptoms. Effective treatments have been developed for the primary care setting [39, 47]. Ongoing efforts seek to improve depression screening tools and reduce burdens on PCCs [48]. Understanding perceived barriers can inform these efforts to improve depression care.

The adult depression literature suggests that patient-centered communication strategies that elicit patients' values and preferences for treatment of depression and helping engage patients into care can lead to improved outcomes [49, 50]. **This patient-centered approach may also be relevant for teens with depression particularly because teens tend to be less involved in medical decisions.** In addition, like adults, the teens in this study, who are receiving care mostly from PCCs, may be selectively more averse to care for depression. Therefore, PCCs treating adolescent depression must gain patient trust and ensure that patients fully understand recommended treatments; otherwise, adherence with treatment and associated positive outcomes will be limited. Our findings highlight the importance of PCCs engaging in conversations that directly address both teen's and their parents concerns, needs, and priorities for depression care.

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Table 1. Baseline Teen and Parent Characteristics

	Teens (N=368)		Parents (N=338)	
	N or Mean	% or SD	N or Mean	% or SD
Age, years, mean (SD)	15.2	1.4	43.8	7.9
Gender				
Male	80	22.0	37	11.0
Female	288	78.0	301	89.1
Race/Ethnicity				
White	52	14.2	56	16.7
Black	120	32.7	114	33.9
Hispanic	181	49.3	154	45.8
Other	14	3.8	12	3.6
Education	N/A			
Did not finish high school			92	27.3
High school graduate/GED			90	26.7
Some college			81	24.0
4 year college degree			40	11.9
Graduate or professional school			34	10.1
Household income	N/A			
Less than \$15,000			59	17.9
\$15,000-\$30,000			81	24.6
\$30,000-\$50,000			65	19.7
\$50,000-\$75,000			49	14.9
\$75,000 or more			76	23.0
Insurance status	N/A			
Private			219	67.0
Public			94	28.7
No insurance			14	4.3
Children in household	N/A			
0			12	3.6
1			121	35.8
2			105	31.1
3+			100	29.6
Adults in household	N/A			
1			69	20.4
2			166	49.1
3+			103	30.5
Marital status	N/A			
Married			189	55.9
Divorced/separated/widowed			94	27.8
Never married			55	16.3

N/A=not applicable.

Table 2. Perceived Barriers to Depression Care for Non-Depressed (Non-Dep) and Depressed (Dep) Teens and their Parents

<i>Barriers Measures</i>	Teens (N=368)			Parents (N=339)		
	Non-Dep	Dep	χ^2 or t	Non-Dep Teen	Dep Teen	χ^2 or t
Cost too high	18.5	34.8	12.5***	16.5	27.4	5.8*
Stigma-worry about what others might think	14.7	26.6	8.0**	12.7	14.8	.3
Access-trouble making appointment	13.6	39.1	30.9***	16.4	28.1	6.6**
Personal-other responsibilities	24.6	44.6	16.2***	17.5	23.8	2.0
Stigma- worry about family's perceptions	16.3	45.1	35.9***	N/A	N/A	N/A
Poor quality-good care not available	9.2	26.6	18.9***	12.1	19.0	3.0
Don't want care	18.5	34.8	12.5***	22.0	26.4	.8
Aggregate barriers scale (mean, SD)	11.4 (5.1)	15.2 (5.6)	7.2***	10.8 (6.1)	12.3 (5.6)	2.2*

Entries for individual barriers items represent the percent of teens or parents reporting that they “somewhat agree” or “strongly agree” with each item. The aggregate barriers scale is scored as the sum of the 6, 5-point items common to both the teen and parent interviews with a possible range from 5 to 30 points; a higher score indicates a stronger perception of barriers e.g., more items were endorsed as being obstacles to getting care. N/A indicates that this item was not asked of parents.

*p<.05; **p<.01; ***p<.001.

Table 3. Patterns of Reporting Perceived Barriers (Percent who Somewhat or Strongly Agree) for and Teens and Parents for Non-Depressed and Depressed Teens

<i>Barriers Measures</i>	Non-Depressed Teens (N=167)		Depressed Teens (N=170)	
	% Agreement	Kappa	% Agreement	Kappa
Cost too high	3.0	.01	7.6	-.08
Stigma-worry about what others might think	3.0	.09	4.7	.06
Access-trouble making appointment	4.8	.21	12.9	.08
Personal-other responsibilities	6.6	.15	12.4	.07
Poor quality-good care not available	2.4	.14	5.9	.04
Don't want care	3.6	-.01	10.6	.10

Percent agreement represents the percent of teens for whom both the teen and their parent reported that for each barrier they “somewhat agree” or “strongly agreed”

Table 4. Relationship Between Perceived Barriers to Depression Care (Baseline) and Use of Services for Depression (Follow-Up) among Depressed Teens (N=184)

Teen Perceived Barrier	Percent of Teens Using Each Service					
	Any Counseling	At least 4 Counseling Sessions	Any AD	At Least 1 Month of AD Use	Any Treatment	4 Counseling Sessions OR 2 Months of AD Use
Cost too high						
No (n = 106)	55.7	25.5	19.8	7.6	56.6	28.3
Yes (n = 56)	55.4	28.6	12.5	5.4	55.4	30.3
Stigma-worry what others might think						
No (n = 122)	59.8	30.3	21.3*	8.2	60.7*	32.8
Yes (n = 40)	42.5	15.0	5.0	2.5	42.5	17.5
Access-trouble making appointment						
No (n = 102)	50.0	22.6	14.7	7.8	51.0	25.5
Yes (n = 60)	65.0	33.3	21.7	5.0	65.0	35.0
Personal-other responsibilities						
No (n = 92)	55.4	27.2	18.5	6.5	56.5	30.4
Yes (n = 70)	55.7	25.7	15.7	7.1	55.7	27.1
Stigma- worry about family's perceptions						
No (n = 91)	63.7*	36.3**	25.3**	9.9	64.8*	38.5*
Yes (n = 71)	45.1	14.1	7.0	2.8	45.1	16.9
Poor quality-good care not available						
No (n = 121)	60.3*	28.9	18.2	6.6	61.2*	32.2
Yes (n = 41)	41.5	19.5	14.6	7.3	41.5	19.5
Don't want care						
No (n = 110)	57.3	27.3	18.1	7.3	58.2	30.0
Yes (n = 52)	51.9	25.0	15.4	5.8	51.9	26.9

Teen barriers items are scored as "1" if a teen reported that they "somewhat agree" or "strongly agree" with each item as being obstacles to getting care, "0" otherwise.

*p<.05; **p<.01; ***p<.001. AD = antidepressant.

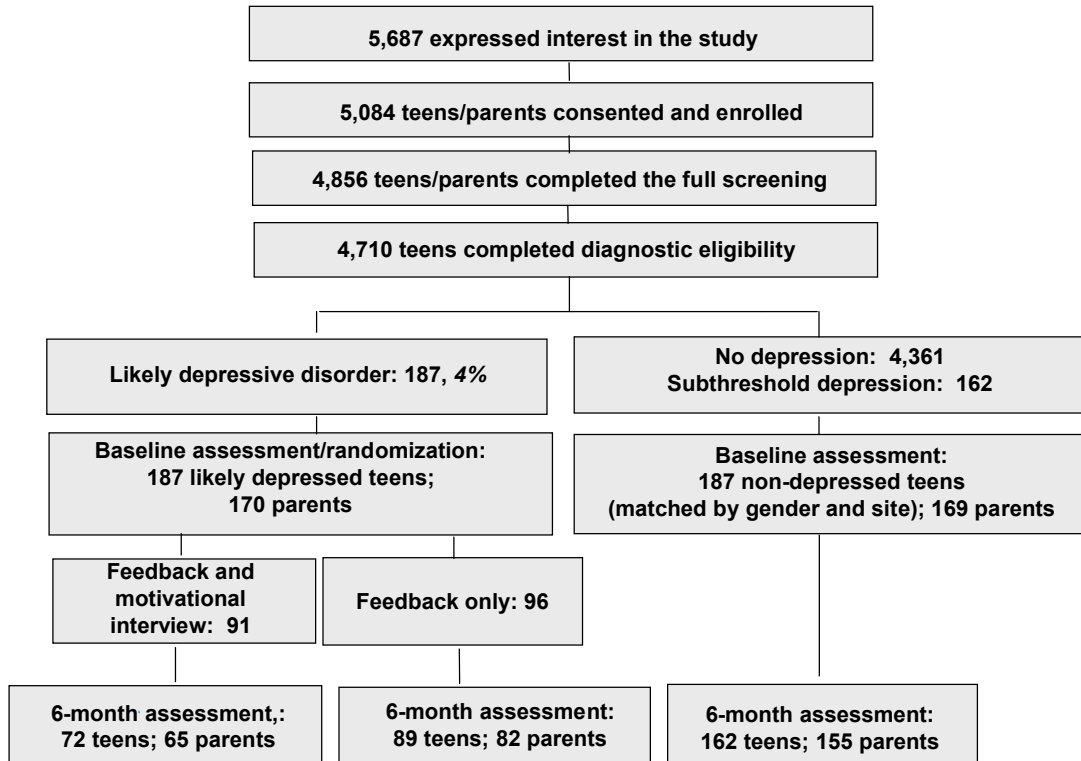
Table 5. Adjusted Odds Ratios (95% CI) for Associations between Teen Characteristics and Use of Services for Depression (N=184)

Teen Characteristics and Barriers	Any Counseling	At least 4 Counseling Sessions	Any AD	At Least 1 Month of AD Use	Any Treatment	4 Counseling Sessions OR 2 Months of AD Use
Intercept	.83 (.34, 2.01)	.36 (.13, .98)	0.18 (.04, .73)	.09 (.003, 2.39)	.82 (.34, 1.98)	.35 (.13, .96)
White	2.05 (.71, 5.91)	1.89 (.75, 4.74)	4.49 (1.64, 12.34)‡	26.0 (3.31, 204.01)‡	2.44 (.79, 7.53)	2.38 (.97, 5.83)†
Female	1.34 (.61, 2.94)	.95 (.38, 2.33)	1.13 (.38, 3.33)	.04 (.005, .41) ‡	1.36 (-.62, 2.99)	.94 (.39, 2.28)
Private insurance	1.11 (.54, 2.28)	.86 (.38, 1.95)	.64 (.22, 1.84)	.01 (.001, .14)	1.12 (.54, 2.30)	1.00 (.44, 2.26)
Perceived barriers*	.86 (.61, 1.19)	.75 (.51, 1.10)	.52 (.32, .84)‡	.03 (.004, .21)	.83 (.60, 1.16)	.69 (.47, 1.01)†

*Standardized score.

†p<.05; ‡p<.01; ||p<.001; AD=antidepressant.

Figure 1. Teen Depression Awareness Project (TDAP) Sample Flow



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