

Implementation of Online Suicide-Specific Training for VA Providers

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Received: 27 August 2013 / Accepted: 9 January 2014 / Published online: 22 February 2014
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Abstract

Objective Due to the gap in suicide-specific intervention training for mental health students and professionals, e-learning is one solution to improving provider skills in the Veterans Affairs (VA) health system. This study focused on the development and evaluation of an equivalent e-learning alternative to the Collaborative Assessment and Management of Suicidality (CAMS) in-person training approach at a Veteran Health Affairs medical center.

Methods The study used a multicenter, randomized, cluster, and three group design. The development of e-CAMS was an iterative process and included pilot testing. Eligible and consenting mental health providers, who completed a CAMS pre-survey, were randomized. Provider satisfaction was assessed using the standard VA evaluation of training consisting of 20 items. Two post training focus groups, divided by learning conditions, were conducted to assess practice adoption using a protocol focused on experiences with training and delivery of CAMS.

Results A total of 215 providers in five sites were randomized to three conditions: 69 to e-learning, 70 to in-person, 76 to the control. The providers were primarily female, Caucasian, midlife providers. Based on frequency scores of satisfaction items, both learning groups rated the trainings positively. In focus groups representing divided by learning conditions, participants described positive reactions to CAMS training and similar individual and institutional barriers to full implementation of CAMS.

Conclusions This is the first evaluation study of a suicide-specific e-learning training within the VA. The e-CAMS

appears equivalent to the in-person CAMS in terms of provider satisfaction with training and practice adoption, consistent with other comparisons of training deliveries across specialty areas. Additional evaluation of provider confidence and adoption and patient outcomes is in progress. The e-CAMS has the potential to provide ongoing training for VA and military mental health providers and serve as a tutorial for psychiatrists in preparation for specialty boards.

Keywords Suicide · Intervention training · Mental health students · Mental health residents · Veteran Health Affairs medical center

Suicide prevention among military veterans has become a national priority [1, 2]. Recently, the Veterans Health Affairs (VHA) hired thousands of clinicians to address the mental health needs of veterans from all war eras. Training providers in a systematic intervention method is consistent with the 2012 National Strategy on Suicide Prevention [3]. Most importantly, it has the potential to help curtail the suicide among military veterans [4]. There is a gap in suicide-specific intervention training for mental health students and professionals [5–7].

A recent Department of Education meta-analysis demonstrated that e-learning (online) education is more effective than traditional in-person (face-to-face) education for adult learners, when methods such as blended learning are used [8]. This finding bears particular relevance for the continuing education needs of busy medical professionals who may find it easier to fit online education into their daily schedules. The effectiveness and efficiency of e-learning is a potential solution to improve suicide-specific knowledge and skills of those who practice in the VHA [7, 9].

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Purpose

To address this need, the development and evaluation of an online learning alternative was undertaken in lieu of the traditional in-person training approach to the Collaborative Assessment and Management of Suicidality (CAMS) [10]. This article focuses on two specific aims of a larger randomized control trial (RCT) study of training outcomes of providers and patient outcomes in the systematic management of suicidal patients: (1) develop a CAMS e-learning version equivalent in content and impact to the in-person training, and (2) evaluate provider outcomes of training. Figure 1 provides a Study Flow Chart. This article focuses on formative evaluation, and no hypothesis was presented for this component.

All of the hospitals in the VHA Southeastern Network (VISN 7) were informed of the study and invited to participate; however, only five VA Medical Centers (VAMCs) ultimately volunteered to participate. The study was approved by the IRBs and Research and Development Committees at each site and was conducted from 2009 to 2013 [11].

Introduction

Collaborative Assessment and Management of Suicidality

To date, Matthieu and colleagues [12] have published the only VA study of suicide prevention training, which was a pre-post evaluation of brief in-person training. Training in suicide-specific interventions can help providers when facing suicidal patients by (1) decreasing fears, (2) improving attitudes, (3) increasing knowledge, confidence and competence, and (4) dispelling any myths about suicidal patients [10]. This study focused on the implementation of an e-learning training version of the Collaborative Assessment and Management of Suicidality (CAMS) [10].

CAMS is a structured clinical approach to assess, monitor, and intervene with a patient at risk for suicide. CAMS includes the use of Problem-Focused Treatment, a written template, the Suicide Status Form (SSF) [13]. The evidence base for CAMS effectiveness includes six correlational studies and one randomized trial over several decades, which support feasibility and clinical use of CAMS with suicidal outpatients and inpatients and outcomes, such as resolution of suicidality [14–20]. CAMS is an effective, suicide-specific intervention, recommended in federal reviews of empirically based best practices [21–24]. For readers who want more depth, Jobes provides a comprehensive review of CAMS development, intervention and research [20]. Traditionally, providers are trained in a 1-day, in-person CAMS workshop. Given the empirical support for e-learning education, it is logical to develop an e-learning version of CAMS. Such a version has the potential to expand the number of clinicians able to implement CAMS [8, 25].

Effectiveness of Online Training

An exemplary review of 76 studies by Cook and colleagues found essentially no difference between computer-assisted instruction and noncomputer-based instruction [25]. Results of other studies and systematic reviews comparing in-person and e-learning education are mixed, with either no difference or more positive findings for e-learning education [25–28]. Few studies examined or demonstrated changes in provider practice other than self-reports. Improved learning in online delivery has been associated with empirically supported instructional methods, listed in Table 1 [8, 29–32]. Gaps identified in e-learning evaluation studies include low intervention dose, wide variation in interventions and outcomes, and poor methodological quality [25, 28, 30, 33, 34].

Fig. 1 Study flow chart

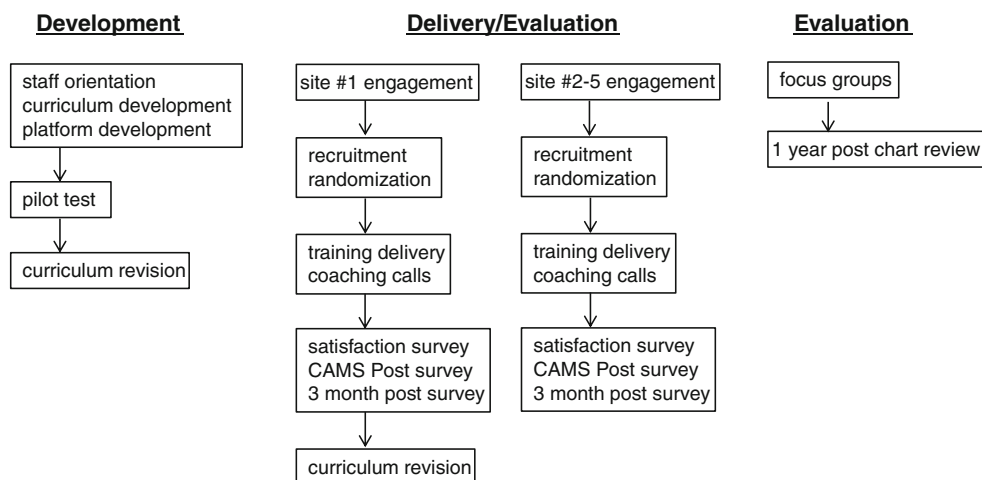


Table 1 Empirically supported instructional methods for online education [1, 16–19]

Evidence-based intervention strategies
Blending
Interactivity and engagement
Practice exercises and repetition
Behavioral journalism
Computer tailoring
Simplicity
Perceived usefulness
Ease of use
Organization by modules
24/7 accessibility and platform-independence
Anonymous and self-paced
Visual attractiveness and appeal
Individuation
Resources for help and feedback
Instructor-direction
Auditory information modeling

Methods: Implementation of e-Learning CAMS

e-Learning Development

Given constraints in length, we made a strategic decision to emphasize a practice-focused approach, a sort of “How to do CAMS” training, in the e-learning version. Orientation of study staff included in-person CAMS training by the developer and training in an e-learning management system, Moodle (Fig. 1). Moodle is an open source system (both familiar to and readily available to the study university collaborators) for creating e-learning courses and educational materials (<http://moodle.org/stats/>).

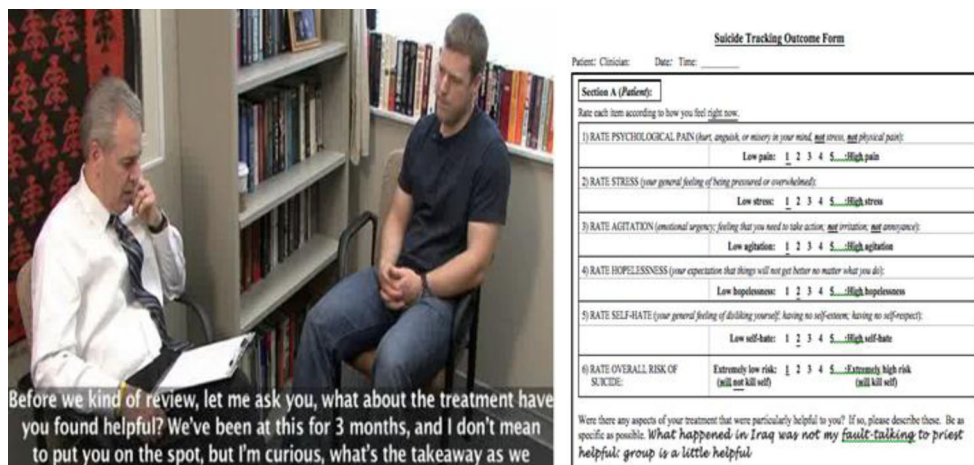
We operationalized empirically supported instructional methods (see Fig. 2) [1, 28–31] throughout the e-CAMS

modules, including tailoring, auditory information, modeling, video clips, patient cases, interactivity, active learning, and repetition. E-Learning CAMS was tailored specifically for VHA mental health providers. Four video segments in e-learning CAMS were modeled after the assessment, management, monitoring, and resolution processes of a 12 session CAMS intervention. The patient was role played by a Veteran, and the provider by the CAMS developer (Fig. 2). Other video segments included CAMS delivery (by previously trained providers) in diversity-specific segments representing both geriatric and female Hispanic Veterans and brief messages from study investigators.

Interactivity included the incorporation of the Suicide Status Form (SSF), the key assessment, treatment planning, and tracking tool used in CAMS [10, 30]. The VAH Central Office has purchased a license to use the SSF as a clinical tool and template in the computerized electronic patient record system throughout the national VAH. Printable SSF forms with the documented “video patient” data were available for the all sessions, including the last (resolution) (refer to Fig. 2). Resolution of suicidality is the criterion for completion of the CAMS intervention.

Technology Barriers

Technology barriers were addressed with the regional VHA technology group. These issues included diminished bandwidth (particularly within the rural community-based clinics), video compression algorithms necessary for sluggish download speeds, and audio volume concerns. Video subtitles were developed to enhance provider access to dialogue (see Fig. 2). Additional technology barriers included limits in file sharing and VA security, such as restrictions on DVD and thumb drive use. Ultimately, this led to the establishment of a dedicated SharePoint to store and edit modules and videos. SharePoint is a Microsoft Office-based controlled access web-based collaborative environment.

Fig. 2 Screen shot of CAMS video and SSF relevant forms

Pilot Studies

Nine providers not enrolled in the study were recruited to evaluate the first version of the e-learning CAMS. On the basis of their feedback, additional modifications were made to the e-learning version and technological delivery. Additional revisions were made to develop a final e-CAMS product following delivery in the first site (Fig. 1). These revisions focused on simplicity, artistic appeal, multimedia images, and manualization. This iterative process is common in development of health education curricula.

Comparison of e-Learning and In-Person CAMS

The e-CAMS contained four modules, whereas the in-person CAMS included a morning and afternoon session. Both trainings included CAMS assessment and Problem-Focused Treatment. The in-person CAMS included information on CAMS research studies within college and military populations and incorporated content on ethics and malpractice. The e-CAMS focused on veteran-specific cases, interventions, and strategies.

The final e-CAMS product was an asynchronous learning course, referring to a course which supports work relations among learners, even when they cannot be online at the same time [35]. The CAMS e-learning modules were designed so if the learner fully participated by reading all slides and viewing all videos and SSF documents, modules 1 and 2 would take approximately the same amount of time to complete as the morning in-person session, and modules 3 and 4 the same time as the afternoon in-person session, making the two learning conditions equivalent (approximately 6.5 h). E-learners may, however, vary in their speed of completion.

The e-CAMS modules included (1) Introduction to Suicidality and CAMS Approach, (2) Collaborative Suicide Risk Assessment, (3) CAMS Status Tracking and Problem-Focused Treatment (PFT), and (4) Fusion of CAMS within the VA. Questions with feedback were dispersed throughout the modules. For example, interesting facts related to suicidology were labeled as “Did you know?” At the end of each module, multiple choice and true/false questions covering key content were included and also summarized into a printable review sheet at the course conclusion to facilitate the learning process. A post quiz was required only for e-learning CEU credit.

Study Design

A randomized controlled trial of CAMS e-learning in comparison to CAMS in-person was conducted, using a multicenter, randomized, cluster, three group design (Fig. 1). Outpatient mental health providers (psychiatrists, psychologists, advanced practice nurses, social workers, and case managers) without previous CAMS training were recruited from the five

participating VHA hospitals. Case managers may have had either bachelor’s (such as RNs) or master’s education (such as counselors). Following informed consent, providers who completed a CAMS Pre-Survey were randomized to one of three conditions: (1) e-learning training, (2) in-person training, or (3) no training. Those randomized to either of the CAMS training conditions were granted 6.5 h of clinic release time, and upon successful completion of training, they received CEUs (6.5 h) and the CAMS text [10]. Those randomized to the control condition received an emergency psychiatry text. Controls received no training.

Clinics were blocked 6–8 weeks in advance of training for providers in both training conditions. Delivery of training was then conducted over a 4-month period. At each site, in-person CAMS was delivered 1 day, and e-learning was implemented over a 3-week period following the in-person training. The support of the site Directors of Mental Health Services was critical, as was that of the Suicide Prevention Coordinators, who served as the “site champions.” The role of the Suicide Prevention Coordinator is to provide suicide prevention education for staff and to coordinate enhanced services for veterans at risk for suicide and environmental safety.

A CAMS Coaching Component was provided to both CAMS training conditions to encourage adoption, recognize successes, and address barriers. The Coaching format was six bimonthly, lunch hour, teleconferences with Dr. Jobes. These calls (four calls per site) were scheduled after the e-learning group completed training and included participants from both training groups. Phone coaching is consistent with the finding that e-learning education, particularly combined with an in-person component (referred to as blending), is as effective as in-person training [8].

Evaluation of Implementation

Participants were required by the VHA to complete the Evaluation of Training form (Table 1) in order to receive CEUs (Fig. 1). The evaluation included 20 standard items assessing provider satisfaction with training, including items similar to other published satisfaction surveys [25]. Survey items were rated using a five-point Likert scale indicating the degree to which respondents agreed or disagreed. Questions were always phrased positively so that agree or strongly agree is equivalent to a positive response.

Process Evaluation Focus group methodology was used to assess CAMS experiences and adoption. Two focus groups were conducted in the primary site approximately 21 months after completion of training. The protocol addressed the following areas: impression of training experience; experience in delivery; organizational incentives, rewards, and related organizational goals; facilitating factors or barriers; implementation

success; compatibility with professional beliefs, values and practices; and fit with workflow and program. Control subjects completed a practice survey and were also included in a chart review of provider adherence and patient outcomes in other components of the study [36].

Results

Participants and Training Completion

A total of 230 out of an eligible 309 providers consented (recruitment rate 72 %). Of these, 212 providers completed the pre-survey and were randomized: 69 to the e-learning condition, 70 to the in-person condition, and 73 to the control condition (Fig. 1). Table 2 provides a summary of the Characteristics of Providers Randomized to Training. The 139 providers randomized to e-learning or in-person training were primarily female, Caucasian (67.7 %) or African American (25.6 %), midlife, midlevel providers (Table 2). Control group findings are not reported in this article, because control subjects were not asked to participate in either the VA Evaluation of Training or the focus groups.

Completion of the e-learning course was operationally defined as finishing 75 %, or three of the four modules. The CAMS content was presented in the first three modules, while the fourth module (25 %) focused on the VHA suicide prevention strategy that is available in other venues. With this definition, 45 of the e-learners completed the course, 11 partially

completed, and 13 never initiated training. Completion of the in-person course was defined as signing out at the end of the training. With this definition, 51 completed, 1 partially completed, and 18 never initiated training.

Prior to training, providers were asked to identify their preferred delivery method for required suicide prevention training: 48.6 % preferred in-person seminar, 21.8 % preferred web-based courses, 7.9 % preferred self-directed reading, and 21.8 % stated no preference.

VA Evaluation of Training

The central VAH education program, Talent Management Systems (TMS), made changes to the VA Evaluation of Training items twice during the study period and provided results aggregated only by site and training condition. Thus, survey items were collapsed into eight composite themes by two independent raters, who achieved 100 % agreement on classification. The themes were overall evaluation, learning, content, objectives, job impact, enablers and barriers, logistics, and environment. Responses were summed across each theme, and frequencies and percentages were derived for each. Table 3 displays the items by themes and percentage of providers by training condition endorsing the themes.

In-person participants tended to rate survey items positively (71–93.6 %) slightly more often than the e-learning participants (70.0–88.9 %), except for logistics, where the opposite result was observed. E-learning participants tended to disagree (negative rating) with a greater percentage of items (6.8–9.1 %) than in-person participants (3.9–14.3 %), except for the enablers and barriers theme. When satisfaction ratings were collapsed from five to three levels (agree, neutral, and disagree), there was little difference in ratings between the two types of training deliveries, as presented in Table 3. As an example, participants strongly agreed that their experience was positive (in-person 55.3 %, e-learning 31.0 %). When the two top categories (strongly agree and agree) were combined, there was little difference (in-person 89.6 %, e-learning 93.6 %).

Process Evaluation

Implementation barriers were evident with the onset of recruitment. Providers' schedules were busy, and many had conflicts with the training dates. Barriers also included failure to complete the e-learning within the required period and failure to complete all modules, which was tracked in the Moodle platform. Early starters in the e-learning group were more apt to complete the training than those participants who delayed the initiation. Another barrier was that 78 % of the Coaching Calls were not attended by any providers.

One focus group each was conducted with five e-learning and seven in-person participants. Participants reported liking both the CAMS e-learning and in-person training and

Table 2 Characteristics of providers randomized to training

Characteristics	e-Learning (n=69)	In-person (n=70)	Total (n=139)
Age (n, %) ^a			
<50	39 (56.5 %)	41 (58.6 %)	80 (57.6 %)
≥50	30 (43.5 %)	29 (41.4 %)	59 (42.4 %)
Gender (n, %)			
Male	20 (29.0 %)	23 (32.9 %)	43 (30.9 %)
Female	49 (71.0 %)	47 (67.1 %)	96 (69.1 %)
Race (n, %)			
Caucasian	45 (67.2 %)	45 (68.2 %)	90 (67.7 %)
African American	19 (28.4 %)	15 (22.7 %)	34 (25.6 %)
Hispanic	2 (3.0 %)	0 (0.0 %)	2 (1.5 %)
Other	1 (1.5 %)	6 (9.1 %)	7 (5.3 %)
Profession (n, %)			
Psychiatrist	12 (17.4 %)	12 (17.1 %)	24 (17.3 %)
Psychologist	13 (18.8 %)	16 (22.9 %)	29 (20.9 %)
Midlevel provider	44 (63.8 %)	42 (60.0 %)	86 (61.9 %)

Completed pre-survey

^a Participants ≥50 group would have 20+years of clinical experience

Table 3 VA evaluation of training themes by training modality [e-learning (in person)] by percent of providers responding

	Agree	Neutral	Disagree
Overall			
Overall satisfied with learning activity	89.6 (93.6)	3.4 (4.3)	6.8 (2.1)
I would recommend this activity			
Learning			
Activities/materials effective in learning	87.5 (92.3)	5.7 (3.9)	6.8 (3.9)
I learned new knowledge/skills			
Content			
Scope appropriate to my needs	88.9 (91.0)	3.2 (1.3)	7.9 (7.7)
Material relevant and up-to-date			
Content relevant to job-related needs			
Objectives			
Accomplished the activity's objectives	87.9 (90.3)	3.0 (0.0)	9.1 (9.7)
Job impact			
Able to apply knowledge/skills to my job	75.0 (83.0)	15.0 (12.8)	10.0 (4.3)
Activity will improve job performance			
Enablers & barriers			
Manager and I set prior expectations	70.0 (74.6)	23.3 (11.1)	6.6 (14.2)
Feel competent to apply skills/knowledge			
Activity aligns with organization business priorities/goals			
Logistics			
Obtained activity's logistics information in timely manner	78.3 (70.9)	13.3 (21.0)	8.3 (8.0)
If required disability accommodation, request addressed respectfully/timely			
Environment			
Appropriate technology utilized	82.4 (87.8)	10.1 (7.7)	7.4 (4.5)
Environment conducive to my learning			
Technology in activity easy to use			
Overall, satisfied with technology use			
Technology responsive and provided access to further support			

intervention, but using only parts of the intervention. They reported that segments of CAMS overlap with the VA Safety Plan template. Use of this template is a requirement in the assessment of suicidality. Reported barriers to adopting CAMS included time constraints, other required clinical protocols and processes, few patients qualifying for CAMS, and the experience of being “rusty” due to infrequent use. The participants’ recommendations included implement a dedicated CAMS clinician, use CAMS with the younger Veterans, integrate CAMS in other protocols and clinical units (such as the inpatient unit), and maintain a dedicated SharePoint resource for CAMS training and booster sessions. There were no discernible qualitative differences between the reports of the two training groups.

Discussion

There is general agreement in the literature regarding advantages and disadvantages of asynchronous learning [37]. Satisfaction with e-learning and in-person training is an outcome

that has been examined in studies as a secondary outcome measure as opposed to primary outcomes, such as knowledge acquisition, attitude change, confidence, and patient outcomes [38]. Primary outcomes are being analyzed in another component of this study.

In-person learning participants tended to have more extreme ratings in the positive direction: however, both e-learning and in-person were similarly satisfied when strongly agree and agree categories were combined. Our finding is in line with other comparative studies of learning delivery. In 43 studies comparing e-learning and in-person training, difference in overall pooled effect size for satisfaction was positive, favoring e-learning training; however, the difference was small and not significant [25]. There were also significant treatment-subgroup interactions favoring short-term and single instance courses, such as e-CAMS, rather than ongoing courses [25]. In another randomized trial of two e-learning and one paper copy condition [38], satisfaction was high (means 6.0+ on a 1–7 scale) on ten items with no significant group differences. In a comparative study of web-streamed didactic and in-person instructions on substance abuse disorders,

students in the in-person group reported significantly higher levels of satisfaction (0.38 mean difference); however, only one item was used to measure satisfaction [39].

Cook and colleagues reviewed instructional methods in 249 studies of e-learning for health professionals [30]. Eighty-four percent of the studies evaluated satisfaction. Interactivity, audio, and online discussion were associated with improved satisfaction, while practice exercises, feedback, and repetition were associated with improved learning outcomes. However, pooled effect sizes were small. The e-CAMS incorporated these instructional methods, but the teleconference coaching calls (blended learning) were poorly utilized for both training conditions [8].

Similar to this study's findings, Matthieu and colleagues reported high satisfaction (93.3 %) and high value (96.4 %) of in-person suicide prevention training for VHA staff, most of whom were providers [12]. However, there are no randomized trials of e-learning and in-person training in comparable suicide prevention training to which to compare this CAMS study of evaluation of satisfaction and adoption [40].

Limitations

There are several limitations to this process evaluation. Due to the VHA changes in the VA Evaluation of Training, it was not possible to statistically analyze the data beyond descriptive statistics. Satisfaction is not considered a strong outcome and is referred to as a secondary outcome of training [25]. Providers in this VISN may not be representative of providers in other VAMCs. The number of volunteers participating in the focus groups was small and may not be representative of each of the training groups. The authors did not recognize the need to adopt an e-learning conceptual framework until they were already immersed in the developmental process [31]. A systematic process, such as intervention mapping, can structure e-learning development of health education [31, 41, 42]. Other aspects to incorporate in the developmental process include (1) guidelines for technology acceptance, (2) interactive dialogue, and (3) measures of system usability. Competencies have not yet been specified for CAMS, as has been recommended, but could be easily developed from the system [43]. Gorrindo and colleagues recommend identifying the specific goals for simulation which these authors did only related to Veteran-specific cases and delivery [37].

Sustainability

CAMS e-learning has been implemented in the context of a research study. We hope that e-CAMS will be adopted for VAH-practicing clinicians interested in improving their management of suicidal patients. Several steps have been taken in this direction: (1) success in obtaining 6.5 CEUs for the e-learning version; (2) invitations to place e-CAMS on the VAH (TMS) and the Department of Defense learning platforms;

(3) analysis of focus group data is being conducted and another site is replicating the focus group study; and (4) additional analyses of provider adherence and patient level outcomes are currently underway. There are fiscal benefits to having e-CAMS available to providers anytime anywhere at a time of rapid VAH provider influx.

Conclusions

This is the first evaluation of a suicide-specific e-learning training within the VHA. It is important to plan sufficient time for the iterative process of e-learning program development because of the many stages and barriers discussed here. Although we were convinced the use of empirically based instructional methods enhanced the training, few methods have actually demonstrated statistical significance in systematic reviews [8, 25, 30, 31].

There is a gap in studies of implementation-effectiveness in e-learning training in suicide prevention [40]. Provider outcomes need to be measured beyond traditional satisfaction, knowledge, and confidence. Those who have been educated primarily through in-person training need to shift their concept of how adults learn, apply new education pedagogies, use a conceptual framework for implementation, and use systematic reviews to inform the development and measurement of outcomes of e-learning training [29, 41]. Providers and organizational leaders need to support and facilitate recommendations to expand best practice training in their systems and professional organizations to ensure providers are competent to manage the care of patients at risk for suicide [1].

Implications for Educators

- Dynamic in-person speakers remain the gold standard.
 - E-learning is an acceptable alternative to reach more clinicians in a timely manner.
 - Conversion of a dynamic in-person workshop to an e-learning platform is possible.
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Implications for Academic Leaders

- E-learning allows schedule flexibility and does not interfere with clinic coverage.
 - Web delivery research should be encouraged to reduce costs and increase reach of exemplary education programs.
 - There is a need for academic technology experts to lead e-learning conversions.
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Acknowledgements We want to acknowledge the actors and script authors: Keith Jennings, Catholic University of America; Delia Chariker, VA SATC Addiction Therapist; David Koerner, VA Social Worker; Denise O'Neil, VA SATC Therapist; Jeff Walker, Veteran, Jonathan

Coutas, Medical University of South Carolina Videographer, and Dan Gross, VA Psychologist.

Disclosures This material is based upon work supported by the Department of Veterans Affairs, Veterans Health Administration. Office of Research and Development. Health Services Research and Development. The study was approved by the joint University and VA IRB site and VA office of Research in the primary site and VA IRBs of the four satellite sites.

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