Antidepressants and Suicide Risk in the United States, 1985–1999

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Background: The role of antidepressants in suicide prevention is a major public health question. An association was hypothesized between the increase in the use of non-tricyclic antidepressant medications in the United States and the decline in the suicide rate during the years 1985–1999.

Method: The relationships between the suicide, antidepressant prescription, unemployment, and alcoholic beverage consumption rates were studied using generalized linear models. Suicide rates by antidepressant overdose were compared in selective serotonin reuptake inhibitors (SSRIs) and tricyclic antidepressants (TCAs).

Results: From 1985 to 1999, the suicide rate fell 13.5%, with a greater decline among women, and antidepressant prescription rates increased over 4-fold, with the increase mostly due to SSRIs. Prescription rates for SSRIs and other second-generation antidepressants were both inversely associated with suicide rates ($p = .03$ and $p = .02$, respectively). In a multivariable analysis adjusting for unemployment and alcoholic beverage consumption rates, SSRI antidepressant prescription rates remained inversely associated with the national suicide rate ($p = .03$). Females received twice as many antidepressant prescriptions compared with males. The commonest prescription indication was mood disorders, the condition most often associated with suicide. SSRIs were associated with a lower risk of suicide by antidepressant overdose compared with TCAs.

Conclusion: The decline in the national suicide rate (1985–1999) appears to be associated with greater use of non-tricyclic antidepressants. Treatment of a greater proportion of mood disorders with SSRIs and other second-generation non-tricyclic antidepressants may further reduce the suicide rate. Controlled studies of the antisuicidal properties of antidepressants are needed in high-risk depressed patient populations.

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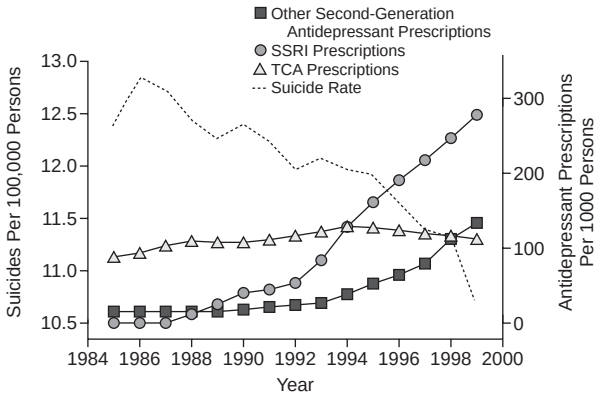
The national suicide rate in the United States climbed 31% in the years 1957 to 1986 (except for a small dip in the late 1970s), from 9.80 to 12.87 suicides per 100,000 persons.[1] The reasons for this increase are unclear. However, in 1987, the suicide rate began to decline, and that trend has continued to the present.[1] Understanding the reasons for this decline may help to identify interventions that can advance suicide prevention. Psychological autopsies indicate that about 60% of suicides occur in the context of a depressive disorder and that most of those suicides were not being treated with antidepressant medication at the time of death.[2–8] Mood disorders are common, with a 1-year prevalence of major depressive disorder in the U.S. population reported to be 5% to 10%.[9,10] Therefore, it is reasonable to hypothesize that successful antidepressant treatment should lower the risk of suicide. However, due to the low base rate of suicide, it is difficult to test this hypothesis using randomized, controlled clinical studies because large high-risk sample sizes and lengthy follow-up are needed, presenting ethical and logistical challenges.[11]

Epidemiologic studies, such as the pioneering work of Isacsson[12] in Sweden, report a correlation between falling suicide rates and rising antidepressant prescription rates.[13–16] Such studies can only provide correlations but are suggestive of a causal relationship because of the known relationship of major depressive disorder to suicide and the efficacy of antidepressants for depression. If a correlation could be demonstrated between the current decline in U.S. suicide rates and greater use of antidepressants, that would support the need for more

Figure 1. U.S. Suicide Rate and TCA, SSRI, and Other Second-Generation Antidepressant Prescription Rates by Year, 1985–1999[a]



[a]Suicide rate data are from the National Center for Injury Prevention and Control.[1] Antidepressant prescription data are from IMS Health, Westport, Conn.
Abbreviations: SSRI = selective serotonin reuptake inhibitor, TCA = tricyclic antidepressant.

direct studies of the anti-suicidal effects of psychotropic medication.

The non-tricyclic antidepressants bupropion and fluoxetine, a selective serotonin reuptake inhibitor (SSRI), were approved in the United States on December 30, 1985, and on December 29, 1987, respectively.[17] Since that period, antidepressant prescriptions have markedly increased, mostly due to the SSRIs (Figure 1). Nationally representative data for the period 1985 to 1999 indicate that annual antidepressant prescriptions increased 4-fold in the United States (Information Marketing Systems [IMS] Health, Westport, Conn.). This increase suggests more widespread treatment of depression and other illnesses for which antidepressants have been found efficacious, such as anxiety disorders and chronic pain.

Since the bulk of the increase in antidepressant prescriptions is accounted for by SSRIs, the present study focused on the relationship between suicide and SSRI prescription rates, adjusting for 2 other factors associated with suicide, the unemployment rate[18–21] and the alcoholic beverage consumption rate.[19,22,23] We also explored the relationship of second-generation, non-SSRI antidepressant (e.g., bupropion) prescription rates to national suicide rates. We hypothesized that the demographic subgroup with the highest prevalence of antidepressant use would show the greatest decline in suicide rates. We sought to determine, given the large increase in antidepressant prescription rates, whether there had been an increase in the number of suicides by antidepressant overdose. We hypothesized that due to the greater safety in overdose of SSRIs compared with tricyclic antidepressants (TCAs),[24,25] the SSRIs would be associated with a lower risk of suicide by antidepressant overdose compared with TCAs.

METHOD

Sources of Data

Data were obtained from the following sources:

Centers for Disease Control and Prevention. We obtained data on national suicide rates from 1985 to 1999 online from the National Center for Injury Prevention and Control.[1]

National Prescription Audit. This commercial database is maintained by IMS Health. We obtained data on the estimated annual total number of new and refilled prescriptions written in the United States for each antidepressant drug from 1985 to 1999. These data were not available for other years. The data were collected from a random sample of 20,000 pharmacies (stratified by type, size, and region) from the IMS database of 34,000 pharmacies, which account for more than half of all retail pharmacies in the continental United States. IMS uses statistical methods to extrapolate these data to provide national figures. IMS data are used by both industry and the U.S. Food and Drug Administration (see http://www.fda.gov for extensive use of IMS data).

National Disease and Therapeutic Index. We also obtained IMS data on prescription volume of antidepressants to males and females and for different clinical indications for the years 1997–2000 (the only years for which data were available to us). These data were obtained by IMS from a nationally representative sample of 1200 office-based physicians who made clinical diagnoses for which they prescribed each medication. On 2 consecutive days each month, the physicians recorded the indication for which they prescribed each medication and the demographics of patients for whom they prescribed it. Diagnoses are based on physicians' clinical assessment and are the primary diagnostic indication for that medication. The physician sample is randomly selected from the same geographic regions as the previously described National Prescription Audit.

Annual Report of the American Association of Poison Control Centers Toxic Exposure Surveillance System (TESS).[26] These data were collected by poison control centers, which covered from 48% (1985) to 95% (1998) of the total U.S. population. Data on suicides in which an antidepressant overdose was deemed "probably" or "undoubtedly" the primary cause of death were included.

National Institute on Alcohol Abuse and Alcoholism, Division of Biometry and Epidemiology, Alcohol Epidemiologic Data System.[27] Data on per capita ethanol consumption were obtained online.

Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey.[28] Data on the average annual U.S. unemployment rate were obtained online.

Statistical Analysis

Suicide by any method. We analyzed the relationship between the annual U.S. suicide rate from 1985 to 1999 and the annual prescription rate for SSRIs (citalopram, fluoxetine, fluvoxamine, paroxetine, sertraline). Therefore, N = 15 years in all analyses in which the suicide rate by any method was the dependent variable. All analyses were performed using the generalized least squares ("gls") function in S-Plus (with maximum likelihood method).[29] The corresponding summary function computes p values for testing whether coefficients are 0. The p values are based on large-sample approximation. However, in this small data set, the large-sample approximation was very poor, leading to p values that were too small. Therefore, we computed p values using the parametric bootstrap with 2000 re-samples.[30]

Another reason for using the bootstrap is that in each case we used the Bayes Information Criterion (BIC) to choose the model (usually choosing between first-order autoregression [AR(1)] and independent errors, but in secondary analysis B, also choosing the terms in the fixed part of the model). BIC is a model selection criterion that balances model fit and model complexity.[31] AR(1) is a simple form of serial dependence among successive measurements.[29] Our bootstrap simulations also included the model selection step. To perform the parametric bootstrap, a choice must be made of the AR(1) nuisance parameter for simulation. In each case, we tried more than 1 parameter value and report the largest of the p values so calculated.

The following analyses were carried out. The primary analysis was suicide rate (number of suicides/U.S. population) versus SSRI prescription rate (number of new and refilled prescriptions/U.S. population). The secondary exploratory analyses were (A) suicide rate versus other second-generation (bupropion, mirtazapine, venlafaxine, trazodone, and nefazodone) prescription rate; (B) suicide rate versus SSRI prescription rate, unemployment rate, and alcoholic beverage consumption rate; (C) use of BIC to choose the model involving the main effects of SSRI prescription rate, unemployment rate, and alcoholic beverage consumption rate that best predicted the suicide rate (interactions were not included because the data set is too small) (models B and C are 2 different ways of adjusting for unemployment and alcoholic beverage consumption rates); and (D) year-to-year changes in the suicide rate versus year-to-year changes in the SSRI prescription rate. Analysis D was the same as the primary analysis, except that in this model, the differenced series were used. A differenced time series subtracts from each value the previous year's value.

All analyses were performed on the rate scale, untransformed, with homoscedastic variance. Residual and added variable plots were used to examine the quality of fit.[32] All tests were 2-sided.

Suicide by antidepressant overdose. In analyses in which the suicide rate by antidepressant overdose was the dependent variable, data were available from 1985 through 1998. We examined the relationship of annual antidepressant prescription rates and of antidepressant type to risk of suicide by overdose of the antidepressant for these years. The dependent variable was the per capita rate of suicides by antidepressant overdose normalized by dividing by the TESS survey coverage, i.e., the proportion of the U.S. population covered by poison control centers in the TESS survey for each year. This adjustment was done to make the overdose rates comparable across years. The coverage in 1985 was 48%, and in 1998 it was 95%.[26] The independent variables in the model were antidepressant type (TCAs or SSRIs) and antidepressant prescription rate. One would expect that the more prescriptions that are filled for an antidepressant type, the more suicides by overdose of antidepressants of that type there would be. For that reason, we controlled for the prescription rate. The unit of observation in this analysis is antidepressant type–year, so N = 28.

Our method of analysis for the overdose data was similar to that performed for the suicide by any method data but was modified as follows. The square root of the normalized overdose rate was the dependent variable. The overdose rate is a rate whose numerator is a small count, sometimes 0. We computed the square root of the normalized overdose rate to stabilize the variance. To take into account the heteroscedasticity introduced by dividing by the TESS coverage, we further modeled the variance as a multiple of the reciprocal of the coverage.

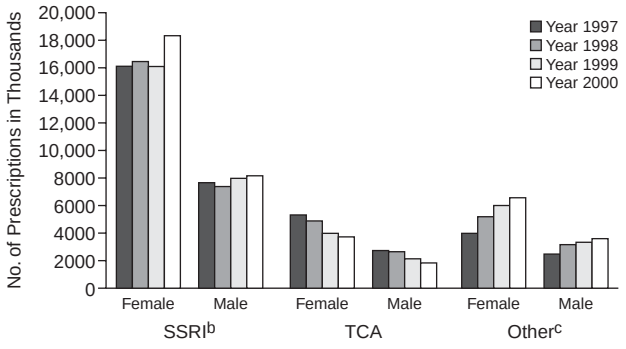
RESULTS

Suicide by Any Method

From 1985 to 1999, the years for which complete data were available for analysis, the crude suicide rate by any method in the United States fell 13.5% from 12.38 per 100,000 in 1985 to 10.71 per 100,000 in 1999 (Figure 1).[1] Moreover, when age-adjusted rates were used, the decline was 12.8% for males and 22.5% for females, almost double an effect on suicide rates in females compared with males. In both 1985 and 1999, the 4 most frequent methods of suicide in descending order were guns, suffocation, poisoning, and falls from a height.[1] Therefore, no evidence was seen of a change in methods used for suicide over this time.

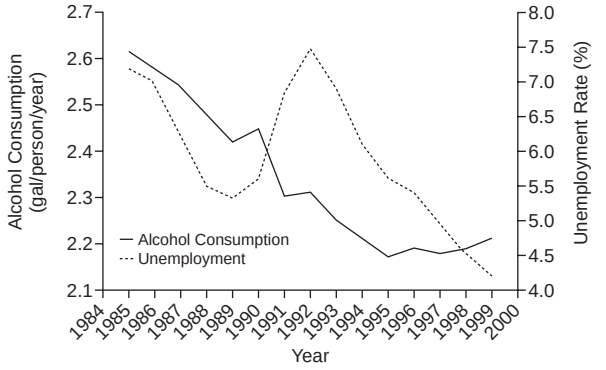
In the same time period, in the United States, the annual prescription volume of all antidepressants more than quadrupled from 35,037,000 in 1985 to 144,856,000 in 1999 (IMS Health). Approximately 69% of the increase

Figure 2. Prescription Antidepressant Use by Medication and Gender, 1997–2000[a]



[a]Data from the National Disease and Therapeutic Index (NDTI), IMS Health, Westport, Conn.
[b]Fluoxetine, sertraline, paroxetine, citalopram.
[c]Bupropion, nefazodone, venlafaxine.
Abbreviations: SSRI = selective serotonin reuptake inhibitor, TCA = tricyclic antidepressant.

Figure 3. U.S. Alcohol Consumption and Unemployment Rates by Year, 1985–1999[a]



[a]Alcohol consumption data are from Nephew et al.[27] Unemployment rate data are from the Bureau of Labor Statistics.[28]

was accounted for by SSRI antidepressants. TCAs accounted for 59% of antidepressant prescriptions in 1985 and 21% in 1999 compared with SSRIs, which in 1999 accounted for 53% of the antidepressant market. The 1997–2000 antidepressant prescription data indicate that females, on average, accounted for 2.1 times the SSRI prescription volume, 1.9 times the TCA prescription volume, and 1.7 times the other second-generation antidepressant prescription volume compared with males (Figure 2) (IMS Health). Mood disorders accounted for 45% of antidepressant prescriptions in 1997 and 59% in 2000, whereas anxiety disorders accounted for 6% in 1997 and 8% in 2000 and other diagnostic indications accounted for 32% in 1997 and 22% in 2000. Therefore, both the absolute total prescriptions and the proportion of prescriptions for mood disorders increased (IMS Health) over the period of time for which we obtained data.

From 1985 to 1989, the unemployment rate fell from 7.2% to 5.3% and then rose to 7.5% in 1992, after which it fell steadily to 4.2% in 1999 (Figure 3). Overall, during this time, per capita alcoholic beverage consumption in the United States declined 15.7% from 2.6 gallons/year in 1985 to 2.2 gallons/year in 1999 (Figure 3).[27] However, alcoholic beverage consumption increased from 1995 to 1999 (Figure 3), a period when the suicide rate appeared to decrease rapidly (Figure 1).

We performed a generalized least squares regression with annual U.S. suicide rate as the dependent variable and the annual SSRI prescription rate as the independent variable. Results showed that the SSRI prescription rate was inversely associated with the suicide rate ($\beta = -0.06$, 95% CI = –0.09 to –0.01, SE = 0.02, t = –10.2, p = .03). This p value allows for the possibility that the serial correlation (from year to year) is high. It also takes into account the use of BIC to decide whether to include AR(1) dependence. The results indicate that a 10% increase in SSRI prescriptions in 1999 was associated with a decrease in the suicide rate of 1.4%. Figure 1 illustrates the inverse relationship between the U.S. suicide rate and the annual SSRI prescription rate, 1985–1999.

We repeated the above analysis substituting other second-generation antidepressants for SSRIs. The results showed an inverse association of the prescription rate for these medications with the suicide rate ($\beta = -0.14$, 95% CI = –0.24 to –0.05, SE = 0.05, t = –9.3, p = .02). The results indicate that a 10% increase in the prescription rate of other second-generation antidepressants in 1999 was associated with a 1.2% decrease in the suicide rate.

A regression analysis with suicide rate as the dependent variable and SSRI prescription rate, unemployment rate, and alcoholic beverage consumption rate as the independent variables did not detect an SSRI prescription rate effect but generated a confidence interval indicating a low degree of precision ($\beta = -0.06$, 95% CI = –0.15 to 0.03, SE = 0.02, t = –3.8, p = .15). Unemployment rate and alcoholic beverage consumption rate were also not significantly associated with suicide rate ($\beta = -1.82$, p = .96 and $\beta = -6.13$, p = .99, respectively).

Therefore, using generalized least squares regression methods, we sought to determine what model best predicts the suicide rate combining SSRI prescription rate, unemployment rate, and alcohol consumption rate as independent variables. The choice of predictor variables was made based on the data using BIC, which balances how well the data fit the model against the complexity of the model. This is another method of adjusting for unemployment and alcoholic beverage consumption rates. The best-fitting model utilized SSRI prescription rate as the independent variable with independent errors ($\beta = -0.06$, 95% CI = –0.09 to –0.01, SE = 0.03, t = –10.2, p = .03).

Lastly, we used the same regression method to investigate whether year-to-year changes in the SSRI prescription rate were associated with year-to-year changes in the suicide rate, using the differenced time series (see Statistical Analysis). The results did not show a significant association ($\beta = -0.05$, 95% CI = –0.17 to 0.08, SE = 0.04, $t = -0.98$, $p = .36$); however, the sign of the estimate is consistent with an inverse SSRI effect on suicide rates. This result suggests the relationship is explained by a steady change in both rates.

Suicide by Antidepressant Overdose

In 1985, before SSRIs were approved in the United States, TCAs accounted for 84% of antidepressant prescriptions and 88% of suicides by antidepressant overdose in the TESS survey. In 1998, TCAs had declined to 24% of antidepressant prescriptions, but still accounted for 86% (N = 73) of suicides by antidepressant overdose in the TESS survey, which then covered 95% of the U.S. population. In 1998, SSRIs accounted for 52% of antidepressant prescriptions and 4% (N = 3) of suicides by antidepressant overdose in the TESS survey.

We performed a regression analysis using the square root of the normalized rate of suicide by antidepressant overdose as the dependent variable. The independent variables were antidepressant type and antidepressant prescription rates. The results indicate that, compared with TCAs, SSRIs were associated with a reduction in the rate of suicide by antidepressant overdose ($\beta_{TCA} = 0.029$, 95% CI = 0.028 to 0.030, SE = 0.01, $t = 52.0$, $p < .001$). In 1998, there were 2.1 times more SSRI than TCA prescriptions, while there were 73 suicides by TCA overdose and only 3 by SSRI overdose. The estimate indicates that, for example, in the United States in 1998, there was an approximately two-thirds reduction in risk of suicide by antidepressant overdose with SSRIs compared with TCAs.

DISCUSSION

The results of this study are consistent with the hypothesis that more widespread treatment of depression, and other antidepressant medication–responsive psychiatric disorders, has contributed to the decline in the U.S. suicide rate. The 1997–2000 prescription data demonstrate that, on average, females accounted for approximately twice the volume of antidepressant prescriptions as males. This finding may explain the almost double decline observed in the suicide rate among women as compared with men. It was not possible to directly test this hypothesis for the period prior to 1997 because we could not obtain prescription data stratified by gender for those years. Unemployment and alcohol consumption may have played a role in the declining suicide rate, although an independent effect of these 2 variables was not demonstrated in our analysis. Depression was the main indication for antidepressant prescriptions in the late 1990s. In addition, we found that despite increasing antidepressant prescription rates for SSRIs (more than double that of TCAs in 1998), there were 24 times more suicides by TCA overdose compared with SSRI overdose.

These results are in agreement with epidemiologic studies reporting that more antidepressant use is associated with falling suicide rates in Sweden,[12] Finland,[13] Australia,[14] and Hungary.[15] In Italy, from 1988 to 1994, antidepressant sales increased approximately 36%, mainly due to the availability of SSRIs. During this period, females had an 18% decrease in suicide rate, whereas male suicide rates showed little change.[16] The latter result could be due to more antidepressant prescriptions going to women, as we have observed in the United States, but a breakdown of the prescription data in Italy by sex was not provided. A similar antidepressant treatment effect, predominantly on female suicide rates, was reported in Gotland, Sweden,[33] and attributed to more females being treated for depression. Our results are also consistent with those of O'Leary et al.,[34] who found progressively lower suicide rates in a review of follow-up studies comparing the treatment era prior to the development of electroconvulsive therapy with subsequent somatic treatment eras.

Our study provides the first evidence that the greater reduction in female suicide rates in the United States may be explained by higher antidepressant prescription rates in women. Our results are consistent with a report from Australia that the demographic subgroup receiving more antidepressants has a greater decline in suicide rate[14] and with the report by Olfson et al.[35] of an inverse relationship between regional youth suicide rates in the United States during 1990–2000 and regional youth antidepressant use. These demographically and geographically specific findings reduce the possibility of a spurious association. Therefore, across time, demographic subgroups, and geographic regions, the findings of our study and the aforementioned reports demonstrate a relationship between increasing use of antidepressant medications and declining suicide rates.

The most likely explanation for the relationship between increasing use of antidepressants and declining suicide rates is that antidepressants are beneficial for psychiatric disorders associated with elevated suicide risk. The suicide rate began to decline in 1987, which closely followed the introduction of non-tricyclic antidepressants, beginning with bupropion and fluoxetine at the end of 1985 and 1987, respectively. There is a substantial literature demonstrating the efficacy of antidepressants for major depressive disorder (for reviews, see Potter et al.[36] and Geddes et al.[37]). The 1997–2000 data, during a period of a particularly steep decline in the U.S. suicide rate, show that mood disorders account for an increasing proportion of antidepressant prescriptions (45% in 1997 and 59% in 2000) (IMS Health).

Greater use of antidepressants for conditions other than primary mood disorders carrying an increased risk of suicide, such as anxiety disorders or eating disorders, may also contribute to lower suicide rates. This relationship may be explained by a therapeutic effect on the primary disorder, on aggressive-impulsive traits, or on comorbid depression. The rate of comorbid depression is 50% or higher in eating disorders[38,39] and 56% in panic disorder.[40] Chronic pain, for which antidepressants are commonly prescribed, is associated with depression and suicide.[41,42]

Suicide due to antidepressant overdose accounts for 3% to 8% of all suicides depending on the sample studied.[43,44] However, in our study, SSRIs were associated with lower risk of suicide by antidepressant overdose compared with TCAs. This finding is most likely due to the risk of atrioventricular conduction delay and fatal arrhythmias in TCA overdose.[24,25] TCAs still account for most suicides by antidepressant drug overdose (over 80%) even though their absolute number of prescriptions and proportion of all antidepressants prescribed have declined substantially.

We evaluated 2 commonly cited factors affecting the suicide rate, namely the unemployment rate[18–21] and the alcoholic beverage consumption rate,[19,22,23] as alternative explanations for declining suicide rates. Our small sample size makes it unlikely that we would detect significant effects when SSRI prescription, alcohol consumption, and unemployment rates are simultaneously included as independent variables in the model. However, of all the models for predicting the suicide rate using some combination of the main effects of SSRI prescription rate, unemployment rate, and alcoholic beverage consumption rate, the one with the best value of BIC (see Statistical Analysis) was the one whose only independent variable was SSRI prescription rate.

The results of an inverse association of SSRI prescription and suicide rates found in our primary analysis and in our analysis using BIC to choose the best-fitting model including all 3 predictor variables are consistent with findings in Hungary and Sweden. In those countries also, the negative correlations of antidepressant prescription rates and suicide rates were independent of unemployment and alcohol consumption.[12,15]

This study has limitations. The sample size of 15 years is small. However, the large number of pharmacies and poison control centers from which data were collected means that we can estimate rates relatively accurately, at least for large portions of the United States. As with any naturalistic study, the analysis is subject to the "ecological fallacy," because one cannot exclude the possibility that the correlations found are due to variables beyond the scope of the analysis. For example, other factors such as rates of gun ownership[45] and drug abuse may also influence the suicide rate. As the most common methods of suicide did not change during the time period studied, it seems unlikely that a shift to less lethal methods is responsible for the trend toward decreased overall suicide rates. The independent variables that we analyzed were limited by the data that were available for this study. For example, prescription rates and diagnostic indications for males versus females were available only for the years 1997–2000; however, this was a period of particularly steep decline in the suicide rate and thus we felt it was reasonable to include these data. Another limitation is that diagnoses for antidepressant prescription indications were made clinically by office-based physicians and not with validated research instruments. In addition, since this study analyzed aggregate-level data, the numbers of suicides by persons taking adequate doses of antidepressants are unknown, as are the number of suicides prevented by such medications. Most studies indicate that most suicides are the result of untreated depression.[3–6,8,23] Statistical associations do not establish a cause-and-effect relationship. However, there is considerable evidence that depression is the main cause of suicide, and antidepressants are beneficial for major depressive disorder. Randomized controlled clinical trials are needed to establish the efficacy of antidepressants for suicidal behavior, although such studies in suicidal patients are ethically and methodologically challenging. Therefore, naturalistic studies such as this one have merit in providing the data indicating the potential value of controlled clinical trials. Observational studies of large cohorts, such as the Framingham Heart Study, are another area for future investigation.

This study cannot address the potential effect on suicide rates of changes in psychotherapeutic treatments. An analysis of the years 1987–1997 found no overall increase in the frequency of psychotherapy, but did find an increase in the rate of psychotherapy for mood disorders, which could have affected suicide rates.[46]

Most of those who commit suicide who are found to have major depressive disorder at the time of death are either untreated or receiving subtherapeutic doses of antidepressants,[44,47–49] indicating the need for better recognition and treatment of at-risk patients. The results of this study support the need for enhanced screening and treatment efforts. Depression intervention strategies should address the fact that males have lower antidepressant prescription rates and have 4 times the suicide rate of females. Evidence indicates that primary care physicians tend to underrecognize and undertreat mood disorders,[50] and therefore an educational intervention with a focus on recognition and treatment of mood disorders may lower suicide rates.[33] The present study suggests that improved treatment delivery for serious depression and related psychiatric disorders, particularly in males, will potentially further reduce the national suicide rate. Randomized controlled clinical trials of SSRIs and other new-generation, non-tricyclic antidepressants in suicidal depressed pa-

tients are needed to provide clearer estimates of the efficacy of these medications in the prevention of suicidal behavior.

Drug names: bupropion (Wellbutrin and others), citalopram (Celexa), fluoxetine (Prozac and others), mirtazapine (Remeron and others), nefazodone (Serzone and others), paroxetine (Paxil and others), sertraline (Zoloft), trazodone (Desyrel and others), venlafaxine (Effexor).

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