



# UNRECOGNIZED DEPRESSION IN HOSPITALIZED MEDICINE PATIENTS

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## Introduction

Depressive disorders are prevalent among hospitalized medicine patients with other medical conditions, though adequate clinical attention may not be given to this comorbid condition. Many physicians feel that this is something that is best addressed in the outpatient setting; however, depression may have important implications in the management of the hospitalized patient.

While other hospitalized populations have been studied, such as those with CHF, ESRD, or cancer, there is minimal data regarding depression in hospitalized general internal medicine patients. We estimate that depression among this population is much more prevalent than currently realized.

### Why is Detection of Depression Important in the Inpatient Population?

- Treatment of depression has been shown to decrease morbidity and mortality.
- Failure of recognition and treatment of depression may lead to greater consumption of healthcare resources.
- Implementation of programs for depression treatment can be both cost-effective and efficient.<sup>27</sup>
- Past studies have found that there is a higher incidence of hospital utilization within 30 days of discharge in those with symptoms of depression.<sup>13</sup>
- Many patients do not have a primary care provider
- Early diagnosis and proper treatment of this modifiable risk factor may help greatly improve quality of life.

Many screening tools for depression exist, though no tool is considered the gold standard. The DMI-18 screening questionnaire has been formulated to be especially useful in the medically ill. It attempts to minimize somatic symptoms of depression by focusing on the cognitive symptoms. This is important, because many ill patients have somatic symptoms due to their disease that can mask or blur the distinction between depression and other physiologic illness.

## Methods

### Instruments:

The screening tool used in this study was the DMI-18 questionnaire. It is a simple, 18 question, patient-completed survey that takes 5-10 minutes to complete. Sensitivity has been found in previous studies to be 93% for clinical depression using a cutoff score of  $\geq 15$  to indicate probable or definite depression, with a specificity of 73%.<sup>22</sup>

### Methods:

All patients on general medicine service that were admitted within 48 hours of survey dates were eligible candidates. Surveys were administered by 2 medical students trained to be nonbiased in their approach. Surveys were completed during the dates of September to December of 2011.

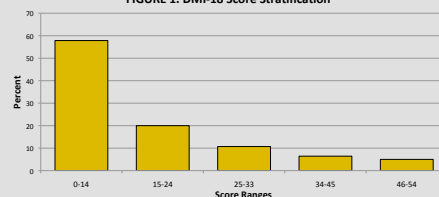
Patients were excluded from the study if they met any of the exclusion criteria: hospitalization for alcohol or drug abuse, psychiatric illness noted in admission documents, suicide attempt, or altered mental status.

In addition to the patient surveys, a licensed psychiatrist interviewed and assessed 10 patients that screened positive for depression using DSM-IV criteria. This was performed to evaluate the positive predictive value of the DMI-18.

Following data collection, patient characteristics were obtained from EMR including: duration of hospital stay, gender, age, race, and discharge diagnosis.

	Frequency	Percent
Depression (Score $\geq 15$ )	59	42.1%
No Depression (Score $< 15$ )	81	57.9%
Total	140	100.0%

FIGURE 1. DMI-18 Score Stratification



DMI-18  
PATIENT SELF-REPORT QUESTIONNAIRE

Please consider the following questions and rate how true each one is in relation to how you have been feeling lately (i.e. in the last two to three days) compared to how you usually or normally feel.

Tick ☐ the most relevant option

	Not True	Slightly True	Moderately True	Very True
1. Are you sleeping over things?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Do you feel more vulnerable than usual?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Do you feel more alone than usual?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are you more fearful than usual?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Do you find you don't enjoy doing the things you usually enjoy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Do you feel gloomy about things?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Have you been feeling bad about yourself?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Do you feel more insecure than usual?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Are you feeling self-critical and hard on yourself?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Do you feel demoralized (i.e. disheartened)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Are you feeling guilty about things in your life?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Do you feel as if you have lost your core and essence?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are you feeling depressed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Do you feel less worthwhile?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Do you feel hopeless or helpless?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Do you feel more distant from other people?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Have you lost interest in your usual activities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Do you feel that nothing seems to be able to cheer you up?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FIGURE 2. Positive DMI-18 Screens by Age of Participants

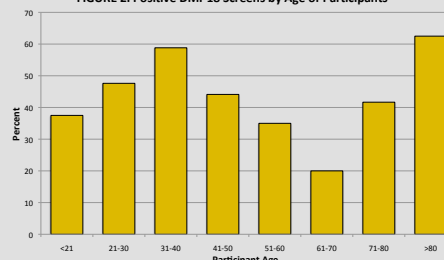


FIGURE 3. Prevalence of Positive DMI-18 Screens by Duration of Hospitalization

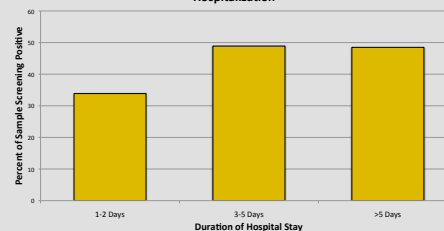


TABLE 4. Results of Psychiatric Interviews for Positive Depression Screens via DMI-18 Questionnaire

	Total Number	Percent
Major Depressive Disorder	6	60%
Depression-NOS	1	10%
Adjustment Disorder	2	20%
Anxiety Disorder	1	10%
Total Clinical Depression	7	70%

## Results

### Depression Prevalence:

Of the 140 participants screened, 59 patients (42.1%) scored  $\geq 15$  on the DMI-18 screening test. 86 patients were excluded from the study using the predefined exclusion criteria. Figure 1 shows score distributions obtained from the sample.

### DMI-18 Positive Predictive Value Determination:

Of the 10 patients that scored  $\geq 15$  on the DMI-18 in the validation portion of the study, 7 were found to have clinical depression as diagnosed by psychiatrist. This value correlates with a PPV of 70% for the DMI-18 in correctly diagnosing depression in the study sample. Major depressive disorder was diagnosed in 6 of the 7 patients, with the remaining diagnosis being Depression-NOS.

The remaining three patients that did not meet DSM-IV criteria for clinical depression were found to have other psychiatric diagnoses, including adjustment disorder and generalized anxiety disorder.

### Sample Characteristics:

The total number of patients available during survey administration that were admitted within 48 hrs was N=335. After exclusions for alcohol (N=38), drug abuse (N=30), prior psychiatric diagnosis (N=18), infection control (N=9), failure to complete survey (N=23), absence from room (N=27), and refusal to complete survey (N=50), 140 patients remained in the study sample. 45% of the sample was male and 55% female.

Discharge diagnosis was also associated with depression prevalence. Greatest association between disease state and depression existed in patients with endocrine-related disorders, with 84.6% screening positive for depression, with musculoskeletal complaints second at 57.1%. Age distribution by depression status can be found in Figure 2. Greatest rates of depression were found in those 31-40 and >80 years old. Figure 3 exhibits the relationship of depression status to duration of hospitalization.

## Discussion

The hypothesis of this study was that unrecognized depression was prevalent in general medicine populations. Psychiatric disturbances were found in 42.1% of the sample, with unrecognized depression representing 29.5% of the total sample, according to study-determined PPV. Using previously calculated DMI-18 specificity of 73%, unrecognized depression would comprise 30.8% of the general medicine population. This number is under-representative of the actual depression prevalence in the hospitalized population, as patients with characteristics that were excluded from our study (alcohol, drugs, suicide attempt, past psychiatric history) are known to have significantly higher rates of depression.

The PPV determined by psychiatric interview in this study was found to be 70% for diagnosis of depression and 100% for diagnosis of a psychiatric disturbance, thus indicating that the DMI-18 may be an acceptable clinical tool for depression screening in this population. Patients who screen positive on the test warrant further evaluation or therapeutic intervention.

Of note, patients that were found to be depressed on admission tended to have prolonged hospitalizations  $\geq 3$  days. This may reaffirm previous data stating that depression can have significant effects on recovery time and duration of hospitalization.

Though this a preliminary study, we feel that the results suggest the DMI-18 will be a good tool for screening for depression in hospitalized medicine patients. The information obtained can likely be applied to other general medicine populations. Further studies are planned to assess the value of screening and implementation of appropriate therapeutic intervention for depression in this population. We believe that the information obtained herein provides physicians with a basis to implement screening practices for depression in patients that are hospitalized.

### Study Limitations:

- Small sample size
- Patient refusal to take part in study
- Failure to rule out all exclusion criteria
- Patient comprehension of questionnaire (Health Literacy)
- Selection of cutoff score for positive depression screen
- Failure of blinding psychiatrist to screening result

### Further Studies:

- Depression prevalence in other hospitalized populations
- Response to treatment in those who screen positive
- Effects of depression identification on hospitalization
- Outpatient course of those that screened positive

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