Trends in Suicide Ideation, Plans, Gestures, and Attempts in the United States, 1990-1992 to 2001-2003

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UICIDE IS ONE OF THE LEADING causes of death worldwide. As a result, the World Health Organization¹ and the US surgeon general² have highlighted the need for more comprehensive data on the occurrence of suicidal thoughts and attempts, according to the assumption that such data would be useful for planning national health care policy, as well as for evaluating efforts to reduce suicide and suicide-related behaviors. The latter are among the official national health objectives in the United States.3 The assumption that information on suiciderelated behaviors, including thoughts, plans, gestures, and nonfatal attempts, is important for understanding completed suicides can be called into question because only a small fraction of suicide attempters eventually complete suicide.4 However, suicide attempts are significant predictors of subsequent completed suicide, as well as important in their own right as indicators of extreme psychological distress.

Although the National Center for Health Statistics maintains data on all suicide deaths in the United States according to death certificate records,⁵ no

See also Patient Page.

Context Little is known about trends in suicidal ideation, plans, gestures, or attempts or about their treatment. Such data are needed to guide and evaluate policies to reduce suicide-related behaviors.

Objective To analyze nationally representative trend data on suicidal ideation, plans, gestures, attempts, and their treatment.

Design, Setting, and Participants Data came from the 1990-1992 National Comorbidity Survey and the 2001-2003 National Comorbidity Survey Replication. These surveys asked identical questions to 9708 people aged 18 to 54 years about the past year's occurrence of suicidal ideation, plans, gestures, attempts, and treatment. Trends were evaluated by using pooled logistic regression analysis. Face-to-face interviews were administered in the homes of respondents, who were nationally representative samples of US English-speaking residents.

Main Outcome Measure Self-reports about suicide-related behaviors and treatment in the year before interview.

Results No significant changes occurred between 1990-1992 and 2001-2003 in suicidal ideation (2.8% vs 3.3%; P=.43), plans (0.7% vs 1.0%; P=.15), gestures (0.3% vs 0.2%; P=.24), or attempts (0.4%-0.6%; P=.45), whereas conditional prevalence of plans among ideators increased significantly (from 19.6% to 28.6%; P=.04), and conditional prevalence of gestures among planners decreased significantly (from 21.4% to 6.4%; P=.003). Treatment increased dramatically among ideators who made a gesture (40.3% vs 92.8%) and among ideators who made an attempt (49.6% vs 79.0%).

Conclusions Despite a dramatic increase in treatment, no significant decrease occurred in suicidal thoughts, plans, gestures, or attempts in the United States during the 1990s. Continued efforts are needed to increase outreach to untreated individuals with suicidal ideation before the occurrence of attempts and to improve treatment effectiveness for such cases.

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national data are available on the 1-year prevalence of trends in suicidal thoughts or attempts. Current estimates of such outcomes in the United States are drawn from 2 main sources. First, several ongoing surveillance systems have been established to monitor suicide-related outcomes among nationally representative samples of Author Affiliations: Department of Health Care Policy (Drs Kessler and Wang) and Division of Pharmacoepidemiology and Pharmacoeconomics, Brigham and Women's Hospital (Dr Wang), Harvard Medical School, Boston, Mass; Institute for Social Research, University of Michigan, Ann Arbor (Ms Berglund); Mexican Institute of Psychiatry, Mexico City, Mexico (Dr Borges); and Department of Psychology, Harvard University, Cambridge, Mass (Dr Nock).

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individuals in the United States. The Centers for Disease Control and Prevention maintains a national surveillance system of nonfatal injuries treated in US hospital emergency departments,6 as well as a surveillance system of health-risk behaviors among high school students in the United States.⁷ These systems provide valuable information, but they are limited because they focus on narrow groups (attempters who present at hospital emergency departments and youth who currently attend high school). Second, several epidemiologic surveys have reported population-based prevalence estimates for suicidal thoughts and suicide attempts.⁸⁻¹⁰ It is unclear, though, whether these results accurately reflect current prevalence because of the considerable increase in recent years in the number of people in the United States who have received treatment for emotional problems.11-13

Substantial efforts have also been made to develop and implement suicide prevention and intervention programs during the past decade.¹⁴ There has been a roughly 6% reduction in the period prevalence of suicide in the United States among people in the sample age range (18-54 years) during this period, from approximately 14.8 per year per 100 000 population in 1990-1992 to 13.9 per year per 100 000 population in 2000-2002.⁵ It is possible that a significant change also occurred in the prevalence of suiciderelated behaviors, including suicidal thoughts, plans, and attempts.

The aim of the current report is to shed some light on this issue by examining the only nationally representative generalpopulation trend data available on the 12month prevalence and treatment of these suicide-related behaviors. These data are based on the 1990-1992 National Comorbidity Survey (NCS)¹⁵ and the 2001-2003 National Comorbidity Survey Replication (NCS-R).¹⁶

METHODS

Samples

The NCS is a nationally representative household survey of English-speaking

residents aged 15 to 54 years.15 The response rate was 82.4%, according to the response rate 3 method of the American Association for Public Opinion Research.¹⁷ The latter method includes the number of completed interviews in the numerator and the number of originally sampled households, excluding ineligible households (ie, vacant households and households in which the randomly sampled respondent was found to be ineligible after contact) in the denominator, with an adjustment for the estimated proportion of uncontacted households that contained an eligible respondent. A total of 8098 interviews were completed. The NCS-R is a nationally representative household survey of respondents aged 18 years and older. The response rate was 70.9%, with the same method of calculation as in the NCS. A total of 9282 interviews were completed.

Both surveys used a 2-part internal subsampling scheme in which all respondents received a part I interview that assessed mental disorders, whereas 100% of part I respondents who met criteria for a disorder and a probability subsample of part I respondents who did not meet criteria for a disorder were administered the part II interview. The part II interview assessed risk factors, treatment, and consequences of mental disorders. Nonrespondent screening data were used to weight the NCS for nonresponse bias. Other weights adjusted for differential probabilities of selection and residual discrepancies between sample and census demographicgeographic distributions. The part II samples were also weighted for the oversampling of part I respondents with disorders. More details about NCS and NCS-R samples and weights are presented elsewhere.^{16,18} Suicidality was assessed in part I of the NCS and in part II of the NCS-R, whereas most of the correlates examined here were assessed in part II of both surveys. Data in the overlapping age range of the 2 surveys (18-54 years) were merged to analyze the trends reported here by using part II of the NCS (n=5388) and part II of the NCS-R (n=4320).

Recruitment and Consent

Introductory letters and study fact brochures were mailed to sample households to explain the study. Interviewers then visited households to answer remaining questions before obtaining verbal informed consent and scheduling interviews. Consent was oral rather than written in the NCS because that was the standard method of obtaining consent when the survey was designed in the late 1980s. Oral consent was used in the NCS-R to maintain comparability with the NCS for trend comparison. Respondents received \$25 (NCS) or \$50 (NCS-R) for participation. A subsample of nonrespondents were offered a higher incentive of \$50 (NCS) or \$100 (NCS-R) to complete a screening interview. The human subjects committees of the University of Michigan and of Harvard Medical School approved these recruitment and consent procedures.

Suicidal Behaviors

Respondents were asked whether they ever seriously thought about killing themselves and, if so, whether they had these thoughts in the past 12 months. Respondents who reported such suicidal ideation were then asked whether they ever made a plan for committing suicide and, if so, whether they made such a plan in the past 12 months. Regardless of the answer to the question about a plan, respondents who reported suicidal ideation were then asked whether they ever attempted suicide and, if so, whether they made such an attempt in the past 12 months. Respondents who reported making a 12month attempt were then asked to describe the lethality intent of the attempt by indicating which of the following 3 statements best described their attempt: "I made a serious attempt to kill myself and it was only luck that I did not succeed." "I tried to kill myself, but knew the method was not foolproof." "My attempt was a cry for help. I did not intend to die." Respondents who endorsed either of the first 2 statements were considered in the analysis to have made a suicide attempt, whereas

respondents who endorsed the third statement were considered to have made a suicide gesture.

Correlates

We examined associations of suiciderelated behaviors with the mental disorders assessed in the 2 surveys. These disorders were assessed with the World Health Organization Composite International Diagnostic Interview (CIDI), a fully structured diagnostic interview designed to be used by trained lay interviewers.¹⁹ The Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition (DSM-III-R) version of CIDI was used in the NCS20 and the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) version in the NCS-R.²¹ We also examined associations of suicide-related behaviors with 7 sociodemographic variables: age, sex, race/ethnicity, education, marital status, employment status, and region of the country. Race/ethnicity was coded into the standard census codes of non-Hispanic black, non-Hispanic white, Hispanic, and other according to responses to 2 questions about Hispanic heritage and race. The following prespecified racial categories were used in the second question: American Indian, Alaskan Native, Asian, black or African American, Native Hawaiian, Pacific Islander, white, and other. Race/ethnicity was included in the analysis because of extensive previous research on the relationship between racial/ethnic minority status and mental disorder.22 All part II respondents in both surveys were also asked about 12-month treatment for emotional problems. Responses were used to distinguish treatment across 5 sectors: psychiatrist, other mental health specialist (eg, psychologist, social worker in a mental health specialty setting), general medical practitioner (primary care physician, nurse); human services professional (religious or spiritual advisor, social worker in any setting other than a specialty mental health setting); and complementary-alternative medical treatment (CAM; treatment by a CAM pro
 Table 1.
 12-Month Prevalence of Suicide-Related Behaviors Among NCS and NCS-R

 Respondents
 Prevalence of Suicide-Related Behaviors Among NCS and NCS-R

	% (
	NCS (n = 5388)	NCS-R (n = 4320)	χ_{1}^{2*}	P Value
Total sample prevalence	/>	/>		
Ideation	2.8 (0.3)	3.3 (0.3)	0.6	.44
Plan	0.7 (0.1)	1.0 (0.1)	2.1	.15
Gesture	0.3 (0.1)	0.2 (0.0)	1.4	.24
Attempt	0.4 (0.1)	0.6 (0.1)	0.6	.44
Conditional prevalence				
Plan among ideators	19.6 (3.7)	28.6 (3.7)	4.4	.04
Gesture among planners	21.4 (8.0)	6.4 (2.9)	10.0	.002
Attempt among planners	28.1 (11.0)	32.8 (7.9)	0.4	.53
Gesture among ideators without a plan	1.9 (0.9)	3.1 (1.1)	0.2	.66
Attempt among ideators without a plan	7.3 (2.8)	9.7 (3.3)	0.1	.66

Abbreviations: NCS, 1990-1992 National Comorbidity Survey; NCS-R, 2001-2003 National Comorbidity Survey Replication.

*Significance was evaluated in pooled multivariate logistic regression equations that adjusted for compositional differences between the 2 samples in sociodemographic characteristics.

fessional, such as a massage therapist, or participation in a self-help group).

Analysis Methods

Trends were assessed with pooled logistic regression equations using the suicidal behaviors as dichotomous outcomes. Predictors included time (NCS-R=1, NCS=0), demographics, and interactions between time and demographics. Tests for sociodemographic variation in trends were made at P=.001 (ie, .05/28) as an approximate adjustment for the fact that 28 comparisons (7 sociodemographic predictors of 4 outcomes) were being made. Standard errors were obtained using the Taylor series linearization method²³ in the SUDAAN²⁴ software system. Coefficients were exponentiated to generate odds ratios (ORs) with 95% confidence intervals (CIs). Significance of predictor sets was evaluated with Wald χ^2 tests using design-adjusted coefficient variance-covariance matrices.

RESULTS Trends in Prevalence

No statistically significant differences were found between the NCS and the NCS-R in the 12-month prevalence of any of the 4 outcomes: suicidal ideation (2.8% vs 3.3%, χ_1^2 =0.6, *P*=.44), suicide plans (0.7% vs 1.0%, χ_1^2 =2.1, *P*=.15), suicide gestures (0.3% vs 0.2%,

 χ_1^2 =1.4, *P*=.24), or suicide attempts $(0.4\% \text{ vs } 0.6\%, \chi_1^2 = 0.6, P = .44)$ (TABLE 1). In subgroup analyses, though, there was a significant increase in the proportion of ideators who made a plan (19.6% vs 28.6%, χ_1^2 =4.4, P=.04) and a significant decrease in the proportion of planners who made a gesture (21.4% vs 6.4%, $\chi_1^2 = 10.0$, P = .002). This latter decrease (but not the former increase) is large enough to remain significant even when we use a P = .005level test (ie, .05/9) as an approximate adjustment because 9 subsample tests were made to compare the results in Table 1. In comparison, there were no significant differences over time in the proportion of planners who made an attempt (28.1% vs 32.8%, $\chi_1^2 = 0.4$, P=.53), the proportion of ideators who had no plan but made a gesture (1.9% vs 3.1%, χ_1^2 =0.2, *P*=.75), or the proportion of ideators who had no plan but made an attempt (7.3% vs 9.7%, χ_1^2 =0.1, P=.66).

Prevalence of Mental Disorders Among Respondents With Suicide-Related Behavior

Rigorous comparison of conditional prevalence estimates of disorders according to the *Diagnostic and Statistical Manual of Mental Disorders (DSM)* is impossible across the surveys because the diagnostic criteria differ (*DSM-III-R* in the NCS and *DSM-IV* in

TRENDS IN SUICIDE

the NCS-R). In both surveys, though, the majority of ideators (80%-82%) planners (89%-95%), gesturers (96%-80%), and attempters (89%-88%) met criteria for 1 or more of the 12-month DSM disorders (TABLE 2). Major depression was the most common individual disorder among people with suicide-related behaviors in both surveys (34%-42% in the NCS and 37% to 51% in the NCS-R), whereas anxiety disorders were the most common class of disorders (63%-78% in the NCS and 52%-81% in the NCS-R).

Trends in Sociodemographic Correlates of Prevalence

Trends were examined in the associations of 7 sociodemographic variables with each of the 4 outcomes, even though the overall trends were not significant. The rationale was that significant changes in subsample trends are possible even in the presence of no significant change at the population level if an increase in one segment of the population offsets a decrease in another segment. All but 1 of these 28 tests failed to exceed the critical value of the test statistic, whereas inspection of the data in the one case in which the test was significant suggested that this result was due to an outlier. These results indicate that suicide-related behaviors not only remained unchanged in the population as a whole but also in major subgroups of the population defined by sociodemographic variables.

According to the above result, we were able to pool the data in the 2

samples to examine consistent sociodemographic correlates of suiciderelated behaviors. A global test showed that the sociodemographics were significant overall in predicting all 4 outcomes (χ^2_{18} =100.5-594.1, P<.001), although the associations were fairly modest in substantive terms (contingency coefficients, 0.10-0.26) (TABLE 3). A consistent inverse association existed between age and all the outcomes, with the highest ORs in the youngest age group (15-24 years; OR=2.6-9.8) and the lowest in the oldest age group (45-54 years; with ORs fixed at 1.0). This association was significant in all 4 outcomes. Respondents with less than college education had consistently elevated ORs compared with college graduates (1.8-

Table 2. Prevalence of 12-Month Mental Disorders Among Respondents With 12-Month Suicide-Related Behaviors*										
	DSM	DSM-III-R Disorders in NCS, % (SE)					DSM-IV Disorders in NCS-R, % (SE)			
T	Ideation	Plan	Gesture	Attempt	Ideation	Plan	Gesture	Attempt		
No.	210	50	17	37	205	63	12	47		
Anxiety disorders Panic disorder	11.3 (3.3)	14.6 (6.5)	11.1 (7.0)	18.2 (7.2)	19.7 (3.1)	31.8 (6.3)	16.4 (9.6)	35.1 (7.3)		
Generalized anxiety disorder	12.4 (2.8)	10.8 (4.0)	1.5 (1.4)	8.2 (4.2)	12.1 (2.9)	11.5 (4.6)	0.0 (0.0)	15.5 (5.5)		
Specific phobia	25.7 (3.9)	24.7 (9.1)	36.8 (12.5)	33.7 (8.5)	28.1 (3.3)	38.1 (7.6)	36.2 (11.5)	42.2 (7.4)		
Social phobia	24.4 (4.1)	23.2 (7.3)	21.7 (12.1)	27.8 (6.7)	33.7 (3.1)	54.4 (6.2)	18.3 (10.5)	41.5 (5.9)		
Agoraphobia without panic	11.7 (3.1)	17.9 (9.5)	9.5 (6.1)	17.4 (8.7)	4.0 (1.3)	8.6 (4.3)	12.6 (12.2)	6.8 (3.9)		
Posttraumatic stress disorder	29.0 (3.6)	40.2 (11.9)	23.2 (11.5)	21.6 (7.7)	20.1 (3.3)	31.7 (6.7)	23.6 (13.0)	30.0 (5.8)		
Obsessive-compulsive disorder					8.0 (3.3)	16.3 (9.1)	17.5 (16.2)	27.8 (14.2)		
Any anxiety disorder	62.8 (5.1)	77.7 (7.0)	70.3 (15.0)	70.9 (6.0)	60.6 (3.2)	80.9 (5.4)	52.2 (14.8)	70.4 (5.4)		
Mood disorders Major depressive disorder	41.9 (4.3)	33.9 (7.4)	39.0 (17.4)	34.7 (10.0)	38.9 (3.0)	51.3 (6.8)	36.9 (12.2)	38.9 (5.6)		
Dysthymia	4.4 (1.4)	8.7 (3.9)	4.1 (4.2)	6.1 (3.3)	8.0 (1.9)	12.1 (3.7)	7.3 (7.8)	7.4 (3.5)		
Bipolar I-II disorders	10.6 (2.6)	25.4 (9.0)	20.5 (14.1)	18.8 (7.5)	22.1 (3.3)	31.8 (5.8)	9.8 (8.2)	31.0 (5.9)		
Any mood disorder	55.0 (5.1)	62.2 (9.2)	62.4 (22.2)	54.6 (10.3)	61.0 (4.6)	83.1 (5.1)	46.7 (7.7)	69.9 (7.2)		
Impulse-control disorders† Oppositional-defiant disorder					9.4 (2.5)	13.5 (4.9)	22.4 (18.1)	17.3 (6.3)		
Conduct disorder					3.0 (1.3)	2.7 (2.6)	0.0 (0.0)	7.8 (3.9)		
Attention-deficit/hyperactivity disorder					14.4 (3.2)	21.1 (6.0)	8.4 (9.3)	18.9 (5.7)		
Intermittent explosive disorder					6.7 (1.8)	4.2 (2.3)	6.6 (5.7)	3.4 (2.4)		
Any impulse-control disorder					28.5 (3.7)	32.4 (6.3)	38.6 (18.2)	33.1 (7.0)		
Substance use disorders Alcohol abuse or dependence	24.6 (4.2)	32.2 (9.8)	40.7 (11.7)	44.9 (9.9)	16.2 (3.0)	18.7 (6.2)	21.1 (14.3)	18.9 (7.6)		
Alcohol dependence	18.6 (3.4)	25.6 (9.2)	31.9 (13.3)	40.4 (9.5)	10.3 (2.6)	18.7 (6.2)	12.6 (12.2)	13.9 (6.7)		
Drug abuse or dependence	18.8 (4.2)	22.7 (9.7)	12.1 (8.6)	28.2 (12.2)	7.3 (2.0)	7.4 (3.4)	18.8 (17.4)	14.8 (6.2)		
Drug dependence	16.8 (4.3)	22.7 (9.7)	10.6 (8.3)	21.2 (10.0)	4.8 (1.6)	6.4 (3.3)	0	8.9 (4.5)		
Any substance use disorder	30.3 (4.6)	41.7 (10.7)	48.7 (11.6)	49.5 (10.2)	19.4 (3.6)	20.6 (6.6)	40.0 (20.5)	26.1 (9.1)		
Any disorder	80.5 (4.3)	88.7 (5.9)	95.7 (4.3)	88.7 (5.8)	82.0 (3.0)	94.5 (3.5)	79.6 (13.2)	88.2 (4.7)		

Abbreviations: NCS, 1990-1992 National Comorbidity Survey; NCS-R, 2001-2003 National Comorbidity Survey Replication.

Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition (DSM-III-R) and Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) disorders were diagnosed by using diagnostic hierarchy rules and organic exclusions.

†Impulse-control disorders were not assessed in the NCS.

50.6), although overall education differences were significant in only 2 of the 4 outcomes. Previously married respondents had elevated ORs compared with the married respondents (1.5-4.4) significant in 3 outcomes. Unemployed or disabled respondents had generally elevated ORs compared with the employed respondents (3.8-4.3) significant in 3 outcomes. Somewhat weaker ORs were found for being female (1.0-2.9, significant for 1 outcome) and for being a homemaker (1.2-2.9, significant in only 1 outcome). The never married had elevated ORs for gestures (3.9 and significant) but decreased ORs for ideation, plans, and attempts (0.4-0.8, significant only for attempts). Race/ethnicity and region of the country were not significantly related to any of the outcomes.

Trends in Treatment

Respondents who reported 12-month suicidal ideation were divided into 3 mutually exclusive subgroups defined by the presence of an attempt, a gesture, or neither. Respondents in each of these 3 subgroups were then distinguished by whether or not they had a suicide plan, thus creating 6 subgroups. The proportion of respondents who reported receiving treatment for emotional problems in the past 12 months increased over time in each of these 6 subgroups, 2 of them significantly so at the .05 level (TABLE 4). The increases were confined to treatment in the psychiatrist sector and the general medical sector. No significant increases were found in the other mental health, human services, or CAM sectors (results available on request). Although treatment in the mental health specialty sectors (either psychiatrist or other mental health specialist) remained somewhat more common than treatment in the general medical sector in 5 of the 6 NCS-R subgroups, this difference was much more pronounced in the NCS than the NCS-R because of a greater increase in general medical than mental health specialty treatment in all subgroups. Even with these increases, sizable minorities with evidence of suicide-related behaviors (21.0% of attempters, 7.2% of respondents who made a gesture, and 35.6% of ideators who made neither a gesture nor an attempt) received no treatment for emotional problems in the past 12 months in the NCS-R.

Trends in Suicide Attempts Among Ideators, Stratified by Treatment Status

To explore how the temporal increase in treatment might have influenced suicide-related behaviors, and particularly the significant decrease in the

Table 3. Sociodemographic Correlates of 12-Month Suicide-Related Behaviors Among	
Pooled NCS (n = 5388) and NCS-R (n = 4320) Respondents*	

		Odds R	latio (95% CI)	
	Ideation	Plan	Gesture	Attempt
Age, y	26(1926)+	20(1696)+	91(10247)+	0 0 /2 5 21 0)+
05.04	2.0 (1.0-3.0)	3.9 (1.0-0.0)	0.1 (1.9-34.7)	9.0 (3.3-21.0)
20-04	1.1 (0.6-1.3)	2.4 (1.0-5.7)	2.3 (0.3-10.7)	3.2 (0.9-11.3)
35-44	1.5 (1.0-2.2)	2.3 (1.1-4.9)T	4.0 (0.7-23.7)	3.1 (1.1-8.9)T
45-54	1.0	1.0	1.0	1.0
<u>χ</u> 3	52.3†	11.0†	9.9†	21.2†
Sex Female	1.4 (1.0-1.9)	1.0 (0.6-1.7)	2.9 (0.9-9.4)	1.0 (0.5-1.9)
Male	1.0	1.0	1.0	1.0
χ^2_1	4.8†	0.0	3.4	0.0
Race/ethnicity Non-Hispanic white	1.0	1.0	1.0	1.0
Non-Hispanic black	0.8 (0.5-1.1)	0.8 (0.4-1.8)	0.4 (0.1-2.8)	0.8 (0.3-1.8)
Hispanic	0.8 (0.5-1.4)	0.8 (0.4-1.7)	1.8 (0.4-8.3)	1.2 (0.5-2.8)
Other	0.9 (0.5-1.6)	1.0 (0.4-2.5)	0.4 (0.1-1.5)	1.6 (0.4-6.2)
$\frac{1}{\chi_3^2}$	2.2	0.4	2.9	1.7
Education				
Less than high school	1.8 (1.2-2.7)†	2.1 (1.0-4.9)	50.6 (5.6-454.6)†	2.8 (0.9-9.1)
High school	1.3 (0.9-1.9)	1.6 (0.8-3.2)	24.7 (3.1-194.5)†	2.9 (0.9-9.4)
Some post-high school	1.6 (1.1-2.3)†	1.8 (0.9-3.5)	10.8 (1.1-102.8)†	2.3 (0.8-6.7)
College graduate	1.0	1.0	1.0	1.0
χ^2_3	8.9†	4.4	15.1†	3.8
Marital status Proviously married	15(1021)	2 2 (1 2 2 0)+	4 4 (1 2-16 6)+	2 / (1 1 5 3)+
Nover married	0.9 (0.6 1 1)	2.2 (1.3-3.3)	2.0 (1.0.7.9)+	2.4 (1.1-5.5)
	1.0	1.0	1.0	1.0
	14.0+	10.0+	15.7+	10.6+
X2 Franka manant atatu a	14.01	12.0	10.7	19.01
Employed	1.0	1.0	1.0	1.0
Student	1.2 (0.7-2.4)	0.6 (0.2-2.1)	0.6 (0.1-3.9)	0.6 (0.1-3.2)
Homemaker	2.4 (1.6-3.8)†	2.9 (1.0-8.1)	1.2 (0.2-7.0)	1.5 (0.3-6.7)
Unemployed or disabled	3.8 (2.7-5.6)†	4.1 (2.3-7.4)†	0.7 (0.1-4.1)	4.3 (2.4-7.8)†
χ^2_3	53.2†	26.7†	0.5	27.3†
Region of the country Northeast	0.9 (0.5-1.5)	0.9 (0.4-2.1)	0.3 (0.0-2.3)	1.1 (0.3-3.6)
Midwest	1.0 (0.7-1.6)	0.7 (0.3-1.3)	0.7 (0.3-1.8)	0.6 (0.2-2.1)
South	1.0 (0.7-1.5)	0.8 (0.4-1.6)	0.3 (0.1-0.8)†	0.8 (0.3-2.5)
West	1.0	1.0	1.0	1.0
$\frac{1}{\chi_3^2}$	0.6	1.9	6.0	1.5
All sociodemographic correlates, χ^2_{18}	253.1†	100.5†	594.1†	134.7†

Abbreviation: CL confidence interval

*Based on pooled multivariate logistic regression analysis controlling for years (NCS = 1, NCS-R = 0) with sociodemographic variables treated as predictors of dichotomously coded suicidal behaviors.

+Significant at the .05 level, 2-sided test.

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		Sector of Treatment, % (SE)*										
	P	sychiatrist		Any M	ental Health		Gen	eral Medical		Any	Treatment	
	NCS	NCS-R	χ^2_1	NCS	NCS-R	χ^2_1	NCS	NCS-R	χ^2_1	NCS	NCS-R	χ^2_1
Ideator without gesture or attempt												
No plan	10.1 (3.5)	29.4 (4.7)	11.5†	35.8 (4.6)	41.4 (4.5)	0.8	17.7 (3.4)	30.0 (4.1)	5.0†	47.4 (4.6)	61.1 (4.4)	4.4†
Plan	50.5 (13.3)	48.8 (10.6)	0	64.4 (9.6)	53.0 (10.6)	0.6	7.2 (4.6)	38.6 (10.6)	5.9†	73.0 (8.7)	76.5 (8.0)	0.1
Total	14.4 (4.0)	33.5 (4.5)	9.4†	38.8 (4.7)	43.9 (4.1)	0.6	16.6 (3.1)	31.8 (3.2)	11.1†	50.2 (4.5)	64.4 (3.6)	5.6†
Gesturer												
No plan	3.3 (3.5)	23.6 (17.2)	1.3	17.1 (11.4)	67.4 (21.6)	2.6	9.7 (7.8)	67.8 (70.5)	5.1†	28.6 (16.5)	88.6 (10.4)	5.0†
Plan	22.2 (14.0)	75.0 (10.1)	6.0†	50.3 (21.9)	82.4 (10.9)	1.9	40.2 (22.1)	69.9 (12.6)	1.6	50.3 (21.9)	100.0 (0)	3.3
Total	13.4 (7.6)	42.8 (12.5)	3.4	34.9 (15.7)	73.0 (13.5)	2.6	26.0 (15.1)	68.6 (13.6)	4.0†	40.3 (16.6)	92.8 (6.8)	5.6†
Attempter												
No plan	25.4 (15.8)	36.7 (11.8)	0.3	33.2 (19.0)	62.3 (15.9)	1.2	11.1 (9.5)	37.8 (13.4)	2.1	33.2 (19.0)	77.8 (12.6)	3.0
Plan	65.7 (20.3)	53.5 (9.8)	0.3	65.7 (20.3)	60.6 (9.3)	0.1	2.2 (2.3)	37.8 (12.2)	4.6†	65.7 (20.3)	80.0 (8.3)	0.4
Total	45.7 (15.7)	46.3 (6.6)	0.0	49.6 (17.2)	61.3 (7.0)	0.4	6.6 (4.6)	37.8 (9.3)	6.0†	49.6 (17.2)	79.0 (6.5)	2.4
Plan Total Gesturer No plan Plan Total Attempter No plan Plan Plan Total	50.5 (13.3) 14.4 (4.0) 3.3 (3.5) 22.2 (14.0) 13.4 (7.6) 25.4 (15.8) 65.7 (20.3) 45.7 (15.7)	48.8 (10.6) 33.5 (4.5) 23.6 (17.2) 75.0 (10.1) 42.8 (12.5) 36.7 (11.8) 53.5 (9.8) 46.3 (6.6)	0 9.4† 1.3 6.0† 3.4 0.3 0.3 0.0	64.4 (9.6) 38.8 (4.7) 17.1 (11.4) 50.3 (21.9) 34.9 (15.7) 33.2 (19.0) 65.7 (20.3) 49.6 (17.2)	53.0 (10.6) 43.9 (4.1) 67.4 (21.6) 82.4 (10.9) 73.0 (13.5) 62.3 (15.9) 60.6 (9.3) 61.3 (7.0)	0.6 0.6 1.9 2.6 1.2 0.1 0.4	7.2 (4.6) 16.6 (3.1) 9.7 (7.8) 40.2 (22.1) 26.0 (15.1) 11.1 (9.5) 2.2 (2.3) 6.6 (4.6)	38.6 (10.6) 31.8 (3.2) 67.8 (70.5) 69.9 (12.6) 68.6 (13.6) 37.8 (13.4) 37.8 (12.2) 37.8 (9.3)	5.9† 11.1† 5.1† 1.6 4.0† 2.1 4.6† 6.0†	73.0 (8.7) 50.2 (4.5) 28.6 (16.5) 50.3 (21.9) 40.3 (16.6) 33.2 (19.0) 65.7 (20.3) 49.6 (17.2)	76.5 (8.0) 64.4 (3.6) 88.6 (10.4) 100.0 (0) 92.8 (6.8) 77.8 (12.6) 80.0 (8.3) 79.0 (6.5)	-

Table 4. 12-Month Treatment of NCS and NCS-R Respondents With Suicide-Related Behaviors

Abbreviations: NCS, 1990-1992 National Comorbidity Survey; NCS-R, 2001-2003 National Comorbidity Survey Replication.

Any mental health reatment includes treatment by a psychiatrist, as well as by a nonphysician mental health specialist (eg, psychologist, social worker in a mental health specialist setting). General medical treatment includes treatment by a psychiatrist as well as by a nonphysician or a worker in a general medical setting (eg, nurse in a primary care setting). In addition to including mental health and general medical treatment includes treatment by any nonpsychiatrist physician or a worker in a general medical setting (eg, nurse in a primary care setting). In addition to including mental health and general medical treatment, the category of any treatment includes treatment by a human services professional (eg, religious or spiritual advisor, social worker) and complementary-alternative medical treatment (treatment by a professional, such as a massage therapist, or participation in a self-help group). †Significant difference between NCS and NCS-R at the .05 level, 2-sided test.

Table 5. Conditional Prevalence of 12-Month Suicide Gestures and Attempts Among NCS and NCS-R Ideators by Treatment*

	Gest	ure, % (SE)		Atte	Attempt, % (SE)			
	NCS	NCS-R	χ^2_1	NCS	NCS-R	χ^2_1		
Ideators with a plan								
Treatment	20.3 (11.4)	8.5 (3.9)	1.3	29.6 (14.7)	34.6 (8.3)	0		
No treatment	35.3 (15.8)	0	2.1	32.0 (14.7)	33.1 (14.0)	0		
Ideators without a plan								
Treatment	3.3 (1.8)	4.9 (1.6)	0.3	3.9 (2.6)	11.6 (4.2)	2.3		
No treatment	0.6 (0.6)	0	1.2	10.2 (4.8)	6.4 (4.5)	0.7		
Abbreviations: NCS, 1990-19	992 National Comc	orbidity Survey;	NCS-R, 20	001-2003 National	Comorbidity Surve	ey Rep-		

lication. *There were no significant differences between NCS and NCS-R at the .05 level, 2-sided test.

prevalence of gestures among ideators, we stratified respondents with suicidal ideation by treatment and estimated the conditional prevalence of gestures and attempts. The prevalence of gestures was found not to decrease between the 2 surveys more among respondents who received treatment than among those who did not (TABLE 5). Furthermore, the prevalence of attempts was found not to increase between the surveys more among respondents who did not receive treatment than among those who did.

COMMENT

These results should be interpreted with 5 limitations in mind. First, the outcomes are sufficiently rare that mean-

ingful changes could have occurred that were not detected as statistically significant with samples of the size considered here. Also, a number of the ORs in the prediction equation have wide CIs. Second, suicide-related behaviors are likely to be underreported because of stigmas that might change and vary at a point in time across sociodemographic segments of society. Third, although the survey methods were kept as comparable as possible in the 2 surveys, even subtle differences in interview procedures, sample nonresponse, or respondent reluctance to admit suicidal thoughts or behaviors could have led to changes in the internal validity of responses over time. Fourth, external validity is reduced by

the fact that the response rate was less than perfect, coupled with the fact that the sampling frame excluded people older than 54 years, individuals living in institutions, the homeless, and individuals who had completed suicide. Fifth, we did not assess whether treatments began before or after onset of suicidality, nor did we assess the adequacy or effectiveness of treatment, which might have changed over time.

With these limitations in mind, the analysis documented 3 noteworthy results. First, we found no significant changes in the 12-month prevalence of suicidal ideation, plans, gestures, or attempts, which is consistent with an earlier analysis that found no evidence of change in the overall 12-month prevalence of DSM-IV mental disorders in the 2 surveys.²⁵ The lack of trends in suicide-related behaviors does not follow logically from the failure to find a trend in disorder prevalence for 2 reasons: a meaningful minority of respondents with suicide-related behaviors did not meet 12-month criteria for any of the DSM disorders assessed in the 2 surveys (eg, 18%-20% of ideators and 11%-12% of attempters), and the remaining respondents with suicidal behaviors had a much higher concentration of severe and comorbid 12-month DSM dis-

orders than cases in the general population.

Second, we found that risk of suiciderelated behaviors is consistently elevated in several vulnerable subgroups, including the young, women, individuals with low education, and individuals lacking stable relationships or employment. These patterns did not change significantly, which means that the lack of a significant time trend in the prevalence of suicide-related behaviors in the total sample does not mask opposite-direction significant trends in major sociodemographic segments of the population. It also means that the enormous increase in treatment of emotional problems in the decade between the 2 surveys did not reduce the disparities in risk of suiciderelated behaviors associated with these disadvantaged social statuses.

Third, we found that treatment increased substantially among people with suicide-related behaviors, which is consistent with a number of earlier studies that documented increased treatment of mental health problems throughout the decade,¹¹⁻¹³ presumably linked to the introduction of direct-to-consumer marketing of new psychotropic drugs; new community programs to promote awareness, screening, and help-seeking for mental disorders; expansion of "carveout" systems to deliver mental health services; and new policies to reduce barriers to service use.²⁶⁻³⁴

It is not clear how to interpret the finding that suicide-related behaviors did not decrease when treatment increased dramatically. Completed suicides decreased by about 6% during this period. The increase in treatment might have played a part in this trend, although county-level analysis shows no overall association between amount of treatment, as indicated by per-capita number of antidepressant prescriptions, and the suicide rate.35 If increased treatment did play a part in the decrease in the suicide rate, then why did we not see a comparable decrease in suicide-related behaviors?

One way to begin addressing this question is to recognize that suicide-

related behaviors are distinct from completed suicides, if for no other reason than their numbers. There are approximately 3000 suicide ideators per 100 000 population and 500 suicide attempters per 100 000 population in the United States each year compared with only 14 suicide completers per 100 000 population. It is possible that processes affecting the comparatively small number of suicide completers had no effect on the much larger number of ideators or attempters.

We cannot rule out the possibility that methodologic factors played a role in suicide-related behaviors not being less prevalent in the NCS-R than the NCS. Such factors could include differences between the surveys either in sample bias or in willingness to admit suicide-related behaviors to interviewers. Arguing against these possibilities are our adjusting for sample selection bias with nonresponse adjustment weights and our finding no evidence in responses to questions about stigma that willingness to admit emotional problems increased over time.

In light of these results, 3 substantive possibilities appear to be more plausible than methodologic ones in accounting for the finding that suiciderelated behaviors remained unchanged in the NCS and NCS-R when treatment increased dramatically. One is that the prevalence of suicide-related behaviors would have increased, were it not for the increase in treatment. A second is that attempters typically obtained treatment only after making attempts. A third is that the increase in treatment was of such low intensity or quality that it had no effect on suiciderelated behaviors.

Although all 3 substantive interpretations are equally consistent with the survey data, other information argues against the possibility that the increase in treatment prevented an increase that would otherwise have occurred in suicide-related behaviors. Specifically, randomized controlled trials find only modest effects of treatment in reducing suicidality, even with optimal regimens.³⁶⁻⁴⁰ Community studies of treatment quality consistently find that the majority of patients currently in treatment for mental disorders receive care that fails to meet minimal evidence-based guidelines.41-44 An added complication raised by the US Food and Drug Administration's recent analyses of pediatric antidepressant trials is that the benefit from treatment in terms of symptom improvement in some patients might be offset by adverse effects of medications in other patients.45 Taken together, these results would lead us not to expect substantial effects of increased treatment on population trends in suicidality.

It is more difficult to determine the relative importance of the other 2 possibilities: that increased treatment either did not reach suicidal people quickly enough to prevent attempts or that this treatment, when it was delivered in time, was of such low intensity or quality that it was ineffective in preventing attempts. Both processes could have been at work, which suggests several important directions for future investigation. With regard to the timeliness of treatment, we know that a substantial minority of survey respondents with suicide-related behaviors received no treatment. In addition, we suspect that at least some who reported receiving treatment did so only after making a suicide gesture or attempt. These results mean that efforts are needed to increase access to and demand for treatment among people with suicidal ideation. The most serious casesideators who make attemptsexperienced smaller increases in treatment throughout the decade than less serious cases. Programs that expand treatment resources^{32,46} may be especially important in addressing this problem, as might initiatives that encourage timely treatment seeking specifically among people with suicidal ideation (eg, Substance Abuse and Mental Health Services Administration's National Suicide Prevention Lifeline program).47 Because the dramatic increase in treatment in the last decade failed to reduce sociodemographic disparities in the suicidal behaviors con-

sidered here, programs specifically targeting high-risk populations are needed. Recent policies and National Institute of Mental Health initiatives encouraging treatment among traditionally underserved and high-risk groups may provide useful models.48-50

Increased treatment, though, will be of little value unless the quality of treatment is adequate. Efforts are needed to identify optimal interventions for primary and secondary prevention of suicidality. Although a growing literature has shed light on the optimal intensity, duration, and follow-up reguired to treat mental disorders,⁵¹⁻⁵⁶ comparable data on optimal treatments of suicidal thoughts and behaviors are just beginning to emerge.57 A recognition is needed that effective prevention of suicide attempts might require substantially more intensive treatment than is currently provided to the majority of people in outpatient treatment for mental disorders. In light of the controversy about the role of antidepressants in suicidality among adolescents, identifying whether emerging treatments have the potential to ameliorate suicidality in some individuals while potentially worsening it in others will be important. The solution is likely to involve providing intensive monitoring and follow-up, as indicated in the US Food and Drug Administration's recent "black box" warning for all antidepressants.58

Efforts will also be needed to promote the uptake of effective treatments for suicidality, including those that already exist, as well as any new treatments that are developed and shown to be effective. Substantial barriers to uptake of effective interventions continue to exist, including competing clinical demands and distorted incentives for treating mental disorders and symptoms.^{31,59-61} Failure to disseminate evidence-based treatments widely may, in fact, help explain why suicidality did not decline in response to the treatment increases during the 1990s. This means that expansion of disease management programs, treatment quality-assurance programs, and

"report cards" to improve the quality of care for suicidal patients may all be needed to reduce the burden of suicidality.62-66

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Study concept and design: Kessler, Borges, Wang. Acquisition of data: Kessler.

Analysis and interpretation of data: Kessler, Berglund, Borges, Nock, Wang.

Drafting of the manuscript: Kessler, Berglund, Nock, Wang.

Critical revision of the manuscript for important intellectual content: Kessler, Borges, Nock.

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Additional Information: The full text of all NCS-R instruments can be found at http://www.hcp.med .harvard.edu/ncs. A complete list of WMH publications can be found at http://www.hcp.med.harvard edu/wmh

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REFERENCES

1. World Health Organization. Prevention of Suicide: Guidelines for the Formulation and Implementation of National Strategies. Geneva, Switzerland: World Health Organization; 1996.

2. The Surgeon General's Call to Action to Prevent Suicide. Washington, DC: US Public Health Service; 1999

3. US Department of Health and Human Services. Healthy People 2010, 2nd ed: With Understanding and Improving Health and Objectives for Improving Health. Washington, DC: US Government Printing Office; 2000.

4. Kuo WH, Gallo JJ. Completed suicide after a suicide attempt. Am J Psychiatry. 2005;162:633.

5. Centers for Disease Control and Prevention Webbased Injury Statistics Query and Reporting System (WISQARS) [Centers for Disease Control and Prevention Web site]. Available at: http://www.cdc.gov /ncipc/wisgars/default.htm. Accessed March 21, 2005. 6. Kessler E, Schroeder T. The NEISS Sample, Design, and Implementation. Washington, DC: US Consumer Product Safety Commission; 2000.

7. Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance System. Available at: http: //www.cdc.gov/HealthyYouth/yrbs/index.htm. Accessed January 20, 2005.

8. Kessler RC, Borges G, Walters EE. Prevalence of and risk factors for lifetime suicide attempts in the National Comorbidity Survey. Arch Gen Psychiatry. 1999; 56:617-626

9. Moscicki EK, O'Carroll P, Rae DS, Locke BZ, Roy A, Regier DA. Suicide attempts in the Epidemiologic Catchment Area Study. Yale J Biol Med. 1988;61:259-268. 10. Paykel ES, Myers JK, Lindenthal JJ, Tanner J. Suicidal feelings in the general population: a prevalence study. Br J Psychiatry. 1974;124:460-469.

11. Manderscheid RW, Atay JE, Hernandez-Cartagena MDR, et al. Highlights of organized mental health services in 1998 and major national and state trends. In: Manderscheid RW, Henderson MJ, eds. Mental Health in the United States, 2000. Washington, DC: Government Printing Office; 2001:135-171

12. Olfson M, Marcus SC, Druss B, Elinson L, Tanielian T, Pincus HA. National trends in the outpatient treatment of depression. JAMA. 2002;287:203-209. 13. Mechanic D, Bilder S. Treatment of people with mental illness: a decade-long perspective. Health Aff (Millwood), 2004:23:84-95

14. Goldsmith SK, Pellmar DC, Kleinman AM, Bunnev WE. Reducing Suicide: A National Imperative. Washington, DC: The National Academies Press; 2002. 15. Kessler RC, McGonagle KA, Zhao S, et al. Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: results from the National Comorbidity Survey. Arch Gen Psychiatry. 1994.51.8-19

16. Kessler RC, Berglund P, Chiu WT, et al. The US National Comorbidity Survey Replication (NCS-R): design and field procedures. Int J Methods Psychiatr Res. 2004;13:69-92

17. American Association for Public Opinion Research. Available at: http://www.aapor.org. Accessed April 27, 2005

18. Kessler RC, Little RJA, Groves RM. Advances in strategies for minimizing and adjusting for survey nonresponse. Epidemiol Rev. 1995;17:192-204.

19. Robins LN, Wing J, Wittchen HU, et al. The Com-

2494 JAMA, May 25, 2005-Vol 293, No. 20 (Reprinted)

posite International Diagnostic Interview: an epidemiologic instrument suitable for use in conjunction with different diagnostic systems and in different cultures. *Arch Gen Psychiatry*. 1988;45:1069-1077.

20. Kessler RC, Wittchen H-U, Abelson JM, et al. Methodological studies of the Composite International Diagnostic Interview (CIDI) in the US National Comorbidity Survey. *Int J Methods Psychiatr Res.* 1998; 7:33-55.

21. Kessler RC, Ustun TB. The World Mental Health (WMH) Survey Initiative Version of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI). *Int J Methods Psychiatr Res.* 2004;13:93-121.

22. Jackson JS, Torres M, Caldwell CH, et al. The National Survey of American Life: a study of racial, ethnic and cultural influences on mental disorders and mental health. *Int J Methods Psychiatr Res.* 2004;13: 196-207.

23. Wolter KM. *Introduction to Variance Estimation*. New York, NY: Springer-Verlag; 1985.

24. SUDAAN. *Professional Software for Survey Data Analysis* [computer program]. Version 8.01. Research Triangle Park, NC: Research Triangle Institute; 2002.

25. Kessler RC, Demler O, Walters EE, Wang PS, Zaslavsky AM. Trends in the prevalence, severity, and treatment of 12-month *DSM-IV* disorders in the National Comorbidity Survey and the National Comorbidity Survey Replication. *N Engl J Med.* In press.

26. Rosenthal MB, Berndt ER, Donohue JM, Frank RG, Epstein AM. Promotion of prescription drugs to consumers. *N Engl J Med*. 2002;346:498-505.

27. Hirschfeld RM, Keller MB, Panico S, et al. The National Depressive and Manic-Depressive Association consensus statement on the undertreatment of depression. JAMA. 1997;277:333-340.

28. Jacobs DG. National Depression Screening Day: educating the public, reaching those in need of treatment, and broadening professional understanding. *Harv Rev Psychiatry*. 1995;3:156-159.

29. Weissman E, Pettigrew K, Sotsky S, Regier DA. The cost of access to mental health services in managed care. *Psychiatr Serv*. 2000;51:664-666.

30. Sturm R. Tracking changes in behavioral health services: how have carve-outs changed care? *J Behav Health Serv Res.* 1999;26:360-371.

31. Williams JW Jr, Rost K, Dietrich AJ, Ciotti MC, Zyzanski SJ, Cornell J. Primary care physicians' approach to depressive disorders: effects of physician specialty and practice structure. *Arch Fam Med.* 1999;8:58-67.

32. Mechanic D, McAlpine DD. Mission unfulfilled: potholes on the road to mental health parity. *Health Aff (Millwood)*. 1999;18:7-21.

33. Kessler RC, Berglund PA, Bruce ML, et al. The prevalence and correlates of untreated serious mental illness. *Health Serv Res.* 2001;36:987-1007.

34. Bender E. Better access to geriatric mental health care goal of new house bill. *Psychiatr News*. 2002;2: 5-16.

35. Gibbons RD, Hur K, Bhaumik DK, Mann JJ. The relationship between antidepressant medication use and rate of suicide. *Arch Gen Psychiatry*. 2005;62:165-172.

36. Hazell P. Treatment strategies for adolescent suicide attempters. In: Hawton K, van Heeringen K, eds. *The International Handbook of Suicide and Attempted Suicide*. Bognor Regis, UK: Wiley; 2000:539-554.

37. Burns J, Dudley M, Hazell P, Patton G. Clinical management of deliberate self-harm in young people: the need for evidence-based approaches to reduce repetition. *Aust N Z J Psychiatry*. 2005;39: 121-128.

38. Meltzer HY, Alphs L, Green AI, et al. Clozapine treatment for suicidality in schizophrenia: International Suicide Prevention Trial (InterSePT). *Arch Gen Psychiatry*. 2003;60:82-91.

 Khan A, Khan S, Kolts R, Brown WA. Suicide rates in clinical trials of SSRIs, other antidepressants, and placebo: analysis of FDA reports. *Am J Psychiatry*. 2003; 160:790-792.

40. Linehan MM, Armstrong HE, Suarez A, Allmon D, Heard HL. Cognitive-behavioral treatment of chronically parasuicidal borderline patients. *Arch Gen Psychiatry*. 1991;48:1060-1064.

41. Wang PS, Lane M, Olfson M, Pincus HA, Wells KB, Kessler RC. Twelve-month use of mental health services in the United States: results from the National Comorbidity Survey Replication (NCS-R). Arch Gen Psychiatry. In press.

42. Wang PS, Berglund P, Kessler RC. Recent care of common mental disorders in the United States: prevalence and conformance with evidence-based recommendations. *J Gen Intern Med.* 2000;15: 284-292.

43. Young AS, Klap R, Sherbourne CD, Wells KB. The quality of care for depressive and anxiety disorders in the United States. *Arch Gen Psychiatry*. 2001;58:55-61.

44. Kessler RC, Berglund P, Demler O, et al. The epidemiology of major depressive disorder: results from the National Comorbidity Survey Replication (NCS-R). *JAMA*. 2003;289:3095-3105.

45. US Food and Drug Administration Summary minutes of the September 13-14, 2004, Center for Drug Evaluation and Research Psychopharmacologic Drugs Advisory Committee and the FDA Pediatric Advisory Committee. Available at: http://www.fda.gov/ohrms/dockets/ac/04/minutes/2004-4065M1_Final.htm. Accessed February 1, 2005.

46. Frank RG, Glied S. *Better but Not Well: US Mental Health Policy* 1950-2000. Baltimore, Md: Johns Hopkins University Press. In press.

47. Substance Abuse and Mental Health Services Administration. National Suicide Prevention Lifeline. Available at: http://www.suicidepreventionlifeline .org. Accessed February 1, 2005.

48. US Department of Health and Human Services. Mental health: culture, race, and ethnicity: a supplement to mental health: a report of the surgeon general. Available at: http://www.surgeongeneral.gov/library /mentalhealth. Accessed July 9, 2004.

49. Rost K, Fortney J, Fischer E, Smith J. Use, quality, and outcomes of care for mental health: the rural perspective. *Med Care Res Rev.* 2002;59:231-265.
50. National Institute of Mental Health Real Men/ Real Depression program [National Institute of Men-

tal Health Web site]. Available at: http://menanddepression.nimh.nih.gov. Accessed July 9, 2004.

51. Agency for Health Care Policy and Research. *Depression in Primary Care, Vol 2: Treatment of Major Depression.* Rockville, Md: US Dept of Health and Human Services; 1993.

52. American Psychiatric Association. *Practice Guide-line for Treatment of Patients With Panic Disorder.* Washington, DC: American Psychiatric Association Press; 1998.

53. American Psychiatric Association. *Practice Guideline for Treatment of Patients With Major Depressive Disorder, Second Edition.* Washington, DC: American Psychiatric Association Press; 2000.

54. American Psychiatric Association. *Practice Guideline for Treatment of Patients With Bipolar Disorder, Second Edition.* Washington, DC: American Psychiatric Association Press; 2002.

55. American Psychiatric Association. *Practice Guideline for Treatment of Patients With Schizophrenia, Second Edition*. Washington, DC: American Psychiatric Association Press; 2004.

56. Lehman AF, Steinwachs DM. Translating research into practice: schizophrenia patient outcomes research team (PORT) treatment recommendations. *Schizophr Bull.* **1998**;24:1-10.

57. American Psychiatric Association. *Practice Guideline for the Assessment and Treatment of Suicidal Behaviors*. Washington, DC: American Psychiatric Association Press; 2003.

58. US Food and Drug Administration. Antidepressant use in children, adolescents and adults. Available at: http://www.fda.gov/cder/drug/antidepressants/default.htm. Accessed February 2, 2005.

59. Williams JW Jr. Competing demands: does care for depression fit in primary care? *J Gen Intern Med.* 1998;13:137-139.

60. Klinkman MS. Competing demands in psychosocial care: a model for the identification and treatment of depressive disorders in primary care. *Gen Hosp Psychiatry*. 1997;19:98-111.

61. Pincus HA, Hough L, Houtsinger JK, Rollman BL, Frank RG. Emerging models of depression care: multi-level ("6 P") strategies. *Int J Methods Psychiatr Res.* 2003;12:54-63.

62. Katon W, Von Korff M, Lin E, et al. Collaborative management to achieve treatment guidelines: impact on depression in primary care. *JAMA*. 1995;273: 1026-1031.

63. Wells KB, Sherbourne C, Schoenbaum M, et al. Impact of disseminating quality improvement programs for depression in managed primary care: a randomized controlled trial. JAMA. 2000;283:212-220.
64. National Committee for Quality Assurance. HE-DIS 3.0: Narrative: What's in It and Why It Matters. Washington, DC: National Committee for Quality Assurance; 1997.

65. Substance Abuse and Mental Health Services Administration. *Consumer-Oriented Mental Health Report Card*. Rockville, Md: Center for Mental Health Services; 1996.

66. Wang PS, Simon G, Kessler RC. The economic burden of depression and the cost-effectiveness of treatment. *Int J Methods Psychiatr Res.* 2003;12:22-33.