

# Detection Of Major Depressive Disorder In Primary Care Patients

Jack Froom, MD, David S. Schlager, MD, Sjardo Steneker, MD, and Arnold Jaffe, PhD

**Abstract: Background:** The aim of this study was to assess the utility of a two-phase case detection strategy for major depressive disorder and a quantitative self-rating instrument for dysphoria.

**Methods:** A convenience sample of 302 ambulatory patients received three self-administered depression rating instruments: a modified version of the Dartmouth Cooperative (COOP) Functional Health Assessment Chart on emotional condition, a three-question screening test for depression taken from the Diagnostic Interview Schedule (DIS), and the Inventory to Diagnose Depression (IDD). All patients' medical charts were reviewed after the administration of these instruments, and those charts of patients found to be depressed were reviewed again 6 months later. A family practice ambulatory patient center in a university hospital was the setting for the study.

**Results:** The IDD detected current major depressive disorder in 41 persons (13.6 percent of sample). Twenty-five of the 41 IDD-positive patients had not previously had a major depressive disorder diagnosed according to chart notes. Six months later, 16 of the 25 patients with newly diagnosed major depressive disorders had not returned to the clinic since the index visit. A single question (DIS question 073b), when compared with the IDD diagnosis of major depressive disorder, had a sensitivity of 95.1 percent, specificity of 78.9 percent, positive predictive value of 41.5 percent, and negative predictive value of 99 percent. Dysphoria, as measured by the modified COOP chart on emotional condition, was significantly worse among those with current major depression (IDD positive) than for those without (IDD negative).

**Conclusions:** A two-phase case detection strategy for major depressive disorder consisting of a single screening question followed by a self-administered diagnostic instrument can efficiently pick out virtually all ambulatory primary care patients with a major depressive disorder. A brief functional assessment chart can quantify the extent of dysphoria. (J Am Board Fam Pract 1993; 6:5-11.)

Six-month and lifetime prevalences of major depressive disorder in the US general population are estimated to be 3 percent and 5.8 percent, respectively.<sup>1</sup> Patients with major depressive disorder have substantially more functional impairment,<sup>2</sup> days of restricted activity,<sup>3,4</sup> and risk of suicide<sup>5</sup> when compared with patients who are not depressed. Because appropriate treatment can reduce morbidity<sup>6,7</sup> and perhaps mortality, case finding is desirable.

Prevalence of major depressive disorder among ambulatory primary care patients is considerably higher than in the general population,<sup>8-12</sup> yet primary care physicians fail to detect it in a great

number of cases.<sup>13,14</sup> Because the diagnosis of depression can be made only by history and because primary care encounters are characterized by short duration (70 percent of office visits last 15 minutes or less)<sup>15</sup> and presentation of ill-defined symptoms, case detection might benefit from a stepwise, structured approach to gathering information.

Several such approaches have been used in previous studies of depression in primary care. A brief, self-rated screening instrument followed by a structured clinical interview, often the Diagnostic Interview Schedule (DIS),<sup>16</sup> has been used to estimate the prevalence of major depressive disorder among various populations.<sup>1-3,9,13,17,18</sup> While both sensitive and specific, clinician time required to administer such interviews limits the practicality of this approach in nonresearch settings. Other studies have used various self-rated depression screening inventories<sup>10,19,20</sup> that, while more time-efficient, have shown poor specificity

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From the Department of Family Medicine (JF, AJ) and the Department of Psychiatry (DSS), State University of New York at Stony Brook, and Nijmegen, The Netherlands (SS). Address reprint requests to Jack Froom, MD, Department of Family Medicine, SUNY at Stony Brook, Stony Brook, NY 11794.

for major depressive disorder and have produced higher prevalence rates than studies using clinical interviews.

This report describes the results of a two-step, self-rated approach to detect major depressive disorder in an ambulatory primary care setting. Assessment instruments included an initial, brief screening test given to all patients to select those with a high likelihood of major depressive disorder, followed by an accurate diagnostic instrument, and a measure to assess severity. The brief screening test consisted of three questions from the DIS<sup>16</sup> as suggested by Rost and colleagues.<sup>21</sup> The diagnostic instrument was the Inventory to Diagnose Depression (IDD),<sup>22</sup> a self-administered questionnaire designed to diagnose current major depressive disorder by the *Diagnostic and Statistical Manual of Mental Disorders*, third edition, revised (DSM-III-R) criteria. Severity of dysphoria was measured using a modified version of the Dartmouth Cooperative (COOP) Functional Health Assessment Chart on emotional condition.<sup>23</sup>

## Methods

Adult patients attending a university ambulatory family practice center where approximately 4000 patients receive primary care from 10 faculty and 16 resident trainees were asked to participate. The sample of 302 patients was of convenience among those available during the sessions at which one of the authors (SS) was present during the months January and February 1991. All subjects completed a modified version of the Dartmouth COOP Functional Health Assessment chart on emotional condition,<sup>24</sup> followed by the three-question screening test for major depressive disorder,<sup>21</sup> taken from the Diagnostic Interview Schedule,<sup>16</sup> and lastly, the Inventory to Diagnose Depression.<sup>22</sup>

The three-question screening test comprises questions 072, 073a, 073b from the DIS. The DIS is a structured interview used by lay interviewers to diagnose psychiatric conditions in the Epidemiologic Catchment Area Study.<sup>18</sup> The questions used in this study read as follows: (1) "In the past year have you had two weeks or more during which you felt sad, blue, or depressed; or when you lost all interest or pleasure in the things you usually cared about or enjoyed?" (question 072), (2) "Have you had two years or more in your

life when you felt depressed or sad most days even if you felt okay sometimes?" (question 073a), and (3) "Have you felt depressed or sad much of the time in the past year?" (question 073b). We used the two parts of question 073 (073a and 073b) as separate questions for a total screen of three questions.

The IDD was chosen as a diagnostic self-rating instrument.<sup>25</sup> It contains 22 questions and differs from other commonly used self-report instruments in that it contains questions that are precisely congruent with the DSM-III-R<sup>26</sup> criteria for major depressive disorder, with thresholds to determine the presence or absence of symptoms and questions that specify a duration of more or less than 2 weeks. An example is question 1:

0. I do not feel sad or depressed
1. I occasionally feel sad or down
2. I feel sad most of the time, but I can snap out of it
3. I feel sad all the time, and I can't snap out of it
4. I am so sad or unhappy that I can't stand it

If you circled 1, 2, 3 or 4: Have you been feeling sad or down for more or less than two weeks?

It can be self-administered in 10 minutes or less and scored by trained lay persons in 1 minute.

The utility of the two-stage case detection process hinges on the validity of using the self-administered IDD as a diagnostic instrument. Among psychiatric inpatients, agreement between the IDD and clinicians' diagnosis of major depressive disorder was as high as those found in studies examining the interrater reliability of the diagnosis of major depressive disorder.<sup>26</sup> In relatives of psychiatric patients, the IDD, compared with the DIS, achieved an identical point prevalence of major depressive disorder, a specificity of 98.5 percent and a positive predictive value of 50 to 57 percent.<sup>22</sup> Although designed to diagnose major depressive disorder by DSM-III criteria, the IDD contains all of the questions needed to score major depressive disorder using DSM-III-R criteria.

To evaluate the severity of dysphoria, we used a modified version of the Dartmouth COOP Functional Health Assessment Chart on emotional condition, relabeled "feelings." The modification was developed and tested by the classification committee of the World Organization of National Colleges, Academies, and Academic Associations

of General Practitioners/Family Physicians (WONCA) to meet the needs of its member countries.<sup>24</sup> The chart asks, "During the past two weeks how much have you been bothered by emotional problems such as feeling anxious, depressed, irritable, or down-hearted and sad?" The responses are rated 1 = not at all, 2 = slightly, 3 = moderately, 4 = quite a bit, 5 = extremely, and each rating is illustrated by a cartoon face with differences ranging from a smile to a frown. The Dartmouth COOP charts have received widespread use, have excellent reliability and validity,<sup>23</sup> and correlate well with the Medical Outcome Study Short Form General Health Survey.<sup>27</sup>

All patients' medical charts were reviewed following the initial visit to determine demographic data, chart diagnosis of any depressive disorder, and prescriptions of antidepressant medication. Table 1 provides the distribution of patients by

IDD scores and medical chart review. If the IDD results were positive for major depressive disorder, the patients' personal physicians were informed, in writing, within 2 weeks of the index visit. Six months later, the charts of all patients who were initially depressed, either by IDD criteria or chart diagnosis, were reviewed again to ascertain current treatment status.

Diagnoses of depression found in patient charts were taken from the problem list or, if the diagnosis was not listed in the chart, by reviewing all progress notes. Asymptomatic patients with a history of depression were not counted as chart positive. Most patients (84 percent) who were chart positive were currently taking antidepressant medication.

It should be noted that a chart diagnosis of depression does not specify whether the depression conformed to DSM criteria<sup>25</sup> for major depression disorder. Data were analyzed using the Statistical Program for the Social Sciences<sup>28</sup> and differences assessed by chi-square calculations.

**Table 1. Distribution of Patients by Inventory to Diagnose Depression (IDD) Scores and by Medical Chart Review.**

Terms	Description	No.
<i>Total Sample</i>		
IDD positive	Patients whose scores indicated a diagnosis of major depressive disorder	41
IDD negative	Patients whose scores were insufficient for a diagnosis of major depressive disorder	261
<i>Subsamples</i>		
IDD positive, chart negative	Patients with major depressive disorder whose diagnosis was not addressed as indicated by their physicians' notes in the medical chart	25
IDD positive, chart positive	Patients with major depressive disorder whose diagnosis was known to their physician as indicated by medical chart notes	16
IDD negative, chart positive	Patients who previously had a major depressive disorder as recorded in their medical charts but whose current condition did not qualify for that diagnosis by IDD criteria	25
IDD negative, chart negative	Patients whose IDD scores were insufficient for a diagnosis of major depressive disorder and who had no evidence of that disorder recorded in their medical charts	236

## Results

Of the 312 patients who were asked to participate, 302 completed the assessment for a final participation rate of 97 percent. There were too few who refused to assess refusal bias. Forty-one (13.6 percent) of the 302 who completed the assessment were classified as having current major depressive disorder based on IDD results. The demographic characteristics of the nondepressed sample and of the 41 patients with major depressive disorder are given in Table 2. Participating patients were predominantly women and white; about one-half were married, and a majority were Catholic. No significant differences in prevalence of major depressive disorder were observed among any of the demographic subgroups within our sample. Of the 41 IDD-positive patients, 14 were taking antidepressant medications with 9 of the 14 also receiving concurrent psychotherapy from mental health professionals.

Medical chart review indicated that only 16 of the 41 IDD-positive patients were considered to be depressed by their physicians (IDD positive, chart positive). Of the 25 undetected cases (IDD-positive, chart-negative patients), 16 patients (64 percent) had not returned to the clinic during the 6 months following the index visit.

**Table 2. Demographic Characteristics of Nondepressed and Depressed Persons.**

Characteristics	Nondepressed	Depressed	P Value
	by IDD* (n = 261) No. (%)	by IDD (n = 41) No. (%)	
<i>Sex</i>			
Men	86 (33.0)	9 (22.0)	NS
Women	175 (67.0)	32 (78.0)	
<i>Age (years)</i>			
17-24	22 (8.4)	4 (9.7)	NS
25-44	119 (45.6)	24 (58.5)	
45-64	72 (27.5)	9 (22.0)	
>65	48 (18.4)	4 (9.8)	
<i>Marital status</i>			
Single	77 (29.5)	13 (31.7)	NS
Married	130 (49.8)	15 (36.7)	
Separated	11 (4.2)	3 (7.3)	
Divorced	27 (10.3)	6 (14.6)	
Widowed	16 (6.1)	4 (9.8)	
<i>Race</i>			
White	229 (87.7)	35 (85.4)	NS
African American	17 (6.5)	5 (12.2)	
Other	15 (5.7)	1 (2.4)	
<i>Religion</i>			
Protestant	33 (12.6)	4 (9.8)	NS
Catholic	150 (57.5)	25 (61.0)	
Jewish	18 (6.9)	3 (7.3)	
Other and not specified	60 (23.0)	9 (22.0)	

\*IDD = Inventory to Diagnose Depression.  
NS = not significant.

Twenty-five of 261 patients who were not depressed by IDD criteria had diagnosis of depressive disorder (IDD negative, chart positive) recorded in their charts. Twenty-one of these 25 were taking antidepressant medications and 9 of this group were also receiving psychotherapy (Figure 1).

We compared scores on the modified Dartmouth COOP Functional Assessment Chart between IDD-positive and IDD-negative patients. Scores of IDD-positive patients indicated poorer functional status with regard to feelings than did those of IDD-negative patients. The difference was highly significant ( $P < 0.001$ , Table 3). The 41 IDD-positive patients also had significantly poorer feelings scores than the 25 persons who were IDD negative and chart positive for depression ( $P < 0.001$ ).

Results of answers to the three-question screening test were tabulated and compared with the results of the IDD. The three questions were compared individually and in combination to assess sensitivity, specificity, and predictive values.

Question 073b, which produced the best results, had a sensitivity of 95.1 percent, specificity of 78.9 percent, positive predictive value of 41.5 percent, and negative predictive value of 99.0 percent. A two-phase case detection procedure beginning with the question, "Have you felt depressed or sad much of the time in the past year?" and followed by the administration of the IDD to those with positive answers would have correctly picked out 39 of 41 IDD-positive patients, although it would have required the administration of the IDD to an additional 55 persons who would have had IDD-negative scores.

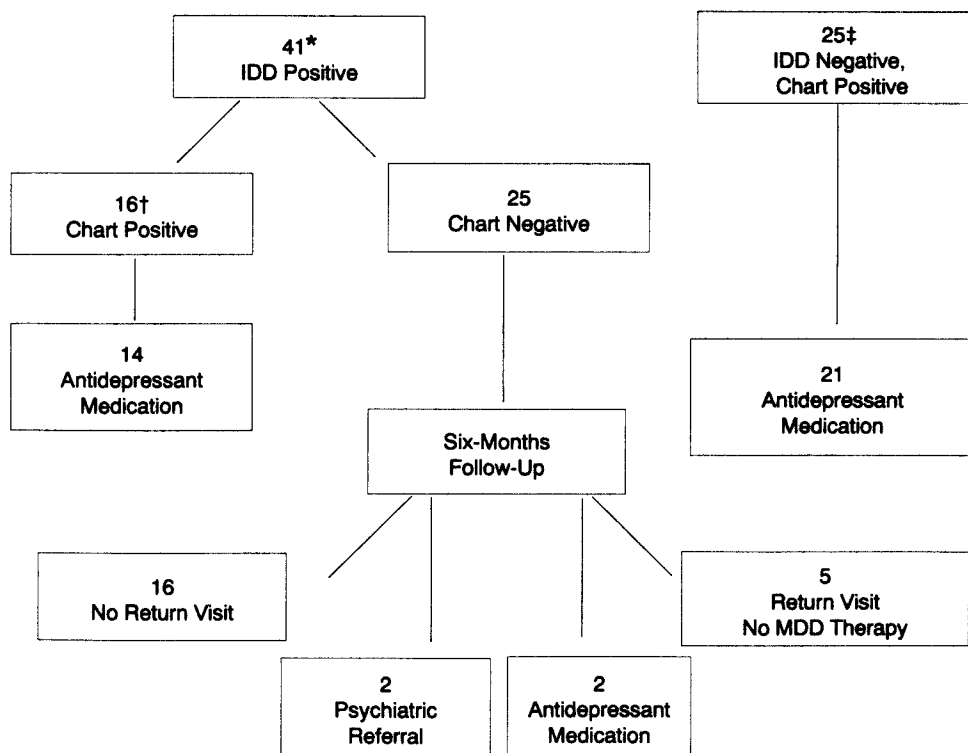
### Discussion

A two-stage assessment of major depressive disorder has been advocated by others<sup>1-3,9,13,17,18</sup> but usually involves a screening instrument followed by a structured interview (often the DIS) in selected patients. Such a method is impractical for primary care physicians because of the length of time and the training required to administer the DIS. Instead, we advocate a two-stage assessment that can be used in primary care settings. In our patients, the DIS question 073b was sufficiently sensitive to detect depression in 95.1 percent of the patients who subsequently scored positive on the IDD. Thus, a single question from the physician with a yes answer followed by a brief self-administered diagnostic questionnaire can detect depression in most patients. In this study, the IDD was more sensitive than primary physicians' assessments. Of the 41 IDD-positive patients, 25 (61 percent) had their condition undetected according

**Table 3. Self-Rating of Feelings Function.**

Rating Score	IDD Negative, Chart Positive (n = 25)	IDD Positive (n = 41)	IDD Negative (n = 261)
	No. (%)	No. (%)	No. (%)
1	2 (8.0)	1 (2.4)	56 (21.5)
2	4 (16.0)	0 (0)	81 (31.0)
3	12 (48.0)	5 (12.2)	58 (22.2)
4	5 (20.0)	17 (41.5)	41 (15.7)
5	2 (8.0)	18 (43.9)	25 (9.6)
P value by chi-square		0.001	0.001

Note: The 25 patients in column 1 are a subset of the 261 IDD-negative patients. In the comparison of IDD-positive with IDD-negative, chart-positive patients, four of 10 cells in the chi-square of analyses have expected values of  $< 5$ .



\*Meet criteria for major depressive disorder on Inventory to Diagnose Depression (IDD).

†Evidence of a diagnosis of depression in patient's chart.

‡Fail criteria for major depressive disorder on Inventory to Diagnose Depression.

**Figure 1. Patients with major depressive disorder (MDD), n = 66.**

to chart notes, even though mental health issues represent a prominent component of our training program, and both residents and faculty are well-acquainted with DSM criteria for psychiatric diagnosis. The IDD also appeared to be more specific than a physician's diagnosis, excluding 25 patients with chart-recorded diagnoses of depression whose IDD scores were insufficient for a diagnosis of major depressive disorder and who as a group had significantly lower COOP chart dysphoria ratings than the IDD-positive group. Conclusions about the sensitivity of the IDD cannot be drawn on the basis of this IDD-negative, chart-positive group, because the latter included patients who had been treated for their depression, as well as those who received their physicians' diagnosis in an unknown manner. Nevertheless, because most of this group of 25 patients were receiving active therapy with antidepressant medication or psychotherapy, it is likely that they had had major depressive disorder but no longer fulfilled its cri-

teria for diagnosis at the time they were tested with the IDD.

The prevalence of major depressive disorder in our patient population as determined by IDD scores (13.6 percent) is somewhat less than the 21 to 38 percent reported by others who used the Zung, Beck, and Popoff Inventory screening instruments<sup>10,20</sup> but is somewhat more than the 6 to 11 percent reported by those who used the DIS structured interview.<sup>9,17</sup> The prevalence of major depressive disorder in our population could be greater than that reported in other primary care settings because we frequently receive referrals from the psychiatric clinic of patients who do not have primary care physicians. An additional reason for our high prevalence of major depressive disorder could be that the IDD does not rule out other causes of major depressive disorder, such as bereavement and alcohol or other substance abuse. We did not specifically test for bereavement or for substance abuse in our patient sample, and medical chart information on this problem could have

been underrecorded. Also, because the current data were gathered in January and February, patients with seasonal affective disorder<sup>29</sup> could have raised the overall point prevalence of depression when compared with studies conducted at other times of the year.

Additional aspects of our study need to be considered. Ours is a university-based primary care site, and extrapolation of findings from our patient population to other primary care patient groups would not be warranted. Our patients' health problems could be more severe than those attending other family practices, although our patients mostly live in the surrounding community and consider our physicians to be their primary providers for medical care. Mental health issues are a prominent component of our training program, and both residents and faculty are well-acquainted with DSM criteria for psychiatric diagnoses. Yet the failure to diagnose major depressive disorder in 25 patients in our sample is a cause for concern. We are uncertain which of the many variables in the primary care encounter contributed to the underdiagnosis of major depressive disorder. Our case recognition estimate could have been distorted by the practice of some physicians who code recognized cases of depression in the medical chart as somatic complaints (e.g., headache or insomnia) to avoid stigma or to aid reimbursement. As for true underrecognition, perhaps important comorbid nonpsychiatric conditions<sup>29</sup> divert attention from psychological problems and symptoms. If so, a structured approach to the diagnosis of major depressive disorder is needed, even for physicians who are generally sensitive to its presence.

To dichotomize our patients into those with major depressive disorder and those without this disorder oversimplifies the problem of depressive disorders in primary care. It neglects patients with dysthymia, as well as those whose depressive symptoms cannot be classified into specific depressive disorders<sup>8</sup> but who can suffer equal functional impairment from their depression.<sup>4</sup> The efficacy of treatment for these depressive syndromes, however, is less well-established than for major depressive disorder.

Our data should not be interpreted to imply that detection of and therapy for the full range of primary care depressive disorders require asking

only a single question, followed by a self-administered questionnaire, and then subsequently administering antidepressive medication to the group of recognized major depressive disorder patients. Instead, these instruments are proposed as additional tools to be added to the wide array of skills, knowledge, and attitudes required to detect and treat this disorder, which occurs in a great portion of primary care patients. Some physicians might wish to follow a positive screening question with a diagnostic interview. Subsequent therapeutic action for major depressive disorder patients will of course depend upon the skills, knowledge, and treatment preferences of the primary care physician and the availability of appropriate mental health specialists.

The primary care physician who chooses to treat major depressive disorder might consider using the modified version of the Dartmouth COOP Functional Status Chart to assess changes in clinical state. In our patients, scores from this chart clearly distinguished between those with and without major depression by IDD criteria.

The challenge of recognizing and treating major depressive disorder in the approximately 4 million persons in the United States, of whom about one-half have not had their depressive disorder diagnosed even when visiting their primary care physician, is formidable. Currently the ability of primary care physicians to detect cases of major depressive disorder appears to be suboptimal,<sup>31</sup> or the constraints of the primary care encounter impair detection of this important health problem. We suggest that our method of case finding is both feasible and accurate and can help meet the needs of these patients and their physicians.

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