Published in final edited form as:

Mayo Clin Proc. 2018 June ; 93(6): 731–738. doi:10.1016/j.mayocp.2017.12.009.

Weren't Asked, Didn't Tell: Prevalence of Communication of Suicidal Ideation in Suicide Decedents During the Last Year of Life

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Abstract

Objective: To explore what percentage of suicide decedents (SDs) vs controls were assessed for suicidality at medical appointments in the year before death.

Patients and Methods: Using the Rochester Epidemiology Project, 66 SDs dying in Olmsted County, Minnesota, between January 1, 2000, and December 31, 2009, were identified and matched with 141 age- and sex-matched controls. Blinded chart review determined how often providers screened and subjects endorsed suicidal ideation (SI). Positive indicators included chart notes recording SI and/or Patient Health Questionnaire-9 scored more than 0 on question 9.

Results: We found that only 29 of 66 (43.9%) SDs and 14 of 141 (9.9%) controls had been screened at any point by any means ($P < .001$). Only 25.8% (17 of 66) of SDs expressed SI, whereas 58.6% of screened SDs (17 of 29) did so, though none at final appointments before death. No control ever expressed SI. While the majority of both cases and controls went unscreened, providers were more likely to screen SDs ($P < .001$; odds ratio [OR], 9.0; 95% CI, 3.6-22.0), even with controlling for mental health diagnoses ($P = .02$; OR, 3.6; 95% CI, 1.2-10.6).

Conclusions: With providers screening less than half of SDs at any point in the year before death, and less than 60% of SDs ever endorsing SI, including none at final appointments, the findings of this naturalistic study bring into question both current screening practices and screening effectiveness. Nonetheless, when SDs were screened, they were significantly more likely to endorse SI than were controls, not 1 of whom ever expressed SI. Taken together, these data suggest that patients expressing SI at any point are at elevated risk for eventual suicide.

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Potential Competing Interests: The authors report no competing interests.

Recent studies show that most suicide decedents (SDs) see a health care provider in the year before death. A systematic review looking at the rate of health care use by SDs reported that 77% had visited a primary care physician in the year before death and 32% had received mental health services. A study of 5894 SDs found that 83% and 50% of individuals used health care in the year and month before death, respectively. As a result of high rates of health care use by SDs in the month and year before death, multiple studies have suggested that health care providers could have used these visits to detect and respond to suicidality.⁷ In a recent publication using the same sample as this study, we challenged the implication that SDs could be distinguished by their greater use of health care. We compared the rate of health care use of SDs with that of age- and sex-matched controls and found that SDs and controls did not significantly differ in having had health care exposure in the 12 months, 6 months, and 4 weeks before death.

Although these studies, including our own, help to quantify and establish patterns in health care use among SDs, they lack qualitative information on what occurs at these appointments. Only a few studies have examined how often SDs voiced suicidal ideation (SI) and how often providers inquired about suicidality at health care appointments in proximity to death. Isometsa et al found that in SDs' final appointments within 28 days of death, suicidal intent was discussed in only 22% of cases. Busch et al showed that 29% of SDs receiving inpatient care before their death had been admitted for SI and that 78% of these had denied SI at their inpatient discharge appointment. However, this study was limited to inpatient visits only, and neither the Isometsa et al study nor the Busch et al study compared rates of communication of suicidality among SDs with those in a control population. In other words, they did not ascertain whether SDs were any more likely to express suicidality than those not dying by suicide.

A limitation of our first study and the others cited thus far is that they did not evaluate how often providers asked about SI. This omission is important because recent studies have asserted the effectiveness of screening tools such as the Patient Health Questionnaire-9 (PHQ-9) in identifying individuals vulnerable to suicide. In studies from 2013 and 2016, Simon et al⁸ found that a positive response to question 9 on the PHQ-9 was moderately to strongly correlated with eventual suicide. Of course, such a screening instrument can be effective only if it is consistently deployed.

To design more effective suicide prevention strategies, it is thus important to understand what percentage of SDs are screened for suicide and what percentage express SI, instead of focusing solely on the presence of health care use in the year before death as recent studies have done.⁷⁻⁹ We set out to reexamine the cohort of SDs and controls from our initial study for rates of suicide screening.

We hypothesize that 2 key differences in our study design—(1) collecting information on the nature and frequency of provider screening and (2) comparing SDs to a control group—will provide a more accurate picture of what happens at health care appointments in the year before death. We hope that a better understanding of patterns of provider screening and patient endorsement of suicidality in the year before death can help to shape more effective suicide prevention strategies in health care settings.

METHODS

Study Design

This study was designed as a population-based case-control study using the Rochester Epidemiology Project (REP) database to compare the rate of communication of SI to health care providers in the year before death by SDs vs age- and sex-matched controls. The primary research questions were whether patients who killed themselves had been screened for suicide and whether they had endorsed SI when screened. In addition to provider documentation of screening in the chart notes, we looked specifically at question 9 of the PHQ-9 because it is the most commonly used screening tool for suicidality at Mayo Clinic and has been shown to be moderately to strongly correlated with eventual suicide.⁷ A secondary question was whether there were significant differences in the rate of communication of SI between SDs and similar others within the population who did not die during the same time period, and whether providers were more likely to screen SDs than controls. The institutional review boards of Mayo Clinic and Olmsted Medical Center (OMC) approved the study.

Study Population and Setting

The REP database, established in 1966, contains the medical records of a population-based cohort in Olmsted County, Minnesota. The 2 major health care providers in Olmsted County are Mayo Clinic and OMC, which through multiple branch offices and associated hospitals care for nearly every Olmsted County resident. As of 2010, the REP database contained the records of 502,860 unique residents of Olmsted County who had had at least 1 contact with a health care provider at Mayo Clinic or OMC.

Case and Control Selection

Cases.—Case and control selection is outlined in Figure 1. A keyword search of the REP database listing “suicide” as the cause of death on Olmsted County death certificates identified 132 cases of suicide between January 1, 2000, and December 31, 2009. These records were then assessed by 2 authors (M.C. and T.B.) for residency status in the year before death. This review yielded 86 cases with Olmsted County residency in the year before death, the cohort reported in our previous article. The electronic and paper medical records of these 86 cases were reviewed and 18 cases were excluded from this second study either because they had not visited a provider in the year before death (13 cases) or they did not have accessible PHQ-9 data because of loss of data during an institutional transition to electronic medical records (5 cases). Finally, 2 cases were excluded because none of their age and sex-matched controls had visited a provider in the year before case death. This resulted in a final cohort of 66 confirmed cases of suicide in Olmsted County with reviewable PHQ-9 data between January 1, 2000, and December 31, 2009.

Controls.—Each of the 86 cases was initially matched to 3 controls by age (within 1 year) and sex, for a total of 258 controls confirmed as Olmsted County residents during the study period. The electronic and paper medical records of these controls were reviewed and 117 were excluded either because their cases were previously eliminated (54 controls) or because they had not visited a provider in the year before death (63 controls). This resulted in a final

count of 141 controls. As a result, each case ended up with between 1 and 3 age- and sex-matched controls. The final list included 207 subjects (66 cases and 141 controls).

Data Collection and Measures

Using the REP browser and electronic and paper medical records at each institution, 2 authors (M.C. and T.B.), blinded to case/control status, independently reviewed a year's worth of medical records for each subject: the year before death for SDs and the year before the SD's date of death for the matched controls.

The medical record was abstracted for the following information from any face-to-face health care visit that occurred within the 1 year:

- Whether a PHQ-9 was administered to the patient
- Whether the provider documented asking about SI
- Whether the patient expressed SI
 - ☐ "Yes" if documented in chart notes by the provider
 - ☐ "Yes" if score more than 0 on question 9 of the PHQ-9
- Presence of a mental health diagnosis

As already described, only subjects with face-to-face visits were included in this cohort, reflecting our main goal: to determine how often providers screened for and SDs endorsed suicidality in person. Operational definitions of health care visits and mental health diagnoses can be found in the Appendix.

Statistical Analyses

Conditional logistic regression was used to analyze differences in the screening and communication of SI. Cases and controls were compared in the following ways:

- Number of times SI was communicated within 12 months, 6 months, and 4 weeks of death date
- Number of times providers administered a PHQ-9 or asked about SI
- Presence of a mental health diagnosis

Statistical analyses were conducted using SAS (version 9.4).

RESULTS

The SDs and control subjects did not differ significantly on any baseline variables except that SDs had a significantly higher number of total visits ($P < .001$), were significantly more likely to have had outpatient and inpatient mental health visits (odds ratio [OR], 1.24; 95% CI, 1.1-1.5; $P = .01$; and OR, 6.76; 95% CI, 1.4-33.0, $P = .02$, respectively), and were significantly more likely to have carried a mental health diagnosis in the 12 months before death ($P < .001$; OR, 6.5; 95% CI, 3.2-13.2) (Table 1).

As shown in Table 2, of the 66 SDs and 141 controls who saw a provider in the year before death, 29 (43.9%) and 14 (9.9%), respectively, were screened for suicidality by at least 1 method. Of the 29 cases screened by either means, 23 (79.3%) received both interventions. Of the 14 controls screened by either means, 10 (71.4%) received both. Providers were significantly more likely to have administered PHQ-9 screening tests to SDs than to controls (37.8% vs 9.2%; $P < .001$; OR, 6.7; 95% CI, 2.9-15.9); however, this trend was no longer significant after adjusting for the presence of mental health diagnoses ($P = .08$; OR, 2.5; 95% CI, 0.9-7.0). Providers were more likely to have documented asking SDs about SI than controls (40.9% vs 7.8%; $P < .001$; OR, 9.0; 95% CI, 3.6-22.0), even after adjusting for mental health diagnoses ($P = .02$; OR, 3.6; 95% CI, 1.2-10.6). In addition, providers were more likely to have asked about suicidality in patients with mental health diagnoses ($P < .001$; OR, 99.0; 95% CI, 22.4-436.4). However, most cases (37 of 66 [56.1%]) and controls (127 of 141 [90.1%]) who saw a provider were not screened for suicidality by either method.

In the period of 6 to 12 months before death, 58 SDs saw a health care provider and 6 (10.3%) expressed SI 1 or more times, as shown in Table 3. Of 52 SDs with visits in the 1- to 6-month period before death, 11 (21.2%) expressed SI. Finally, of 35 SDs with visits in the month before death, 5 (14.3%) expressed SI, none during a final appointment. None of the 141 controls expressed SI, either during an interview or on the PHQ-9, at any point.

Overall, 17 different SDs expressed SI a total of 37 times in the year before death. Figure 2 shows the number of visits and SI endorsements in each of the 3 time periods—6 to 12 months before death, 1 to 6 months before death, and within 1 month of death—among the 17 SDs who expressed SI at least once. This figure allows for closer examination of the timing of SDs' interactions with providers in the year before death. Of the 17 individuals expressing SI, 8 (47.1%) did so more than once and 9 (52.9%) did so only once. Most SI endorsements occurred during the 1- to 6-month period before death, with 11 of 17 (64.7%) individuals expressing SI on a total of 25 occasions during this time period. Four (23.5%) individuals expressed SI multiple times during the 1- to 6-month time frame but did not endorse it again in the month before death while 3 (17.6%) individuals endorsed SI for the first time within a month of their death. Finally, 2 (11.8%) individuals expressed SI in the 6- to 12-month time frame but had no more appointments before their deaths.

DISCUSSION

This study has 3 principal findings. First, less than half of SDs in the year before their deaths and less than 10% of controls were screened for suicidality. Second, although most providers failed to screen either cases or controls for suicidality, they were more likely to screen individuals who eventually killed themselves, irrespective of mental health diagnosis. Third, when screened, less than 60% of eventual SDs ever endorsed suicidality, whether in response to a questionnaire or direct provider questioning.

Regarding the effectiveness of screening for suicidality in the health care setting as a preventive tool, insofar as Olmsted County providers are representative of providers elsewhere, our study finds major deficiencies in current practices. One in 6 SDs (16.7%) had not visited a provider in the year before death. Of those who did, less than half had been

screened for suicidality at these visits (43.9%). When they were assessed—some multiple times—more than 40% (12/29) did not endorse suicidality at any visit. When SDs did endorse suicidality, they did so independent of any conceivable pattern, many without proximity to their death, none at their final appointments. As a result, either because SDs were not asked or did not tell, only a very small number could have benefitted from interventions that might have prevented their deaths.

This pair of findings—that providers did not regularly screen for suicidality and SDs infrequently endorsed suicidality, even when asked—throws into question the effectiveness of current screening strategies. Current screening programs have many inherent assumptions, including that patients will visit providers, that providers will administer a screening instrument or ask directly about suicidality, that the patient will respond truthfully, and that the patient's response will predict future events. Although multiple validated screening tools for measuring suicidality are available and easy to administer in a brief period of time, evidence is needed to show that these tools actually decrease attempts and mortality. Several studies have argued that none of our current risk assessments accurately predict suicide completion in the general population.⁷ From their studies, Simon and others suggest that vulnerable groups can be identified but individual suicide attempts cannot be predicted. The results of our study lend further support to this conclusion.

Our findings also concur with those of Isometsa et al and Busch et al, who concluded that while a large percentage of SDs received health care in the months before death, relatively few revealed SI to providers. Our study expands upon these studies by adding a control group of demographically similar individuals, thereby permitting a comparison of cases and controls for rates of provider screening and patient endorsement of suicidality. Our study helps to illuminate the content of provider-patient communication about suicidality in the year before suicide rather than focusing solely on the pattern of health care use.

In addition, our study found that providers were more likely to screen SDs than controls, even having adjusted for the presence of mental health diagnoses. This finding implies that the presence of a mental health diagnosis prompts provider screening for suicidality. This finding could also be explained by the observation that decedents were more likely than controls to have had a mental health visit, a setting in which screening for suicidality is more common practice. However, additional factors are likely to play a role in provider screening for SI including provider awareness of previous suicide attempts or ideation, the presence of significant psychosocial stressors, or a “hunch” from the clinical examination that drives provider curiosity. While further investigation is needed to identify these factors and clarify their nature, we want to emphasize that any provider with concerns for suicidality should promptly screen the patient.

Another key finding of our study is that a significant minority (41.4%) of screened SDs did not endorse suicidality at any point in the year before death, and none did so at the final appointment before death. In a clinical setting, the ability of a provider to intervene with a potentially lethal individual relies heavily on the patient's willingness to share SI. Our data suggest that most suicide assessments done in the health care setting, even with patients who will soon kill themselves, are negative for SI. In this way, assuming that the soon-to-die-by-

suicide are not routinely deliberately deceptive, suicidality may be viewed as a “waxing and waning” phenomenon rather than one readily predicted through screening measures deployed when an SD is not actively suicidal. The absence of SI at a particular moment does not offer reassurance that an individual will not eventually die by suicide. Our data show that any individual who expresses SI at an appointment should be considered at heightened risk for suicide.

The time-course schematic diagram (Figure 2) we used to map health care visits and SI endorsements in the year before death provides a unique perspective on that year. We were unable to decipher any discernible or reliable pattern in SI endorsement relative to death. The nature of this study means that not all SDs met with providers in each of the time frames we studied, and some never endorsed SI, regardless of when they had their appointments. The absence of a discernible pattern and the fact that most individuals did not endorse SI in close proximity to their death further supports the unpredictable nature of screening for suicidality.

A potential limitation of this study is that it was a retrospective and naturalistic, passive record review. We relied solely on documentation in the medical record of the providers' encounters with subjects. If a provider screened a patient for suicidality but did not record it in the electronic medical record, we could not have detected it. A finding and potential limitation of our study was that many SDs and most controls were not screened by either method. Ideally, to accurately understand how often SDs and similar others endorse SI, all cases and controls would have had to be given a PHQ-9 or asked about SI.

An inherent limitation of the REP is that only health care visits to providers working at Mayo Clinic and OMC are included in the database. While the vast majority of Olmsted County residents obtain their care at one of these institutions, the records of individuals who did not access care at either medical center are unavailable for study. Another limitation is that we did not delineate the specialties of providers subjects saw during the study period. As in all suicide studies dependent on coroner records, a potential limitation is that death certificate data may underrepresent suicide mortality, making it possible that our study did not identify or include all SDs in Olmsted County during the study period.

Ongoing research efforts should be designed to inform practice changes that enhance suicide prevention efforts. Both primary care and medical specialty clinics represent critical settings in which to deploy these new approaches. The rise of integrated behavioral health practices creates greater opportunities for assessing suicide risk and providing continuity of care in general medical settings. The PHQ-9, a brief screening measure, effectively identifying at-risk individuals, can trigger more extensive provider assessments. Health systems should continue to introduce routine procedure screening tools such as the PHQ-9, followed by more in-depth assessment when suicidality is endorsed. Novel approaches that aid in clinical decision making may incorporate into electronic medical record systems prompts that remind providers to screen for suicidality. Moreover, investment in education to train providers to better assess and manage suicidal risk is needed. Research has demonstrated that providers who receive such training are more likely to screen patients for SI. Future research efforts should focus on exploring what providers do with suicide screening

information and show how screening and subsequent interventions can abort potential suicides. A future study, our current work suggests, would compare groups of individuals reporting SI who did and did not make attempts or complete suicide.

CONCLUSION

Our findings show that most SDs were not screened for suicidality in the year before death, and when they were, more than 40% did not express SI at any point. Those SDs who expressed SI did so in the absence of any discernible pattern: specifically, none did so in the final appointment before death. Our results support the conclusions that any patient expressing SI is at elevated risk of suicide, even as most eventual SDs will not endorse SI. Thus, even 100% compliance by care providers with inquiring about SI may not identify most SDs. In aggregate, our findings bring into question the effectiveness of current screening methods at medical appointments in the year before death in preventing most suicides.

Acknowledgments

Grant Support: The work was supported in part by an Alpha Omega Alpha Carolyn L. Kuckein Student Research Fellowship.

APPENDIX.: Definition and Criteria of Health Care Visits

Visit—face-to-face contact between patient and provider

- Not including tests (eg, echocardiograms, imaging, and colonoscopies)
- Not including written correspondences

Mental health diagnosis—a patient was defined as having a mental health diagnosis in the past year if the following were present:

1. Visit to any health care provider described a mental health diagnosis (eg, mood disorder, anxiety, and substance abuse disorder other than tobacco) as an active issue discussed during the visit and/or included in the final treatment
2. Record of a provider renewing or prescribing an antidepressant, mood stabilizer, or phone call to discuss mental health

Abbreviations and Acronyms:

OMC	Olmsted Medical Center
PHQ-9	Patient Health Questionnaire-9
REP	Rochester Epidemiology Project
SD	suicide decedent
SI	suicidal ideation

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FIGURE 1.

Selection of cases and controls. SI = suicidal ideation.

FIGURE 2.

Visits and SI endorsements among individuals who expressed SI at least once. PHQ-9 = Patient Health Questionnaire-9; SI = suicidal ideation.

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TABLE 1.

Demographic Characteristics

Characteristic	All (N = 207)	Controls (n = 141)	Cases (n = 66)
Age (y) (at case's time of death), mean ± SD	47.4 ± 18.5	47.5 ± 18.4	47.2 ± 18.7
Mental health diagnosis, n (%)	62 (30.0)	24 (17.0)	38 (57.6)
Sex (male), n (%)	167 (80.7)	114 (80.9)	53 (80.3)

TABLE 2.

Number of Times a PHQ-9 Was Administered and/or SI Inquiry Was Documented in Subjects Who Had Contact With a provider Within 12 Mo

Screening method	Controls (N = 141)	Cases (N = 66)	P value
PHQ-9 administered	13 of 141	25 of 66	<.001
SI inquiry	11 of 141	27 of 66	<.001
Both	10 of 141	23 of 66	<.001
Screened by any means	14 of 141	29 of 66	<.001
Not screened	127 of 141	37 of 66	<.001

PHQ-9 = Patient Health Questionnaire-9; SI = suicidal ideation.

TABLE 3.

Number of Individuals Expressing SI Among Individuals Who Visited a Provider in Different Time Periods

Time before death	Controls (N = 141)	Cases (N = 66)	P value
6-12 mo	0	6 of 58 (10.3%)	<.001
1-6 mo	0	11 of 52 (21.2%)	<.001
4 wk	0	5 of 35 (14.3%)	<.001

SI = suicidal ideation.