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Factors contributing to cancer-related suicide: A study of root-cause analysis reports

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Abstract

Objective: Vast efforts are directed toward curing or prolonging the life of patients with cancer. However, less attention is given to mental health aspects of cancer care, and there is elevated incidence of death by suicide in this population. Evaluating Root Cause Analyses (RCAs) of cancer-related suicides may further our understanding of system-level factors that may contribute to suicide in patients with cancer and highlight strategies to mitigate this risk.

Methods: We searched the Veterans Health Administration National Center for Patient Safety RCA database for cancer-related suicides between 2002 and 2017 to evaluate the context of the suicides and identify root causes and suggested actions. These variables were coded by consensus and evaluated using descriptive statistics.

Results: We identified 64 RCA reports involving cancer-related suicide; 100% were males of older age. Many suicides occurred during treatment with palliative intent (44%, $N = 28$). Depression (59%, $N = 38$), medical comorbidities (59%, $N = 38$), and pain (47%, $N = 30$) were common suicide risk factors identified. Most suicides occurred within 7 days of a medical visit (67%, $N = 43$), especially within the first 24 hours (41%, $N = 26$). Root causes included a need to improve recognition of triggers for assessment and interdisciplinary communication.

Conclusion: This analysis uncovers opportunities to mitigate risk of death by suicide among patients with cancer. Suggested actions include use of comprehensive cancer centers and development of a distress checklist using information from the National Comprehensive Cancer Network Guidelines. Further studies should assess additional factors that may increase the risk of other adverse mental health outcomes in this population.

Keywords

cancer; mental health; oncology; pain; suicide

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1 | INTRODUCTION

Cancer is a major medical, public health, and economic concern in the United States.[1] While advancements in diagnostic tools and treatment options have contributed to the declining death rate among patients with cancer, this disease remains the second leading cause of death, claiming 595 930 lives in 2015 alone.[1] It is also one of the most expensive illnesses to treat, accounting for more than $88 billion in health care costs in the USA in 2014.[2] Cancer treatment focuses on curing or managing progression of the disease through radiation, chemotherapy, and surgery. Less attention is given to the mental health aspects of cancer treatment, despite the higher risk for psychological symptoms in this population.[3,4] A study by Rahouma et al estimated that patients with cancer are 60% more likely than the general population to die by suicide, regardless of cancer type.[5] This is not surprising, given the well-documented psychological and physical toll of cancer and cancer treatment, including emotional distress and demoralization.[6–9] Many patients report severe depression, pain, and demoralization, which are closely tied to suicidal behavior.[6–9] Further, untreated mental health conditions exacerbate cancer care costs by more than $9000 USD per patient per year, as well as increase hospital admissions.[10] These findings also align with the greater overall concern regarding the rise in suicide in the US population.[11]

Current literature pertaining to suicide in patients with cancer focuses primarily on the clinical epidemiology of the problem.[5,12] Studies have found that patients with certain types of cancer, such as breast, lung, or prostate, are more likely to die by suicide than others.[5,12] These cancer types also happen to be the most common in the USA, and ironically, these are the cancer types oncologists consider some of the most highly treatable forms of the disease.[5,12] The etiology of higher suicide rate for these cancer types is unknown but may be due to the psychological and physical toll the lengthy treatment associated with these cancer types may have on patients. Moreover, lack of patient knowledge about their outcomes, or a lack of mental health training for cancer specialists may contribute to the higher suicide rate.[13–15] Mental health care in patients with cancer is further complicated by the interdisciplinary nature of the field, as patients are treated by a variety of providers from a wide spectrum of disciplines, and many patients receive their care at more than one health care institution.[16] Organizing bodies such as the National Comprehensive Cancer Network (NCCN) and the American Society of Clinical Oncology have recently placed more emphasis on the need for routine screening and treatment of psychological issues in patients with cancer.[17,18] However, there has been relatively little study to understand how health system and organizational factors, such as lack of screening or improperly implemented processes, may contribute to cancer-related suicides.

To address current gaps in literature, we conducted a comprehensive review of death by suicide in patients with cancer using Root Cause Analysis (RCA) data from more than 150 hospitals in the Veterans Health Administration (VHA). The goal was to gain a better understanding of health system factors that may contribute to suicide in patients with cancer and identify potential strategies for care teams to address this.

2 | METHODS

2.1 | Overview of the VHA National Center for Patient Safety RCA program

RCA is a structured and standardized method used for evaluating medical errors and their root causes with the goal of improving patient safety.[19,20] RCA focuses on systematic and organizational factors that contributed to the adverse event and is useful for determining what happened, why it happened, and what can be done to prevent it from happening again.[19,20] In the VHA, RCAs are completed locally by hospital staff, and the final reports are sent to the National Center for Patient Safety (NCPS).[19,20] After adverse events occur, patient safety managers at each VA facility decide whether to commission a RCA team by using a matrix that incorporates the severity, frequency, and vulnerability to recurrence.[21] The patient safety manager is trained in RCA and patient safety protocols and procedures, and facilitates teams to conduct the RCA. Which reports are subject to full RCA is at the discretion of the Patient Safety manager, and only those selected for full review and RCA are reported into the database. In the cases described in our review of RCA reports, the patient safety manager and local clinical staff believed an RCA was warranted, and the RCA team found evidence of medical error. RCAs are required following sentinel events such as wrong-site surgery. Within the VA, inpatient suicides, suicides occurring within 7 days of a mental health discharge, and suicides occurring within 3 days of a medical discharge are considered sentinel events.[21] It is left to the discretion of the individual facility to conduct an RCA on suicides occurring outside of this timeframe, which may potentially skew the data to over-represent death by suicide in the first week and may not be representative of all suicides that occur.

2.2 | Study design

This study is a descriptive analysis of cancer-related suicides reported to the NCPS RCA database between 8 August 2002 and 2 August 2017. This project was reviewed and approved by the Research and Development Committee, White River Junction, VA Medical Center.

2.3 | Inclusion/exclusion criteria

We searched the NCPS database from all VHA facilities to identify RCA reports pertaining to suicide occurring during oncology care. We included suicides that occurred at the time of initial diagnosis, during treatment, or within 5-years of follow-up. We chose this window of follow-up because it reflects the period during which a patient with cancer typically receives the majority of their care and may be at the highest risk for suicide.[18,22] We excluded reports with insufficient information to determine inclusion eligibility.

2.4 | Coding

To abstract relevant data from the results of each RCA report, we used a codebook designed for this study, and the coding schema was adapted from similar reviews of suicide adverse events.[20] The codebook included the following variables: (1) patient characteristics (age, gender, stage in care [initial diagnosis, treatment, or follow-up], primary cancer type, pre-existing mental health problems, stressors, cancer-related health complications), (2) contextual factors pertaining to the suicide (time (days) since last medical visit, last provider visit, location of last visit, method, and whether or not the patient was referred and seen recently by a mental health provider), and (3) root causes. The cases were coded by consensus, and a third reviewer intervened in cases of uncertainty. The review team included two physician patient safety experts specialized in psychiatry (B.W. and B.S.) and a patient safety specialist (M.A.). We assessed for the presence of themes in all RCA reports to categorize the root causes and calculated frequency as a basic descriptive statistic. Finally, we developed suggested actions to prevent future suicides by searching existing literature for potential solutions related to systematic vulnerabilities identified in each theme.

3 | RESULTS

From August 2002 to August 2017, we identified 289 cases. We excluded 225 cases for the following reasons: 81 patients died by suicide but did not have cancer (a family member did), 63 cases were brief incident reports not full RCAs, 17 cases were attempted suicides (rather than suicide deaths), 13 patients were more than 5 years after cancer treatments had been completed, and 5 cases involved missing patients and not an actual suicide.

Sixty-four cases met our inclusion criteria. There are 170 VA hospitals across the United States, and our subset of reports ($N = 64$) came from 46 hospitals in 35 states.

3.1 | Patient characteristics

The data described in this study was ascertained from the RCA results, and we did not have access to the patients' medical records. Of the 64 decedents described in the RCA reports, 100% were male, and the plurality were between ages 60–69 (28%, 18) and 70–79 (27%, 17). Most suicides occurred during treatment with palliative intent (44%, 28), and the most common primary cancer types were prostate (34%, 22) and lung (22%, 14) cancer. In the majority of cases, the suicide method was a firearm (Table 1).

Many cases reported history of mental health problems including depression (59%, 38), anxiety disorders (28%, 18), and substance abuse (20%, 13). In 39% (25) of cases, the individual reported recent suicidal ideation (17), suicide attempts (4), or both (5), and some included a history of symptoms in the past. A large portion (30%, 19) did not report mental health problems. The most common stressors included medical comorbidities (59%, 38), family issues (45%, 29), and a poor prognosis (38%, 24). Only 6% (4) did not report stressors. Finally, with regards to cancer-related health complications, many patients reported chronic pain (41%, 26) and sleep problems (17%, 11); 27% (17) did not report complications (Table 1).

3.2 | Contextual factors pertaining to the suicide

The majority of suicides occurred within a week of being seen (67%, 43). Patients were last seen by mental health (22%, 14), followed by oncology (17%, 11) and primary care (17%, 11). The locations of the visits were distributed between the outpatient (44%, 28) and inpatient (41%, 26) settings. Overall, 67% (43) were not referred to mental health, 22% (14) were referred and seen by a mental health provider, and 5% (3) were referred and not seen, including cases in which the patient refused the referral (2), or the patient died before the scheduled appointment (1) (Table 2). Of the 43 patients who were not referred to mental health, 17 (39.5%) either did not have a history of mental health problems, or the RCA did not report it. Twenty-six patients (59.5%) had some known mental health diagnosis. Nine of the 26 cases reported one mental health problem, and the remainder (17) reported two or more mental health problems. We conducted a chi-squared test to determine if suicide attempts resulted in more referrals than suicidal ideation and found no correlation between reported SI vs reported SA and referral to mental health ($P = 0.217$).

3.3 | Root causes

We identified 175 root causes across the 64 RCA reports, which we grouped into 5 categories: (1) Triggers to Assess (eg, a patient transitions from active to palliative treatment, and the provider fails to recognize this as a trigger for assessment), (2) Communication Problems (eg, oncology does not communicate with mental health regarding changes in a patient's psychosocial needs, or there is a patient-provider disagreement regarding treatment that leaves the patient feeling abandoned, possibly contributing to noncompliance with the treatment plan), (3) Response to Mental Health Problems (eg, a patient screened positive for depression, but the provider did not address the result or no follow-up was provided), (4) Mental Health Treatment (eg, a patient is being treated by a mental health provider and expresses increasing distress, but the provider does not suggest meeting more frequently or offer additional services), (5) Pain (eg, a patient consistently reports severe pain, and inadequate or no changes to treat the pain are made), and (6) Assessment/Referral (eg, a patient was never assessed for suicide or depression, or a terminal patient was never referred to hospice and/or palliative care) (Table 3). The most frequently identified root causes were failure to recognize triggers requiring assessment (29%, 50) and an insufficient or lack of communication (26%, 46). Other contributing factors included a lack of appropriate action taken to prevent the suicide (17%, 30), inadequate or lack of mental health treatment (11%, 19), inadequate pain treatment (10%, 18), and failure to assess patients for suicide/depression or refer them to necessary services (7%, 12).

3.4 | Action plans

We developed several suggested actions including more widespread adoption of a comprehensive cancer center, a position similar to a case manager, and a private consultation area for distress assessments and discussions (Table 4). Further, we recommend referring to the NCCN Guidelines for assessment tools, appropriate interventions, and more detailed information regarding best practices.[18]

4 | CONCLUSIONS

Despite advancements in cancer treatment, there are systematic vulnerabilities and gaps in care that may contribute to death by suicide in patients with cancer. This study identified 64 cancer-related suicides between 2002 and 2017. The majority of suicides occurred within 7 days since the last medical visit, with the bulk occurring within a day. There are limited epidemiologic studies that capture the relationship between death by suicide and time since the last medical visit in this population[34]; however, our finding is similar to an RCA study by Riblet et al that suggests patients may be at a higher risk for death by suicide within 7 days of discharge, especially within the first 24 hours.[26] The main primary cancer types were prostate and lung. Although this finding may be consistent with previous literature reporting higher suicide rates in patients with these cancer types, we acknowledge that the demographics of our sample population may skew our results.[5,12] This finding is reflective of our sample in that 100% were male veterans of older age, and these cancer types are the most common among men overall. Therefore, it is not surprising that these cancer types would be most represented in our study, and our finding may not be indicative of a particularly unique risk for patients with prostate or lung cancer. Further, the most common method used to complete death by suicide was a firearm, which is a common method for men, but not women. Most suicides occurred during treatment with palliative intent and upon initial diagnosis, which is supported by studies suggesting a greater suicide risk upon diagnosis or worsening medical status.[18,35–38] There were a variety of known risk factors present in these cases such as depression, suicidal ideation and attempts, medical comorbidities, and pain.[6–10,14,18,23,35,37,39] We were surprised to find that 67% of patients were not referred to mental health services, largely stemming from failures to recognize triggers to assess and communication issues, which are frequently reported areas in need of improvement.[23–26] These findings advance on previous studies because they illustrate the details surrounding the events, and the system-related errors that contributed to the suicides. We highlight actions that may limit and prevent cancer-related suicides from reoccurring.

There were various triggers for assessment that were not identified by the care teams, such as a patient drops out of active treatment, noncompliance with treatment, changing from active to palliative treatment, new diagnosis and/or recurrence, worsening clinical status, and leaving the hospital against medical advice (AMA). These are in agreement with the NCCN Distress Management Guidelines, which states that patients should be screened for distress with changes in clinical status such as remission, recurrence, progression, and complications with treatment.[18] This highlights the importance of implementing protocols that help care teams more closely follow these guidelines. The NCCN recommends their Distress Thermometer for assessment; however, health systems may consider supplementing this by developing a checklist that incorporates key information pertaining to warning signs and appropriate interventions based on available evidence. This may help standardize assessment processes and facilitate timely retrieval of necessary information. It may also be beneficial to offer distress assessment training for care teams to ensure proficiency.[18,23] While evidence does not necessarily show effect to prevent death by suicide, encouraging this open conversation may help remove the stigma surrounding distress assessments and improve disclosure of distress by fostering strong patient-clinician rapport.[23,40]

We identified issues with interdisciplinary team communication and coordination of care, a lack of patient centered approaches, and situations where patients experienced an overt conflict with their providers. Health systems may consider more widespread adoption of a comprehensive cancer center to support the co-location of all disciplines necessary to treat this disease, including oncology and mental health.[27–29] This approach may improve communication, streamline coordination of care to prevent patients from falling through the cracks, and better facilitate patient centered care.[27–29] Further, this arrangement may support the development of a position dedicated to overseeing the entirety of a patient's care, similar to a patient navigator or nurse case manager.[29–31] Studies demonstrated that continuity with one provider bolsters patient-clinician rapport, increases treatment compliance, and improves access to health care services.[29–31] However, there is mixed evidence of effectiveness regarding psychosocial outcomes.[29–31] Some studies report that these services provide patients with an additional support system to ensure their psychosocial needs are met, while others report limited effectiveness for quality of life and distress level outcomes.[29–31] Future research should explore if these services improve psychological outcomes, including reduction in suicide morbidity. Additionally, providers may consider using more structured tools to solicit patient preferences, such as shared-decision making cognitive aids, to achieve patient centeredness, decrease patient-provider conflicts, and increase treatment compliance.[32]

A minority of patients (14%, 9) left AMA before achieving clinical stability, and the suicide followed shortly after. It is important that a patient’s autonomous decision to decline medical intervention does not impact access to other aspects of care or end care altogether. A study by Glasgow et al identified a higher 30-day readmission rate and 30-day mortality rate for patients that left AMA.[24] This highlights the need to provide discharge transition interventions including close follow-up, home visits, or engagement with mental health services.[24–26] Further, care teams may decrease the number of patients that leave AMA by identifying and resolving factors that could contribute to premature discharge such as patient-provider communication, access to social services, or engaging family in decision-making conversations.[24–26]

Finally, many patients in these cases consistently reported severe pain, and treatment was inadequate. It is unclear if the current push away from opioids applies to this population as most cases predate efforts to decrease opioid prescribing across the medical system. However, several studies demonstrated that unmanaged pain is closely tied to suicidal behavior.[6–9,12] The NCCN Adult Cancer Pain Guidelines report that pain management is an essential aspect of oncology treatment and a major contributor to the patient’s quality of life.[18] Health systems may consider following their recommendation to conduct pain assessments at each contact and use a multimodal approach to ensure optimal pain relief and minimal adverse effects.[18]

While death by suicide appears to be a rare outcome in patients with cancer overall, these cases revealed missed opportunities to provide help, such as addressing depression or adequately controlling pain, and a lack of patient-centered approaches. Many cancer institutions are trying to implement more rigorous strategies for assessing distress and pain based on American Society of Clinical Oncology and NCCN guidelines, but their uptake may not be as widespread. Given how the lack of a proper distress assessment or appropriate response may contribute to suicide risk, our findings support even more of an impetus for cancer centers to work diligently to improve this aspect of cancer care. Further, while there may be increasing focus on distress screening in patients with cancer, there is no discussion of screening specifically for suicidal ideation or suicide risk.[13,33] This may lead to high-risk patients being overlooked.[13,33] It may be argued that part of the problem is limited mental health resources available in oncology to address these issues, or a lack of knowledge on part of oncology providers regarding management of suicide risk.[13,33] In our study, we found it interesting that 22% of patients were referred and seen by a mental health provider prior to the suicide, which might argue against the “quick fix” of sending all patients to mental health. While controversial, it may be important to acknowledge medical assistance in dying as a potential option for terminal patients with cancer. In some countries, these patients are not considered suicidal, but rather capable of requesting medical assistance in dying as treatment for their suffering. Further research should assess additional factors that may increase the risk of suicide and other adverse mental health outcomes in patients with cancer.

4.1 | Limitations

We acknowledge several limitations to this study. The results are based on RCA reports written by staff at individual hospitals, and the level of detail in each report may differ between hospitals. Because an RCA is only mandatory for suicides occurring within 3 days of medical discharge or 7 days of psychiatric discharge, this may result in incomplete reporting of suicides outside of these groups. Thus, while RCA reports contain valuable lessons regarding health systems vulnerabilities, they are generally not a valid source of epidemiologic estimates. We did not have access to the patient’s medical record, and RCA reports do not uniformly track individual level data pertaining to the patient. Therefore, we were unable to identify patient-specific characteristics or risk factors, limiting our ability to evaluate all potential factors contributing to the suicide. Further, our results may not be reflective of the general population because the data in our analysis is from patients utilizing VA hospitals, and the patients in this study were older and male.

4.2 | Clinical implications

There are gaps in oncology care that may contribute to cancer-related suicides. Recognition of triggers for assessment and improved communication are necessary first steps to help close these gaps. We recommend several actions to limit and prevent cancer-related suicides including comprehensive cancer centers and case managers for improved coordination of patient centered care, and referral to the NCCN Distress Management and Adult Cancer Pain Guidelines to ensure patients receive the highest quality of care and achieve the highest quality of life. The results of this system-wide analysis may help increase awareness of factors that contribute to suicide in patients with cancer, and may be effective in preventing some of the cases presented in this study.

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TABLE 1

Patient characteristics ($N = 64$)

Demographics	
Age 80–89	6% (4)
Age 70–79	27% (17)
Age 60–69	28% (18)
Age 50–59	16% (10)
Age 40–49	2% (1)
Age not determined	22% (14)
Male sex	100% (64)
Suicide method	
Firearm	75% (48)
Hanging	5% (3)
Stab/cutting	5% (3)
Other	16% (10)
Stage in cancer care	
Diagnosis	25% (16)
Treatment (curative)	3% (2)
Treatment (palliative)	44% (28)
Treatment (unknown)	9% (6)
5-year follow-up	17% (11)
Unable to determine	2% (1)
Primary cancer types	
Prostate	34% (22)
Lung	22% (14)
Colon	11% (7)
Head and neck	9% (6)
Large cell non-Hodgkin's lymphoma	5% (3)
Other	19% (12)
Prevalence of mental health problems	
Depression	59% (38)
Suicidal ideation and attempts[a]	39% (25)
Anxiety disorders	28% (18)
Substance abuse	20% (13)
PTSD	14% (9)
Personality disorder	5% (3)
Other	11% (7)
None reported	30% (19)
Prevalence of stressors	
Medical comorbidities	59% (38)
Family issues	45% (29)
Poor prognosis	38% (24)

News of cancer recurrence	17% (11)
Divorce	13% (8)
Work problems	11% (7)
Financial	9% (6)
Other	6% (4)
None reported	6% (4)
Prevalence of health complications	
Chronic pain	41% (26)
Acute pain	6% (4)
Fatigue	11% (7)
Sleep problems	17% (11)
None reported	27% (17)

[a] 16 reported only SI, 4 reported only SA, and 5 reported both.

TABLE 2

Context around last medical contact (*N* = 64)

Time since last medical visit (days)	
Same day	23% (15)
1	17% (11)
2–7	27% (17)
8–14	13% (8)
15–30	13% (8)
>2 months	5% (3)
Not described	3% (2)
Last provider visit	
Mental health	22% (14)
Oncology	17% (11)
Primary care	17% (11)
Surgery	11% (7)
Emergency department or urgent care	6% (4)
Hospice	6% (4)
Internal medicine	5% (3)
Urology	5% (3)
Other	11% (7)
Location of last visit	
Outpatient	44% (28)[a]
Inpatient	41% (26)
Long-term care	9% (6)
Emergency department or urgent care	6% (4)[b]
Referred to mental health	
Inpatient mental health	6% (4)
Referred and went	22% (14)
Referred and did not go	5% (3)
Not referred	67% (43)

[a] 2 not scheduled for follow-up.

[b] None scheduled for follow-up.

TABLE 3

Root causes ($N = 175$)

Root Causes	
Triggers to assess	29% (50)
Failure to assess or reassess psychosocial needs when a patient experiences a change in clinical status	41
Patient left AMA	9
Communication deficits	26% (46)
Interdisciplinary team communication or coordination	24
Patient centered approaches including overt conflict with providers	22
Response to mental health problem	17% (30)
Not recognizing a positive standardized mental health or suicide screen	11
Provider aware of symptoms but did not respond	11
Inappropriate action to a mental health emergency	8
Mental health treatment	11% (19)
Patient has a mental health provider, but treatment is inadequate	12
Patient has a mental health provider, but is not being actively treated	5
Other	2
Pain	10% (18)
Inadequate pain treatment	18
Assessment/referral	7% (12)
Failure to assess for suicide/depression	10
Non-referral of a terminal patient to hospice and/or palliative care	2

TABLE 4

Suggested actions based on literature

Root Causes	Suggested Actions
Triggers to assess	- Develop a checklist using the NCCN distress management guidelines that includes warning signs and appropriate interventions to supplement the NCCN distress thermometer.[18,23] - Conduct a distress assessment in concordance with the NCCN distress management guidelines.[18] - Provide transition interventions including close follow-up, home visits, or engagement with mental health services.[24–26] - Identify and resolve factors that may contribute to patients leaving AMA, such as patient-provider communication, access to social services, or engaging family in decision-making conversations.[24–26]
Communication deficits	- More widespread implementation of a comprehensive cancer center with interdisciplinary teams in one physical location.[27–29] - Develop a position dedicated to overseeing the entirety of patients care, such as a patient navigator or nurse case manager.[29–31] - Increase use of shared-decision making cognitive aids to solicit patient preferences.[32] - Establish a private consultation area for distress assessments and discussions.[13]
Response to mental health problem	- Develop a checklist using the NCCN distress management guidelines that includes warning signs and appropriate interventions to supplement the NCCN distress thermometer.[18,23] - A psychiatric liaison provider should be placed in outpatient clinics to help coordinate mental health care. This would be a regularly scheduled person with an integrated presence for improved access and an easier follow-up system.[13,27–29,33]
Mental health treatment	- Frequently refer to the NCCN distress guidelines to ensure mental health treatment is adequate (eg, patient's current mental health status requires visit every 3 months rather than every 6 months).[18]
Pain	- Conduct a pain assessment in concordance with the NCCN adult cancer pain guidelines.[18] - Use a multimodal approach to ensure optimal pain relief and minimal adverse effects.[18]
Assessment/referral	- Conduct a distress assessment in concordance with the NCCN distress management guidelines.[18]