ASIST

Review of the Applied Suicide Intervention Skills Training Program (ASIST)

Rationale, Evaluation Results, and Directions for Future Research

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LivingWorks

Acknowledgments

There are many people around the globe working on solutions to the difficult problem of suicide. Many of them have contributed to the evaluations cited in this report—either as evaluators, ASIST trainers or trainees, data sources, or in other important ways. To them I, and the field of suicide prevention, owe a debt of gratitude.

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Preface

There are no easy answers to the problem of suicide. It kills almost one million people a year, injures many more, and leaves countless survivors—friends, family, and loved ones of those who have died—emotionally devastated.

The Applied Suicide Intervention Skills Training program (ASIST) provides one solution to this problem by training caregivers to identify and intervene with those at risk for suicide.

Although the ASIST program has been the subject of numerous evaluations, there has been, to this point, no compilation of these reports. Therefore, **the purpose of this report is to provide a comprehensive review of ASIST evaluation results**. To this end, the report is organized into four sections:

An overview of the problem of suicide

A description of the ASIST program

A review of ASIST evaluation results

Suggestions for future ASIST evaluations

By compiling the results of ASIST evaluations, a better understanding of the impact of ASIST can be known. This knowledge can aid program improvement, guide future evaluation efforts, and increase our knowledge of suicide prevention generally.

This review is limited to training outcomes; particularly, satisfaction with training, knowledge and attitudes, intervention-related skills, intervention-related behaviors, and suicidal behaviors (suicide attempts or deaths). The methods used to collect data for this review were standardized; however, the methods and measures used by the ASIST evaluations cited in this report varied widely. This variability prevented the mathematical aggregation of results typically found in reviews. Therefore, results are listed singularly by evaluation. Not all results from all evaluations are reported here. **Complete results from evaluations cited in this report can be found in the separately published *Data Extraction Tables*.**

While this review focused on ASIST, it should be noted that suicide is a complex behavior that defies simple solutions. A multifaceted approach to suicide prevention, which includes programs like ASIST, is most likely to be effective in reducing suicide deaths.

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Executive Summary

The Applied Suicide Intervention Skills Training program (ASIST) is a fourteen hour workshop that teaches participants to connect, understand, and assist persons who may be at risk for suicide. Almost one million persons in twenty-two countries have been ASIST trained since its development in Calgary, Alberta, Canada in the early 1980s.

Since its development, numerous formal and informal evaluations of ASIST have been conducted. The purpose of this report is to summarize the results of these evaluations. Evaluations summarized in this report came from five countries: Australia, Canada, Norway, Scotland, and the United States.

Evaluation results were extracted and organized into five domains: participant satisfaction, knowledge and attitude changes, acquired skills, intervention-related behavior changes, and suicidal behavior. This review found that

1. ASIST trainees have generally been **very satisfied** with the training.
2. ASIST trainees have demonstrated **greater relevant knowledge and positive attitudes** when compared to pre-training states or non-trainees.
3. ASIST trainees have demonstrated **increased intervention skills**, either through self-assessments or as assessed through simulations, when compared to pre-training states or non-trainees.
4. ASIST trainees have generally reported **increased interventions** with those possibly at risk for suicide, when compared to pre-training states or non-trainees; increases, however, have not been seen in all settings.
5. In a single evaluation, ASIST-trained school personnel reported fewer known suicide attempts when compared to schools that received other types of training, but caution is warranted when interpreting this result.
6. The **use of ASIST training is dependent upon several factors outside the influence of the training**. Most notable of these factors is the opportunity to engage those who are at risk for suicide.

While it is clear that the ASIST program is popular among participants and routinely results in positive changes to knowledge, attitudes, skills, and in most instances, intervention behavior, its impact upon suicidal behavior has not been adequately evaluated. To do this would require a study population of tens if not hundreds of thousands of persons with a correspondingly large number of ASIST trained persons. A simpler approach may be to focus on better identifying and measuring the skills acquired as a result of ASIST. Skill acquisition is the hallmark of most training, and further validation of ASIST in this regard would be useful.

1. Suicide is a Wicked Problem

Suicide is a wicked problem because it kills and injures millions of people each year, it is a complex behavior with many contributing factors, and it can be difficult to prevent.

1.1 One million people die by suicide each year

An estimated one million people died by suicide in 2000; over 100,000 of those who died were adolescents (World Health Organization, 2009). If current trends continue, over 1.5 million people are expected to die by suicide in the year 2020 (Bertolote & Fleischmann, 2002). The world wide suicide rate is estimated to be 16 deaths per 100,000 people per year (World Health Organization, 2009).

For every person who dies by suicide, many more make an attempt

The ratio of suicide attempts to deaths can vary depending upon age. For adolescents, there can be as many as 200 attempts for every suicide death, but for seniors there may be as few as 4 attempts for every suicide death (Berman, Jobes, & Silverman, 2006; Goldsmith, Pellmar, Kleinman, & Bunney, 2002). A recent household survey conducted in the United States estimated that 8.3 million adults had serious thoughts about suicide in the past year, that 2.3 million had made a suicide plan, and 1.1 million had attempted suicide (Substance Abuse and Mental Health Services Administration Office of Applied Studies, 2009). A survey of Australian adults conducted by the World Health Organization found that 4.2% of respondents had attempted suicide at least once during their lifetime (De Leo, Cerin, Spathonis, & Burgis, 2005).

The devastation of suicide affects many

Suicide is devastating. Not only for those who suffer, are injured, and die from it, but also for their family, friends, and others. The total devastation of suicide is perhaps best summarized by a quote from Kay Redfield Jamison

> *Suicide is a particularly awful way to die: the mental suffering leading up to it is usually prolonged, intense, and unpalliated. There is no morphine equivalent to ease the acute pain, and death not uncommonly is violent and grisly. The suffering of the suicidal is private and inexpressible, leaving family members, friends, and colleagues to deal with an almost unfathomable kind of loss, as well as guilt. Suicide carries in its aftermath a level of confusion and devastation that is, for the most part, beyond description (Jamison, 1999, p. 24).*

1.2 Suicide is a complex behavior

Suicide is a complex behavior with multiple contributing factors including biological, psychological, sociological and spiritual. Ultimately, the causes of suicide are multi-determined. This complexity can make suicide prevention difficult.

Multiple factors contribute to suicide risk

While mental and substance use disorders represent a common contributing factor to suicide risk, they remain poor predictors of who will die by suicide. As stated by Mann and colleagues, "*A psychiatric*

disorder is generally a necessary but insufficient condition for suicide. To identify suicide risk factors, it is necessary to look beyond the presence of a major psychiatric syndrome" (Mann, Waternaux, Haas, & Malone, 1999, p. 181).

Individual factors that may contribute to suicide risk include:

- **Biological Factors,** including family risk, brain chemistry, gender, physiological problems
- **Predisposing Factors,** including psychiatric disorders, substance abuse, personality profile, severe illnesses
- **Proximal Factors,** including hopelessness, intoxication, impulsiveness, aggressiveness, severe/ chronic pain
- **Immediate Triggers,** including public humiliation, access to weapons, severe defeat, major loss, worsening prognosis (Knesper, n.d.)

A variety of sociocultural factors may also contribute to suicide risk. These include race, ethnicity, religion, occupation, geography, and economic conditions, among others (Goldsmith, et al., 2002).

David Knesper of the University of Michigan's Depression Center illustrated the complexity of suicide when he stated that **"*Every suicide is a different story; every suicide is unique*"** (Knesper, n.d.)

1.3 Preventing suicide can be difficult

Because "every suicide is a different story", the prevention of suicide can be difficult: what may be effective in preventing one suicide may not be effective in preventing another. A recent review of suicide prevention strategies found that only means restriction and physician education in the recognition and treatment of depression gave evidence of reducing suicide deaths (Mann, Apter, Bertolote, & Beautrais, 2005). However, these approaches may be limited.

Restricting access to poisons, firearms, and certain high places has proven effective in decreasing suicide deaths, but the application of this strategy may be limited by geography and cultural norms. Models of professional education and their impact upon models of care may also be limited.

Standard models of care may be limited when addressing suicide risk

While standard care by a mental health professional or other professional caregiver represents a common approach to addressing suicide risk in individuals, the effectiveness of this model may be limited by difficulties in identifying those at risk, the availability of suicide-specific training, and poor compliance with care.

- **Identifying those at risk of suicide is difficult.** Since suicide is a behavior, not a disease, it cannot be identified and assessed in the same way as physical maladies, such as heart disease and cancer (Maris, Silverman, & Canetto, 1997). This makes the identification of those at risk for suicide difficult (Maris, et al., 1997).

- **Trained professionals are not always available**. While there is increasing evidence regarding the efficacy of several psychotherapies can reduce suicide risk (McKeon, 2009), and training primary care physicians to recognize and treat depression has demonstrated reductions in suicide deaths (Rihmer, Rutz, & Pihlgren, 1995), there remains a lack of suicide-specific training for mental health care professionals (Berman, et al., 2006).

- **Adherence to treatment can be poor.** For suicide attempters who've been treated in emergency departments, compliance with follow-up care instructions can be poor (Nordentoft & Sogaard, 2005).

Comprehensive programs offer best opportunity to reduce suicide risk

Suicide is a complex behavior that defies simple prevention approaches. While means restriction and physician education have demonstrated reductions in suicide deaths, they cannot prevent all suicide deaths. Therefore, **comprehensive prevention approaches that take into consideration the complexities of individuals who are at risk, and the communities in which they live, may allow for the greatest opportunity to significantly reduce suicide deaths.** They may include means restriction and physician education.

Comprehensive suicide prevention approaches are those that contain multiple interventions designed to address the varied needs of those at risk. **Comprehensive approaches may also facilitate access to community channels of help on the part of those at risk.** Comprehensive approaches have demonstrated success at reducing suicide rates in varied settings (Knox, Litts, Talcott, Feig, & Caine, 2003; May, Serna, Hurt, & DeBruyn, 2005; Zenere & Lazarus, 2009). **A common feature of many comprehensive approaches is gatekeeper training.**

1.4 Gatekeeper training as prevention

John Snyder coined the term "gatekeeper" in a 1971 article published in the *Bulletin of Suicidology*. Snyder defined gatekeepers as "any person to whom troubled people are turning for help" (p. 39). Today, the definition of gatekeeper has been more specifically defined as persons who have been trained to recognize and intervene with those who may be at risk for suicide.

> *A gatekeeper can be any person in a position of trust whose potential contact with a person at risk may be informal (friend, family member, sports coach) or more clearly associated with a professional helping role. Gatekeepers who are competent in suicide first aid and comfortable being a first-responder with a person at risk play a vital role in the primary care network of a community (Turley & Tanney, 1998, p. 32).*

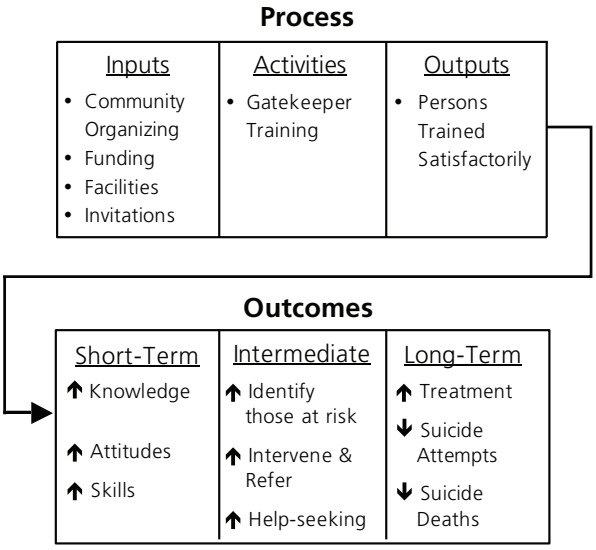
Quite often, gatekeeper training is defined as a linear process, as in this definition from the U.S. National Strategy for Suicide Prevention:

> *(Gatekeepers are) those individuals in a community who have face-to-face contact with large numbers of community members as part of their usual routine; they may be trained to identify persons at risk of suicide and refer them to treatment or supporting services as appropriate.(U.S. Department of Health and Human Services, 2001, p. 78)*

The logic of the gatekeeper training model is simple

There is a simple logic in support of gatekeeper training: By training a broad swath of people to recognize symptoms of suicide, how to intervene with those at risk for suicide, and how to refer those at risk for help, treatment of those at-risk for suicide will increase, thus decreasing suicide attempts and deaths (Figure 1). This is important because those who are at risk for suicide are more likely to seek help from friends and family than from medical or mental healthcare professionals (Barnes, Ikeda, & Kresnow, 2001).

Figure 1: Generic Logic Model for Gatekeeper Training



Gatekeeper training is widespread

Gatekeeper training has been widely applied. It has been used with native peoples (Capp, Deane, & Lambert, 2001), veterans (Matthieu, Cross, Batres, Flora, & Knox, 2008), the military (Rozanov, Mokhovikov, & Stiliha, 2002), in secondary schools (Gould, Greenberg, Velting, & Shaffer, 2003) and higher education (Tompkins & Witt, 2009), places of worship (Molock, Matlin, Barksdale, Puri, & Lyles, 2008), senior living communities (Walker & Osgood, 2000), and workplaces (Cross, Matthieu, Cerel, & Knox, 2007) among other groups and locations.

Research support for gatekeeper training has been mixed

While gatekeeper training is clearly popular, research on the effectiveness of gatekeeper training has been mixed.

- Gatekeeper training was named as one of the three "most promising interventions" in an international review of suicide prevention strategies (Mann, et al., 2005, p. 270)
- A review of youth suicide prevention programs found research on gatekeeper training to be "encouraging" (Gould, et al., 2003, p. 395); another study found that students identified by gatekeeper training in schools were successfully linked to mental health services (Kataoka, Stein, Nadeem, & Wong, 2007)
- However, a recent well-controlled study found that a 1-2 hour gatekeeper training with school staff did not significantly increase the identification and referral of students (Wyman, et al., 2008)

Typically, evaluations of gatekeeper training programs have demonstrated increases in relevant knowledge and desired attitudes. However, questions remain in regard to the impact these changes may have in the actual identification, referral, and treatment of those at risk for suicide, and ultimately whether these lead to decreased suicides (Isaac, et al., 2009).

While commonly labeled as a gatekeeper training program, ASIST differs from most gatekeeper training programs in several significant ways.

2. What is ASIST and How does it Work?

ASIST is a fourteen hour gatekeeper training workshop that teaches participants to connect, understand, and assist persons who may be at risk for suicide. It was developed in Calgary, Alberta, Canada, in 1983 by four multidisciplinary human service professionals. Originally referred to as the "Foundation Workshop" or "Suicide Intervention Workshop," development of ASIST was supported by provincial and state governments of Alberta and California.

2.1 ASIST is different from most other gatekeeper programs

In his seminal article on gatekeeper training, Snyder (1971) stated that "The key to a full understanding of the gatekeeper philosophy is that it is against formal referral as a standard operating procedure" (p. 40). Snyder believed that "most people who end up in mental health clinics or who attempt suicide are victims of breakdowns in community channels for help" and that the role of gatekeepers should be to get those at risk "back into these channels, not as alienating them further from the community by substituting artificial channels for help" (p. 40). *The ability of those at risk to access these channels forms the basis for a community-based comprehensive approach to suicide prevention.*

While most gatekeeper training models are linear—teaching a three-step process of identification, intervention, and referral—ASIST more closely follows Snyder's philosophy by teaching a Suicide Intervention Model (SIM) that does not necessarily result in direct referrals to professional mental health services.

Instead of direct intervention and referral, the ASIST SIM recognizes that referrals may not be the best solution (or even a possible solution) for the person at risk. Therefore, the SIM focuses on the quality of the interaction between the gatekeeper and person at risk, and how that interaction can result in reduced risk through the creation of a safeplan that connects the at-risk individual with a variety of community resources, including, if indicated, mental health services. This model appears to be more akin to Snyder's 1971 gatekeeper model than other gatekeeper programs. The ASIST SIM instructs gatekeepers to connect, understand, and assist (Figure 2).

Figure 2: ASIST Suicide Intervention Model (SIM)

- **Connect**
  - ✓Explore invitations
  - ✓Ask about suicide
- **Understand**
  - ✓Listen to reasons for dying and living
  - ✓Review risk
- **Assist**
  - ✓Develop a safeplan
  - ✓Follow-up on commitments

ASIST safeplan provides options to those at risk

The ASIST SIM includes assessment of suicide risk and the development of a safeplan. The safeplan provides for various options depending upon present and future risk, available resources, and the needs of the person at risk. Options include not only referral to formal mental healthcare professionals but also to friends, family members, and other sources of support. **It is the philosophy of ASIST that the SIM may be sufficient to reduce risk without the need for further referral** (Figure 3).

Figure 3: ASIST Logic Model—Outcomes

Outcomes

Short-Term	Intermediate	Long-Term
↑ Intervention Knowledge ↑ Attitudes Favorable to Intervening ↑ Suicide Intervention Skills	↑ Identification of at risk ASIST Suicide Intervention Model ↑ Connecting ↑ Understanding ↑ Assisting	↓ Suicide Attempts ↓ Suicide Deaths

ASIST is longer to accommodate additional material and training methods

ASIST training is longer than most gatekeeper training programs. ASIST training is fourteen hours, while most gatekeeper training programs provide one to five hours of training (Suicide Prevention Resource Center, 2009). The greater time allows for a more skill dependent training, particularly in regard to addressing the attitudes of participants and engaging in simulations.

2.2 Other notable features of ASIST training

Other notable features of ASIST include a focus on improving trainee attitudes toward suicide intervention, the use of multiple simulations to rehearse and refine intervention skills, and a discussion of the potential of ASIST, along with complementary programs, to create suicide safer communities.

Improving attitudes toward suicide intervention

At the beginning of ASIST training, trainees, with the help of trainers, have an opportunity to openly and freely discuss their attitudes about suicide. "*In workgroup discussion, participants explore, express, identify, examine and perhaps modify their attitudes about suicide and suicide first aid. Looking at attitudes toward suicide is the first step in learning the knowledge and skills to work with persons at risk of suicide*" (Lang, Ramsay, Tanney, & Kinzel, 2007, p. 73).

Using simulations to improve skill development

ASIST training incorporates multiple levels of simulations (trainer to trainer, trainer to audience, trainer to trainee, trainee to trainee). The use of interactive methods, particularly simulations, in training is more likely to change behavior than simple didactic presentations (Davis, et al., 1999) and active learning, which includes the use of simulations, may increase gatekeeper training effectiveness (Cross, et al., 2007).

Creating suicide safer communities

ASIST is designed to work best when part of a community-based comprehensive approach to reducing suicide risk. This community approach may involve lay-persons, paraprofessionals, and professionals alike to create what *LivingWorks* refers to as "suicide safer communities."

In addition to direct training, community-wide efforts may lead to increased awareness, advocacy, capacity building, and beneficial policies. Such community outcomes were addressed in comprehensive *Choose Life* (Griesbach, Dolev, Russell, & Lardner, 2008) and *Vivat* (Lander & Tallaksen, 2007) program evaluations cited in this report.

In addition to ASIST, *LivingWorks* offers several levels of training including suicideTALK (a 1.5-2 hour community-based awareness program), safeTALK (a 3-hour gatekeeper training program), suicideCARE (a one-day clinically focused training), and Working Together (a one-day program for community caregivers). More information about these can be found on the *LivingWorks* website (www.livingworks.net).

2.3 Development of ASIST

Development of ASIST was based largely upon Rothman's Research and Development framework (Rothman, 1980; Rothman & Thomas, 1994). The Rothman model posits four stages of intervention development and dissemination

1. **Collecting and assessing available knowledge**
2. **Creating and pilot testing an initial design**
3. **Refining program & preparing for dissemination**
4. **Disseminating program**

These stages are meant to be dynamic, forming a continuing process of program improvement. **As a result, in 2001 the ASIST program underwent a major review and revision that was completed in 2003. A smaller review and revision was begun in 2008 and is scheduled to be completed in 2010.**

The Rothman model also allows for adaption of the ASIST program to meet local needs, customizing certain aspects of dissemination and implementation to best fit local needs.

ASIST is disseminated through a Training for Trainers (T4T) model

ASIST is disseminated through a network of trainers who have completed a 5-day T4T training course. After completion of the course, trainers are considered "provisional" until they have conducted and received Q&A feedback for three ASIST workshops. With additional experience, Q&A feedback, and in some cases supplemental training, trainers can become Master Trainers, Consulting Trainers, Training Coaches, or Team Leaders. Trainers can be independent contractors or work for agencies that have adopted ASIST training. **Providing trainers with continuing support and feedback is an important component of ASIST trainer training.**

ASIST was developed for use in a variety of settings

Although it is highly standardized, ASIST training has been used in a variety of settings with trainees from a variety of backgrounds and countries. ASIST has been implemented in secondary and post-secondary schools, mental health centers, hospitals, social service and public safety agencies and numerous other community settings. Those trained in ASIST include social workers, psychologists, psychiatrists, medical students, teachers, public safety officers, administrators, crisis line workers, and many others. ASIST training has been conducted in over twenty countries and ASIST training and materials are available in five languages. The ASIST logic model is adaptable to the practical and cultural considerations found in a variety of countries.

3. What do evaluations say about ASIST?

There have been numerous evaluations of the ASIST program. To be included in this review, evaluations must have (1) been publicly available prior to June 2009, (2) been written in English, (3) been either a qualitative study or a quantitative study that measured pre-training and post-testing or training and comparison group differences (with the exception of satisfaction with training), and (4) measured at least one of the following outcomes

- Satisfaction with training
- Knowledge and attitudes
- Intervention-related skills
- Intervention-related behaviors
- Suicidal behaviors (suicide attempts or deaths)

While every effort was taken to ensure that the all eligible ASIST evaluations were included in this review, some may have escaped detection (if the reader is aware of any evaluations that should be included in future versions of this review, please notify the author).

3.1 How data was collected

Evaluations used in this report were obtained either by an electronic search of the available literature, program evaluation websites, the *Suicide Information and Education Collection*[1], or directly from *LivingWorks Education Inc*. All are publicly available from their original source or directly from *LivingWorks*.

A standardized form was used to extract data from evaluation reports. Data collected included:

- **Descriptive Information**: Country of origin, author, year, title
- **Group Characteristics**: Population studied, setting, number studied
- **Method of Data Collection**: Domain (satisfaction with training, knowledge & attitudes, skills, behaviors, suicide attempts, suicide deaths), title of instrument used to collect data, number of questions in the instrument
- **Quantitative Outcomes**: Comparison (between pre- and posttest scores on an assessment, or between those trained in ASIST and those in a comparison group), time between testing (short, medium, or long-term), outcome type, sample size, effect size type, and effect size
- **Qualitative Outcomes**: Method, general conclusions, report narrative, participant narratives
- **Notable Findings and General Notes**

Because of the variety of methods and measures used in the evaluation reports examined, it was not possible to mathematically aggregate results across studies; therefore, results are reported for individual evaluations grouped by outcomes.

[1] *The Suicide Information and Education Collection* is housed at the *Centre for Suicide Prevention in Calgary, Alberta, Canada.* See www.suicideinfo.ca for more information.

3.2 Evaluations summarized in this report

The evaluations summarized in this report are listed below. Full bibliographic information for these is contained in the reference section of this report.

Australia

1. Turley (2009) *Lifeline's LivingWorks Project: Supplementary Evaluation Report*.
2. Turley, Pullen, Thomas, & Rolfe (2000) *LivingWorks Applied Suicide Intervention Skills Training (ASIST): A Competency-Based Evaluation*.
3. Turley & Tanney (1998) *LivingWorks Australian Field Trial Evaluation Report*.

Canada

4. McAuliffe & Perry (2007) *Making it Safer: A Health Centre's Strategy for Suicide Prevention*.
5. Tierney (1994) *Suicide Intervention Training Evaluation: A Preliminary Report*.
6. Walsh & Perry (2000) *Youth Based Prevention Strategies in a Rural Community, Quesnel, BC: A Community Suicide Prevention Study*.

Norway

7. Guttormsen et al. (2003) *Applied Suicide Intervention Skills Training: An Evaluation*.

Scotland

8. Griesbach et al. (2008) *The Use and Impact of Applied Suicide Intervention Skills Training (ASIST) in Scotland: An Evaluation*.
9. Smith & MacKay (2007) *Evaluation of Applied Suicide Intervention Skills Training (ASIST); West Dunbartonshire*.
10. Todd (2005) *An Evaluation of the Use of ASIST (Applied Suicide Intervention Skills Training) in Shetland*.

United States

11. Chen (2009) *Project Safety Net: CSU Final Report. October 1, 2006-September 30, 2009*
12. Coleman et al. (2008) *Garrett Lee Smith Memorial Act Oregon Youth Suicide Prevention and Early Intervention Annual Report 2007-2008.*
13. Cornell et al. (2006) *Evaluation of Student Suicide Prevention Training in Virginia.*
14. Demmler (2007) *Gatekeepers: Helping to Prevent Suicide in Colorado.*
15. Eggert et al. (1999).*Washington State Youth Suicide Prevention Program: Pathways to Enhancing Community Capacity to Prevent Youth Suicidal Behaviors. Final Report, 1999.*
16. Illich (2004) *Suicide Intervention Training Outcome Study: Summary Report.*
17. LivingWorks Education Inc. *(2009) HQDA Tasker No. 09013001 ASIST Evaluation (U.S. Army)*
18. McConahay (1991). *Suicide intervention training effectiveness*.
19. ORS (2002) *Youth Suicide Prevention Program: Annual Evaluation Report 2001-2002 Evaluation of Program Training Programs.*
20. ORS (2003) *Youth Suicide Prevention Program: Annual Evaluation Report 2001-2002 Evaluation of Program Training Programs.*

Because of space considerations, not all results from these evaluations are included in this report. Complete results can be found in the separately published *Data Extraction Tables*.

3.2 Satisfaction with ASIST training

Satisfaction is a measure of the value that trainees place in the training. For example, did trainees think the training was useful? Did they consider it a valuable use of their time? Would they recommend the training to others?

Satisfaction with training is critical. Without it, training would likely be unsustainable regardless of whether other outcomes were positive or not.

Summary of Satisfaction Outcomes

Based upon several evaluation reports, ASIST trainees have generally been very satisfied with the training. Specifically, participants

- Found ASIST training to be a **good use of their time**
- Thought ASIST training was of **high quality**
- Thought that the **benefits** of ASIST were **long lasting**
- Felt that they were **better prepared to address suicide** after ASIST training

Training was a good use of time

Ninety-five percent of over 500 caregivers in Scotland agreed with the statement "*going to ASIST training had been a good use of their time*" (Griesbach, et al., 2008).

Training was of high quality

Surveys and interviews of social and healthcare service providers found that *"Participants in the ASIST workshops held a strongly positive view of the training and felt that taking part was worthwhile and beneficial..., rated highly the organization and planning of the workshops, [and] felt the quality of training they received was high"* (Smith & MacKay, 2007, p. 93).

Benefits of training have lasted for years

Trainees, from a variety of helping professions in Alberta, Canada, reported that the ASIST training was valuable and that the benefits had lasted for several years. Further, these trainees reported greater knowledge of community resources, greater comfort in talking about suicide, and greater skills in assessing suicide risk and intervening with those at risk (Walsh & Perry, 2000).

Would recommend training to others

Over 90% of National Health Service workers, other government employees, and laypersons in Scotland, "*were very keen to recommend ASIST to others*" (Todd, 2005, p. 5). Eighty-four percent of participants would recommend ASIST because of the "*skills, knowledge, and insights gained*" (p. 6).

96% of U.S. Army personnel and associated civilians who took the ASIST training "Strongly Agreed" or "Agreed" that ASIST training should be given to all personnel that interact closely with soldiers (LivingWorks Education Inc., 2009).

Felt better prepared to address suicide

Medical students in Norway felt that ASIST training helped them feel more secure about the subject of suicide, that ASIST simulations increased mastery of the subject, and that their confidence to ask about suicide had increased (Guttormsen, Høifødt, Silvola, & Burkeland, 2003). Authors of the evaluation concluded that

The medical students believed that after the workshop they were better prepared to encounter people who were close to suicide. They had been given a tool that could be used in their clinical work. The feelings of fear, helplessness, lack of confidence and uncertainty prior to the workshop had been supplanted by greater clinical competence (p. 4).

High satisfaction across a range of measures

Over 90% of helping professionals who took ASIST training in Colorado State "Strongly Agreed" or "Agreed" with the following satisfaction related statements

- The training increased my knowledge about suicide prevention
- The training met my needs
- The training was practical to my work and/or my daily life
- I fully understand why I attended the training
- I am now more ready to help with youth suicide prevention in my community
- I will use what I learned from this training
- The things I learned will help youth seek help for issues that might lead to suicide
- The things I learned will help prevent youth suicide or reduce the problems that might lead to suicide

However, trainees were **less satisfied with the recognition of cultural differences** in ASIST training. Only 52% "Strongly Agreed" or "Agreed" with the statement that "The training addressed cultural differences in the youth I intend to serve" (Chen, Moore, & Gibbs, 2009).

Increased satisfaction with training

After implementing ASIST training in a mental health center, clinical, administrative, and support personnel who "strongly agreed" or "agreed" with the statement "I am provided with adequate, ongoing training in how to assess and respond to patients with suicide risk" improved from 30% to 80% (McAuliffe & Perry, 2007).

3.3 Knowledge and attitude outcomes of ASIST training

Knowledge is simply what people know about a topic. Some examples might be knowledge of suicide warning, intervention procedures, or locations of helping resources. Attitudes are how people feel concerning a topic. For example, "suicide is preventable" or "I can effectively intervene with someone at risk" (Chinman, Imm, & Wandersman, 2004).

Knowledge and attitude changes are important because they are often necessary precursors to changes in behaviors, and changing behavior is the ultimate goal of ASIST training.

Summary of Knowledge and Attitude Outcomes

Based upon results from multiple evaluations, ASIST training has led to positive changes in both knowledge and attitudes. Furthermore, these changes have endured over months and years. Specifically, participants

- Reported **greater knowledge** about suicide, suicide prevention, warning signs of suicide, and intervention methods
- Reported **greater confidence** in their ability to intervene after training

Knowledge and confidence increased after ASIST training

ASIST trainees in Scotland, 75% of whom were professionals, reported substantially increased knowledge, confidence, and skills after ASIST training (Griesbach, et al., 2008). The authors concluded:

> *Participants' self-reported levels of knowledge, confidence and skills in relation to intervening with someone at risk of suicide **increased substantially** immediately after ASIST. These increases were largely maintained over time. (p. 63; bold in the original).*

Knowledge and attitudes were greater than comparison group

ASIST trainees in Alberta, Canada, demonstrated greater knowledge and positive attitudes toward suicide intervention than did members of a comparison group (Tierney, 1994).

Readiness to intervene increased after ASIST training

A variety of professionals and laypersons in Australia reported a significantly greater readiness to intervene after ASIST training than before (Turley, Pullen, Thomas, & Rolfe, 2000).

Knowledge and attitude gains maintained over time

A variety of professionals and laypersons in Australia demonstrated increased knowledge about suicide and intervention, as well as increased willingness to intervene and optimism about intervening, immediately after ASIST training and four months later, when compared with pre-training knowledge and attitudes (Turley & Tanney, 1998).

School personnel reported sustained knowledge gains

School personnel in Oregon, U.S., demonstrated increased knowledge of facts about suicide prevention, suicide warning signs, and how to intervene with someone at risk for suicide, as well as greater comfort, competence, and confidence in helping suicidal persons immediately following ASIST training. These gains were maintained when measured three months after training (Organizational Research Services, 2002). The authors concluded:

> *The results demonstrate the strong positive impact of workshops and training on knowledge of suicide issues, prevention, intervention and assessment. We observe many instances of significant increases over time in knowledge among participants. Moreover, the analysis at three time points indicates that the knowledge gains demonstrated at the post workshop persist three months later (p. 3).*

Increased confidence to intervene

National Health Service Staff in Scotland reported a 63% increase in confidence to intervene with someone who may be at risk for suicide after ASIST training (Griesbach, et al., 2008).

Youths and adult trainees in Washington State reported significantly greater comfort, competence, and confidence to intervene with someone at risk and a greater likelihood of intervening after ASIST training (Eggert, Karovsky, & Pike, 1999).

U.S. Army personnel and associated civilians reported significantly greater confidence, preparation, and likelihood to intervene after ASIST training (LivingWorks Education Inc., 2009).

Knowledge of intervention skills increased

Trainees from helping professions in Colorado State demonstrated significant increases in their knowledge of intervention skills immediately after training and three months later (Chen, et al., 2009). Similar increases were seen in a variety of suicide intervention knowledge for school workers in Washington, U.S.A. (Organizational Research Services, 2003).

Telephone counselors increased knowledge and adaptive attitudes

Telephone counselors in Australia reported greater knowledge and attitude gains after ASIST training. The author concluded that

> *"Clearly, ASIST participation had strengthened telephone counselors' self-assessed readiness, willingness and ability to perform key tasks associated with an effective suicide intervention" (Turley, 2009, p. 20).*

3.4 Skill-related outcomes for ASIST training

Skills are defined as expertise or accomplishment in any given behavior, such as intervening with someone at risk for suicide using prescribed methods.

Skills acquisition is perhaps the most valid measure of the effectiveness of ASIST training. Outcomes beyond this—intervention behaviors and suicidal behaviors—are contextually dependent. The success of ASIST relies first upon the skill of those trained to engage those at risk using the Suicide Intervention Model (SIM), and this can be reliably measured in all ASIST trainees.

The best way to measure skills is to observe, in a real world setting, the interaction between someone trained in ASIST and someone at risk for suicide. Unfortunately, this is rarely possible. Other methods include observing trainee interaction in a simulated intervention or having trainees respond to simulations with a paper and pencil response. Having trainees simply rate their ability to perform a skill is more a measure of self-efficacy and has therefore been classified as an attitude in this report.

Summary of Skill-Related Outcomes

Based upon results from three evaluations, ASIST trainees have demonstrated increased intervention skills. Specifically,

- Trainees demonstrated **greater intervention skills** after ASIST training than before training.
- Trainees also demonstrated **greater intervention skills** when compared to those who hadn't been ASIST trained.

Intervention competencies increased

ASIST trainees in Australia, who responded to two taped scenarios of a person at risk, demonstrated significantly improved understanding of scenario issues, assessment of suicide risk, perceptions of the unfolding process, and knowledge about how an effective suicide intervention strategy might be applied to the situation, compared to pretest understanding (Turley, et al., 2000).

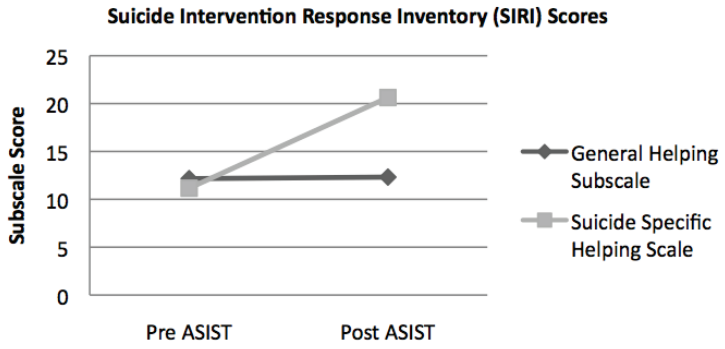
Trainees did better in simulated interventions

ASIST trainees in Alberta, Canada, performed significantly better in simulated suicide interventions than those in a comparison group (Tierney, 1994). The author concluded that

> *Intervention competencies were improved by the workshop experience. Participants were demonstrably better able to make direct inquiries regarding the existence of suicidal ideation and behaviors, to expand on suicide-related material, to assess factors related to risk, to [bring to the] surface and work with ambivalence, and to develop direct, specific, mutually agreed upon action plans for the prevention of immediate suicidal behavior as demonstrated in simulated interventions (pps. 74-75).*

In addition to doing better in simulated interventions, ASIST trainees also significantly improved their suicide-specific helping scores (Figure 4).

Figure 4: Suicide helping scores improved after ASIST (Tierney, 1994)



Ability to identify risk level increased

U.S. Air Force personnel demonstrated significantly improved ability to identify risk factors and evaluate risk level, based upon four risk scenarios, after ASIST training (Illich, 2004).

3.5 Behavior change outcomes for ASIST training

Behaviors are observable actions, self-reports of actions, or records of actions on the part of people, such as reports of interventions or records of hospital admissions. While suicide attempts and deaths are behaviors, because of their importance, they have been given a category of their own.

Ultimately, it is the hope of ASIST training to change behaviors—first by increasing the number and quality of suicide interventions then, subsequently, in suicidal behaviors.

Summary of Behavior Outcomes

Results are mixed in regard to intervention behavior after ASIST training. Specifically,

- Most evaluations reported increased intervention behavior after ASIST training when compared to pre-training behavior or a comparison group. However, there were several evaluations that reported no significant change in intervention behaviors.
- Two evaluations reported increased in interventions or assessments but decreased in referrals.

Increased interventions after ASIST

Forty-two percent of social and healthcare service providers who participated in ASIST training in Scotland said they had experienced "*putting ASIST into practice with individuals at risk*." Seventy-nine percent of those who hadn't put ASIST into practice said they hadn't had the opportunity. The number trained who ultimately used their ASIST skills increased over time (Griesbach, et al., 2008).

A variety of ASIST-trained professionals and paraprofessionals in Australia reported a 33% increase in direct helping behaviors since ASIST training (Turley & Tanney, 1998).

National Health Service Staff in Scotland reported a 20% increase in interventions for those possibly at risk of suicide after ASIST training (Griesbach, et al., 2008).

Fifty-two percent of ASIST trainees in Scotland reported that they had used the training with a person at risk for suicide. Most had used their training between one and five times, but some had used it over twenty times (Todd, 2005).

Gatekeeper training behaviors increased for school personnel

School personnel in Oregon, U.S., reported increased gatekeeper training behaviors after ASIST training. Authors of the evaluation concluded that those results provided "*preliminary evidence that ASIST…has an overall effect on increasing desired suicide prevention behaviors*" (Cornell, Williams, & Hague, 2006, pp. 9, 11).

Greater number of reported interventions than other programs

A variety of ASIST-trained caregivers in Colorado reported a greater number of interventions (+17%) than caregivers trained in two other types of gatekeeper training. Overall, 60% of ASIST trainees reported concern for a suicidal person and 52% reported an intervention during the previous three months (Demmler, 2007).

Increased identification but decreased referrals in medical setting

A large medical center in Ontario, Canada, reported increased suicide risk assessments and identifications of those at risk, and fewer hospital admissions , three years after implementing ongoing ASIST training and associated protocols (McAuliffe & Perry, 2007).

Medical Center Reports Three Years after Implementation of ASIST

Assessments of suicide risk .....+ 13%
Identification of patients at risk for suicide.....+ 18%
Admission of suicidal patients.....- 14%

The authors speculated that a key aspect of the ASIST Suicide Intervention Model—exploring reasons for dying and reasons for living—reduced admissions

> *Staff of the Crisis Intervention Team reported that with a clearer process of exploring reasons for dying, reasons for living and with an increased focus on strengthening the client's protective factors in the community, some admissions had been averted (p. 302).*

Increased identification but decreased referrals also seen in schools

ASIST trainees in a school setting reported a greater number of student safety contracts and fewer number of student suicide attempts when compared to those trained in a different gatekeeper training program and/or those in comparison schools. They also reported fewer referrals to outside agencies than those in comparison schools (Cornell, et al., 2006).

No differences seen in intervention behavior after training

U.S. Air Force personnel, while demonstrating improved risk identification and assessment, did not produce changes in intervention-related behaviors after training (Illich, 2004).

A variety of community professionals in Oregon reported a slight decrease in encounters with suicidal persons but a slight increase in the frequency they intervened with those they thought were suicidal (McConahay, 1991).

School personnel in Washington State, while demonstrating significant increased knowledge about suicide and intervention skills after ASIST training, showed a mix of intervention behaviors at six-months post training, and decreased intervention behaviors nine- and twelve-months after training (Organizational Research Services, 2003).

3.6 Decreased suicidal behaviors

For the purposes of this report, suicidal behaviors are defined as either suicide attempts or suicide deaths.

Reducing suicide attempts and deaths are the ultimate aim of suicide prevention programs, but, due to methodological restrictions, they can be difficult or impossible to measure reliably. See Chapter 4 *How can ASIST be better evaluated?* for a discussion of methodological considerations related to this issue.

Summary of Suicidal Behavior Outcomes

There was a single evaluation study that reported suicide attempts as an outcome. Specifically,

- Schools with ASIST-trained personnel reported a reduction in known suicide attempts.

Schools with ASIST-trained personnel reported fewer suicide attempts

Schools in Virginia with ASIST-trained personnel reported fewer suicide attempts in the past three months when compared with schools that had received other types of gatekeeper training. When annualized, the difference was 1.5 fewer suicide attempts per year per school (Cornell, et al., 2006).

4. How can ASIST be better evaluated?

Roger Tierney's 1994 evaluation of ASIST training demonstrated increased knowledge, improved attitudes, and skill development on the part of trainees, yet he recognized one limitation to his study: "*There remains the classic question of whether the intervention procedures taught are effective in actually reducing suicidal behavior*" (p. 75).

If the purpose of suicide prevention programs is to prevent suicide, then the most valid measure of the effectiveness of these programs is suicide deaths. However, because of their low base rate, suicide deaths are not a reliable outcome for most suicide prevention programs. Program evaluators are therefore left with two choices:

1. Use population-based evaluations of suicide prevention programs so that suicide deaths are a reliable outcome, or
2. Use surrogate endpoints rather than actual suicide deaths, to evaluate the effectiveness of suicide prevention programs.

4.1 Population-centered evaluation approaches

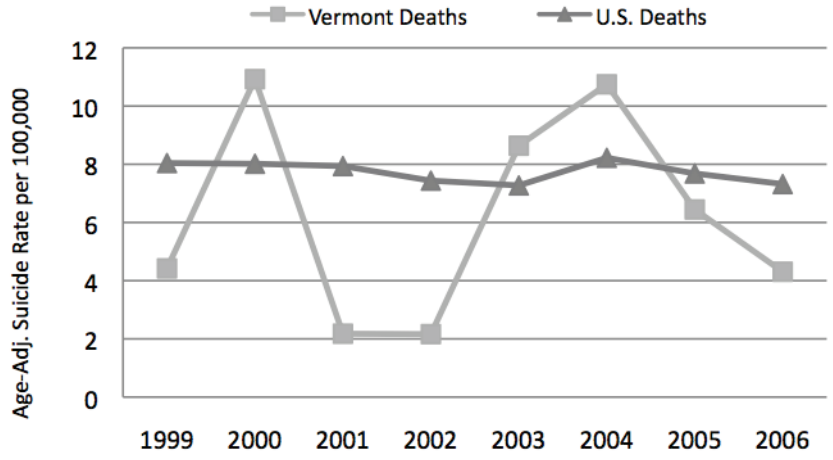
Population-centered approaches evaluate outcomes from entire groups such as all residents of a city, state, or country, or all members of an institution, such as all members of the armed forces, or all students in a school system. The benefit of this approach is that with a sufficiently large population, suicide deaths are sufficiently numerous to be a reliable outcome. However, this requires a large population.

> *As a general rule of thumb, to study the impact of a suicide prevention program upon the suicide deaths in a general population, one million person years is required. This could be a study of one million persons for one year or a study of 100,000 persons for ten years (Brown, Wyman, Brinales, & Gibbons, 2007).*

Why is a Large Population Needed to Study Suicide Deaths?

Because small numbers can be erratic, they are not a reliable outcome for evaluations. Figure 5 shows youth suicide rates in Vermont and the United States as a whole. While rates for the U.S. are fairly consistent over time, rates for Vermont fluctuate. This is due to the relatively smaller population of 15-19 year olds in Vermont (approx. 43,000) than in the U.S. population (approx. 20 million).

Figure 5: U.S. and Vermont Suicide Rates for 15-19 year-olds



Examples of population-based evaluations

There have been several notable population-based studies of suicide prevention programs. While none of these involved the ASIST program, they may provide a model for future evaluations of ASIST.

The **Air Force suicide prevention program** instituted 11 different initiatives, including gatekeeper training, to reduce suicide. The evaluation examined suicide rates within the Air Force for a period of 13 years. With approximately 350,000 Air Force members, it required three years of post-intervention data collection to determine if observed reductions in suicide deaths were statistically reliable (Knox, et al., 2003).

Dade Country, Florida, implemented a suicide prevention program that combined **crisis response teams**, **protocols**, **student curriculum**, etc., and found a decrease in suicide attempts and deaths over the course of 16 years (Zenere & Lazarus, 1997, 2009).

Depression screening and treatment for elderly Japanese resulted in lower suicide rates over ten years in a province that received these services when compared to a province that did not receive services (Oyama, Koida, Sakashita, & Kudo, 2004).

Physicians on the island of Gotland, Sweden, were trained to better **recognize and treat depression** in their patients. Short-term outcomes included decreased referrals and admissions, decreased suicide rates, and increased anti-depressant use (Hodges, Inch, & Silver, 2001; Rutz, 2001).

Recommendations for population-based evaluations of ASIST

- The reason for using a population approach is to ensure that suicide deaths are a statistically reliable outcome. Therefore, **a reliable source of suicide death data should be accessible**.
- **A large population and sufficient number of years is needed** to equal the one million person years required to make suicide deaths a reliable evaluation outcome. (The number of person years needed may vary depending upon the baseline suicide rate for the population—the higher the suicide rate, the fewer person years required.)
- **A large number of ASIST trained persons are required** in order to have an impact on the population. There is no simple formula for determining this number. It should be based on the capacity of those trained in ASIST to interact with those at risk.
- **ASIST, alone, may not be adequate to effect a change**. Combinations of interventions are often required to make a difference on the population level. For example, in addition to ASIST training, initiatives to increase awareness of services, access to services and clinical training, or other complementary interventions may also be required.
- **Data from similar populations should be available** so that comparisons can be made. This will help rule out the influence of possibly confounding factors.

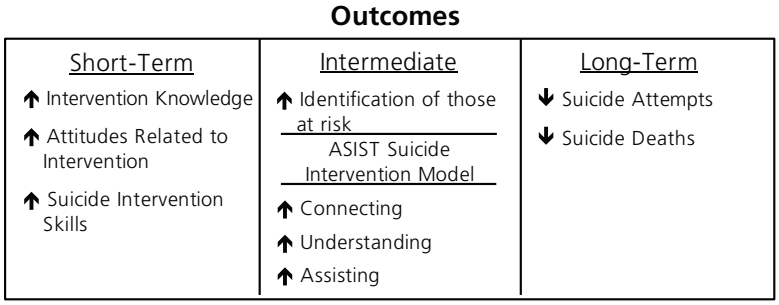
4.2 Person-centered evaluation approaches

Person-centered evaluation approaches collect data from individuals. For research and analysis purposes, individuals are usually grouped into those receiving training and those not receiving training (a control group) or those who have been intervened with and those who have not. Since it is not possible to study the impact of gatekeeper training upon suicide deaths using a person-centered approach, an important consideration of this approach is "What to measure?"

Measuring the effectiveness of ASIST training

Ultimately, the purpose of ASIST training is to prevent suicide. As discussed earlier, however, this is a difficult outcome to measure using population-centered approaches and a nearly impossible outcome to measure using person-centered approaches. It is therefore important to determine what would be a valid and reliable outcome of ASIST training. An important aid in this determination is the ASIST logic model, which organizes theorized ASIST effects into short-, intermediate-, and long-term outcomes (Figure 6).

Figure 6: ASIST Logic Model—Outcomes



The logic model illustrates the mechanism by which ASIST training is thought to reduce suicide. It also provides the outcomes by which ASIST effectiveness can be measured.

Measuring ASIST short-term outcomes is important. Short-term outcomes are those that can be measured immediately following training. Based upon the evaluations summarized in this review, it is clear that ASIST training results in positive knowledge, attitude, and skill outcomes. This is critical because **knowledge, attitude, and particularly skill outcomes are the most reliable indicator of the effectiveness of ASIST training**.

There are a number of good measures that can be used to evaluate ASIST short-term outcomes. These include:

Knowledge Measures

- Intervention Knowledge Test (IKT; Tierney, 1988)
- Information Questionnaire on Suicide (IQS; McIntosh et al., 1985)

Attitude Measures

- Suicide Intervention Questionnaire (SIQ; Tierney, 1988)

Skill Measures

- Suicide Intervention Protocol (SIP; Tierney, 1988)

Intermediate outcomes are more complex because they are context dependent. Intermediate outcomes can occur any time after training, be it a day, month, or year. They are largely dependent upon the opportunity to use ASIST skills. Some trained in ASIST will have immediate and continual opportunities to use ASIST skills. Others may have few, if any, opportunities.

The Griesbach et al. (2008) evaluation found that forty-two percent of ASIST trainees said they had experienced "*putting ASIST into practice with individuals at risk*." However, seventy-nine percent of those who hadn't put ASIST into practice said they hadn't had the opportunity. Therefore, **intermediate outcomes are generally dependent upon the opportunity to use them and not necessarily the quality and effectiveness of ASIST training.** To account for this context, when evaluating intermediate outcomes it is critical to (1) ask about opportunity to use ASIST skills, and (2) have a control group with equal opportunities to intervene so that the impact of ASIST can be accurately gauged.

Suicide attempts may be a realistic long-term outcome to measure. As explained earlier, to examine the impact of ASIST training upon suicide deaths would require a large population and a correspondingly large number of persons trained in ASIST. Suicide attempts, because of their greater frequency, may be a more reliable long-term measure. The difficulty with using suicide attempts as an outcome is first defining what a suicide attempt is and, second, deciding how to measure it. A good discussion of this issue can be found in Silverman, Berman, Sanddal, O'Carroll, and Joiner's 2007 *Rebuilding the Tower of Babel* article on suicide nomenclature. An additional tool in this regard might be the *Columbia Classification Algorithm of Suicide Assessment* (Posner, Oquendo, Gould, Stanley, & Davies, 2007).

To this point, the most important source of data regarding the effectiveness of ASIST training has been inaccessible

The most important source of data concerning the effectiveness of ASIST training is also the most difficult to access: those at risk for suicide that have had an ASIST intervention. Ultimately, the most important gauge of the effectiveness of the ASIST program is whether the suicide risk of those who have had interventions has been reduced. A randomized clinical trial of the ASIST program, funded by the National Institutes of Health, is currently underway in the U.S. In addition to examining the transfer of ASIST training to practice, this trial will examine the impact of the ASIST Suicide Intervention Model upon suicidal callers to crisis lines.

Recommendations for person-centered evaluations of ASIST

- When possible, **standardized measures of training satisfaction, knowledge, and attitudes should be used**. There are several examples of evaluations using standardized measures in this report (see Tierney, 1994 for one example).
- While it is important to measure trainee satisfaction, increased knowledge, and improved attitudes, the sine qua non of ASIST training is improved intervention skills. **Therefore, skill acquisition should be a focus of most evaluation efforts**.
- When possible, **data should be collected prior to training** (pretesting), **immediately after training** (post-testing), **and at some point in the future** (follow-up). Pre- and post-testing allow for the examination of what was learned while follow-up testing allows for the examination of what was done with what was learned.
- When possible, **a comparison group should be used**. By using a comparison group, inferences about program effectiveness are strengthened.

4.3 What are important evaluations questions regarding ASIST?

Beyond the large question of ASIST trainings impact on suicide deaths, there are a number of important evaluation questions regarding ASIST that should be given attention. Among these are

1. Does use of the ASIST Suicide Intervention Model (SIM) reduce suicide risk for individuals who've had an ASIST intervention?
2. Can booster training effectively return ASIST acquired knowledge, attitudes, and skills to post-training levels? When should booster training occur?
3. What type of person is most likely to benefit from and use ASIST training? Does this vary by position or setting?
4. Do women and men use ASIST training differently? Does this impact ASIST effectiveness?
5. When and how should ASIST be adapted to meet the needs different cultures?
6. How can ASIST best be adapted for use within medical and mental health institutions?
7. Why did two evaluations (Cornell et al., 2006; McAuliffe & Perry, 2007) demonstrate increased interventions, but decreased referrals? How may this be relevant to future ASIST evaluations?

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SUICIDE ASIST

Review of the Applied Suicide Intervention Skills Training Program (ASIST)

Rationale, Evaluation Results, and Directions for Future Research

Data Extraction Tables

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April 2010

LivingWorks

Table of Contents

Evaluations Included in the Data Extraction Tables

To be included in this review, evaluations must have (1) been publicly available prior to June 2009, (2) been written in English, (3) been either a qualitative study or a quantitative study that measured pre-training and post-testing or training and comparison group differences (with the exception of satisfaction with training), and (4) measured at least one of the following outcomes

- Satisfaction with training
- Knowledge and attitudes
- Intervention-related skills
- Intervention-related behaviors
- Suicidal behaviors (suicide attempts or deaths)

While every effort was taken to ensure that the all eligible ASIST evaluations were included in this review, some may have escaped detection (if the reader is aware of any evaluations that should be included in future versions of this review, please notify the author). Some evaluations that were found were deemed ineligible (see the next section).

Evaluations Included in the Data Extraction Tables

Australia

1. Turley (2009) *Lifeline's LivingWorks Project: Supplementary Evaluation Report*.
2. Turley, Pullen, Thomas, & Rolfe (2000) *LivingWorks Applied Suicide Intervention Skills Training (ASIST): A Competency-Based Evaluation*.
3. Turley & Tanney (1998) *LivingWorks Australian Field Trial Evaluation Report*.

Canada

4. McAuliffe & Perry (2007) *Making it Safer: A Health Centre's Strategy for Suicide Prevention*.
5. Tierney (1994) *Suicide Intervention Training Evaluation: A Preliminary Report*.
6. Walsh & Perry (2000) *Youth Based Prevention Strategies in a Rural Community, Quesnel, BC: A Community Suicide Prevention Study*.

Norway

7. Guttormsen et al. (2003) *Applied Suicide Intervention Skills Training: An Evaluation*.

Scotland

8. Griesbach et al. (2008) *The Use and Impact of Applied Suicide Intervention Skills Training (ASIST) in Scotland: An Evaluation*.
9. Smith & MacKay (2007) *Evaluation of Applied Suicide Intervention Skills Training (ASIST); West Dunbartonshire*.
10. Todd (2005) *An Evaluation of the Use of ASIST (Applied Suicide Intervention Skills Training) in Shetland*.

United States

11. Chen (2009) *Project Safety Net: CSU Final Report. October 1, 2006-September 30, 2009*
12. Coleman et al. (2008) *Garrett Lee Smith Memorial Act Oregon Youth Suicide Prevention and Early Intervention Annual Report 2007-2008*.
13. Cornell et al. (2006) *Evaluation of Student Suicide Prevention Training in Virginia*.
14. Demmler (2007) *Gatekeepers: Helping to Prevent Suicide in Colorado.*
15. Eggert et al. (1999).*Washington State Youth Suicide Prevention Program: Pathways to Enhancing Community Capacity to Prevent Youth Suicidal Behaviors. Final Report, 1999.*
16. Illich (2004) *Suicide Intervention Training Outcome Study: Summary Report.*
17. LivingWorks Education Inc. *(2009) HQDA Tasker No. 09013001 ASIST Evaluation (U.S. Army)*
18. McConahay (1991). *Suicide intervention training effectiveness*.
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Evaluations Excluded From the Summary

The following reports were not included in data extraction for the reasons stated.

1. **Hinbest (2001) Youth Suicide Prevention in British Columbia: Putting Best Practices into Action.** This was a large meta-evaluation of multi-site, multi-intervention suicide prevention initiative. Relevant to ASIST were the results from Quesnel, where two ASIST trainers conducted a follow-up telephone interview. Respondents were asked to estimate skills at three points in time: prior to the workshop, immediately after the workshop, and one to three years after the training. While the results seemed very positive, they were reported in bar charts without stating exact percentages. The actual percentages were reported in the Walsh & Perry (2000) study which was included in the evaluation reports.
2. **Lander & Tallaksen (2007) Long-Term Efforts Yield Results: Positive Evaluation of Educational Program Vivat.** This was a brief overview of a larger evaluation of ASIST training in Norway. While positive, this brief report does not provide sufficient information for coding. The original evaluation report was in Norwegian, so it was unable to be coded. Among limited report findings was this advanced clinicians—doctors and psychologists—felt that they raised their level of competence and were satisfied with the teaching materials and educational methods used.
3. **Silvola et al. (2003) Applied Suicide Intervention Skills Training Workshop.** This was a simple overview of the ASIST program, with no original data.
4. **Sørås (2000) The Norwegian Plan for Suicide Prevention 1994-1999 Evaluation Findings.** This is a brief narrative of evaluation findings for the Norwegian Suicide Prevention Plan. There is a brief mention of ASIST, to wit: "We conclude that the Living Works programme features a good pedagogic structure and lends itself well as a "first-aid course" for many groups. The course has also fared well based on the evaluations of participants. Moreover, this course is very cost-effective as new course leaders are certified continuously, and thus an increasing number of persons can be used to teach the course" (p. 3).

Information Found in the Data Tables

A standardized form was used to extract data from evaluation reports. Data collected included:

- **Descriptive Information**: Country of origin, author, year, title
- **Group Characteristics**: Population studied, setting, number studied
- **Method of Data Collection**: Domain (satisfaction with training, knowledge & attitudes, skills, behaviors, suicide attempts, suicide deaths), title of instrument used to collect data, number of questions in the instrument
- **Quantitative Outcomes**: Comparison (between pre- and posttest scores on an assessment, or between those trained in ASIST and those in a comparison group), time between testing (short, medium, or long-term), outcome type, sample size, effect size type, and effect size
- **Qualitative Outcomes**: Method, general conclusions, report narrative, participant narratives
- **Notable Findings and General Notes**

How Methodologies Were Rated

Level 1: Experimental Designs. Experimental designs are those that randomized subjects or groups to experimental and control/comparison groups.

Level 2: Quasi-Experimental Designs. Quasi-Experimental designs are those that did not randomize subjects to groups.

Level 3: Pretest/Posttest Designs. Pretest/Posttest designs are those that tested subjects from a single group before and after the intervention. The time between pretests and posttests varied. For the purposes of this report, time periods are defined as follows: short-term, immediately after training; medium-term, within a year; Long-term, greater than a year.

Level 4: Posttest Only Designs. Posttest only designs are those that tested subjects from a single group after the intervention.

Level 5: Qualitative Designs. Qualitative designs are generally those that provided narrative accounts of outcomes usually collected through structured interviews or focus groups.

How Outcomes Were Rated

Level A: Suicide Deaths and Serious Suicide Attempts. For the purposes of this report, suicidal behaviors are defined as either suicide attempts or suicide deaths.

Level B: Intervention Behaviors. Behaviors are observable actions or reports of actions on the part of people, such as reports of interventions or records of hospital admissions. While suicide attempts and deaths are behaviors, because of their particular importance, they have been given a category of their own.

Level C: Skills. Skills are defined as expertise or accomplishment in any given behavior, such as intervening with someone at risk for suicide using prescribed methods. Methods to measure skills include observations in a real world setting, observations of trainee interaction in a simulated intervention or having trainees respond to simulations with a paper and pencil response. Having trainees simply rate their ability to perform a skill is more a measure of self-efficacy and is therefore been classified as an attitude.

Level D: Knowledge and Attitudes. Knowledge is what people know about a topic. For example, warning signs of suicide, intervention procedures, or locations of helping resources. Attitudes are how people feel concerning a topic. For example, "suicide is preventable" or "I can effectively intervene with someone at-risk." Attitudes also include self-assessments of ability to intervene.

Level E: Satisfaction with Training. Satisfaction is a measure of the value that trainees place in the training. For example, did trainees think the training was useful? Did they consider it a valuable use of their time? Would they recommend the training to others?

How Effect Sizes were Calculated

Effect sizes were calculated using the best available data and at times were estimated based upon less than optimal data. Therefore, effect sizes calculated for this review range from the more sophisticated and easily interpreted Cohen's D to simple yet difficult to interpret mean differences. When available, results of tests of significance are provided using the standard * = $p < .05$, ** = $p < .01$, *** = $p < .001$, and if not statistically significant ns.

Formulas Used to Calculate Effect Sizes

The formulas used to calculate effect sizes found in the quantitative results tables are listed below.

Cohen's D

$$Cohen's\ d = \sqrt{F\left(\frac{n_t + n_c}{n_t n_c}\right)\left(\frac{n_t + n_c}{n_t + n_c - 2}\right)}$$

Mean Difference

$$Mean\ Difference = Mean_{\ Posttest} - Mean_{\ Pretest}$$

Percentage Difference

$$Percentage\ Difference = \%_{\ Posttest} - \%_{\ Pretest}$$

SMD (Standardized Mean Difference Effect Size)

$$SMD = \frac{m_t - m_c}{\frac{s_t + s_c}{2}}$$

Methodology & Outcome Classification

This matrix provides a snapshot of methodology and outcomes. Evaluations were listed based upon the "highest" outcome measured. Each evaluation table includes this classification. For example, a quasi-experimental design that measured skills would be classified as "2C."

	A Suicidal Behavior	B Intervention Behaviors	C Skills	D Knowledge & Attitudes	E Satisfaction
1 Experimental					
2 Quasi-Experimental	Cornell et al. (2006)	Demmler (2007)		Tierney (1994)*	
3 Pretest/Posttest		Coleman et al. (2008) Griesbach et al. (2008) Illich (2004) McAuliffe & Perry (2007) McConahay (1991) ORS (2002) ORS (2003) Turley & Tanney (1998	Turley et al. (2000) Tierney (1994)*	Chen (2007) Eggert et al. (1999) LivingWorks Education (2009) Turley (2009) Walsh & Perry (2000)	
4 Posttest Only		Todd (2005)			
5 Qualitative		Smith & Mackay (2007)			Guttormsen et al. (2003)

*Appears twice (2D & 3C)

Australian Evaluations

Country	Design	Highest Outcome	Published	Classification
Australia	Pre/Post	Knowledge & Attitudes	No	**3D**

Author	Year	Title
Turley	2009	*Lifeline's LivingWorks Project: Supplemental Evaluation Report*

Population Studied	Telephone counselors	**No. ASIST Studied**	982
Setting	Unk	**No. Comp. Studied**	
Addit'l Components?	None		

Domain	Name of Instrument	# Items	Notes
Satisfaction			
Knowledge & Attitudes	Preparation for intervention	1	4-pt Likert scale "Well prepared", "Mostly prepared", "Partly prepared", "Not prepared" (retrospective)
	Suicide intervention competencies	8	4-pt Likert scale "Much more", "More", "Same", "Less" (retrospective)
Skills			
Behaviors			
Suicide Attempts			
Suicide Deaths			

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Pre/Post (short)	I am "Well prepared" or "Mostly prepared" for suicide intervention (retrospective)	986	Pct. Difference†	+69.0%
Pre/Post (short)	I will "Much more" or "More" recognize warning signs inviting help (retrospective)	979	Pct. Difference	+98.0%
Pre/Post (short)	I will "Much more" or "More" ask directly about suicide thoughts (retrospective)	981	Pct. Difference	+97.0%
Pre/Post (short)	I will "Much more" or "More" explore why someone is thinking about suicide (retrospective)	980	Pct. Difference	+98.0%
Pre/Post (short)	I know "Much more" or "More" how to review immediate suicide risk (retrospective)	980	Pct. Difference	+98.0%
Pre/Post (short)	I could "Much more" or "More" take steps to increase the safety of a person at risk (retrospective)	980	Pct. Difference	+98.0%
Pre/Post (short)	I have "Much more" or "More" options for self-care and support in my helper role (retrospective)	981	Pct. Difference	+93.0%
Pre/Post (short)	I will "Much more" or "More" network with others around suicide safety (retrospective)	973	Pct. Difference	+94.0%
Pre/Post (short)	I am "Much more" or "More" aware of how my attitudes and experiences affect helping a person at risk (retrospective)	982	Pct. Difference	+95.0%

Statistical significance: *= p < .05; **= p < .01; ***= p < .001; ns = not statistically significant; if blank, no statistical test was reported.
†Estimated from graph.

Notable Findings

"Clearly, ASIST participation had strengthened telephone counselor's self-assessed readiness, willingness and ability to perform key tasks associated with an effective suicide intervention" (p. 20).

General Notes

- These results were included within a more comprehensive review of the ASIST program in Australia. Results from a survey of ASIST trainees attending a booster session was not included because no comparisons were made with which to calculate effect sizes.

Country	Design	Highest Outcome	Published	Classification
Australia	Quasi-Experimental	Skills	No	**3C**

Author	Year	Title
Turley et al.	2000	*LivingWorks Applied Suicide Intervention Skills Training (ASIST): A Competency-Based Evaluation*

Population Studied	Variety of professionals and laypersons; urban & rural	**No. ASIST Studied**	91
Setting	Unk	**No. Comp. Studied**	40
Addit'l Components?	None		

Domain	Name of Instrument	# Items	Notes
Satisfaction			
Knowledge & Attitudes	Self-Declared Readiness to Intervene	Unk	7 pt scale
Skills	Suicide Intervention Competencies	11	Narrative response to taped scenarios; reviewed by 2 raters. No IRR reported.
Behaviors			
Suicide Attempts			
Suicide Deaths			

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Pre/Post (short)	Self-Declared Readiness to Intervention	91	SMD	1.82***
Pre/Post (short)	Suicide Intervention Competencies	91	SMD	1.35***

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Notable Findings

(This study) "adds strength to earlier findings by demonstrating that trainees not only exhibit more suicide intervention knowledge, but that they can apply this knowledge appropriately to situations involving a person at risk" (p. 5)

General Notes

- Standard deviations for the comparison group were not reported and relevant statistical tests (ANCOVA) may not have been performed, so the calculation of effect sizes for ASIST v. comparison group was not possible.

Country	Design	Highest Outcome	Published	Classification
Australia	Pre/Post	Behavior	No	**3B**

Author	Year	Title
Turley & Tanney	1998	*LivingWorks Australian Field Trial Evaluation Report*

Population Studied	Service providers, teachers, phone crisis counselors, others.	**No. ASIST Studied**	Unk
Setting	Unk	**No. Comp. Studied**	
Addit'l Components?	None		

Domain	Name of Instrument	# Items	Notes
Satisfaction			
Knowledge & Attitudes	Intervention Knowledge	19	Self-developed
	Readiness for Dissemination	3	Self-developed; 7 pt scale
	Willingness to Intervene	Unk	Also used in Washington State evaluation.
	Optimism-Pessimism About Outcome	Unk	Also used in Washington State evaluation.
Skills			
Behaviors	Used in direct helping activities	1	Questions were retrospective.
	Used in professional interventions	1	
	Used in personal interventions	1	
Suicide Attempts			
Suicide Deaths			

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Pre/Post (short)	Intervention Knowledge	Unk	Mean Difference	3.38***
Pre/Post (medium)		Unk	Mean Difference	3.11***
Pre/Post (short)	Readiness	Unk	Mean Difference	6.02***
Pre/Post (medium)		Unk	Mean Difference	4.52***
Pre/Post (short)	Willingness to Intervene	Unk	Mean Difference	1.51***
Pre/Post (medium)		Unk	Mean Difference	1.65***
Pre/Post (short)	Optimism-Pessimism About Outcome	Unk	Mean Difference	0.46***
Pre/Post (medium)		Unk	Mean Difference	0.45***
Posttest (medium)	Used in direct helping activities (retrospective)	Unk	Pct. Difference	+33%
Posttest (medium)	Used in professional interventions (retrospective)	Unk	Pct. Difference	0%
Posttest (medium)	Used in personal interventions (retrospective)	Unk	Pct. Difference	+10%

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Notable Findings

"These results indicate some positive enduring trends in actual suicide prevention helping activities resulting from workshop involvement" (p. 41).

General Notes

This is a broad organizational, implementation, and outcome evaluation report of both *Suicide Aware* and *ASIST* training.

- The time from pretest to posted (medium) was 4 months.
- The Mean Difference effect size is not standardized; therefore, little meaning can be derived from it.
- While it was noted in the report that pre/post differences were statistically significant, the type of significance test was not stated.
- The Readiness Scores were combined from three items measuring "comfort", "competence", and "confidence."
- "The four-month follow-up data only captured about one third of the original sample and could reflect a bias in favor of the most committed or accessible" (p. 41).

Canadian Evaluations

Country	Design	Highest Outcome	Published	Classification
Canada	Pre/Post	Behavior	Yes	**3B**

Author	Year	Title
McAuliffe & Perry	2007	*Making it Safer: A Health Centre's Strategy for Suicide Prevention*

Population Studied	Clinical, administrative, support personnel	**No. ASIST Studied**	400+
Setting	Mental Health Center	**No. Comp. Studied**	
Addit'l Components?	Standardized assessment and clinical protocols		

Domain	Name of Instrument	# Items	Notes
Satisfaction	Staff think trained adequately in S protocols	1?	This may include training other than ASIST
Knowledge & Attitudes	Knowledge of steps to take post assessment	1?	This may reflect protocols & not ASIST
Skills			
Behaviors	Admission of Suicidal ED Patients	1	Collected over 4 years; taken from hospital records.
	Identification of Suicidal Risk ED Patients	1	
	Clinicians assessing all patients	1	
Suicide Attempts			
Suicide Deaths			

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Pre/Post (long)	Satisfaction with suicide risk training	126	Pct. Difference	+50.0%
Pre/Post (long)	Knowledge of protocols for suicidal patients	126	Pct. Difference	+10.0%
Pre/Post (long)	Staff assessments of patient suicide risk	126	Pct. Difference	+13.0%
Pre/Post (long)	Identification of suicidal risk in ED Patients	N/A	Pct. Difference	≈+18.0%
Pre/Post (long)	Admission of suicidal ED patients	N/A	Pct. Difference	-14.0%

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Notable Findings

"Staff of the Crisis Intervention Team reported that with a clearer process of exploring reasons for dying, reasons for living and with an increased focus on strengthening the client's protective factors in the community, some admissions had been averted" (p. 302).

General Notes

- This comprehensive program was implemented with high levels of administrative support.
- Results may be confounded by same-time implementation of standardized assessment and protocols.
- The increase in identifications and decrease in admissions is an interesting phenomenon that has been seen in other evaluations (Cornel et al., 2006).

Country	Design	Highest Outcome	Published	Classification
Canada	Quasi-Experimental Pre/Post	Knowledge & Attitudes, Skills	Yes	**3C & 2D**

Author	Year	Title
Tierney	1994	*Suicide Intervention Training Evaluation: A Preliminary Report*

Population Studied	Community-based trainees and college students	**No. ASIST Studied**	≈174
Setting	Community, Higher Education	**No. Comp. Studied**	≈23
Addit'l Components?			

Domain	Name of Instrument	# Items	Notes
Satisfaction			
Knowledge & Attitudes	Semantic Differential on Suicide (SDS)	22	Paper & Pencil (Boldt, 1982)
	Suicide Intervention Questionnaire (SIQ)	20	Paper & Pencil (Tierney, 1988)
	Information Questionnaire on Suicide (IQS)	32	Paper & Pencil (McIntosh et al. 1985)
	Intervention Knowledge Test (IKT)	20	Paper & Pencil (Tierney, 1988)
Skills	Suicide Intervention Response Inv. (SIRI)	25	Paper & Pencil (Neimeyer & MacInnes, 1981); 2 subscales: general helping and suicide helping
	Suicide Intervention Protocol (SIP)	17	Observational (Tierney, 1988)
Behaviors			
Suicide Attempts			
Suicide Deaths			

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
ASIST/Comparison	Semantic Differential on Suicide (SDS)	170/22	Cohen's D	-0.09 ^{ns}
ASIST/Comparison	Suicide Intervention Questionnaire (SIQ)	174/22	Cohen's D	+1.43 ***
ASIST/Comparison	Information Questionnaire on Suicide (IQS)	154/22	Cohen's D	+1.03***
ASIST/Comparison	Intervention Knowledge Test (IKT)	154/23	Cohen's D	+1.61***
Pre/Post (short)	Suicide Intervention Response Inv. (SIRI)	19	SMD	+0.29^{ns}
Pre/Post (short)	SIRI general helping subscale	19	Mean Difference	+0.16 ^{ns}
Pre/Post (short)	SIRI suicide specific item score	19	Mean Difference	+9.47***
Pre/Post (short)	Suicide Intervention Protocol (SIP)	19	SMD	+1.30***

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Notable Findings

"Intervention competencies were improved by the workshop experience. Participants were demonstrably better able to make direct inquiries regarding the existence of suicidal ideation and behaviors, to expand on suicide-related materials, to assess factors related to risk, to surface and work with ambivalence, and to develop direct, specific, mutually agreed upon action plans for the prevention of immediate suicidal behavior as demonstrated in simulated interventions" (pgs. 74-75).

"There remains the classic question of whether the intervention procedures taught are effective in actually reducing suicidal behavior" (p. 75).

General Notes

- Contains three studies: #1 The Intervention Abilities Study (pre/post design), #2 The Attitudes Study (quasi-experimental), and #3 the Knowledge Study (quasi-experimental).
- The author notes that a possible ceiling effect inhibited change in study #1's SIRI pre/post scores.
- Compared voluntary ASIST trainees v. college students; the former group perhaps had greater motivation.

Country	Design	Highest Outcome	Published	Classification
Canada	Pre/Post	Skills	No	**3D**

Author	Year	Title
Walsh & Perry	2000	*Youth Based Prevention Strategies in a Rural Community, Quesnel, BC: A Community Suicide Prevention Study.*

Population Studied	Community service, school personnel, private sector, healthcare workers.	**No. ASIST Studied**	49
Setting	Community	**No. Comp. Studied**	N/A
Addit'l Components?	None, although there were numerous other suicide prevention efforts in the community		

Domain	Name of Instrument	# Items	Notes
Satisfaction			
Knowledge & Attitudes	Awareness of community resources	1	Used on a Likert scale. Only extreme frequencies were reported (i.e., "not at all knowledgeable" v. "very knowledgeable"). Middle points (2 or 3?) were not reported. Questions were retrospective.
	Comfortable talking about suicide	1	
	Able to recognize warning signs	1	
Skills	Very skilled in assessing risk	1	
	Very skilled in intervention	1	
Behaviors			
Suicide Attempts			
Suicide Deaths			

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Pre/Post (short)	Very aware of community resources	49	Pct. Difference	+31.4%
Pre/Post (medium)		49	Pct. Difference	+36.7%
Pre/Post (short)	Completely comfortable talking about suicide	49	Pct. Difference	+35.5%
Pre/Post (medium)		49	Pct. Difference	+53.0%
Pre/Post (short)	Completely able to recognize warning signs of suicide	49	Pct. Difference	+09.8%
Pre/Post (medium)		49	Pct. Difference	+16.3%
Pre/Post (short)	Very skilled in assessing risk (self-assessment)	49	Pct. Difference	+18.8%
Pre/Post (medium)		49	Pct. Difference	+20.4%
Pre/Post (short)	Very skilled in intervention (self-assessment)	49	Pct. Difference	+12.6%
Pre/Post (medium)		49	Pct. Difference	+20.4%

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Notable Findings

"The overall tone of the survey was that it was (a) valuable workshop and the benefits have lasted several years" (p. 9). "The strength of this workshop is that it provides a common 'language' for all caregivers to use. If someone from the High School calls Child and Youth Mental Health with a referral of a suicidal teen, they will be using the same assessment tools, risk assessment and intervention strategies…This allows for greater prioritization of intervention" (p. 10).

General Notes

- All data was collected at follow-up using retrospective questions for the pretest and short-term posttest.

Norwegian Evaluations

Country	Design	Highest Outcome	Published	Classification
Norway	Qualitative	Knowledge & Attitudes	Yes	**5E**

Author	Year	Title
Guttormsen et al.	2003	*Applied Suicide Intervention Skills Training: An Evaluation*

Population Studied	Medical Students	**No. ASIST Studied**	47
Setting	University Hospital, Department of Psychiatry	**No. Comp. Studied**	
Addit'l Components?	None		

Qualitative Method &Outcomes	
Method	Seven semi-structured, 90-minute focus groups were conducted with medical students who had been ASIST trained.

General Conclusions

"The workshop appears to enhance suicide intervention skills and will continue to be incorporated in the psychiatry clerkship at the University of Tromsø" (p. 1).

From Report Narrative

- "The students stated that the workshop had helped them feel more secure about this subject" (p. 3).
- "Important knowledge that was tested through role play increased mastery of the subject" (p. 3).
- "The students had a sense of confidence that had not been there before, and they believed it would be easier to ask whether a patient was considering suicide" (p. 3).
- "The medical students believed that after the workshop they were better prepared to encounter people who were close to suicide. They had been given a tool that could be used in their clinical work. The feelings of fear, helplessness, lack of confidence and uncertainty prior to the workshop had been supplanted by greater clinical competence" (p. 4).
- "A few students were unable to benefit from the role play. Which methods work best for learning may vary, but even if students have reservations against role play, they should be encouraged to receive feedback on their own consultations with patients" (p. 5).

From Participants

- "Before the workshop I was anxious and uncertain, now I feel much more confident" (p. 3).
- "If I were to choose what I liked best about the workshop it is undoubtedly that role play was the most important aspect" (p. 3).
- "I believe that we will be assuming responsibility, but for further follow-up it is important that there should be more people" (p. 3)
- "The encounter with suicidal persons is demanding, and it is important to take care of oneself professionally and personally" (p. 4).

Scottish Evaluations

Country	Design	Highest Outcome	Published	Classification
Scotland	Pre/Post	Behaviors	No	**3B**

Author	Year	Title
Griesbach et al.	2008	*The Use and Impact of Applied Suicide Intervention Skills Training (ASIST) in Scotland: An Evaluation*

Population Studied	Professional caregivers (78%), community volunteers, others	**No. ASIST Studied**	534
Setting	Varied	**No. Comp. Studied**	
Addit'l Components?	None		

Domain	Name of Instrument	# Items	Notes
Satisfaction	Internet Survey	Unk	Created with help from 3 focus groups. Questions were retrospective.
Knowledge & Attitudes	Internet Survey	Unk	Created with help from 3 focus groups. Questions were retrospective.
Skills			
Behaviors	Internet Survey	Unk	Created with help from 3 focus groups. Questions were retrospective.
Suicide Attempts			
Suicide Deaths			

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Pre/Post (short)	Knowledge (very high or high)	534	Pct. Difference	+70.3%
Pre/Post (long)		534	Pct. Difference	+56.7%
Pre/Post (short)	Confidence (very high or high)	534	Pct. Difference	+65.5%
Pre/Post (long)		534	Pct. Difference	+48.9%
Pre/Post (short)	Skills (self-reported very high or high)	534	Pct. Difference	+63.3%
Pre/Post (long)		534	Pct. Difference	+50.1%
Pre/Post (long)	Intervened with a person at-risk for suicide	534	Pct. Difference	+20.0%

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Notable Findings

"94.5% of all participants agreed with the statement that going to ASIST training had been a good use of their time" (p. 54).

"Participants' self-reported levels of knowledge, confidence and skills in relation to intervening with someone at risk of suicide increased substantially immediately after ASIST. These increases were largely maintained over time. However, the majority of participants also felt that their ASIST skills needed updating" (p. 63; bold in the original).

Overall, there was a 20% increase in interventions with persons at-risk for suicide (58% prior to training, 78% after training); for National Health Service staff the increase was 20.1%, for Volunteer staff the increase was 22.8%, and for local government staff the increase was 18.2%.

General Notes

- This was a multi-site evaluation.
- Results were retrospective: at the posttest period, respondents were asked about behavior prior to training.

Country	Design	Highest Outcome	Published	Classification
Scotland	Qualitative	Behavior	No	**5B**

Author	Year	Title
Smith & MacKay	2007	*Evaluation of Applied Suicide Intervention Skills Training (ASIST). West Dunbartonshire.*

Population Studied	Over 80% direct social or healthcare service providers.	**No. ASIST Studied**	43/13
Setting	Community	**No. Comp. Studied**	N/A
Addit'l Components?	None		

Qualitative Method &Outcomes	
Method	Two methods were used: postal surveys (43 out of 72 returned) and 13 interviews (selected from those who returned the survey). Questions in both modalities were open-ended. Note: West Dunbartonshire was part of the larger Griesbach et al. (2008) meta-evaluation, but used a different methodology to evaluate the program.

General Conclusions

"Participants in the ASIST workshops held a strongly positive view of the training and felt that taking part was worthwhile and beneficial…rated highly the organization and planning of the workshops…(and) felt the quality of training they received was high" (p. 93).

"In response to an open ended question about the relevance of ASIST, the majority of respondents (76%) felt that the workshop was of direct relevance to the activity that they pursue in their job. Other aspects of relevance were felt to be the knowledge building and confidence building benefits arising from the workshop" (p. 94).

"ASIST workshop participants worked in a broad range of organizations, generally delivering front line social care and mental health services in the public and voluntary sectors within West Dunbartonshire" (p. 96).

"The majority had had experience of applying ASIST within 6-9 months of the training, and with positive outcomes" (p. 97).

From Report Narrative

- When asked "What, if anything, do you feel you got out of the workshop?" 55% said knowledge, 45% said confidence, and 24% said skills (from postal survey). 91% felt they developed new knowledge as a result of their attendance.
- When asked "Have you had any experience of putting ASIST into practice with individuals at risk?" 42% said yes, 58% said no. Of those who said "no", 79% said they hadn't had the opportunity. The number who used ASIST training increased with time from training.

From Participants

- "It firmed up my knowledge and put it into a structured framework/model which made a lot more sense" (p. 20).
- "I was unaware that you could actually bring up the subject of suicide with the individual" (p. 20).

Country	Design	Highest Outcome	Published	Classification
Scotland	Posttest	Behavior	No	**4B**

Author	Year	Title
Todd	2005	*An Evaluation of the Use of ASIST (Applied Suicide Intervention Skills Training) in Shetland.*

Population Studied	NHS and local government employees, volunteers , and gen. public	**No. ASIST Studied**	Unk
Setting	Communities	**No. Comp. Studied**	
Addit'l Components?	None		

Domain	Name of Instrument	# Items	Notes
Satisfaction	Satisfaction survey	Unk	Immediate posttest
Knowledge & Attitudes			
Skills			
Behaviors	Follow-up survey	Unk	Follow-up 3-21 months post training
Suicide Attempts			
Suicide Deaths			

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
None Available				

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Notable Findings

"Over 90% of participants were very keen to recommend ASIST to others" (p. 5).

"52% of respondents had used the training with a person at risk of suicide. The training had been used mostly between 1 and 5 times, with some people having used it over 20 times" (pgs. 7-8).

"86% of respondents stated that they had found the training useful when dealing with a person at risk of suicide. 10% wrote not applicable on the questionnaire as they had not yet had to use the training with a person at risk and 4% ticked no as they had not had to use the training yet" (p. 8).

"From the immediate evaluation it can be clearly seen that ASIST continues to be rated very highly by participants in Shetland. Completing ASIST makes people feel better prepared to offer assistance to a person at risk of suicide" (p. 9).

General Notes

- Data was collected immediately following training and 3-21 months afterwards. Much of the evaluation data collected is in graphs with no accompanying data tables.

United States Evaluations

Country	Design	Highest Outcome	Published	Classification
USA	Pre/Post	Knowledge & Attitudes	No	**3D**

Author	Year	Title
Chen et al.	2009	*Project Safety Net: CSU Final Report October 1, 2006-September 30, 2009*

Population Studied	Foster care parents, mental health service workers, law enforcement officers, secondary school teachers and staff, juvenile justice staff, others.	**No. ASIST Studied**	206
Setting	Multiple sites throughout Colorado	**No. Comp. Studied**	N/A
Addit'l Components?	None		

Domain	Name of Instrument	# Items	Notes
Satisfaction	Level of Satisfaction	9	4-pt Likert scale "Strongly disagree" to "Strongly agree" with "N/A" option
Knowledge & Attitudes	Knowledge of Intervention Skills	6	Multiple choice of basic ASIST competency questions
	Self-efficacy for suicide prevention	3	5-pt Likert scale "Strongly disagree" to "Strongly agree"
Skills			
Behaviors			
Suicide Attempts			
Suicide Deaths			

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Post (short)	Level of satisfaction ("Agree" or "Strongly Agree")	≈206	Mean	91.1%
Pre/Post (short)	Knowledge of suicide intervention skills	199	Pct. Difference	+32.0%**
Pre/Post (3-mos.)		203	Pct. Difference	+14.0%**
ASIST/Comparison	Knowledge of suicide intervention skills	≈40/40	Pct. Difference	+38.0%*
Pre/Post (short)	Self-efficacy for suicide prevention	127	Mean Difference	+1.22**
Pre/Post (3-mos.)		132	Mean Difference	+1.01**
Pre/Post (6-mos.)		81	Mean Difference	+1.04
ASIST/Comparison	Self-efficacy for suicide prevention	≈40/40	Mean Difference	+1.46*

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Notable Findings

"It is worthy to note that, three months after the training, 46 ASIST trainees reported performing 115 direct interventions with individuals who showed signs of being suicidal. Additionally, 58 ASIST trainees reported intervening with 302 individuals between the three-month follow-up and the six-month follow-up" (p. 2).

General Notes

- This was a multi-site evaluation comparing two types of gatekeeper training.
- The evaluation used the relatively sophisticated techniques of Internal Referencing Strategies and a Rolling Group Design to gauge program impact. Details of these methods are available in the original report.
- Intervention behaviors were measured; however, no comparison conditions (pre-test behaviors or control groups) were provided in which to compute effect sizes.
- The non-significant findings for "intention to intervene" were perhaps due to a pretest ceiling effect.
- The analysis also utilized an internal referencing strategy (IRS) to further validate that pre- and posttest differences were due to training.

Country	Design	Highest Outcome	Published	Classification
USA	Pre/Post	Behaviors	No	**3B**

Author	Year	Title
Coleman et al.	2008	*Garrett Lee Smith Memorial Act Oregon Youth Suicide Prevention Annual Report 2007-2008.*

Population Studied	School clinicians & teachers; target population was students	**No. ASIST Studied**	130
Setting		**No. Comp. Studied**	
Addit'l Components?	Unk		

Domain	Name of Instrument	# Items	Notes
Satisfaction			
Knowledge & Attitudes			
Skills			
Behaviors	Gatekeeper Behaviors	3	Scale taken from Wyman et al. (2008)
Suicide Attempts			
Suicide Deaths			

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Pre/Post (medium)	Gatekeeper Behaviors in past 6 months.	19	SMD	+0.48

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Notable Findings

"Trainees who had open, empathetic relationships with youth showed more prevention behavior at follow-up" p. 2).

"These results provide preliminary evidence that ASIST…has an overall effect on increasing desired suicide prevention behaviors" (p. 11).

General Notes

- This study included two other school-based interventions. A pre- and posttest analysis of knowledge and attitude changes was conducted, but was not disaggregated by program. Only the analysis of gatekeeper behaviors was disaggregated.
- Pretest, posttest, and 9 month follow-up data were collected.

Country	Design	Highest Outcome	Published	Classification
USA	Quasi-Experimental	Suicide Attempts	No	**2A**

Author	Year	Title
Cornell et al.	2006	*Evaluation of Student Suicide Prevention Training in Virginia.*

Population Studied	School teachers, counselors, psychologists, administrators, others	**No. ASIST Studied**	101
Setting	Schools	**No. Comp. Studied**	249
Addit'l Components?			

Domain	Name of Instrument	# Items	Notes
Satisfaction			
Knowledge & Attitudes			
Skills			
Behaviors	Student Suicide Prevention Survey	4	Questions are listed below.
Suicide Attempts	Student Suicide Prevention Survey	1	Questions are listed below.
Suicide Deaths			

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
ASIST/Comparison	1. Number of students questioned about suicide	101/249	Mean Difference†	-1.60
ASIST/Comparison	2. Concerned, but did not ask about suicide	101/249	Mean Difference†	+2.52
ASIST/Comparison	3. Number of students referred for services	101/249	Mean Difference†	-1.13
ASIST/Comparison	4. Number of student contracts	101/249	Mean Difference†	+1.28
ASIST/Comparison	5. Student suicide attempts	101/249	Mean Difference†	-1.45

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported. † = this is an annualized mean difference. For example, -1.60 equates to an average of 1.6 fewer students questioned about suicide per year.

Corresponding Survey Questions

1. How many students have you questioned about suicide in the past 3 months?
2. In the past 3 months, how many students have you spoken with in a situation where you wondered if suicide was a concern, but you decided not to question the student about suicide?
3. In the past 3 months, how many students have you referred for counseling or some form of mental health services where suicide was a concern?
4. In the past 3 months, how many times have you made a contract with a student not to engage in suicidal behavior?
5. In the past 3 months, to your knowledge, has any student at your school made a suicide attempt?

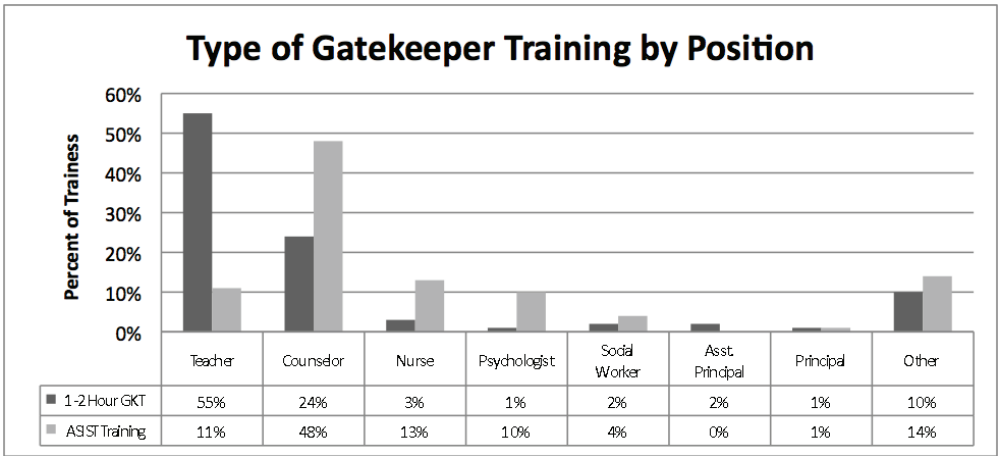
Notable Findings

- ASIST-trained school staff reported fewer known suicide attempts than did staff at a school that did not receive training.
- Although it is unknown how training assignments were made, teachers were more likely to be trained using a more typical 2-hour gatekeeper training course, while counselors, psychologists, nurses, and social workers were more likely to be trained in ASIST (See Figure 1 on the following page).

General Notes

- Results were adjusted for time since training.
- This evaluation compared results for those trained in ASIST, those trained in a 2- hour gatekeeper training program, and those who did not receive gatekeeper training. The outcomes reported here are
- Satisfaction data was collected, but was not disaggregated by type of training so it is not reported here.

Distribution of Gatekeeper Training Type by Position (Cornell et al., 2006).



Country	Design	Highest Outcome	Published	Classification
USA	Quasi-Experimental	Behaviors	No	**2B**

Author	Year	Title
Demmler	2007	*Gatekeepers: Helping to Prevent Suicide in Colorado.*

Population Studied	Human service & social workers, youth workers, employment counselors, law enforcement & public safety personnel	**No. ASIST Studied**	322
Setting	Communities	**No. Comp. Studied**	248
Addit'l Components?	None		

Domain	Name of Instrument	# Items	Notes
Satisfaction			
Knowledge & Attitudes			
Skills			
Behaviors	Behaviors	2	Online survey administered 3 months after training.
Suicide Attempts			
Suicide Deaths			

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
ASIST/Comparisons	Reported concern for suicidal person	322/248	Pct. Difference	+18.0%
ASIST/Comparisons	Reported an intervention	322/248	Pct. Difference	+17.0%

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Notable Findings

"Findings show that gatekeepers trained in the ASIST curriculum more often reported concern that someone might be suicidal on the post-training survey. The ASIST-trained gatekeepers also reported they were more likely to intervene than the gatekeepers trained in the other two types of programs. One interpretation for these differences is that amount of time required for the trainings." (p. 9).

General Notes

- This was an evaluation of three types of gatekeeper training: ASIST, a two-hour course, and a six-hour course.
- Surveys were conducted three-months after training.
- Knowledge questions were not disaggregated, so they are not reported here.
- For ASIST, 60% of respondents reported concern for a suicidal person, and 52% reported an intervention.

Country	Design	Highest Outcome	Published	Classification
USA	Pre/Post	Knowledge & Attitudes	No	**3D**

Author	Year	Title
Eggert et al.	(1999)	*Washington State Youth Suicide Prevention Program: Pathways to Enhancing Community Capacity to Prevent Youth Suicidal Behaviors. Final Report, 1999.*

Population Studied	Youths and adults trained in ASIST; comparisons were made with randomized samples from communities that received awareness campaigns.	**No. ASIST Studied**	110
Setting	Schools and communities	**No. Comp. Studied**	2249
Addit'l Components?			

Domain	Name of Instrument	# Items	Notes
Satisfaction			
Knowledge & Attitudes	Knowledge of Warning Signs	1	Identify 3 warning signs
	Comfort to intervene	1	6-pt Likert scale from "Not at all..." to "Fully..."
	Competence to intervene	1	
	Confidence to intervene	1	
	Belief that one could prevent suicide	1	5-pt Likert scale from "Strongly Disagree" to "Strongly Agree"
	Likelihood they would intervene	1	
Skills			
Behaviors			
Suicide Attempts			
Suicide Deaths			

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
ASIST/Comparison	Identify 3 warning signs‡	110/2249	Pct. Diff. Adult	56%***
ASIST/Comparison			Pct. Diff. Youth	28%***
Pre/Post (short)	Comfort to intervene	110	Not Calculable†	unk***
Pre/Post (short)	Competence to intervene	110	Not Calculable†	unk***
Pre/Post (short)	Confidence to intervene	110	Not Calculable†	unk***
Pre/Post (short)	Belief that one could prevent suicide	110	Mean Difference	+0.50***
Pre/Post (short)	Likelihood they would intervene	108	Not Calculable†	Unk***

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.
†Data reported was insufficient to calculate an effect size.
‡Other questions asked participants to identify one and two warning signs. Only the "identify three warning signs" is reported here. Statistical significance testing was based upon analysis of both adult and youth responses.

Notable Findings

"The evaluation findings reveal that the (ASIST) training of youth gatekeepers resulted in significant increases in both intervention efficacy (i.e., taking appropriate suicide prevention steps with a person at-risk) and behavioral intentions (i.e., being more committed to intervening given the opportunity)" (p. 65).

General Notes

- There was insufficient data reported to calculate effect sizes for four out of five outcomes.
- The Readiness Scores were combined from three items measuring "comfort", "competence", and "confidence".

Country	Design	Highest Outcome	Published	Classification
USA	Pre/Post	Behavior	No	**3B**

Author	Year	Title
Illich	2004	*Suicide Intervention Training Outcome Study: Summary Report*

Population Studied	U.S. Air Force; AMC Front-line Supervisors	**No. ASIST Studied**	189
Setting	Military Bases	**No. Comp. Studied**	n/a
Addit'l Components?			

Domain	Name of Instrument	# Items	Notes
Satisfaction			
Knowledge & Attitudes	Identify correct response to basic knowledge questions	7	Each knowledge question had 4 possible responses
	Identify 3 critical factors to predict risk	1	Multiple choice with 4 lists of 3 factors.
Skills	Risk Assessment	4	Rated each of four scenarios as low, moderate, or high risk
Behaviors	Used Training	5	Used training in 5 specific ways during past 90 days
Suicide Attempts			
Suicide Deaths			

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Pre/Post (short)	Basic knowledge (7 questions aggregated)	187/188	Pct. Difference	+19.8%*†
Pre/Post (short)	Correctly identify 3 critical risk factors	187/189	Pct. Difference	+30.0%*
Pre/Post (short)	Risk Assessment (Correctly Identified Low Risk)	187/189	Pct. Difference	+6.7%ns
Pre/Post (short)	Risk Assessment (Correctly Identified Moderate Risk)	187/189	Pct. Difference	+14.8%*
Pre/Post (short)	Risk Assessment (Correctly Identified High Risk)	187/189	Pct. Difference	+10.2%*
Pre/Post (short)	Risk Assessment (Correctly Identified High Risk)	187/189	Pct. Difference	+8.6%*
Pre/Post (long)	Discussed personal problems	187/45	Pct. Difference	-7.0% ns
Pre/Post (long)	Had conversations with person at risk for suicide	187/45	Pct. Difference	+9.0% ns
Pre/Post (long)	Asked about suicide	187/45	Pct. Difference	+6.0% ns
Pre/Post (long)	Made a life-saving agreement	187/45	Pct. Difference	-2.0% ns
Pre/Post (long)	Made referral	187/45	Pct. Difference	-2.0% ns

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.
†The effect size was likely reduced due to ceiling effect for (3 questions had pretest scores in the 90s).

Notable Findings

"Overall, the study findings show that the ASIST training program, as implemented by the AMC/HC, resulted in improved knowledge and skill in suicide intervention techniques. In addition, participants provided strong support for the training program. However, the training did not produce significant changes in the application of suicide intervention techniques. It is not clear whether this represents a problem with the training program or whether it reflects outside factors. For example, it may be the case that some front-line supervisors believe they do not the authority and/or opportunity to apply their suicide prevention skills. This issue should be considered carefully in determining the overall effectiveness of the suicide prevention training program" (p. 9).

General Notes

- The 90-day follow-up survey also included two assessment questions. Results for these were not statistically significantly different than those at posttest.
- Conclusions based upon the 90-day follow-up survey are limited due to the relatively small number of respondents.

Country	Design	Highest Outcome	Published	Classification
USA	Pre/Post	Knowledge & Attitudes	No	**3D**

Author	Year	Title
LivingWorks Education	2009	*HQDA Tasker No. 09013001 ASIST Evaluation (U.S. Army)*

Population Studied	U.S. Army personnel (active and Guard) and associated civilians, including mid-level leaders, healthcare workers, and others.	**No. ASIST Studied**	502
Setting	Multiple settings (18 total workshops) including in theater (Iraq), transition units, leadership meetings, and family settings.	**No. Comp. Studied**	
Addit'l Components?			

Domain	Name of Instrument	# Items	Notes
Satisfaction	ASIST should be given to others	1	5-pt. Likert scale "Strongly agree", "Agree", "Undecided", "Disagree", "Strongly disagree"
Knowledge & Attitudes	Likelihood to engage in intervention behaviors	5	4-pt. Likert scale "Much more likely", "More likely", "Undecided", "Less Likely"
	Confidence to intervene	1	5-pt. Likert scale "Strongly agree", "Agree", "Undecided", "Disagree", "Strongly disagree"
	Better Prepared to intervene	1	
	Confidence to help	1	5-pt. Likert scale "Very confident", "Mostly confident", "About average", "Partially confident", and "Not confident"
Skills			
Behaviors			
Suicide Attempts			
Suicide Deaths			

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Pre/Post (short)	"Strongly agree" that ASIST should be given to all personnel that interact closely with soldiers	502	OR	7.6***
Pre/Post (short)	"Much more likely" or "More likely" to engage in intervention behaviors (retrospective)†	502	Pct. Difference	+93.8%
Pre/Post (short)	"Strongly agree" or "Agree" more confident (retrospective)	502	Pct. Difference	+94.0%
Pre/Post (short)	"Strongly agree" or "Agree" better prepared (retrospective)	502	Pct. Difference	+95.0%
Pre/Post (short)	"Very confident" or "Mostly confident" to Help	237/237	OR	10.4***

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.
†Aggregated for 5 behaviors: "increase safety", "review risks", "explore reasons", "ask directly", and "recognize signs".

Notable Findings

"Participants had considerable suicide prevention training before ASIST, but only 14% felt well prepared by their previous training. The limited experience of talking openly and directly about suicide (54% with no experience) suggests the stigma of reaching out to help others and/or self-initiated help seeking still may be a significant barrier amongst Army personnel"(p. 10).

General Notes

- Responses for many questions were retrospective.

Country	Design	Highest Outcome	Published	Classification
USA	Pre/Post	Behaviors	No	**3B**

Author	Year	Title
McConahay	1991	*Suicide Intervention Training Effectiveness*

Population Studied	Educators, social workers, police & corrections personnel, psychologists, child care, clergy, nurses, and others.	**No. ASIST Studied**	103
Setting	Unk	**No. Comp. Studied**	
Addit'l Components?			

Domain	Name of Instrument	# Items	Notes
Satisfaction			
Knowledge & Attitudes	Felt more capable to intervene	1	5-pt Likert scale from "Not At All Capable" to "Fully Capable"
Skills			
Behaviors	Encounters with someone deemed to be at-risk for suicide	1	Encounters for the past month. Response options were: 0, 1, 2-5, 6-10, 11+.
	Intervening with someone at-risk	1	5-pt Likert scale from "Never" to "Always"
Suicide Attempts			
Suicide Deaths			

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Pre/Post (medium)	Felt more capable to intervene	101/100	SMD	+0.30
Pre/Post (medium)	Frequency of encountering possibly suicidal person	100/100	SMD†	-0.10
Pre/Post (medium)	Frequency of intervening with possibly suicidal person	100/103	SMD	+0.15

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.
†Means and standard deviations were calculated from categorical data.

Notable Findings

"Were participants more likely to intervene? Actual encounters with suicidal people decreased between the 6 months before and 6 months after the workshop. This decrease could be a result of random chance because the chance was small. Participants may have learned to identify suicidal people and self selected to avoid those suicidal people. It may be the case that participants were better able to discriminate between suicidal and non-suicidal individuals so that their frequency of encounters with persons 'you suspect may be suicidal' decreased because they did not make a suicidal generalization as frequently" (p. 136).

General Notes

- Posttests were administered six months after training.
- Two questions relating to satisfaction and knowledge were omitted from these outcomes because they compared post-test and follow-up results without a pretest baseline for comparison.

Country	Design	Highest Outcome	Published	Classification
USA	Pre/Post	Knowledge & Attitudes	No	**3B**

Author	Year	Title
ORS	2002	*Youth Suicide Prevention Program: Annual Evaluation Report 2001-2002: Evaluation of Program Training Workshops*

Population Studied	Multiple community members including educators and school staff, probation officers, and clergy.	**No. ASIST Studied**	148*
Setting	Schools	**No. Comp. Studied**	N/A
Addit'l Components?	None		

*148 persons completed pre- and posttests; 39 completed the 3-month follow-up.

Domain	Name of Instrument	# Items	Notes
Satisfaction			
Knowledge & Attitudes	Self-rated general knowledge	5	5-pt. Likert scale from "Very low" to "Very high"
	Number of warning signs known	1	3 maximum
	Knowledge of suicide prevention and intervention	4	5-pt. Likert scale from "strongly disagree" to "strongly agree"
	Knowledge of suicide prevention and intervention	6	Multiple choice
	Knowledge of suicide assessment	7	Compared posttest v. 3 month follow-up
	Comfort, competence, & confidence in helping suicidal youth	3	5-pt. Scale from "Not at all" to "Fully"
Skills			
Behaviors	Contact with suicidal youth	4	Multiple response sets
Suicide Attempts			
Suicide Deaths			

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Self-Rated General Knowledge & Number of Warning Signs Known				
Pre/Post (short)	Facts about suicide prevention.	148	Mean difference	+1.68*
Pre/Post (medium)		39	Mean difference	+1.87*
Pre/Post (short)	Suicide warning signs.	148	Mean difference	+1.40*
Pre/Post (medium)		39	Mean difference	+1.33*
Pre/Post (short)	How to ask someone about suicide.	147	Mean difference	+1.71*
Pre/Post (medium)		39	Mean difference	+1.71*
Pre/Post (short)	How to get help for someone who may be suicidal	148	Mean difference	+1.31*
Pre/Post (medium)		39	Mean difference	+1.41*
Pre/Post (short)	Information about resources for help with/suicide	144	Mean difference	+1.57*
Pre/Post (medium)		39	Mean difference	+1.44*
Pre/Post (short)	Number of suicide warning signs known	144	Mean difference	+0.10^{ns}
Pre/Post (medium)		Not included in follow-up		

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Quantitative Outcomes, Continued				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Knowledge of Suicide Prevention and Intervention (Likert)				
Pre/Post (short)	If someone I knew told me they were thinking of suicide, I would want to get more information about their plan	148	Mean difference	0.38[ns]
Pre/Post (medium)		39	Mean difference	+0.42*
Pre/Post (short)	It is harmful for a helper to engage in open communication when dealing with someone at risk of suicide	147	Mean difference	-0.56*
Pre/Post (medium)		39	Mean difference	-0.63*
Pre/Post (short)	If someone I knew was showing suggesting signs of suicide, I would raise the question of suicide with them	148	Mean difference	0.69*
Pre/Post (medium)		39	Mean difference	+0.79*
Pre/Post (short)	If someone I knew was at risk of suicide, I would encourage them to talk about their wish to die	147	Mean difference	0.75*
Pre/Post (medium)		39	Mean difference	+0.64*
Knowledge of Suicide Prevention and Intervention (Multiple Choice)				
Pre/Post (short)	When confronted with the possibility of suicidal behavior in a person, a caregiver should immediately…(Percent who selected right answer, *Discuss it directly with the person*, from four options)	143	Pct. difference	+37.1%*
Pre/Post (medium)		39	Pct. difference	+33.4%*
Pre/Post (short)	Low intent attempts or gesture Require a suicide intervention…(Percent who selected right answer, *Require a suicide intervention*, from four options)	143	Pct. difference	+1.4% [ns]
Pre/Post (medium)		39	Pct. difference	+2.6% [ns]
Pre/Post (short)	If a person's words and/or behavior suggest the possibility of suicide, a helper should…(Percent who selected right answer: *Ask if the person is thinking of suicide*, from four options)	138	Pct. difference	+27.6%*
Pre/Post (medium)		39	Pct. difference	+41.0%*
Pre/Post (short)	If someone admits to feeling suicidal, a helper should… (Percent who selected right answer: *Calmly inquire about what is happening in their life*, from four options)	138	Pct. difference	-32.7%*
Pre/Post (medium)		39	Pct. difference	-20.5%*
Pre/Post (short)	Key tasks in the first phase of Suicide Intervention are… (Percent who selected right answer: *Engagement and identification*, from four options)	140	Pct. difference	+40.7%*
Pre/Post (medium)		39	Pct. difference	+29.7%*
Pre/Post (short)	Which of the following action plans would likely be most suitable for someone at the risk of suicide…(Percent who selected right answer: *No-harm agreement and follow-up meeting confirmed*, from four options)	138	Pct. difference	+18.8%*
Pre/Post (medium)		39	Pct. difference	+15.4%*

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Knowledge of Suicide Assessment (Comparison of posttest scores with follow-up scores)				
Post/Post	Suicide is most likely a result of…(Percent who selected right answer: *No single cause*, from four options)	39	Pct. difference	+5.1% ns
Post/Post	Suicide plans are assessed on the basis of a person's… (Percent who selected right answer: *Degree of preparation*, from four options)	39	Pct. difference	-5.1% ns
Post/Post	People who express suicidal intentions…(Percent who selected right answer: *Are ambivalent about dying*, from four options)	39	Pct. difference	-7.7% ns
Post/Post	Which provides the most important information in assessing the risk of suicide…(Percent who selected right answer: *Resources*, from four options)	39	Pct. difference	-5.1% ns
Post/Post	Generally determines if behavior is suicidal…(Percent who selected right answer: *The intent of the person*)	39	Pct. difference	-10.3% ns
Post/Post	Which provides the least important information in assessing the risk of suicide…(Percent who selected right answer: *stress*)	39	Pct. difference	+6.2% ns

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Attitudes				
Pre/Post (short)	How comfortable are you in helping a suicidal person?	148	Mean difference	+0.53*
Pre/Post (medium)		39	Mean difference	+0.62*
Pre/Post (short)	How competent would you feel helping a suicidal person?	148	Mean difference	+1.13*
Pre/Post (medium)		39	Mean difference	+1.28*
Pre/Post (short)	How confident are you that you would try to help this suicidal person?	148	Mean difference	+0.64*
Pre/Post (medium)		39	Mean difference	+0.75*

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Contact with Suicidal Youth				
Pre/Post (medium)	Number of young people who showed signs of being suicidal that you had contact with? ("One or more" response)	37	Pct. Difference	-8.1%
Pre/Post (medium)	Did you talk to them about your concerns for their well-being? ("Yes" response)	37	Pct. Difference	-2.8%
Pre/Post (medium)	Did you ask them if they were thinking about harming themselves or attempting suicide?	37	Pct. Difference	-4.8%
Pre/Post (medium)	Did you talk with them about where they could get help?	37	Pct. Difference	+2.0%

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Notable Findings

At baseline "Over 46 percent (67 individuals) of the participants reported they had at least one contact with a suicidal youth in the last month. Almost 21 percent had more than one contact. The average number of contacts in the sample is 0.97" (p. 6)

"The results demonstrate the strong positive impact of workshops and training on knowledge of suicide issues, prevention, intervention and assessment. We observe many instances of significant increases over time in knowledge among participants. Moreover, the analysis at three time points indicates that the knowledge gains demonstrated at the Post workshop persist three months later" (p. 3).

General Notes

- **Nine- to twelve-month follow-up results are available in ORS (2003).**
- This evaluation was initially meant to study three types of gatekeeper trainings: ASIST, and two different one hour courses; however, participation in the other courses was insufficient to merit evaluation so only ASIST participants were evaluated.
- Follow-up survey was sent three months after training.
- Three questions pertaining to beliefs about suicide were not included here.

Country	Design	Highest Outcome	Published	Classification
USA	Pre/Post	Behavior	No	**3B**

Author	Year	Title
ORS	2003	*Youth Suicide Prevention Program: Annual Evaluation Report 2002-2003: Evaluation of Program Training Workshops*

Population Studied	Multiple community members including educators and school staff, probation officers, and clergy.	**No. ASIST Studied**	142
Setting	Schools	**No. Comp. Studied**	N/A
Addit'l Components?	None		

*142 persons completed pre- and posttests; 73 completed 3-month follow-up surveys and 29 completed 12-month follow-up surveys.

Domain	Name of Instrument	# Items	Notes
Satisfaction			
Knowledge & Attitudes	Self-rated general knowledge	5	5-pt. Likert scale from "Very low" to "Very high"
	Number of warning signs known	1	3 maximum
	Knowledge of suicide prevention and intervention	4	5-pt. Likert scale from "strongly disagree" to "strongly agree"
	Knowledge of suicide prevention and intervention	6	Multiple choice
	Knowledge of suicide assessment	7	Compared posttest v. 3 month follow-up
	Comfort, competence, & confidence in helping suicidal youth	3	5-pt. Scale from "Not at all" to "Fully"
Skills			
Behaviors	Contact with suicidal youth	4	Multiple response sets
Suicide Attempts			
Suicide Deaths			

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Self-Rated General Knowledge & Number of Warning Signs Known				
Pre/Post (short)	Facts about suicide prevention.	142	Mean difference	+1.25*
Pre/Post (medium)		73	Mean difference	+1.28*
Pre/Post (long)		28	Mean difference	+1.07*
Pre/Post (short)	Suicide warning signs.	142	Mean difference	+1.08*
Pre/Post (medium)		73	Mean difference	+1.22*
Pre/Post (long)		28	Mean difference	+1.04*
Pre/Post (short)	How to ask someone about suicide.	141	Mean difference	+1.39*
Pre/Post (medium)		73	Mean difference	+1.42*
Pre/Post (long)		28	Mean difference	+1.29*
Pre/Post (short)	How to get help for someone who may be suicidal	142	Mean difference	+0.90*
Pre/Post (medium)		73	Mean difference	+1.09*
Pre/Post (long)		28	Mean difference	+0.68*

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Self-Rated General Knowledge & Number of Warning Signs Known Cont'd				
Pre/Post (short)	Information about resources for help with/suicide	142	Mean difference	+1.11*
Pre/Post (medium)		73	Mean difference	+1.18*
Pre/Post (long)			Mean difference	+0.89*
Pre/Post (short)	Number of suicide warning signs known	142	Mean difference	+0.10^{ns}
Pre/Post (medium)		73	Mean difference	+0.08^{ns}
Pre/Post (long)		29	Mean difference	+0.10^{ns}

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Quantitative Outcomes, Continued				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Knowledge of Suicide Prevention and Intervention (Likert)				
Pre/Post (short)	If someone I knew told me they were thinking of suicide, I would want to get more information about their plan	142	Mean difference	+0.29*
Pre/Post (medium)		72	Mean difference	+0.37*
Pre/Post (long)		29	Mean difference	0.52*
Pre/Post (short)	It is harmful for a helper to engage in open communication when dealing with someone at risk of suicide	142	Mean difference	-0.17^{ns}
Pre/Post (medium)		71	Mean difference	-0.31*
Pre/Post (long)		29	Mean difference	-0.17 ^{ns}
Pre/Post (short)	If someone I knew was showing suggesting signs of suicide, I would raise the question of suicide with them	141	Mean difference	+0.50*
Pre/Post (medium)		71	Mean difference	+0.62*
Pre/Post (long)		29	Mean difference	+0.72*
Pre/Post (short)	If someone I knew was at risk of suicide, I would encourage them to talk about their wish to die	142	Mean difference	+0.52*
Pre/Post (medium)		72	Mean difference	+0.65*
Pre/Post (long)		29	Mean difference	+0.55*
Knowledge of Suicide Prevention and Intervention (Multiple Choice)				
Pre/Post (short)	When confronted with the possibility of suicidal behavior in a person, a caregiver should immediately…(Percent who selected right answer, *Discuss it directly with the person*, from four options)	140	Pct. difference	+25.7%*
Pre/Post (medium)		≈73	Pct. difference	+24.0%*
Pre/Post (long)		≈29	Pct. difference	+8.0% ^{ns}
Pre/Post (short)	Low intent attempts or gesture Require a suicide intervention…(Percent who selected right answer, *Require a suicide intervention*, from four options)	141	Pct. difference	-0.6%^{ns}
Pre/Post (medium)		≈73	Pct. difference	0.0%^{ns}
Pre/Post (long)		≈29	Pct. difference	-6.7% ^{ns}
Pre/Post (short)	If a person's words and/or behavior suggest the possibility of suicide, a helper should…(Percent who selected right answer: *Ask if the person is thinking of suicide*, from four options)	135	Pct. difference	+17.2%*
Pre/Post (medium)		≈73	Pct. difference	+25.4%*
Pre/Post (long)		≈29	Pct. difference	+25.1%*
Pre/Post (short)	If someone admits to feeling suicidal, a helper should… (Percent who selected right answer: *Calmly inquire about what is happening in their life*, from four options)	135	Pct. difference	+25.3%*
Pre/Post (medium)		≈73	Pct. difference	+38.2%*
Pre/Post (long)		≈29	Pct. difference	+22.0% ^{ns}
Pre/Post (short)	Key tasks in the first phase of Suicide Intervention are… (Percent who selected right answer: *Engagement and identification*, from four options)	136	Pct. difference	+41.5%*
Pre/Post (medium)		≈73	Pct. difference	+31.8%*
Pre/Post (long)		≈29	Pct. difference	+1.4% ^{ns}

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Knowledge of Suicide Prevention and Intervention (Multiple Choice) Cont'd				
Pre/Post (short)	Which of the following action plans would likely be most suitable for someone at the risk of suicide…(Percent who selected right answer: *No-harm agreement and follow-up meeting confirmed*, from four options)	133	Pct. difference	+24.8%*
Pre/Post (medium)		≈73	Pct. difference	+16.4%^{ns}
Pre/Post (long)		≈29	Pct. difference	+14.4% ^{ns}
Knowledge of Suicide Assessment (Comparison of posttest scores with follow-up scores)				
Post/Post (medium)	Suicide is most likely a result of…(Percent who selected right answer: *No single cause*, from four options)	≈73	Pct. difference	+3.3% ^{ns}
Post/Post (long)		≈29	Pct. Difference	+6.9%^{ns}
Post/Post (medium)	Suicide plans are assessed on the basis of a person's… (Percent who selected right answer: *Degree of preparation*, from four options)	≈73	Pct. Difference	-5.1% ^{ns}
Post/Post (long)		≈29	Pct. Difference	-8.1% ^{ns}
Post/Post (medium)	People who express suicidal intentions…(Percent who selected right answer: *Are ambivalent about dying*, from four options)	≈73	Pct. Difference	-7.1% ^{ns}
Post/Post (long)		≈29	Pct. Difference	-6.9% ^{ns}
Post/Post (medium)	Which provides the most important information in assessing the risk of suicide…(Percent who selected right answer: *Resources*, from four options)	≈73	Pct. Difference	-5.5% ^{ns}
Post/Post (long)		≈29	Pct. Difference	-15.7% ^{ns}
Post/Post (medium)	Generally determines if behavior is suicidal…(Percent who selected right answer: *The intent of the person*)	≈73	Pct. Difference	-17.8%*
Post/Post (long)		≈29	Pct. Difference	-17.7% ^{ns}
Post/Post (medium)	Which provides the least important information in assessing the risk of suicide…(Percent who selected right answer: *stress*)	≈73	Pct. Difference	-1.4% ^{ns}
Post/Post (long)		≈29	Pct. Difference	-5.0% ^{ns}

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Attitudes				
Pre/Post (short)	How comfortable are you in helping a suicidal person?	142	Mean difference	+0.43*
Pre/Post (medium)		73	Mean difference	+0.51*
Pre/Post (long)		29	Mean difference	+0.34^{ns}
Pre/Post (short)	How competent would you feel helping a suicidal person?	141	Mean difference	+0.88*
Pre/Post (medium)		73	Mean difference	+1.14*
Pre/Post (long)		29	Mean difference	+0.80*
Pre/Post (short)	How confident are you that you would try to help this suicidal person?	141	Mean difference	+0.50*
Pre/Post (medium)		73	Mean difference	+0.64*
Pre/Post (long)		29	Mean difference	+0.55*

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Quantitative Outcomes				
Comparison	**Outcome**	**N**	**ES Type**	**ES**
Contact with Suicidal Youth				
Pre/Post (medium)	Number of young people who showed signs of being suicidal that you had contact with? ("One or more" response)	≈73	Pct. Difference	-1.4%
Pre/Post (long)		≈29	Pct. Difference	-17.2%
Pre/Post (medium)	Did you talk to them about your concerns for their well-being? ("Yes" response)	≈73	Pct. Difference	+6.8%
Pre/Post (long)		≈29	Pct. Difference	-13.8%
Pre/Post (medium)	Did you ask them if they were thinking about harming themselves or attempting suicide? ("Yes" response)	≈73	Pct. Difference	+5.4%
Pre/Post (long)		≈29	Pct. Difference	-20.7%
Contact with Suicidal Youth Cont'd				
Pre/Post (medium)	Did you talk with them about where they could get help? ("Yes" response)	≈73	Pct. Difference	+13.7%
Pre/Post (long)		≈29	Pct. Difference	-3.4%

Statistical significance: *= $p < .05$; **= $p < .01$; ***= $p < .001$; ns = not statistically significant; if blank, no statistical test was reported.

Notable Findings

"Interestingly, the levels of self-reported knowledge...remain high even at the 9-12 month Follow-up among those participants with data at three time periods. While there is some drop-off in knowledge between Post and 9-12 months, in most instances this level of knowledge is still significantly greater than observed before participation in the workshops" (p. 4).

"Almost 40 of those who responded in the [3-month] follow-up report contact with one or more suicidal youth, and we find that they are referring youth to a wide range of possible resources, most notably family, mental health agencies, and crisis lines. In contrast, only 20 percent of the participants with data at 9-12 months reported any contact with suicidal youth, and only 17 percent referred youth to any resources" (p. 5).

General Notes

- **Some results, particularly those from the 3-month follow-up, may overlap with the ORS (2002) report.**
- Evaluation was initially meant to study three types of gatekeeper trainings: ASIST, and two different one hour courses; however, participation in the other courses was insufficient to merit evaluation so only ASIST participants were evaluated.
- Follow-up surveys were sent at 3 months and at 9-12 months.
- Three questions pertaining to beliefs about suicide were not included here.

Quantitative Outcomes by Domain

These tables do not include outcomes from (1) ORS (2002) because they were largely duplicated and updated in ORS (2003), (2) Guttormsen et al. (2003) because it was a qualitative study, and from Smith & MacKay (2007) and Todd (2005) because these only provided narrative.

Statistical significance is indicated as follows: *= $p < .05$, **= $p < .01$, ***= $p < .001$, and ns = not statistically significant; if blank, no statistical test was reported.

Satisfaction

Author	Domain	Comparison	Outcome	N	ES Type	ES
Chen et al. (2009)	Satisfaction	Post (short)	Level of satisfaction ("Agree" or "Strongly Agree")	≈206	Mean	91.1%
McAuliffe & Perry (2007)	Satisfaction	Pre/Post (long)	Satisfaction with suicide risk training	126	Pct. Difference	+50.0%

Knowledge

Author	Domain	Comparison	Outcome	N	ES Type	ES
Chen et al. (2009)	Knowledge	Pre/Post (short)	Knowledge of suicide intervention skills	199	Pct. Difference	+32.0%**
Chen et al. (2009)	Knowledge	Pre/Post (3-mos.)		203	Pct. Difference	+14.0%**
Chen et al. (2009)	Knowledge	ASIST/ Comparison		≈40/40	Pct. Difference	+38.0%*
Eggert et al. (1999)	Knowledge	ASIST/ Comparison	Identify 3 warning signs	110/2249	Pct. Diff. Adult	+56.0%***
Eggert et al. (1999)	Knowledge	ASIST/ Comparison		110/2249	Pct. Diff. Youth	+28.0%***
Griesbach et al. (2008)	Knowledge	Pre/Post (short)	Knowledge (very high or high)	534	Pct. Difference	+70.3%
Griesbach et al. (2008)	Knowledge	Pre/Post (long)		534	Pct. Difference	+56.7%
Illich (2004)	Knowledge	Pre/Post (short)	Basic knowledge (7 questions aggregated)	187/188	Pct. Difference	+19.8%*†
Illich (2004)	Knowledge	Pre/Post (short)	Correctly identify 3 critical risk factors	187/189	Pct. Difference	+30.0%*
McAuliffe & Perry (2007)	Knowledge	Pre/Post (long)	Knowledge of protocols for suicidal patients	126	Pct. Difference	+10.0%
ORS (2003)	Knowledge	Pre/Post (short)	Facts about suicide prevention	142	Mean difference	+1.25*
ORS (2003)	Knowledge	Pre/Post (medium)		73	Mean difference	+1.28*
ORS (2003)	Knowledge	Pre/Post (long)		28	Mean difference	+1.07*
ORS (2003)	Knowledge	Pre/Post (short)	Suicide warning signs	142	Mean difference	+1.08*
ORS (2003)	Knowledge	Pre/Post (medium)		73	Mean difference	+1.22*
ORS (2003)	Knowledge	Pre/Post (long)		28	Mean difference	+1.04*

Knowledge Cont'd

Author	Domain	Comparison	Outcome	N	ES Type	ES
ORS (2003)	Knowledge	Pre/Post (short)	How to ask someone about suicide	141	Mean difference	+1.39*
ORS (2003)	Knowledge	Pre/Post (medium)		73	Mean difference	+1.42*
ORS (2003)	Knowledge	Pre/Post (long)		28	Mean difference	+1.29*
ORS (2003)	Knowledge	Pre/Post (short)	How to get help for someone who may be suicidal	142	Mean difference	+0.90*
ORS (2003)	Knowledge	Pre/Post (medium)		73	Mean difference	+1.09*
ORS (2003)	Knowledge	Pre/Post (long)		28	Mean difference	+0.68*
ORS (2003)	Knowledge	Pre/Post (short)	Information about resources for help with/ suicide	142	Mean difference	+1.11*
ORS (2003)	Knowledge	Pre/Post (medium)		73	Mean difference	+1.18*
ORS (2003)	Knowledge	Pre/Post (long)			Mean difference	+0.89*
ORS (2003)	Knowledge	Pre/Post (short)	Number of suicide warning signs known	142	Mean difference	+0.10^{ns}
ORS (2003)	Knowledge	Pre/Post (medium)		73	Mean difference	+0.08^{ns}
ORS (2003)	Knowledge	Pre/Post (long)		29	Mean difference	+0.10^{ns}
ORS (2003)	Knowledge	Pre/Post (short)	If someone I knew told me they were thinking of suicide, I would want to get more information about their plan	142	Mean difference	+0.29*
ORS (2003)	Knowledge	Pre/Post (medium)		72	Mean difference	+0.37*
ORS (2003)	Knowledge	Pre/Post (long)		29	Mean difference	0.52*
ORS (2003)	Knowledge	Pre/Post (short)	It is harmful for a helper to engage in open communication when dealing with someone at risk of suicide	142	Mean difference	-0.17^{ns}
ORS (2003)	Knowledge	Pre/Post (medium)		71	Mean difference	-0.31*
ORS (2003)	Knowledge	Pre/Post (long)		29	Mean difference	-0.17^{ns}
ORS (2003)	Knowledge	Pre/Post (short)	If someone I knew was showing suggesting signs of suicide, I would raise the question of suicide with them	141	Mean difference	+0.50*
ORS (2003)	Knowledge	Pre/Post (medium)		71	Mean difference	+0.62*
ORS (2003)	Knowledge	Pre/Post (long)		29	Mean difference	+0.72*
ORS (2003)	Knowledge	Pre/Post (short)	If someone I knew was at risk of suicide, I would encourage them to talk about their wish to die	142	Mean difference	+0.52*
ORS (2003)	Knowledge	Pre/Post (medium)		72	Mean difference	+0.65*
ORS (2003)	Knowledge	Pre/Post (long)		29	Mean difference	+0.55*
ORS (2003)	Knowledge	Pre/Post (short)	When confronted with the possibility of suicidal behavior in a person, a caregiver should immediately…(Percent who selected right answer, *Discuss it directly with the person*, from four options)	140	Pct. difference	+25.7%*
ORS (2003)	Knowledge	Pre/Post (medium)		≈73	Pct. difference	+24.0%*
ORS (2003)	Knowledge	Pre/Post (long)		≈29	Pct. difference	+8.0%^{ns}

Knowledge Cont'd

Author	Domain	Comparison	Outcome	N	ES Type	ES
ORS (2003)	Knowledge	Pre/Post (short)	Low intent attempts or gesture Require a suicide intervention…(Percent who selected right answer, *Require a suicide intervention*, from four options)	141	Pct. difference	-0.6%^{ns}
ORS (2003)	Knowledge	Pre/Post (medium)		≈73	Pct. difference	0.0%^{ns}
ORS (2003)	Knowledge	Pre/Post (long)		≈29	Pct. difference	-6.7%^{ns}
ORS (2003)	Knowledge	Pre/Post (short)	If a person's words and/or behavior suggest the possibility of suicide, a helper should… (Percent who selected right answer: *Ask if the person is thinking of suicide*, from four options)	135	Pct. difference	+17.2%*
ORS (2003)	Knowledge	Pre/Post (medium)		≈73	Pct. difference	+25.4%*
ORS (2003)	Knowledge	Pre/Post (long)		≈29	Pct. difference	+25.1%*
ORS (2003)	Knowledge	Pre/Post (short)	If someone admits to feeling suicidal, a helper should… (Percent who selected right answer: *Calmly inquire about what is happening in their life*, from four options)	135	Pct. difference	+25.3%*
ORS (2003)	Knowledge	Pre/Post (medium)		≈73	Pct. difference	+38.2%*
ORS (2003)	Knowledge	Pre/Post (long)		≈29	Pct. difference	+22.0%^{ns}
ORS (2003)	Knowledge	Pre/Post (short)	Key tasks in the first phase of Suicide Intervention are… (Percent who selected right answer: *Engagement and identification*, from four options)	136	Pct. difference	+41.5%*
ORS (2003)	Knowledge	Pre/Post (medium)		≈73	Pct. difference	+31.8%*
ORS (2003)	Knowledge	Pre/Post (long)		≈29	Pct. difference	+1.4%^{ns}
ORS (2003)	Knowledge	Pre/Post (short)	Which of the following action plans would likely be most suitable for someone at the risk of suicide…(Percent who selected right answer: *No-harm agreement and follow-up meeting confirmed*, from four options)	133	Pct. difference	+24.8%*
ORS (2003)	Knowledge	Pre/Post (medium)		≈73	Pct. difference	+16.4%^{ns}
ORS (2003)	Knowledge	Pre/Post (long)		≈29	Pct. difference	+14.4%^{ns}
Tierney (1994)	Knowledge	ASIST/ Comparison	Information Questionnaire on Suicide (IQS)	154/22	Cohen's D	+1.03***
Tierney (1994)	Knowledge	ASIST/ Comparison	Intervention Knowledge Test (IKT)	154/23	Cohen's D	+1.61***
Turley & Tanney (1998)	Knowledge	Pre/Post (short)	Intervention Knowledge	Unk	Mean Difference	3.38***
Turley & Tanney (1998)	Knowledge	Pre/Post (med.)		Unk	Mean Difference	3.11***
Turley, et al. (2000)	Knowledge	Pre/Post (short)	Self-Declared Readiness to Intervention	91	SMD	1.82***
Walsh & Perry (2000)	Knowledge	Pre/Post (short)	Very aware of community resources	49	Pct. Difference	+31.4%
Walsh & Perry (2000)	Knowledge	Pre/Post (med.)		49	Pct. Difference	+36.7%

Attitudes

Author	Domain	Comparison	Outcome	N	ES Type	ES
Chen et al. (2009)	Attitudes	Pre/Post (short)	Self-efficacy for suicide prevention	127	Mean Difference	+1.22**
Chen et al. (2009)	Attitudes	Pre/Post (3-mos.)		132	Mean Difference	+1.01**
Chen et al. (2009)	Attitudes	Pre/Post (6-mos.)		81	Mean Difference	+1.04
Chen et al. (2009)	Attitudes	ASIST/ Comparison	Self-efficacy for suicide prevention	≈40/40	Mean Difference	+1.46*
Eggert et al. (1999)	Attitudes	Pre/Post (short)	Comfort to intervene	110	Not Calculable†	unk***
Eggert et al. (1999)	Attitudes	Pre/Post (short)	Competence to intervene	110	Not Calculable†	unk***
Eggert et al. (1999)	Attitudes	Pre/Post (short)	Confidence to intervene	110	Not Calculable†	unk***
Eggert et al. (1999)	Attitudes	Pre/Post (short)	Belief that one could prevent suicide	110	Mean Difference	+0.50***
Eggert et al. (1999)	Attitudes	Pre/Post (short)	Likelihood they would intervene	108	Not Calculable†	Unk***
McConahay (1991)	Attitudes	Pre/Post (medium)	Felt more capable to intervene	101/100	SMD	+0.30
Griesbach et al. (2008)	Attitudes	Pre/Post (short)	Confidence (very high or high)	534	Pct. Difference	+65.5%
Griesbach et al. (2008)	Attitudes	Pre/Post (long)		534	Pct. Difference	+48.9%
ORS (2003)	Attitudes	Pre/Post (short)	How comfortable are you in helping a suicidal person?	142	Mean difference	+0.43*
ORS (2003)	Attitudes	Pre/Post (medium)		73	Mean difference	+0.51*
ORS (2003)	Attitudes	Pre/Post (long)		29	Mean difference	+0.34^{ns}
ORS (2003)	Attitudes	Pre/Post (short)	How competent would you feel helping a suicidal person?	141	Mean difference	+0.88*
ORS (2003)	Attitudes	Pre/Post (medium)		73	Mean difference	+1.14*
ORS (2003)	Attitudes	Pre/Post (long)		29	Mean difference	+0.80*
ORS (2003)	Attitudes	Pre/Post (short)	How confident are you that you would try to help this suicidal person?	141	Mean difference	+0.50*
ORS (2003)	Attitudes	Pre/Post (medium)		73	Mean difference	+0.64*
ORS (2003)	Attitudes	Pre/Post (long)		29	Mean difference	+0.55*
Turley (2009)	Attitudes	Pre/Post (short)	I am "Well prepared" or "Mostly prepared" for suicide intervention (retrospective)	986	Pct. Difference	+69.0%
Turley (2009)	Attitudes	Pre/Post (short)	I will "Much more" or "More" recognize warning signs inviting help (retrospective)	979	Pct. Difference	+98.0%
Turley (2009)	Attitudes	Pre/Post (short)	I will "Much more" or "More" ask directly about suicide thoughts (retrospective)	981	Pct. Difference	+97.0%
Turley (2009)	Attitudes	Pre/Post (short)	I will "Much more" or "More" explore why someone is thinking about suicide (retrospective)	980	Pct. Difference	+98.0%

Attitudes Cont'd

Author	Domain	Comparison	Outcome	N	ES Type	ES
Turley (2009)	Attitudes	Pre/Post (short)	I know "Much more" or "More" how to review immediate suicide risk (retrospective)	980	Pct. Difference	+98.0%
Turley (2009)	Attitudes	Pre/Post (short)	I could "Much more" or "More" take steps to increase the safety of a person at risk (retrospective)	980	Pct. Difference	+98.0%
Turley (2009)	Attitudes	Pre/Post (short)	I have "Much more" or "More" options for self-care and support in my helper role (retrospective)	981	Pct. Difference	+93.0%
Turley (2009)	Attitudes	Pre/Post (short)	I will "Much more" or "More" network with others around suicide safety (retrospective)	973	Pct. Difference	+94.0%
Turley (2009)	Attitudes	Pre/Post (short)	I am "Much more" or "More" aware of how my attitudes and experiences affect helping a person at risk (retrospective)	982	Pct. Difference	+95.0%
Tierney (1994)	Attitudes	ASIST/ Comparison	Semantic Differential on Suicide (SDS)	170/22	Cohen's D	-0.09 ns
Tierney (1994)	Attitudes	ASIST/ Comparison	Suicide Intervention Questionnaire (SIQ)	174/22	Cohen's D	+1.43 ***
Turley & Tanney (1998)	Attitudes	Pre/Post (short)	Readiness	Unk	Mean Difference	6.02***
Turley & Tanney (1998)	Attitudes	Pre/Post (med.)		Unk	Mean Difference	4.52***
Turley & Tanney (1998)	Attitudes	Pre/Post (short)	Willingness to Intervene	Unk	Mean Difference	1.51***
Turley & Tanney (1998)	Attitudes	Pre/Post (med.)		Unk	Mean Difference	1.65***
Turley & Tanney (1998)	Attitudes	Pre/Post (short)	Optimism-pessimism about outcome	Unk	Mean Difference	0.46***
Turley & Tanney (1998)	Attitudes	Pre/Post (med.)		Unk	Mean Difference	0.45***
Walsh & Perry (2000)	Attitudes	Pre/Post (short)	Completely comfortable talking about suicide	49	Pct. Difference	+35.5%
Walsh & Perry (2000)	Attitudes	Pre/Post (med.)		49	Pct. Difference	+53.0%
Walsh & Perry (2000)	Attitudes	Pre/Post (short)	Completely able to recognize warning signs of suicide	49	Pct. Difference	+09.8%
Walsh & Perry (2000)	Attitudes	Pre/Post (med.)		49	Pct. Difference	+16.3%

Skills

Author	Domain	Comparison	Outcome	N	ES Type	ES
Griesbach et al. (2008)	Skills	Pre/Post (short)	Skills (self-reported very high or high)	534	Pct. Difference	+63.3%
Griesbach et al. (2008)	Skills	Pre/Post (long)		534	Pct. Difference	+50.1%
Illich (2004)	Skills	Pre/Post (short)	Risk Assessment (Correctly Identified Low Risk)	187/189	Pct. Difference	+6.7%^{ns}
Illich (2004)	Skills	Pre/Post (short)	Risk Assessment (Correctly Identified Moderate Risk)	187/189	Pct. Difference	+14.8%*
Illich (2004)	Skills	Pre/Post (short)	Risk Assessment (Correctly Identified High Risk)	187/189	Pct. Difference	+10.2%*
Illich (2004)	Skills	Pre/Post (short)	Risk Assessment (Correctly Identified High Risk)	187/189	Pct. Difference	+8.6%*
Tierney (1994)	Skills	Pre/Post (short)	Suicide Intervention Response Inv. (SIRI)	19	SMD	+0.29^{ns}
Tierney (1994)	Skills	Pre/Post (short)	Suicide Intervention Protocol (SIP)	19	SMD	+1.30***
Turley, et al. (2000)	Skills	Pre/Post (short)	Suicide Intervention Competencies	91	SMD	1.35***
Walsh & Perry (2000)	Skills	Pre/Post (short)	Very skilled in assessing risk	49	Pct. Difference	+18.8%
Walsh & Perry (2000)	Skills	Pre/Post (medium)		49	Pct. Difference	+20.4%
Walsh & Perry (2000)	Skills	Pre/Post (short)	Very skilled in intervention	49	Pct. Difference	+12.6%
Walsh & Perry (2000)	Skills	Pre/Post (medium)		49	Pct. Difference	+20.4%

Behaviors

Author	Domain	Comparison	Outcome	N	ES Type	ES
Coleman et al. (2008)	Behaviors	Pre/Post	Gatekeeper Behaviors in past 6 months.	19	SMD	+0.48
Cornell et al. (2006)	Behaviors	ASIST/ Comparison	Number of students questioned about suicide	101/249	Mean Annual Diff.	-1.60
Cornell et al. (2006)	Behaviors	ASIST/ Comparison	Wondered if student were suicidal, but did not ask	101/249	Mean Annual Diff.	+2.52
Cornell et al. (2006)	Behaviors	ASIST/ Comparison	Number of students referred for services	101/249	Mean Annual Diff.	-1.13
Cornell et al. (2006)	Behaviors	ASIST/ Comparison	Number of student contracts	101/249	Mean Annual Diff.	1.28
Demmler (2007)	Behaviors	ASIST/ Comparisons	Reported concern for suicidal person	322/248	Pct. Difference	+18.0%
Demmler (2007)	Behaviors	ASIST/ Comparisons	Reported an intervention	322/248	Pct. Difference	+17.0%
Griesbach et al. (2008)	Behaviors	Pre/Post (long)	Intervened with a person at-risk for suicide	534	Pct. Difference	+20.0%
Illich (2004)	Behavior	Pre/Post (long)	Discussed personal problems	187/45	Pct. Difference	-7.0% [ns]
Illich (2004)	Behavior	Pre/Post (long)	Had conversations with person at risk for suicide	187/45	Pct. Difference	+9.0% [ns]
Illich (2004)	Behavior	Pre/Post (long)	Asked about suicide	187/45	Pct. Difference	+6.0% [ns]

Behaviors Cont'd

Author	Domain	Comparison	Outcome	N	ES Type	ES
Illich (2004)	Behavior	Pre/Post (long)	Made a life-saving agreement	187/45	Pct. Difference	-2.0% [ns]
Illich (2004)	Behavior	Pre/Post (long)	Made referral	187/45	Pct. Difference	-2.0% [ns]
McAuliffe & Perry (2007)	Behaviors	Pre/Post (long)	Staff assessments of patient suicide risk	126	Pct. Difference	+13.0%
McAuliffe & Perry (2007)	Behaviors	Pre/Post (long)	Identification of suicidal risk in ED Patients	N/A	Pct. Difference	≈+18.0%
McAuliffe & Perry (2007)	Behaviors	Pre/Post (long)	Admission of suicidal ED patients	N/A	Pct. Difference	-14.0%
McConahay (1991)	Behavior	Pre/Post (medium)	Frequency of encountering possibly suicidal person	100/100	SMD†	-0.10
McConahay (1991)	Behavior	Pre/Post (medium)	Frequency of intervening with possibly suicidal person	100/103	SMD	+0.15
ORS (2003)	Behaviors	Pre/Post (medium)	Number of young people who showed signs of being suicidal that you had contact with? ("One or more" response)	≈73	Pct. Difference	-1.4%
ORS (2003)	Behaviors	Pre/Post (long)		≈29	Pct. Difference	-17.2%
ORS (2003)	Behavior	Pre/Post (medium)	Did you talk to them about your concerns for their well-being? ("Yes" response)	≈73	Pct. Difference	+6.8%
ORS (2003)	Behavior	Pre/Post (long)		≈29	Pct. Difference	-13.8%
ORS (2003)	Behavior	Pre/Post (medium)	Did you ask them if they were thinking about harming themselves or attempting suicide? ("Yes" response)	≈73	Pct. Difference	+5.4%
ORS (2003)	Behavior	Pre/Post (long)		≈29	Pct. Difference	-20.7%
ORS (2003)	Behavior	Pre/Post (medium)	Did you talk with them about where they could get help? ("Yes" response)	≈73	Pct. Difference	+13.7%
ORS (2003)	Behavior	Pre/Post (long)		≈29	Pct. Difference	-3.4%
Turley & Tanney (1998)	Behaviors	Post (medium)	Used in direct helping activities	Unk	Pct. Difference	+33%
Turley & Tanney (1998)	Behaviors	Post (medium)	Used in professional interventions	Unk	Pct. Difference	0%
Turley & Tanney (1998)	Behaviors	Post (medium)	Used in personal interventions	Unk	Pct. Difference	+10%

Suicidal Behavior

Author	Domain	Comparison	Outcome	N	ES Type	ES
Cornell et al. (2006)	Suicide Attmpts	ASIST/ Comparison	Student suicide attempts	101/249	Mean Annual Diff.	-1.45

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