American Journal of Emergency Medicine xxx (2017) xxx–xxx

Contents lists available at ScienceDirect

American Journal of Emergency Medicine

journal homepage: www.elsevier.com/locate/ajem

Suicide risk assessment in the emergency department: Are there any tools in the pipeline?☆

Aaron Bowers, BS [a], Chase Meyer, BS [a,*], Shannon Hillier, DO [b], Mark Blubaugh, DO [c], Brie Roepke, DO [c], Michelle Farabough, MSKM, AHIP [a], Joshua Gordon, DO [d], Matt Vassar, PhD [a]

[a] Oklahoma State University Center for Health Sciences, Tulsa, OK, United States
[b] Psychiatry Department, Oklahoma State University Medical Center, Tulsa, OK, United States
[c] Department of Emergency Medicine, Oklahoma State University Medical Center, Tulsa, OK, United States
[d] Department of Anesthesiology, University of Oklahoma Center for Health Sciences, Oklahoma City, OK, United States

ARTICLE INFO

Article history:
Received 10 August 2017
Received in revised form 26 September 2017
Accepted 27 September 2017
Available online xxxx

Keywords:
Suicide
Risk
Assessment
Screen
Emergency

ABSTRACT

Background: It is estimated that as many as 1 in 10 individuals who complete suicide had been seen in emergency departments within the prior 2 months. However, very little evidence underlies the current recommendations on managing patients with suicidal ideation presenting to the emergency department. The American College of Emergency Physicians (ACEP) and Veterans Affairs/Department of Defense (VA/DoD) have developed clinical practice guidelines for the screening and treatment of patients with suicidal ideation who present to emergency departments. In this study we investigated the extent to which new and ongoing studies are being conducted to address the current limitations in suicide screening in emergency departments.
Methods: We identified low-level recommendations in clinical practice guidelines that have been set forth by the ACEP and VA/DoD. PICO questions were then created to help identify relevant studies pertaining to screening patients with suicidal ideation in the emergency department. PICO questions were used to develop search strings, which were then used to locate studies from ClinicalTrials.gov and the World Health Organization's International Clinical Trials Registry Platform.
Results: Seventeen PICO questions were created for this study. We found 11 studies addressing gaps identified in the clinical practice guidelines. Of the 17 PICO questions created, 10 were being addressed by 11 studies.
Conclusions: Little research is being done to improve suicide risk assessment tools in the emergency department. Further research in this area may decrease health care costs, improve patient care, and save the lives of those at risk of dying by suicide.

1. Introduction

Suicidal ideation is a continual problem for emergency physicians, accounting for 1% of all adult emergency department (ED) visits [1]. It is estimated that as many as 1 in 10 individuals who complete suicide had been seen in ED within the prior 2 months [2]. From 2006 to 2013, the rate of ED visits related to suicidal ideation among adults increased by 12% on average annually. Additionally, the total number of ED visits related to suicidal ideation in 2006 was 388,100 compared with 903,400 in 2013, an increase of 132.8%. From 2006 to 2013, total ED and inpatient costs for patients presenting with suicidal ideation increased from $600 million to $2.2 billion. Patients presenting in 2013 with suicidal ideation to the ED were 3 times less likely to experience a routine discharge and 2.5 times more likely to be admitted. This leads to an increased stay of half a day and an increase of $1000 in costs over the same period of stay [1].

The American College of Emergency Physicians (ACEP) and the Veterans Administration in partnership with the Department of Defense (VA/DoD) have developed clinical practice guidelines (referred to as clinical policies by ACEP) for the screening and treatment of patients with suicidal ideation presenting to the ED and other acute care settings. These guidelines were created through comprehensive literature reviews and were also based on expert opinion when supporting evidence was unavailable. Recommendations for both guidelines were classified according to levels of supporting evidence. The ACEP guideline contains grades ranging from Grade A (high) to C (low), whereas the VA/DoD guideline grades range from Grade A (high) to I (inconclusive). Recommendations based on insufficient evidence from these guidelines may serve to identify areas that need additional research. Conducting studies

☆ The authors report no financial conflicts of interest.

* Corresponding author at: Oklahoma State University, Center for Health Sciences, 1111 W. 17th St., Tulsa, OK 74107, United States.
E-mail address: Chase.meyer@okstate.edu (C. Meyer).

https://doi.org/10.1016/j.ajem.2017.09.044
0735-6757/

to fill these research gaps may ultimately lead to a more rigorous evidence base and greater clinical certainty in guideline recommendations [3,4].

In 2017, the ACEP released its latest clinical policy for patients with suicidal ideation presenting to EDs. One of the recommendations, rated as Level C, states that, "In patients presenting to the ED with suicidal ideation, physicians should not use currently available risk-assessment tools in isolation to identify low-risk patients who are safe for discharge. The best approach to determine risk is an appropriate psychiatric assessment and good clinical judgment, taking patient, family, and community factors into account." Upon reviewing the evidence, the ACEP panel concluded that the current studies contained methodological flaws. They recommended that future studies focus on identifying screeners that can best predict suicide completion in an at-risk population with a low prevalence rate while also being applicable to all age groups. They further recommended that such screening tools have at least 90% sensitivity and specificity for patients at high suicide risk in the next 30 days. Similar limitations were noted in the VA/DoD guideline. Others have questioned the application of universal screening tools for patients presenting to EDs, acknowledging that there are no good-fit, well-validated screening tools for suicide risk. Furthermore, traditional suicide assessment tools are too lengthy and complex for emergency department staff to administer universally [5]. In this study, we identify guideline recommendations that are based on insufficient evidence from the ACEP and VA/DoD related to suicide screening. We also search for new and ongoing studies catalogued in clinical trial registries to determine the extent to which new and ongoing studies are being conducted to address the current limitations in suicide screening in EDs.

2. Methods

2.1. Oversight and reporting

This study was not subject to Institutional Review Board oversight since it did not meet the regulatory definition of human subject research as defined in 45 CFR 46.102(d) and (f) of the Department of Health and Human Services' Code of Federal Regulations. We applied relevant Statistical Analyses and Methods in the Published Literature reporting guidelines for reporting descriptive statistics. We carefully reviewed several sources when developing the methodology for this study [6].

2.2. Clinical practice guidelines

We located the latest clinical policy for the *Management of the Adult Psychiatric Patient in the Emergency Department* from the ACEP and the clinical practice guideline, *Assessment and Management of Patients at Risk for Suicide*, from the VA/DoD [3,4].

Recommendations from the ACEP clinical policy are rated as follows [3]:

Grade A: Generally accepted principles for patient care that reflect a high degree of clinical certainty (e.g., based on evidence from one or more Class of Evidence I or multiple Class of Evidence II studies).

Grade B: Recommendations for patient care that may identify a particular strategy or range of strategies that reflect moderate clinical certainty (e.g., based on evidence from one or more Class of Evidence II studies or strong consensus of Class of Evidence III studies).

Grade C: Recommendations for patient care that are based on evidence from Class of Evidence III studies or, in the absence of any adequate published literature, based on expert consensus.

For interpretation of these recommendations, evidence is classified into the following levels [3]:

Class I: Randomized, controlled trial or meta-analysis of randomized trials.
Class II: Non-randomized trial.
Class III: Case series.

Recommendations from the VA/DoD are as follows [4]:

Grade A: A strong recommendation that the clinicians provide the intervention to eligible patients. Good evidence was found that the intervention improves important health outcomes, and it concludes that benefits substantially outweigh harm.
Grade B: A recommendation that clinicians provide (the service) to eligible patients. At least fair evidence was found that the intervention improves health outcomes, and it concludes that benefits outweigh harm.
Grade C: No recommendation for or against the routine provision of the intervention is made. At least fair evidence was found that the intervention can improve health outcomes, but it concludes that the balance of benefits and harms is too close to justify a general recommendation.
Grade D: Recommendation is made against routinely providing the intervention to asymptomatic patients. At least fair evidence was found that the intervention is ineffective or that harms outweigh benefits.
Grade I: The conclusion is that the evidence is insufficient to recommend for or against routinely providing the intervention. Evidence that the intervention is effective is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.

2.3. Development of PICO questions

Investigators then constructed one or more research questions using the Participants, Intervention, Comparator, Outcome (PICO) format for grades C, D, and I recommendations from both guidelines involving the use of suicide risk assessment tools (SRATs). This method is used to identify clinical components for systematic reviews and is endorsed by the Cochrane Collaboration [7]. It was chosen over the Participants, Intervention, Comparator, Outcomes, Study Design (PICOS) and the Sample, Phenomenon of Interest, Design, Evaluation, Research type methods (SPIDER) because evidence suggests that the PICO method produces searches with greater sensitivity [8]. Two investigators (MB, SH) constructed all initial PICO questions.

2.4. Development of the search strings

PICO questions were reviewed to identify high-yield keywords. These keywords were then used to design search strings for the questions. Search strings are part of a search strategy for finding information in databases. According to Gillespie and Gillespie [9], a search strategy is the process used to translate a clinical query (i.e., research question in PICO format) into a format that can be correctly understood by the search engine. The goal of a search string is to strike a balance between retrieving relevant studies and excluding irrelevant ones. For this study, we used a highly sensitive search strategy. Our searches retrieved a large number of false-positive results to ensure that important studies were not missed.

Using these keywords, a medical librarian consulted Cochrane Systematic Reviews, Medical Subject Headings (MeSH), and PubMed Automatic Term Mapping to determine relevant synonyms, entry terms, and variant word forms. A search string was formulated leveraging Boolean operators (e.g., OR, AND) and parenthetical groupings to optimize the use of key terms to retrieve as many relevant records as possible in the clinical trial registries. Although both ClinicalTrials.gov and the World Health Organization's International Clinical Trials Registry

Please cite this article as: Bowers A, et al, Suicide risk assessment in the emergency department: Are there any tools in the pipeline?, American Journal of Emergency Medicine (2017), https://doi.org/10.1016/j.ajem.2017.09.044