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The Garrett Lee Smith Memorial Suicide Prevention Program

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Abstract

Responding to calls for greater efforts to reduce youth suicide, the Garrett Lee Smith (GLS) Memorial Act to date has provided funding for 68 state, territory, and tribal community grants, and 74 college campus grants for suicide prevention efforts. Suicide prevention activities supported by GLS grantees have included education, training programs including gatekeeper training, screening activities, infrastructure for improved linkages to services, crisis hotlines, and community partnerships. Through participation in both local- and cross-site evaluations, GLS grantees are generating data regarding the local context, proximal outcomes, and implementation of programs, as well as opportunities for improvement of suicide prevention efforts.

From 1999 to 2006, suicide was the third leading cause of death for both 12- to 18-, and 19-to 25-year-olds in the United States (Centers for Disease Control and Prevention [CDC], 2009). Although suicide rates stabilized somewhat in recent years, the calendar year 2004 was associated with the greatest percentage increase in deaths due to suicide among 10- to 19-year-olds since 1990 (CDC, 2007). Non-lethal suicide attempts are considerably more common than deaths from suicide among young people, with nearly 7% of students in grades 9–12 in a nationally representative sample reporting that they attempted suicide in the previous 12 months (CDC, 2008). Higher risk for suicide attempts during adolescence has been linked to the presence of psychiatric and substance use disorders (Goldston et al., 2009), as well as histories of abuse (Molnar, Bukman, & Buka, 2001). For some youths, additional contributing factors during this developmental period may include increased conflicts with families, academic difficulties, and difficulties with negotiation of interpersonal relationships, which are taking on added importance during this period (Daniel & Goldston, 2009).

The transition from adolescence to emerging adulthood also is a high-risk period of time for suicidal behaviors. Higher risk of suicidal behaviors during this period may be related to increased alcohol use, substance abuse, and risk behaviors (Arnett, 2000), and the relatively high incidences of many major mental illnesses during this period (Kessler et al., 2005). Indeed, the National College Health Assessment found that almost half of college students said that they had felt so depressed that they could barely function and 9 percent reported that they considered suicide in the last year (American College Health Association, 2007). Risk also may be associated with the fact that many college students and other young adults move away from the protective supports of living at home during this time (Arnett, 2000), and because of the competitiveness of some college environments and the accompanying possibilities of failure experiences (Westefeld et al, 2006). Many colleges, however, do not have the capacity or resources to deal with suicidal behavior or serious mental health problems on campuses (Gallagher, 2007). Moreover, some colleges discourage open discussion of suicidal thoughts and behavior insofar as they have adopted policies that lead to withdrawal of students from college when they are suicidal because of concerns about the ability to maintain a safe environment for such students, and liability concerns (Appelbaum, 2006; Lamberg, 2006). To this point, the ratio of counselors to students on many college campuses, particularly larger campuses, is significantly lower than that recommended in the accreditation standards of the International Association of Counseling Services, Inc. (2000) (Gallagher, 2004).

The President's New Freedom Commission Report, Achieving the Promise: Transforming Mental Health Care in America (2003) declared that "suicide is a serious public health challenge that has not received the attention and degree of national priority it deserves." Efforts to reduce suicidal behavior have lagged behind efforts to reduce other major health problems in the United States (Knox, Conwell, & Caine, 2004). The National Strategy for Suicide Prevention (NSSP; US Public Health Service, 2001), a national plan for public and private collaboration in the reduction of risk and burden associated with suicide and suicidal behaviors, specifically described suicide prevention needs of adolescents and students on campuses (US Public Health Service, 2001). To address many of these needs among adolescents and young adults, Congress passed, and President Bush signed into law in October 2004 the Garrett Lee Smith Memorial Act (GLSMA). The GLSMA made federal funding widely available for the first time to states, tribes, and colleges across the nation to implement community-based youth and young adult suicide prevention programs. Specifically, the GLSMA enabled funding for addressing a number of the NSSP goals and objectives including (1) increased development and implementation of community-based suicide prevention programs (Goal #4); (2) training for recognition of at-risk behaviors (Goal #6), (3) improvement in access to and linkages with substance use and mental health services (Goal #8), (4) improvement and expansion of surveillance of suicide-related outcomes (Goal #11), (5) increased awareness of suicide as a public health problem (Goal #1), and (6) development and implementation of strategies for reducing stigma associated with services for mental health and suicide prevention activities (Goal #3; US Public Health Service, 2001, pages 15–16).

GLS suicide prevention grants have been awarded to states, tribes, tribal entities, and territories to develop and facilitate implementation of suicide prevention programs "in schools, educational institutions, juvenile justice systems, substance abuse programs, mental health programs, foster care systems, and other child and youth support organizations" (GLSMA, 2004, p. 6). GLS grants also have been awarded to institutions of higher learning, and their associated college counseling and health centers, psychology training clinics, and evidence-based mental illness and substance abuse prevention and treatment centers (GLSMA, 2004). Hand in hand with mental health and suicide prevention aims, the GLSMA mandates the collection of data regarding activities and/or services (p. 6) to monitor the

effectiveness of the program, to facilitate efforts at quality assurance and policy development, and to provide a basis for modifying programs as needed. This latter goal of evaluation is particularly important given that many suicide prevention activities have not been rigorously evaluated, and are lacking in evidence regarding efficacy or effectiveness (Mann et al., 2005), or ease of implementation. The purpose of this paper is to describe the scope and evaluation of the GLS suicide prevention activities.

The Program: Scope, Supports, and Evaluation Scope of Program

The GLS state and tribal and GLS campus suicide prevention grants have been awarded through a competitive review process. A total of 68 new or renewal 3-year grants have been awarded to states and tribal organizations in the first four cohorts of funding. Awardees include 42 states, 17 tribes or tribal organizations, and one territory. In response to three separate requests for proposals, 74 3-year new or renewal grants have been awarded to meet the campus mental health and suicide prevention aims of the Garrett Lee Smith Memorial Act.

Focus of State, Tribal, Territory Grants—The GLS state and tribal grants stipulated that grantees promote or develop early intervention and prevention services aimed at reducing risk for suicidal behaviors. GLS grantees also have been encouraged to use funds for facilitating timely referrals of youth at risk for suicidal behaviors, and for improving access to services for youth from varied backgrounds. Provision of "continuous training activities for child care professionals and community care providers on the latest youth suicide early intervention and prevention services practices and strategies" (e.g., gatekeeper training), as well as provision of support for individuals or groups who recently suffered the loss of someone due to suicide (i.e., postvention services) specifically were mentioned in the Garrett Lee Smith Memorial Act and the SAMHSA Request for Applications (RFA). The SAMHSA RFA emphasized the need for community collaborations, or a plan for future collaboration among organizations, programs, or agencies as a prerequisite for funding.

Among the funded grantees, suicide prevention efforts in different communities have reflected the wide range of youth suicide prevention activities in use nationally. Unsurprisingly, given the specific references to these approaches in the GLSMA legislation, the most common prevention approaches across grantee communities and organizations have been gatekeeper training and screening programs to identify youth at risk. Specifically, as of spring 2009, approximately 125,000 gatekeepers had been trained, and over 29,000 youth screened through the GLS state and tribal programs. QPR (Question-Persuade-Refer; Quinnett, 1995) and ASIST (Applied Suicide Intervention Skills Training; Lang, Ramsey, Tanney, & Kinzel, 2005) have been the primary gatekeeper training approaches utilized, and the Columbia Teen Screen (Shaffer et al., 2004) and Signs of Suicide programs (Aseltine & DeMartino, 2004; Aseltine, James, Schilling, & Glanovsky, 2007) frequently have been utilized as screening approaches. These programs have been implemented differently in different settings, with gatekeeper training programs for example variously focusing on schools, juvenile justice settings, social service and foster care programs, parents of gay, lesbian, and bisexual teenagers, and individuals within tribal communities. Screening programs also have been implemented in schools, juvenile justice settings, mental health clinic settings, and other settings. Other programs implemented in various sites include programs for providing general education regarding suicide prevention or intervention, programs for teaching core competencies in the assessment and management of suicide risk to mental health specialists, peer support programs, support groups for suicide survivors, Emergency Department interventions, support for crisis centers and hotlines, and school programs designed to empower youth to seek assistance when they or a peer are feeling

suicidal. The GLS state and tribal programs also have supported creative approaches to suicide prevention such as talking circles and programs to enrich cultural protective supports in native communities.

Focus of College Grants—College grants have been awarded to fund six types of activities for suicide prevention and improving access and linkages to services for mental health and substance abuse problems: (1) educational seminars, (2) crisis hot lines (or promotion of the National Suicide Prevention Lifeline, 1-800-273-TALK), (3) preparation of informational materials; (4) preparation of educational materials for families of students to increase awareness of potential mental and behavioral health issues; (5) training programs (e.g., gatekeeper training) for students and campus staff to enhance their ability to respond effectively to college students with emotional or behavioral difficulties including substance abuse and suicidal behavior that might lead to school failure; and (6) creation of an infrastructure for linking institutions of higher learning without adequate mental health resources to health care providers that can provide these services. As part of the application process, applicants have been required to provide a description of the student mental health needs at that institution, resources currently available, strategies to reach out to students in need and to expand access to services, and a plan for evaluating the objectives of their program.

The campus GLS programs have differed from the GLS state and tribal programs in several respects including lower levels of funding, the fact that campus grants could not be used to provide any direct clinical services to students, a requirement that campuses obtain match funding, and more circumscribed requirements for use of funds tied directly to the GLSMA.

Gatekeeper training and awareness activities have been occurring on all GLS-funded campuses. As of spring 2009, over 108,000 individuals have been reached through 2,913 training activities supported by GLS campus grantees. The most common target of suicide prevention and awareness activities have been the students themselves (73%); nonetheless, other potential gatekeepers also have been commonly targeted including college faculty (51%), college counseling and health center staff (39%), residential life (38%), campus security (26%), parents and guardians (28%), and primary care staff (20%) (Macro International, 2008). Some of the most common "products" of the GLS Cohort 1 and 2 grantees have been print materials related to suicide prevention, awareness, and education (29% of grantees), training curriculum and materials (9%), assessment, screening, and tracking tools (7%), workshops, curriculum, and conference presentations (7%), web development related to suicide prevention activities (4%), and visual and audio media presentations related to suicide prevention (5%).

Organization & Technical Assistance

The GLS grantees have worked with program partners who offer technical assistance in addressing programmatic as well as local and national evaluation-related issues. Specifically, each grantee has worked with an assigned SAMHSA government project officer, a prevention specialist from the Suicide Prevention Resource Center (SPRC), and a cross-site evaluation technical assistance liaison from Macro International. These groups have worked in tandem to support the varied needs of the grantees with federal monitoring and oversight coming from SAMHSA, local program implementation and local evaluation support coming from SPRC, and cross-site evaluation support coming from Macro International Inc. This technical assistance model has provided each grantee with tailored support and a single point of contact within each of the program partner organizations.

Technical assistance has been provided largely through electronic communication, teleconference, WebCast trainings, site visits, and annual grantee meetings. In addition,

internet-based systems have been developed to warehouse and disseminate prevention resources (i.e., the SPRC website) as well as to collect, manage, and disseminate data (i.e., Suicide Prevention Data Center [SPDC]). With an emphasis on data-driven decision making and sustainability, grantees have been encouraged to locally implement best practice approaches, use data (local and cross-site evaluation) to monitor and refine their program activities, and to pursue avenues that would lead to increased sustainability of program efforts.

Evaluation Activities

Local Evaluation—Both the GLS state and tribal and the GLS campus grantees have been required to evaluate suicide prevention efforts and outcomes locally on an ongoing basis. Assistance with local evaluations has been offered from the SPRC, upon request from grantees. As a condition for funding, each grantee provided plans for their own site-specific data collection, management, analysis, interpretation, and reporting. Although some degree of process and outcome measurement has typified almost all sites, some of the more sophisticated approaches to evaluation have been linked to the frameworks of specific models or theory, and have been conducted with the aim of testing hypotheses about the effects of suicide prevention efforts.

Evaluation efforts at the site level have varied considerably depending on the funded suicide prevention strategies, the local emphases in evaluation, and the type of data that are available or have been collected. Among grantees, there has been a range in the types of programs and strategies being implemented and the corresponding evaluation strategies. Strategies range across universal, selective, and indicated suicide prevention, and most grantees have implemented multiple levels of suicide prevention activities. As an illustration of universal suicide prevention efforts and activities, several grantees are conducting awareness-raising campaigns that target broad audiences. Evaluations of these efforts at some sites have included focus groups as well as surveys of risk and protective factors and the impact of educational/media campaigns. Some grantees are conducting secondary prevention programs with higher risk groups, such as youth in juvenile justice settings and foster care. Evaluations of these efforts have included the number of youth identified at risk and referred for appropriate services. Other grantees have implemented indicated suicide prevention strategies such as culturally adapted emergency department brief interventions to facilitate safety planning and aftercare, or continued contact with natural helpers and inhome interventions for adolescents who have made suicide attempts. Local evaluation of these indicated suicide prevention efforts have included data regarding the acceptability and feasibility of new interventions to youth, family, and staff, ratings of the helpfulness of the interventions, and pretest – posttest surveys assessing changes as a function of interventions. Complementing other local prevention evaluation data, all sites also have been asked to evaluate the degree to which community coalitions (e.g., coalitions or partnerships with interested families, mental health consumers, and advocacy groups) have been developed in conjunction with the GLS activities.

Similar to the state and tribal GLS programs, the local efforts at evaluation for campus programs have varied widely, depending in part on the type of suicide prevention activities implemented at a particular site. The majority of campuses have evaluated their efforts at multiple levels, for example, gatekeeper training knowledge assessment, as well as indicants of short-term outcomes among students such as the number of students referred to counseling, and the utilization of gatekeeper training skills. Some of the campuses have relied upon existing data such as regularly administered survey data and number of students referred to counseling services, whereas other sites have included primary data collection as part of their evaluation efforts. To cite specific examples, some colleges are tracking the

number of individuals reached by or participating in programs (e.g., University of Wyoming), and some universities are supplementing this type of information with qualitative data from focus groups or interviews to examine reactions to programs (e.g., University of Puerto Rico). Some universities and colleges are implementing or drawing upon online surveys to provide information regarding depression, service utilization, and other mental health outcomes (e.g., California State University - Fullerton). Other universities are using pre-intervention/post-intervention assessments to provide information regarding effectiveness and "user-friendliness" of programs (e.g., University of Maryland). The local evaluation efforts of several universities also have included a focus on understanding the nuances of the college environment within which programs are being evaluated (e.g., Vanderbilt University).

Across both state and tribal, and campus grantees, there has been substantial heterogeneity in data sources and data collection plans. Some grantees have taken advantage of the existing data collection systems and existing capacity to collect and analyze data. These sources of data include, for example, Youth Risk Behavior Survey (CDC, 2008) data collected in the schools, emergency department admission codes, existing epidemiologic data at the state level, crisis agency data, and insurance claims data. In other cases, local evaluation efforts have necessitated the collection and analysis of primary data from program participants or patient records. These local evaluation efforts include, for example, evaluation of knowledge of suicidal behavior and risk factors among recipients of gatekeeper training, and information regarding referrals to providers. In many cases, local evaluation efforts have required the creation of instruments, collection of data from informants, and development of processes for data access and/or entry, cleaning, and analysis. In several cases, when grantees have implemented standardized programs (e.g., Signs of Suicide, Teen Screen, ASIST, and QPR), they have been able to utilize corresponding data collection instruments provided with the programs. To supplement these evaluation efforts, some grantees have implemented site visits and focus groups to further assess the impact, coordination, and community involvement or investment in suicide prevention activities.

The purpose of the local evaluation efforts has been to generate findings that will be informative in refining suicide prevention strategies and efforts at the local levels. Differences in the emphases, approaches, type of data collected, and rigor of local suicide prevention evaluation efforts, as well as a lack of randomization at most sites in the implementation of suicide prevention activities likely limit the generalizability of findings beyond the local level in many cases. However, some grantees have engaged in very systematic approaches to implementation and evaluations that may indeed yield generalizable information.

Cross-site evaluation—The independent cross-site evaluation is the mechanism through which the efforts of the GLSMA initiative as a whole are understood, improved, and sustained. The cross-site evaluation has served as a multi-site repository of information about the context within which the GLS programs are implemented; the products and services that have been developed and utilized; the process though which programmatic activities have been implemented; and the impacts associated with those activities. The cross-site evaluation also was designed in part to support the federal performance measurement and program management efforts.

Although the ultimate desired outcome of suicide prevention activities is a reduction in suicide attempts and deaths by suicide, there are crucial contextual and mediating variables that need to be adequately evaluated prior to the evaluation of suicidal behavior itself. For example, the effectiveness of gatekeeper training activities presumably depends upon

gatekeeper's confidence in using these skills, their ability to actually utilize the behavioral skills upon encountering youth at risk, and the degree to which they are able to successfully facilitate referral to service. Similarly, the success of suicide prevention screening efforts presumably depends on the accurate identification of youth at risk, the availability of services, and the subsequent connection of youth with these services. Hopefully, their receipt of services will lead to the reduction of risk for suicidal behaviors. The cross-site evaluation was designed to evaluate these contextual and mediating variables that will likely affect the success of suicide prevention programs, so it can be determined whether modifications are required in order for these programs to reach their goals.

Although the focus of the cross-site evaluation is similar across the GLS state and tribal and GLS campus programs, there are differences in its implementation that are driven by the different program contexts and allowable activities. There are four stages of data collection associated with the cross-site evaluation. First, there have been efforts to obtain a clearer understanding of the *context* of suicide prevention efforts. Specifically, information has been collected regarding the local environment within which program activities are being implemented. This has included, but has not been limited to existing evaluation resources and/or data sources, and the availability of data to support the evaluation of suicide prevention programs. For both the GLS state and tribal, and GLS campus programs, this information has been gathered through a review of the grant application from each grantee, and via the *Existing Database Inventory (EDI)*, a catalogue of data sources (e.g., Youth Risk Behavior Survey data from schools, claims data, emergency department codes) and accessibility of existing data relevant to evaluation of suicide prevention programming across sites.

Second, the *product stage* of evaluation has focused on the collection of information regarding the development, utilization, and budget allocation of products and services. For example, information is being collected regarding training programs, educational materials that have been developed, educational seminars, informational materials (regarding identification of at-risk individuals, suicide prevention awareness, help-seeking, and stigma), the development of hotlines, development and expansion of procedures for identification of at-risk students, and development of referral mechanisms and expansion of service networks. In this regard, the *Product and Services Inventory* has been used to catalogue data about products and services supported with GLS resources.

Third, the process stage of the evaluation has focused on key activities related to implementation of each grantee's suicide prevention plans. For example, a Training Exit Survey has been administered to all individuals trained in suicide prevention through state and tribal initiatives to assess content of training programs, use of skills and knowledge learned, and satisfaction with training experiences. In addition, at state and tribal sites, the Training Utilization and Penetration (TUP) interview has been administered two months following each training with up to 10 participants to gather information on knowledge and utilization of training. Complementing these data, the Training Activity Report (TAR) has been completed after each training and educational seminar to provide information on the training activity's participants. On GLS campus sites, the Campus Key Infrastructure Key Informant Interviews (CIFI) have been conducted with key members of the campus community including administrators, students, faculty, and counseling staff members to assess perceptions of the characteristics and impact of suicide prevention activities on their campus. Changes in campus infrastructure related to suicide prevention planning and emergency response also have been a focus of the cross-site evaluation, since these factors have been presumed to be a strong and powerful mediator of potential programming impact (cf., Knox et al., 2007).

The fourth stage of data collection has been the *impact stage* of evaluation. In this stage, the impact that the suicide prevention programs have on youth and students considered at risk for suicide has been evaluated. Among state and tribal grantees, for example, there has been a major focus on assessing the degree to which programs result in early identification (e.g., number of individuals identified as the result of a program), referral (i.e., the proportion of identified individuals that receive referrals), and eventual receipt of needed services (i.e., the degree to which youth identified at risk and their families follow through with referrals). Among campus grantees, information similarly has been gathered regarding the impact of GLS programming on counseling center and crisis services, referral access, and service utilization. In addition, the *Suicide Prevention Exposure Awareness and Knowledge Survey* (SPEAKS) has been administered to a stratified random sample of students, faculty, and staff on each campus to assess respondents' knowledge and opinions regarding suicide prevention and whether they have been exposed to or participated in suicide prevention activities, or are aware of available services.

Enhanced evaluations/special campus studies—Supplemental funding has been provided to enhance the local evaluations already being conducted by selected state and tribal GLS grantees, and for special studies into specific campus programs and their impacts. The CDC provided funding for three state/tribal "enhanced evaluations", including Maine, Tennessee, and Native American Rehabilitation Association (NARA) Northwest. These programs were primarily selected for their focus on public health prevention strategies rather than direct provision of mental health services. The enhanced evaluation projects have been supported with monthly conference calls that include both evaluation and program staff at the local level, CDC staff, at least one representative from Macro International Inc., and usually one representative from SAMHSA.

In Maine, the effects of three different combinations of school-based suicide prevention activities on suicide-related outcomes and service utilization are being evaluated. All participating schools have been receiving a modification of the Lifelines school based curriculum (Kalafat & Elias, 1994) and gatekeeper training, but some schools additionally have received either the Reconnecting Youth (Eggert, Thompson, Hertig, Nicholas, & Dicker, 1994) program for reducing school drop-out and risk behaviors, or linkages to community crisis-based services. Tennessee has been implementing gatekeeper training on a state-wide basis to a variety of youth-serving institutions including schools, juvenile justice, child welfare, and foster parents (Keller et al., 2009). Enhanced evaluation funds have been used to gather 6-month follow-up data to assess outcomes of gatekeeper training from a sample of participants, and to detect any changes in suicidal behavior rates coinciding with the implementation of the training. The Native American Rehabilitation Association (NARA) of the Northwest has been developing and implementing culturally appropriate strategies that emphasize protective factors and supports for increasing community awareness of suicide risk, improving identification of at-risk youth, and mobilizing resources. Outcomes are being assessed with youth following implementation of the program and at a one-year follow-up, and focus groups are being used to help identify contextual issues that may affect the impact of the various prevention strategies.

A fourth enhanced evaluation, funded by SAMHSA, is taking place with the White Mountain Apache tribe in Arizona focusing on youth who have attempted suicide. White Mountain Apache Tribe and Johns Hopkins Center for American Indian Health partners have developed and are piloting a culturally-based emergency department-linked intervention which includes a video for American Indian youth who attempt suicide and their families that focuses on safety training, the seriousness of suicidal behavior, and the importance of follow-up care (cf., Rotheram-Borus et al., 1996). A portion of these youth and families also are being randomized to receive an in-home adaptation of the American

Indian Life Skills Curriculum (LaFromboise & Howard-Pitney, 1995), which focuses on increasing coping skills, decreasing self-destructive behaviors, and goal-setting. Both of these programs are designed to be delivered by Apache paraprofessionals ("Natural Helpers").

Two special studies also are being undertaken on GLS-funded college campuses. The first of these evaluates the impact of incentives on the rate of completing the web-based surveys being used to evaluate the impact of GLS programs, including awareness and knowledge. The second study is an in-depth investigation (using surveys, focus groups, key informant interviews, and review of documents) on two college campuses (SUNY Albany and University of Wyoming) of the (1) infrastructure and supports on college campuses for suicide prevention activities; (2) student level factors such as attitudes, protective variables, social norms, and barriers to access of services that may be related to suicide prevention activities; and, (3) the degree to which infrastructure and supports on campuses affect the student-level factors related to prevention of suicide.

Conclusions and Significance

As described at the outset of this paper, the period of adolescence through early adulthood, and the transition to college and living independently in many cases is a high-risk period of time for suicidal behaviors. Despite this, efforts to systematically implement and evaluate suicide prevention activities often have lagged efforts devoted to other public health priorities. The GLS suicide prevention grant programs have provided an important impetus for the initiation of youth suicide prevention activities throughout the United States in multiple settings and communities. Reducing suicide and suicidal behaviors has been identified as a national public health priority, and the GLS programs have provided important resources toward potentially reducing the burden of suicidal behaviors, and achieving the goals articulated in the National Strategy for Suicide Prevention. As of September 2009, two cohorts of GLS suicide prevention program grants will have completed their funding cycles, and these and subsequently programs are yielding important information regarding suicide prevention efforts.

There has been a strong emphasis on evaluation in the GLS programs, and these evaluation efforts have and will continue to yield very useful information in several respects. At a local level, the GLS programs have raised awareness of suicide prevention needs and the need for coordinated efforts among youth-serving agencies in suicide prevention, have provided information regarding the ease of implementation of and community readiness for different suicide prevention approaches, and have generated data regarding the perceived usefulness and preliminary indications of the effects of different approaches. Across sites, the GLS programs have contributed data regarding the extent of suicide prevention activities across the United States, and have provided important data regarding the impact of programs in terms of numbers of individuals affected (e.g., screened, trained) and proximal outcomes of efforts (e.g., increased knowledge or awareness, numbers of youth at risk referred for services). The enhanced evaluations for states and tribal groups have provided important information regarding the long-term effects of gatekeeper training, the impact of culturally tailored suicide prevention activities, the impact of different school- and community-based programs, and the impact of suicide prevention efforts focusing on youth who have made suicide attempts being seen in Emergency Departments. Specific questions of particular importance that are being addressed by GLS projects or the cross-site evaluation include (1) the degree to which referrals to services that are made because of screening or gatekeeper approaches actually result in receipt of services; (2) the degree to which gatekeepers utilize the training they receive, the extent to which differing characteristics of gatekeepers (e.g., mental health background vs. no mental health background) are associated with differences

in the benefit received, and the degree to which gatekeeper training programs result in lasting changes in suicide prevention knowledge, attitudes, and behaviors such as identification, intervention, and referral of at-risk youth; and, (3) the degree to which cultural contexts for states and tribes impact the acceptability of suicide prevention efforts and the readiness to develop or implement programs.

Among the diverse set of GLS-funded college campuses, evaluations also are providing information about the cultural contexts of suicide risk and suicide prevention programs, how suicide prevention activities need to be tailored or individualized to these contexts, and how these differences in cultural environment affects the acceptability of suicide prevention efforts and the readiness to develop or implement new programs. The Campus Infrastructure Interviews being implemented as part of the GLS cross-site evaluation are providing information regarding the interface of campus culture, policy, and infrastructure that will prove useful as the next generation of campus suicide prevention activities are developed and implemented. In addition, it is clear that suicidal students, even when they are referred to and engage in mental health treatment, often drop out of treatment prematurely (Joffe, 2008). It is important to better understand barriers to seeking or staying in treatment on college campuses, and to develop methods for engaging at-risk students and motivating change or movement to better coping and adaptation. The GLS case studies have been providing information regarding barriers to help-seeking among college students that hopefully will aid in the development of new programs to overcome barriers and provide needed services to students at risk.

These efforts notwithstanding, it should be acknowledged that the GLS programs were not developed or funded as research projects. Hence, there has been little use of experimental approaches (e.g., randomization and controls) that would allow inferences to be drawn about the efficacy or effectiveness of suicide prevention programs in impacted versus nonimpacted communities. For this same reason, it is inappropriate to draw definitive inferences about the comparative effectiveness of suicide prevention approaches (e.g., one method of suicide screening versus another) used in different GLS funded sites. In particular, communities that choose to implement one specific approach to suicide prevention activities may differ in systematic and uncontrolled ways from communities that implement other prevention approaches. In addition, it also may be difficult to disentangle effects of specific suicide prevention activities from co-occurring activities, especially given the fact that grantees commonly engage in multiple levels of suicide prevention activities. Lastly, it may be informative to compare data from implementation sites or communities to data (e.g., regarding rates of suicidal behavior) from national data bases or comparison sites. However, it is difficult to definitively determine whether any divergence from comparison data is actually due to the effectiveness of GLS-introduced interventions, or whether it is due to other factors. Despite these inherent limitations, the GLS programs and their accumulated data, as detailed above, are poised to make continued important contributions to the field of suicide prevention.

For the field of suicide prevention in general, however, and for the GLS funded programs in particular, there are several areas that continue to deserve additional attention. First, as evidenced with earlier school-based suicide prevention curricula (Kalafat & Elias, 1994; Overholser, Hemstreet, Spirito, & Vyse, 1989; Shaffer et al., 1990), there can be deleterious effects associated with well-intended suicide prevention efforts. Some of the local suicide prevention programs developed or implemented with GLS have not been rigorously evaluated, and special attention needs to be directed towards detecting these possible unintended negative effects of intervention efforts, as well as their benefits. Second, given the problem of relatively low base rate outcomes such as suicidal behavior, and the state of the evidence base with regard to suicide prevention activities, greater collaboration across

sites in the systematic evaluation of the effectiveness of suicide prevention programs would be desirable. In this way, collaborating GLS programs might not only benefit specific communities, but will be best poised to make a larger contribution to the evidence base regarding suicide prevention. Third, issues of cost-effectiveness of suicide prevention activities need attention. That is, given resources that are often limited, communities need to know how they might best invest their capital to achieve the maximum impact in terms of suicide prevention efforts. Said differently, communities need to know which suicide prevention activities "provide the biggest bang for the buck" in different circumstances. Lastly, the GLS program funding has provided an excellent opportunity for initiating activities across the country for reducing suicidal behaviors among youth. Nonetheless, the degree to which any lasting changes occur in communities or funded sites as a result of GLS funding needs to be more carefully studied, as well as the steps that might be taken to increase the sustainability of prevention efforts beyond the provision of federal resources.

In sum, the GLS Youth Suicide Prevention and Early Intervention programs and their evaluation have provided impetus for youth suicide prevention activities across the country on a scale that has not been realized previously. The knowledge gained from these GLS grantees and the evaluation of their programs can help to provide a springboard for continued efforts to implement activities designed to reduce suicide and suicidal behaviors among young people, and to help determine which suicide prevention activities result in the largest impacts, and under what circumstances. As such, the GLS programs are providing substantial contribution to the national effort to reduce suicidal behaviors and their burden.

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References

- American College Health Association. American College Health Association National College Health Assessment Spring 2006 reference group data report (abridged). Journal of American College Health. 2007; 55:195–206. [PubMed: 17319325]
- Appelbaum P. "Depressed? Get Out!": Dealing with suicidal students on college campuses. Psychiatric Services. 2006; 57:914–916. [PubMed: 16816275]
- Arnett J. Emerging adulthood: A theory of development from the late teens through the twenties. American Psychologist. 2000; 55:469–480. [PubMed: 10842426]
- Aseltine R, DeMartino R. An outcome evaluation of the SOS suicide prevention program. American Journal of Public Health. 2004; 94:446–451. [PubMed: 14998812]
- Aseltine R, James A, Schilling E, Glanovsky J. Evaluating the SOS suicide prevention program: A replication and extension. BMC Public Health. 2007; 7(161):1–7. [PubMed: 17199891]
- Centers for Disease Control and Prevention. Suicide trends in youths and young adults aged 10–24 years 1990–2004. MMWR Surveillance Summaries. 2007; 56:906–908.
- Centers for Disease Control and Prevention. National Center for Injury Prevention and Control. Webbased Injury Statistics Query and Reporting System (WISQARS) [online]. 2009. Available on the internet: http://www.cdc.gov/ncipc/wisqars
- Centers for Disease Control and Prevention [CDC]. Youth risk behavior surveillance United States, 2007. MMWR Surveillance Summaries. 2008; 57(SS-4)
- Daniel S, Goldston D. Interventions for suicidal youth: A review of the literature and developmental considerations. Suicide & Life-Threatening Behavior. 2009; 39:252–268. [PubMed: 19606918]

Eggert L, Thompson E, Herting J, Nicholas L, Dickers B. Preventing adolescent drug abuse and high school dropout through an intensive social network development program. American Journal of Health Promotion. 1994; 8:202–215. [PubMed: 10172017]

- Gallagher, R. National survey of counseling center directors 2004. International Association of Counseling Services, Inc; 2004. Retrieved from the internet on September 20, 2008: http://www.education.pitt.edu/survey/nsccd/archive/2004/monograph
- Gallagher, R. National survey of counseling center directors 2007. International Association of Counseling Services, Inc; 2007. Retrieved from the internet on September 17, 1008: http://www.iacsinc.org/NsccdSurveyFinal_v2.pdf
- Garrett Lee Smith Memorial Act, S. 2634, 108th Cong. (2004).
- Goldston D, Daniel S, Erkanli A, Reboussin B, Mayfield A, Frazier P, et al. Psychiatric disorders as contemporaneous risk factors for suicide attempts among adolescents and young adults:

 Developmental changes. Journal of Consulting and Clinical Psychology. 2009; 77:281–290.

 [PubMed: 19309187]
- Kalafat J, Elias M. An evaluation of a school-based suicide intervention. Suicide & Life- Threatening Behavior. 1994; 24:224–233. [PubMed: 7825195]
- Keller D, Schut L, Puddy R, Williams L, Stephens R, McKeon R, et al. Tennessee Lives Count: Statewide gatekeeper training for youth suicide prevention. Professional Psychology: Research and Practice. 2009; 40:126–133.
- Kessler R, Berglund P, Demler O, Jin R, Merikangas K, Walters E. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. Archives of General Psychiatry. 2005; 62:593–602. [PubMed: 15939837]
- Knox K, Conwell Y, Caine E. If suicide is a public health problem, what are we doing to prevent it? American Journal of Public Health. 2004; 94:37–45. [PubMed: 14713694]
- Knox, K.; Pearson, J. The college implementation capacity study: How much capacity is enough for community prevention programs?. Paper presented at the Society for Prevention Research; Washington, DC. 2007.
- LaFromboise T, Howard-Pitney B. The Zuni Life Skills Development curriculum: Description and evaluation of a suicide prevention program. Journal of Counseling Psychology. 1995; 42:479–486.
- Lamberg L. Experts work to prevent college suicides. JAMA. 2006; 296:502–504. [PubMed: 16882951]
- Lang, W.; Ramsey, R.; Tanney, B.; Kinzel, T. ASIST | Applied suicide intervention skills training: Organizer's guide. Calgary, Alberta, Canada: Livingworks Education, Inc; 2005.
- Macro International, Inc. Campus annual report: Fiscal year 2007. New York: Macro International, Inc; 2008. Garrett Lee Smith Suicide Prevention Cross-Site Evaluation.
- Mann J, Apter A, Bertolote J, Beautrais A, Currier D, Haas A, et al. Suicide prevention strategies: A systematic review. JAMA. 2005; 294:2064–2074. [PubMed: 16249421]
- Molnar B, Berkman L, Buka S. Psychopathology, sexual abuse, and other childhood adversities: Relative links to subsequent suicidal behaviour in the US. Psychological Medicine. 2001; 31:965–977. [PubMed: 11513382]
- New Freedom Commission on Mental Health. Achieving the Promise: Transforming Mental Health Care in America. Rockville Md: Department of Health and Human Services; 2003. Available at http://www.mentalhealthcommission.gov/reports/finalreport/fullreport-02.htm
- Overholser J, Hemstreet A, Spirito A, Vyse S. Suicide awareness programs in the schools: Effects of gender and personal experience. Journal of the American Academy of Child and Adolescent Psychiatry. 1989; 28:925–930. [PubMed: 2808264]
- Quinnett, P. QPR: Ask a Question, Save a Life. Spokane, Washington: The QPR Institute; 1995.
- Rotheram-Borus M, Piacentini J, van Rossem R, Graae F, Cantwell C, Castro-Blano D, et al. Enhancing treatment adherence with a specialized emergency room program for adolescent suicide attempters. Journal of the American Academy of Child and Adolescent Psychiatry. 1996; 35:654–663. [PubMed: 8935213]
- Shaffer D, Vieland V, Garland A, Rolas M, Underwood M, Busner C. Adolescent suicide attempters: Response to suicide-prevention programs. JAMA. 1990; 264:3151–3155. [PubMed: 2255023]

Shaffer D, Scott M, Wilcox H, Maslow C, Hicks R, Lucas C, et al. The Columbia SuicideScreen: Validity and reliability of a screen for youth suicide and depression. Journal of the American Academy of Child and Adolescent Psychiatry. 2004; 43:71–79. [PubMed: 14691362]

- US Public Health Service. National strategy for suicide prevention: Goals and objectives for action. Washington, D.C: 2001.
- Westefeld J, Button C, Haley J, Kettmann J, Macconnell J, Sandil R, et al. College student suicide: A call to action. Death Studies. 2006; 30:931–956. [PubMed: 17024786]