

BRIEF REPORTS

Suicide Attempts and Completions on Medical-Surgical and Intensive Care Units

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Studies of inpatient suicide attempts and completions on medical-surgical and intensive care units are rare, and there are no large studies in the United States. We reviewed 50 cases, including 45 suicide attempts and 5 completed suicides, that occurred on medical surgical or intensive care units in the Veterans Health Administration between December 1, 1999 and December 31, 2012. The method, location, and the root causes of the events were categorized. The most common methods included cutting with a sharp object, followed by overdose and hanging. Root causes included

problems with communication of risk, need for staff education in suicide assessment, and the need for better treatment for depressed and suicidal patients on medical units. Based on these results, we made our recommendations for managing suicidal patients on medical-surgical and intensive care units, including improved education for staff, standardized communication about suicide risk, and clear management protocols for suicidal patients. *Journal of Hospital Medicine* 2014;9:182–185. Published 2014 Society of Hospital Medicine

Suicide is the tenth leading cause of death in the United States,¹ resulting in the deaths of over 34,000 people each year.² In 2007, 165,997 individuals were hospitalized for self-inflicted injuries, and 395,320 people were treated for self-harm in emergency departments.² In 2003, the American Psychiatric Association reported that approximately 1500 suicides take place within hospital facilities in the United States each year.³

Although a number of studies have examined inpatient suicides that occurred on psychiatric units,^{4–8} fewer have focused on suicides occurring on medical units. A Joint Commission review of inpatient suicide on medical/surgical units⁹ found that 14.25% of all inpatient suicides occurred while the patient was on a medical unit, and now recommends that all hospitals identify individuals at risk for suicide, develop interventions for suicidal patients, and educate staff about the risk factors of suicide. Bostwick and Rackley¹⁰ reviewed studies of suicide on medical/surgical units and found that few of the patients had histories of mental illness or suicidal ideation and recommend close attention to agitated patients, aggressively treating depression and pain, modifying the environment where possible, and observation of patients thought to be at risk. Wint and Alil⁵ also report a high level of depression in patients who commit suicide in general

hospitals and suggest that improved recognition of depression in general hospital patients will reduce suicide.

GOALS FOR THIS STUDY

Few studies have examined suicide on acute medical and surgical and intensive care units (ICUs), and there are no large studies conducted in the United States. The goal of this study was to describe suicide attempts and completions in the medical setting using Root Cause Analysis (RCA) reports of these events in the Veterans Health Administration (VHA).

METHODS

Study Design and Theoretical Model

This is an observational review of all RCA reports of suicide attempts or completions on the medical-surgical wards and ICUs in the VHA system between December 1, 1999 (when the RCA system started) and December 31, 2012. The Committee for the Protection of Human Subjects, Dartmouth College considered this project exempt.

The VHA provides comprehensive healthcare services to over 6 million veterans across the United States through 152 VHA medical centers. Over the study period there were approximately 7,289,770 admissions to medical-surgical wards and ICUs in the VHA (average number of admissions per year between 2000 and 2012 = 560,771.5, standard deviation = 25,535.7).

The VHA National Center for Patient Safety RCA Program

Patient safety including the investigation of adverse events is coordinated by the National Center for Patient Safety (NCPS). The NCPS has instituted a systematic and structured RCA program to individually and collectively analyze adverse events.^{11,12}

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RCA is a method for examining the underlying causes of an adverse event such as a hospital related death, surgical error, or suicide. The focus of an RCA is on the systemic and organizational factors that may have contributed to an adverse event.^{11,12} The RCA process within the VHA is conducted by multidisciplinary teams organized by the hospital's patient safety manager. In general, an RCA describes what happened, how it happened, and what should be done to avoid the same event happening again.¹¹

Because of the focus on the system, the information contained in the RCA reports does not include detailed demographic data about the patients involved in the events. RCA reports that are submitted to NCPS include narrative descriptions of the event, all contributing factors, a final understanding of the event, and a specific action plan for addressing underlying causes of the event.

Analysis of RCA Reports

Our goal was to identify suicide attempts and completed suicides that occurred on acute care medical-surgical wards or ICUs. The search was completed through use of event codes for suicide or suicide attempts entered in the RCA and through the use of natural language processing software to identify the terms related to "suicide" or "suicide attempts" anywhere in the RCA text (PolyAnalyst; Megaputer, Bloomington, IN).

Data Processing

Each RCA report was coded for the location of the event, method of self-harm, and root causes; where

possible, we also coded medical diagnosis, reason for admission, history of suicidal behavior, age, and gender. The coding system was developed in a previous study of RCA reports of suicide.¹³

RESULTS

Our search resulted in 525 RCA reports of inpatient suicide attempts and completions. These were obtained from the 14,851 total RCA reports in the RCA dataset. Of the 525, we identified 50 cases that occurred while the patient was on the acute medical-surgical unit (43 cases) or ICU (7 cases). Other cases occurred on mental health units, emergency department, or other areas of the hospital. Five cases were completed suicides, and 45 were suicide attempts. Based on the number of admissions per year reported above, the approximate rate of completed inpatient suicides on medical-surgical and ICUs is 0.6 per million admissions. (For comparison, the rate of completed suicide on psychiatric units in the VA has been estimated to be 8.7 per million admissions.¹⁴ Table 1 displays the admitting diagnosis and demographic data for those RCA reports that contained this information. The most common admitting diagnoses were "alcohol detoxification" and "chest pain or rule out myocardial infarction (MI)"; note that 12 reports did not contain an admitting diagnosis. Table 2 displays the methods and root causes for the 50 cases; there were 118 root causes generated. The most common methods were cutting, overdose, and hanging; and the most common root causes were "poor communication," "need

TABLE 1. Admitting Diagnosis and Demographic Data Available in the Veterans Health Administration National Center for Patient Safety Root Cause Analysis Reports

	Medical-Surgical		ICU	
	Attempts	Completions	Attempts	Completions
Admitting diagnosis, N = 50				
Alcohol detox	3	2	2	0
Chest pain or rule out MI	5	0	0	0
Delirium	1	0	0	0
Peripheral infection/cellulitis	2	1	0	0
Spine surgery or spine issue	2	0	0	0
Lung CA	1	1	0	0
Cystoscopy (bladder surgery)	2	0	0	0
Head and neck CA	1	0	1	0
Other	4	0	0	0
Respiratory (COPD)	2	0	1	0
Suicide attempt by overdose	2	0	0	0
Lung infection	1	0	1	0
CVA	0	1	0	0
Unknown	12	0	2	0
Demographics N = 50				
% male	91.40%	100%	80%	NA
Average age, y	56	53	47	NA
History of suicidal thoughts or behaviors	16	2	3	0

NOTE: There were 50 cases, 43 on medical-surgical units and 7 on ICUs including 45 suicide attempts and 5 completions. Simple counts are reported here. Abbreviations: CA, cancer; COPD, chronic obstructive pulmonary disease; CVA, cerebrovascular accident; ICU, intensive care unit; MI, myocardial infarction.

TABLE 2. Percentage of Root Causes and Methods for Suicide Attempts and Completions on Medical-Surgical and Intensive Care Units

	Medical-Surgical		ICU	
	Attempts	Completions	Attempts	Completions
Methods				
Cutting with a sharp object	29%	0%	43%	None
Overdose	26%	20%	0%	None
Hanging	18%	40%	29%	None
Strangulation	8%	0%	0%	None
Jumping	5%	0%	14%	None
Asphyxiation	8%	0%	0%	None
Removed lines or equipment	5%	0%	14%	None
Gun shot	0%	40%	0%	None
Column total	100%	100%	100%	None
Root causes				
Poor communication between providers or services	22%	9%	7%	None
Need for staff training in suicide assessment	14%	0%	20%	None
Need to improve process of suicide assessment	13%	9%	13%	None
Need for improvement of risk documentation	9%	0%	7%	None
Physical environment is a risk factor	7%	0%	20%	None
Contraband search needs improvement	7%	18%	0%	None
Problems with treatment for suicidal patients	7%	27%	7%	None
Not following existing policies	5%	0%	0%	None
Medical assess or treatment delayed or incomplete	5%	0%	0%	None
Easy access to medication for overdose	4%	9%	0%	None
Stressed by medical/mental health/pain problems	5%	18%	20%	None
Other root causes	1%	0%	7%	None
No root cause	1%	9%	0%	None
Column totals	100%	100%	100%	None

NOTE: Percentages are within each category. Abbreviations: ICU, intensive care unit.

for staff training in suicide assessment,” and “need to improve suicide risk assessment.”

DISCUSSION

This study examined the specific systemic factors involved in suicide attempts and completions in medical-surgical and intensive care units in a large, national hospital sample. Overall, the number of completed suicides over the 13-year period was small (5 in total). The most common reason for admission was alcohol detoxification. Many patients going through alcohol detoxification experience agitation, which is a risk factor for suicide among medical patients.¹⁰ This hypothesis is further supported by the fact that 2 of the 5 completed suicides were admitted for alcohol detoxification. Interestingly, only 2 of the patients who attempted suicide in the hospital were also admitted for medical conditions related to a prior suicide attempt. It is likely the case that patients admitted for a suicide attempt are closely watched throughout the admission and so may have fewer opportunities to repeat the suicide attempt.

The most common method of suicide attempts was cutting with a sharp object. However, cutting did not result in death, whereas overdose, hanging, and gunshot did. As a precaution, especially with patients with a known history of suicidal ideation, removing

sharp objects such as razor blades and knives as well as extra medications is a reasonable first step. It may also be possible to create safer bathroom environments, at least in some medical rooms for potentially suicidal patients, which have break-away shower curtains, sealed grab-bars, and a general reduction of anchor points for hanging (see <https://www.naphs.org/resources/home.aspx?product-tab=1>). Another intervention that should be considered is systematic contraband searches, especially for sharp objects and firearms that could easily be used for self-harm. Hospitals should develop clear plans for what steps should be taken if patients are identified to be a risk for suicide, and medical staff should be trained in the initiation and execution of this suicide prevention process.

As with other studies of RCAs,^{15,16} we found that “problems communicating risk” was the most common identified root cause for suicide attempts and completions. Problems communicating risk most often involved knowledge of suicide risk or specific suicide mitigation plans that were not shared by the treatment team or communicated during handoffs. Most frequently, this communication problem involved team members assessing a patient to be at high risk for suicide, but that information was not provided to other care team members. This root cause also included situations in which the treatment plan for suicide

prevention was inadequately disseminated to the entire treatment team. It is critical that good systems are in place so that staff members have the time to communicate critical information about patients. In addition, the system should be standardized so that the same information is communicated each time there is a handoff. The lack of clear steps to mitigate suicide risk when a patient was identified at high risk was also a commonly cited root cause. The most extreme examples involved completed suicides occurring with a patient receiving 1-on-1 staffing. This 1-on-1 staffing did not include specific guidance for the “sitters” such as the need to remove personal items that could be used for self-harm. We also saw that staff on medical units needed to learn more about risk factors for suicide and how to conduct a suicide assessment with their patients. Another root cause was the stress caused by the medical and psychiatric conditions of the patients. It is notable that no completed suicides occurred in ICUs, suggesting that closer observation and/or a higher level of medical incapacitation can reduce the risk of completed suicides.

To address these root causes, staff should be educated about risk factors for suicide, and standardized high-risk for suicide order sets and checklists should be used to ensure staff execute the desired care processes and communicate them to all staff. In addition, specific training in suicide prevention should be provided to staff involved in 1-on-1 observation for high-risk patients. Again, this may be aided by a checklist to help staff remember the protocol for what may be a low-frequency event. A high risk suicide care process may include:

1. Conducting contraband searches for items that could be used for self-harm, modifying the environment of a small percentage of toilet rooms on medical floors to reduce anchor points for hanging. A high risk patient could then be moved to these rooms.
2. Regular psychiatric input into the treatment plan.
3. Discharge planning that includes attention to the potential for depression and suicidal ideation upon discharge.

Limitations

This study has several limitations. First, our data only contained suicide attempts and completions that were reported through our patient safety system in the VHA, and only completed suicides require an RCA, thus there are likely some events that were not included. Second, the RCA reports focus on the systemic vulnerabilities in medical-surgical units and

ICUs that may have contributed to the adverse event rather than the specific characteristics of the patients involved, so we do not have complete demographic information about these individual patients. Third, our sample was mostly male, so the results may not generalize well to units with a higher percentage of female patients.

These limitations notwithstanding, we know of no other study to present data on suicide attempts and completions in medical-surgical and ICUs in a large national medical system.

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