

# Relative Benefits of Narrowband and Broadband Tools for Behavioral Health Settings

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**Variables: Correlations between PHQ 9 and Health Dynamics Inventory on a sample of 883 CMHC outpatients, and predictions of diagnoses compared to base rates.**

## How Much Detail is Enough in Behavioral Health Screening?

Narrowband instruments (PHQ-2, PHQ-9, GAD-7, Beck Depression Inventory) focus on single disorders. Other disorders then are measured by adding other scales as the clinician suspects other apparent problems. Narrowband instruments tend to be shorter and may offer time and cost savings. However, longer narrowband instruments (BDI) may offer increased specificity and the potential to probe a larger range of symptom expression defining a particular disorder.

Broadband instruments measure several disorders simultaneously, increasing detection and treatment of disorders. These instruments are necessarily longer and often have greater costs and time requirements.

What amount of psychopathology goes undetected in the narrowband approach, and when are other problems likely to be recognized? Is detection of only a narrow focus of psychopathology likely to interfere with treatment, or cause it to be longer, or less successful?

## Medical and Behavioral Health Interface

60 million people in the US 18 years or older suffer from a mental disorder in any given year, but mental illness is chronically underestimated and under-treated (Report of the Surgeon General, 1999). Mood disorders account for 9.5% of mental disorders in the U.S; anxiety disorders, 18.1% across the U.S. population. Those with any disorder were found to have an average of two disorders, or both a mental disorder and a substance abuse disorder (Adelmann & Asche, 2002; NIMH, 2010; Vermani, Marcus, & Katzman, 2011).

Accurate diagnosis of mental health problems also is important for effective medical care. The disability associated with mental illness is greater than that associated with all but the most severe medical illnesses (Wells et al., 1989). Depression is not the only relevant issue of concern in primary care medicine. Medical patients with comorbid anxiety and depression are likely to have more severe symptoms, poorer response to treatment, and greater risks for suicide. Marciniak et al., (2005) found annual medical costs \$1,945 higher in patients diagnosed with depression. Comorbid anxiety reduces effectiveness of clinical interventions, increases pain perception, and increases medical costs of treatment (Rivas-Vazquez, Saffa-Biller, Ruiz, Blais, & Rivas-Vazquez, 2004). Screening for mental health disorders also aids patients who may seek care in primary care settings but feel ambivalence about admitting them.

## The Present Study

The present study compared measurement with narrowband screening compared to a broadband instrument for three specific research questions:

1. What proportion of patients is identified with illnesses other than depression in a sample of community mental health patients?
2. How does the Health Dynamics Inventory function in identifying depression compared to the PHQ-9?
3. How does the predicted rate of various illness compare to that found in the base rates of the agency's electronic health record?

## Method

### Participants

- 883 HSI/Canvas Health clients took both the HDI-S and PHQ-9 at initial assessment.
- 304 males and 579 females.
- Average age 36.5 (SD = 14.2), range from 11 to 89.

### Measures

#### ▶ **PHQ-9: Patient Health Questionnaire 9**

(Spitzer, Kroenke, & Williams, 1999; Kroenke, Spitzer, & Williams, 2001)

Brief, self-report instrument assessing the severity of depression symptoms, as defined in the DSM-IV-TR, experienced by the respondent over the preceding two weeks. A reliable and valid measure of depression. Scored by summing questions 1-9; cutoff score of 10 - 14 probable mild depression, 15-19 moderate, and  $\geq 20$  severe depression. Final item (question 10) asks how much difficulty their problems made it difficult for them to do work, take care of things at home, or get along with other people.

#### ▶ **Health Dynamics Inventory: Health Dynamics Inventory**

(HDI; Saunders & Wojcik, 2003)

50 item, self-report questionnaire Measures emotional distress (morale), depression, anxiety, attention disorder, psychotic thinking, eating disorder, substance abuse, and behavior problems, and impaired role functioning (occupational, relational, and self-care impairment). Three global scores (Morale, Global Symptoms, Global Impairment) allow summary review. Normed on patient and non-patient samples of over 2000 each. Self Report and Parent Report versions. Background information module available.

### Procedure

Data from a CMHC outpatient mental health clinic, Canvas Health Inc. The HDI is administered routinely to all patients who receive mental health services at the clinic. From 2008-2011, the PHQ-9 was also administered to those cases that

manifested depressive symptoms. Only initial measures of each instrument were included in the current analyses.

## Results

Characteristics of the current sample are described in **Appendix Table 1**.

**Figure 1** below and **Appendix Table 2** describe the cases predicted by both scales.

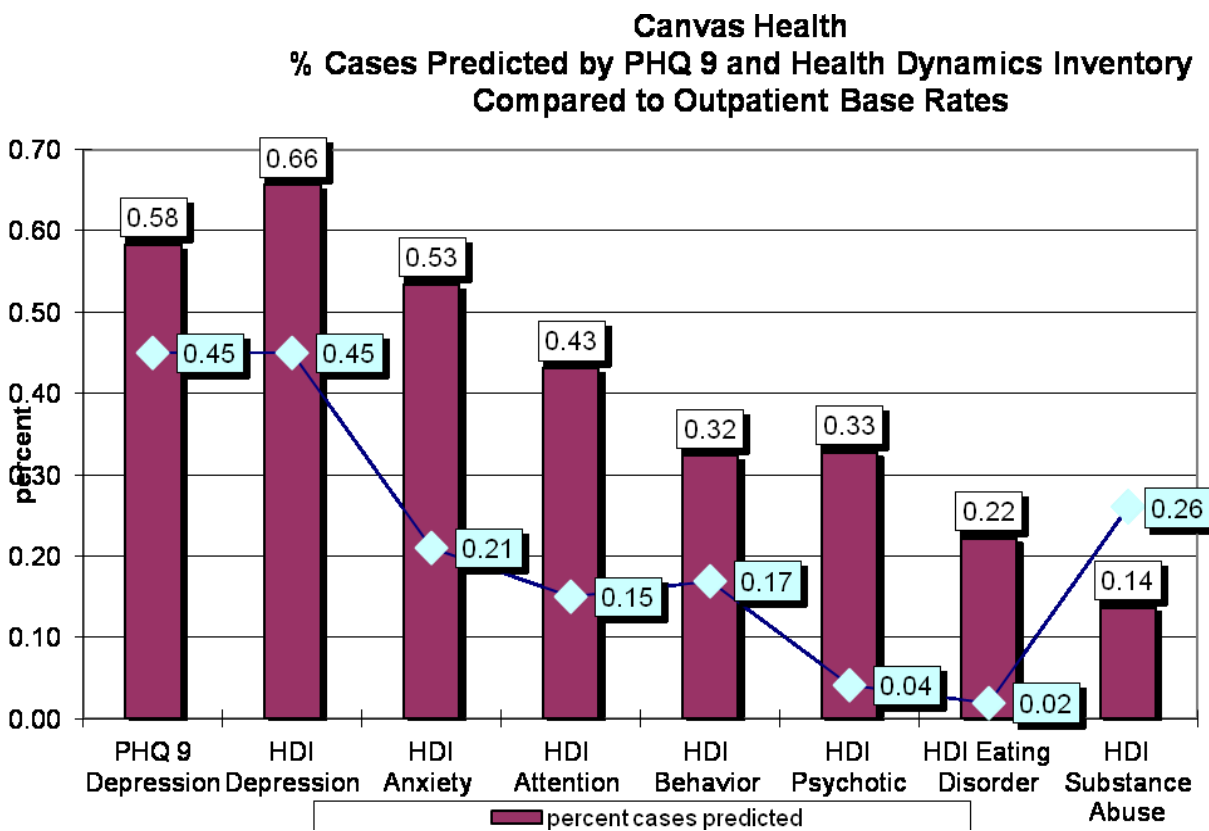


Figure 1

Figure 2 presents this data as cases predicted by the tools and found in the base rate data:

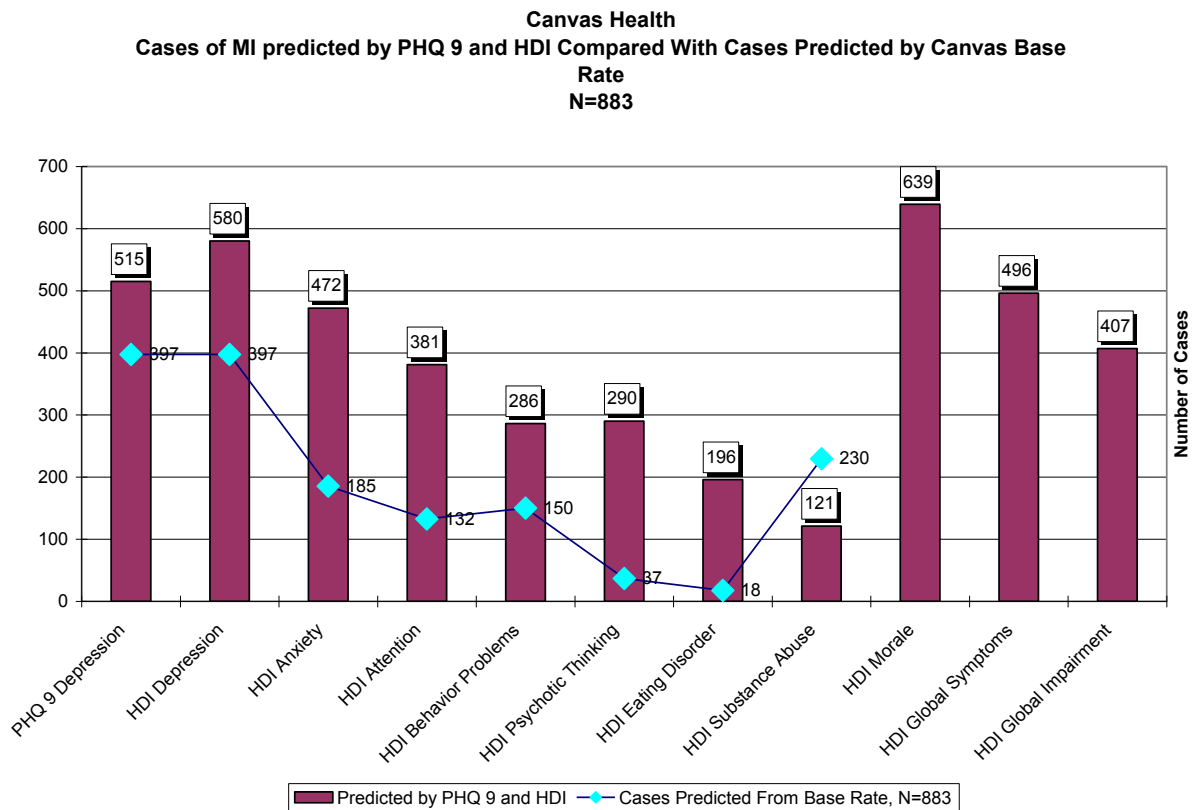


Figure 2

PHQ 9 predicted 515 cases (58% of the sample) of mild or greater depression.

HDI predicted 580 cases (66%) of depression, plus 639 cases (72%) of distress and demoralization, 472 cases (53%) of anxiety disorder, 381 (43%) of attention disorder, 290 (33%) of psychotic thinking, 196 (22%) of eating disorder, and 121 cases (14%) of substance abuse. Prevalence (base) rates indicate that for all but substance abuse, the HDI and PHQ predict more cases than would finally be decided by the outpatient clinician, as desired in a screening instrument.

**Appendix Table 3** presents Pearson *r* correlations between PHQ 9 total scores and HDI Depression, ( $r = .82$ ), HDI Morale ( $r = .74$ ), and HDI Anxiety subscales ( $r = .70$ ), and the PHQ 9 Impairment item and the HDI Global Impairment Scale ( $r = .55$ ). HDI Morale is negatively correlated because high Morale is considered desirable ( $r = -.74$ ).

## Discussion

Both the PHQ-9 and HDI work well to identify cases of likely depressive illness in this outpatient population. The HDI identified 8% more such cases, as well as predicting over half of the measured patients to have an anxiety disorder, 14% of patients with substance use problems, and one-fourth to one-third of the patients as having either eating disorder, behavioral or psychosis related symptoms.

Both primary medical care and specialty mental health care have neglected systematic screening and outcomes measurement of the mental health conditions they treat. The current study suggests that use of narrowband instruments, particularly when not integrated into consistent broadband-style measurement, may leave significant comorbid disorders undetected. The consequences of this failure may include undetected health risks, poorer results for the treatment of the index disorder, and only peripheral or incidental relief from the undetected disorders.

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## Appendix

<b>Table 1</b> <b>HD and -PHQ9 Sample Characteristics N=883</b> <b>HDI and -PHQ9 Symptoms Scales</b>				
<b>Symptoms</b>	<b># of Cases</b>	<b>Mean Score</b>	<b>Standard Deviation</b>	<b>Alpha</b>
PHQ9 ≥ 10	515	11.79	6.92	0.89
Depression	580	69.23	14.51	0.92
Anxiety	472	69.86	18.40	0.88
Attention problems	381	65.66	15.95	NA
Behavioral problems	286	60.61	16.24	0.79
Eating Disorder	196	54.99	14.06	0.75
Psychotic Symptoms	290	62.28	16.69	0.75
Substance Abuse	121	54.17	10.00	0.72
Morale/demoralization	639	26.89	15.28	0.9

**Appendix Table 1**

**Table 2**  
**Total Cases Predicted by PHQ 9 and HDI**

	<b>Number of Cases</b>	<b>Percent Cases Predicted</b>	<b>Canvas Outpatient Prevalence (Base) Rate (%)</b>
Total cases	883		
PHQ 9 Depression	515	0.58	0.45
HDI Morale	639	0.72	N A
HDI Global Symptoms	496	0.56	N A
HDI Global Impairment	407	0.46	N A
HDI Depression	580	0.66	0.45
HDI Anxiety	472	0.53	0.21
HDI Attention	381	0.43	0.15
HDI Behavior Problems	286	0.32	0.17
HDI Psychotic Thinking	290	0.33	0.04
HDI Eating Disorder	196	0.22	0.02
HDI Substance Abuse	121	0.14	0.26

HDI cases predicted at T ≥65  
PHQ cases of depression predicted at ≥10

**Appendix Table 2**

<b>Table 3</b>	
<b>Pearson <i>r</i> for PHQ 9 and HDI select scales</b>	
	Pearson <i>r</i>
PHQ-9 total and HDI Depression	0.82
PHQ impairment-HDI Global Impairment	0.55
PHQ 9 total and HDI Morale	-0.74
PHQ total and HDI Anxiety	0.70

**Appendix Table 3**

## For More Information

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