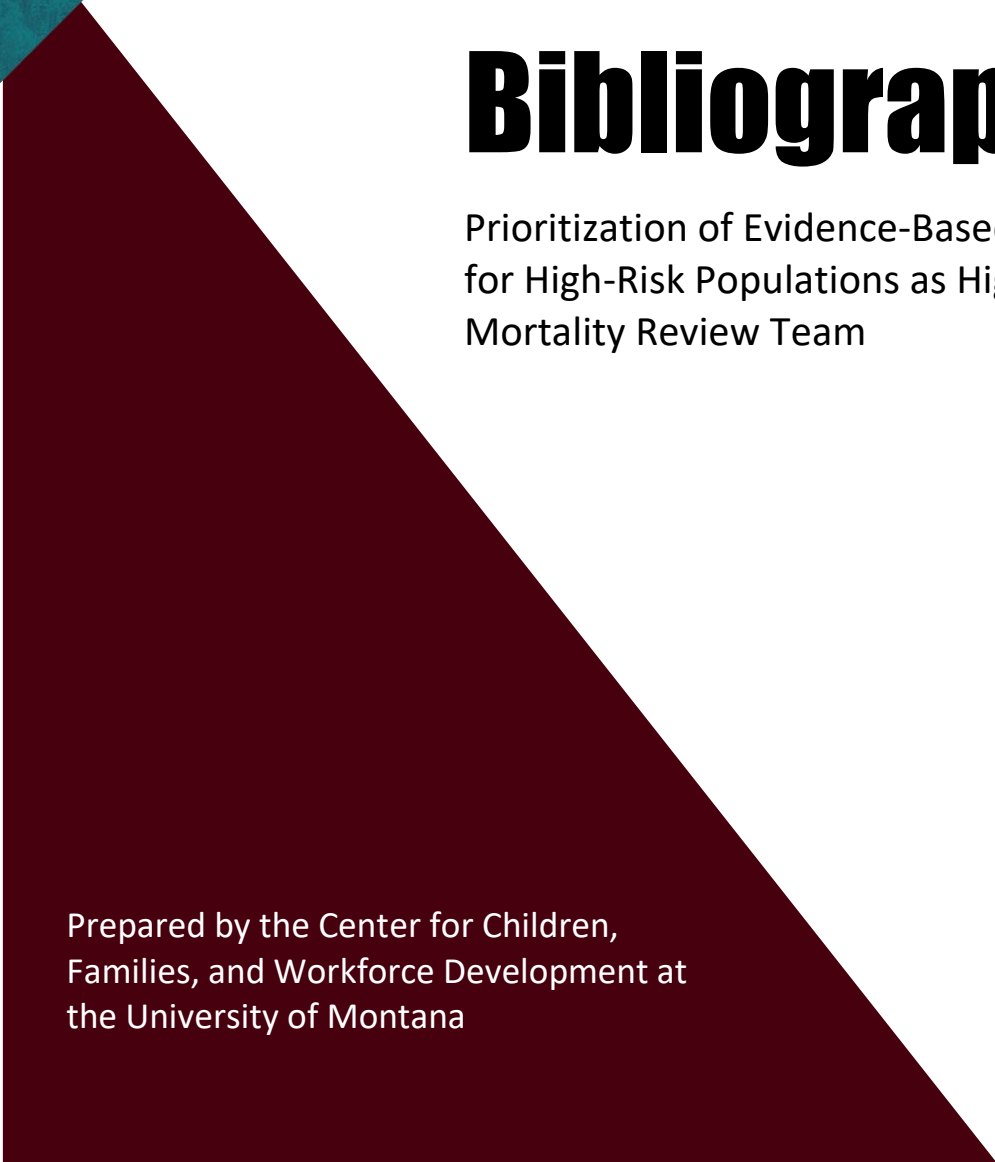# Suicide Prevention Annotated Bibliography:

Prioritization of Evidence-Based Interventions and Programs for High-Risk Populations as Highlighted by the Montana Mortality Review Team

Updated May 2018

Prepared by the Center for Children, Families, and Workforce Development at the University of Montana

Annotated Bibliography Contents

INTRODUCTION

The document is an annotated bibliography of the current literature that has been published on suicidal thoughts and behaviors, suicidal ideation, risk and protective factors of suicide, and death by suicide. The articles selected in this review provides literature from the past 20 years due to the limited nature of publications on certain risk factors or identity groups. Though some older articles were used most of the articles in this document are from the past 5 years. Overall, over 300 articles were reviewed and only a limited number are provided below. Articles were excluded if they were more than 20 years old, did not include a statistical analysis of programs or highlight new and innovative programming.

Statistical analysis was important throughout this review process due in large part to the legislative mandate from House Bill 118 that all funding appropriations must have 'demonstrate credible evidence' that it will reduce suicide, also known as evidence-based programs. Evidence-based programs can be defined curriculum and programming that has demonstrated through rigorous evaluation to help participants achieve positive outcomes or reductions in behaviors. Another key component of evidence-based programming is utilizing the model with full fidelity. Evidence-based programs can be expensive upon initial implementation, but the promise of sought-after results often outweigh anecdotally-based program implementation.

Evidence-informed programs were also included in this review. Evidence-informed programs use the best existing research in combination with practice wisdom and community input. Evidence-informed practices are often utilized to provide more culturally inclusive and can rapidly be adapted to match the resources within a community. These programs are an innovative way of infusing research-based modalities to meet the needs of a community.

In addition, to reviewing evidence-based programs this annotated bibliography researched and included articles related to the priorities set by the Montana Mortality Review Team's recommended interventions and prevention programming. This annotated bibliography serves as a tool to help practitioners, legislators, educators, program managers, families, and other stakeholders to quickly review the most recent literature to make informed choices about suicide prevention programming. We believe that all youth, families, and Montanans deserve the best possible programming.

Meta-Analysis of Suicidal Thoughts and Behaviors

Cha, C.B., Tezanos, K.M., Peros, O.M., Ng, M.Y., Ribeiro, J.D., Nock, M.K., & Franklin, J.C. (2017). Accounting for diversity in suicide research: Sampling and sample reporting practices in the United States. *Suicide and Life-Threatening Behavior,* epub. DOI: 10.1111/sltb.12344

Suicidal thoughts and behaviors risk factors have over 50 years of research but have a significant limitation when looking for research generalizability. The research team conducted a meta-analysis of 158 studies examined by Franklin et al (2016). The goal of this study was to begin to analyze the current standings and overall trends of assessing diverse identities (IE age, race, ethnicity, gender, LGBT, and veteran status) in research studies. This study found that of the existing literature over 90% reported on age, about 89% report on sex, and 74% reported on race research participants. Less than 3% reported veteran status and 1.9% reported LGBT status. The team discovered that reporting on diverse identity markers has not increased over time leaving the most vulnerable groups without a valid body of research on interventions to prevent suicidal thoughts and behaviors.

Franklin, J.C., Ribeiro, J. D., Fox, K.R., Bentley, K. H., Kleiman, E. M., Huang, X., Musacchio, K. M., Jaroszewski, A. C., Chang, B.P., & Nock, M. K. (2016). Risk factors for suicidal thoughts and behaviors: A Meta-Analysis of 50 Years of Research. *Psychological Bulletin*. Advance online publication. http://dx.doi.org/10.1037/bul0000084

Researchers completed a meta-analysis study of over 350 longitudinal studies to determine the validity of risk factors for suicidal ideation and suicidal behavior over the past 50 years. Through examining their selection of articles, the research team found that risk and protective factors used to reduce suicide are not universally effective. In fact, they found there has been little innovation in the field and current articles have not built on the existing base of literature from the 1980s forward. The team suggests a longitudinal study of the current risk factors should be conducted to assess their validity and to have more focused risk factors for predicting the accuracy of suicidal intent. In addition, they suggest the need for identity-based (IE youth, veterans, elders, etc.) risk factors be created instead of broad risk factors created through practitioner consensus. Another challenge the team highlighted in the existing literature is the small sample size of the study (median 57 participants) which significantly limits their generalizability. The team also found substantially more research on risk factors than protective factors.

May, A., & Klonsky, E. (2016). What distinguishes suicide attempters from suicide ideators? A Meta-Analysis of Potential Factors. Clinical Psychology: *Science and Practice, 23*(1), 5-20. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/cpsp.12136/epdf

In this meta-analysis, the team reviewed current literature to gain a complete understanding of why the suicide rates in the United States have risen or remained the same. The research team found that similar to other studies, there is a large body of research in relation to suicidal risk but few of these studies have been able to identify valid risk factors. As a matter of fact, even commonly accepted risk factors such as hopelessness did not prove to be a valid identifier of suicidal attempt risk. Their findings are in direct conflict with seminal theories and prevention practice behaviors. The team also found that most studies compared the risk factors and characteristics of individuals who had attempted suicide to non-attempters. They ascertain that to fully understand the significance of risk and predictive factors for suicide future research should look at individuals experiencing suicidal ideation compared to those who attempted suicide.

EXTERNAL FACTORS

ALTITUDE

Brenner, B., Cheng, D., Clark, S., & Camargo, C.A. (2010). Positive association between altitude and suicide in 2585 US Counties. *High Altitude Medicine and Biology,* 12(1). DOI: 10.1089/ham.2010.1058

An analysis was completed in 2585 counties in the United States to see if there was a relationship between altitude and death by suicide. To calculate the team used the mean altitude of the entire state to calculate altitude. This was somewhat problematic since many states vary greatly in altitude. Despite this, the counties with the highest elevation still were the highest for suicidal ideation. The researchers found that counties at higher altitudes had higher rates of overall deaths by suicide, including both suicides that utilized firearms or non-firearm related means.

Kim, N., Michelson, J.B., Brenner, B.E., Haws, C.A., Yurglen-Todd, D.A., & Renshaw, P.F. (2011). Altitude, gun ownership, rural areas, and suicide. *American Journal of Psychiatry,* (168). DOI: 10.1176/appi.ajp.2010.10020289

Deaths by suicide have continually varied across different regional areas in the United States. A team of researchers utilized over 20 years of public access data from the Center for Disease

Control and Prevention (CDC) to isolate geographic regions that continued to have higher deaths by suicides. Firearm ownership and population density data were also provided by the CDC. The research found that there was a positive relationship between death by suicide and county elevation across the United States. Both homes with and without firearms were positively correlated with high rates of suicide in counties with high elevation. The researchers believe more research is needed in this area to make more conclusive statements about the relationship between altitude and death by suicide.

FIREARMS and Lethal Means

Barber, C.W. & Miller, M.J. (2014). Reducing a suicidal person's access to lethal means of suicide: A research agenda. *American Journal of Preventive Medicine,* 47(3), pp. 264-272. DOI: 10.1016/j.amepre.2014.05.028

Means reduction in suicide prevention has mainly targeted through the physical education of access (IE gun locks, fences, and barriers on bridges), toxicity reduction (IE carbon monoxide in car exhaust), or ending the romanization of suicide. Researchers have found a relationship between lethality of means and death by suicide. Studies found that 30% of people who had seriously considered suicide had ideation that lasted about 1 hour. In addition, they found 90% of attempters did not make a repeated attempt. The researchers propose reducing the access to lethal means as a form of suicide prevention in the United States.   Internationally researchers found means reductions to reduce some suicides in the following countries:

- *The United Kingdom* had a leading suicide method through asphyxiation through the inhalation of domestic gas. However, during this time a more affordable and non-toxic form of natural gas was found and replaced the previous gas form. As a result, gas related suicides fell to nearly zero.
- *Sri Lanka* was experiencing the highest levels of death using pesticides. As a result, the government created new regulations and restrictions on the sale of pesticides with the largest amount of toxicity for humans. Over the next 10 years following the restrictions about 20,000 fewer deaths by suicide occurred, however, there was not a reduction in non-poisoning related deaths by suicide.

Birckmayer, J. & Hemenway, D. (2001). Suicide and firearm prevalence: Are youth disproportionately affected? *Suicide and life-threatening behavior* (31), pp. 303. doi.org/10.1521/suli.31.3.303.24243

Firearm data from over 16 years was analyzed against suicide deaths for individuals 15 to 84 years old. This study found that suicides rates across the nation remained constant over the

16-year time period. Based on their findings they believe if household firearm ownership decreased by 10% there would be an 8.2% decrease in firearm use in deaths by suicide. The researchers found that 15 to 24 years old and 65 to 84-year-old individuals have the highest rates of death by suicide if there is a higher level of firearm ownership.

Coyne-Beasley, T., Schoenback, V.J., & Johnson, R.M. (2001). "Love our kids, lock our guns": A community-based firearm safety counseling and gun lock distribution program. *Archives of Pediatrics and Adolescent Medicine,* 155, pp. 659-664. doi:10.1001/archpedi.155.6.659

In North Carolina gun ownership is estimated at 40% to 50% of the population and was selected for a day-long intervention called "Love our kids, lock our guns". The program consisted of gun owners filling out initial surveys to assess their risk, participating in gun safety counseling with a specialist, and real-life practice of applying gun locks with support from assistance from local police officers. The intake surveys found less than half of participants were currently using any form of gun lock or safe to store their firearms and about 20% stored their guns loaded. The study also found gun owners with children were more likely to have unlocked and loaded weapons in their home compared to gun owners without children (59% compared to 41%). At 6 and 12-month follow-ups, 72% now report to using a gun lock, 24% indicated they had forgotten but would place the gun lock on following the follow-up, and 4% were still struggling with understanding how to use a gun lock. Participants with children also were more likely to lock their gun after the intervention and 88% have asked their friends and family about their gun storage practices (up from 28%).   This program continued to provide support, letters of contact and resources following the study to participants to continue to build capacity for change with participants. This model is unique because it was held in a public space and was facilitated by community members which created the ability to reach folks who may not access primary care or engage in other community prevention measures.

Johnson, M., Frank, M., Ciocca, M., & Barber, W. (2011). Training mental health care providers to reduce at-risk patients' access to lethal means of suicide: Evaluation of the CALM Project. *Archives of Suicide Research*, 15(3), pp. 259–264. DOI: 10.1080/13811118.2011.589727

Evidence shows that means restriction can decrease the most lethal forms of suicide in America. Despite these findings, researchers found that mental health providers did not speak with families about reducing lethal means in the home. The research team recommends that all mental health professionals seek out professional development on education around what lethal means, the research on the use of lethal means reduction to decrease death by suicide,

and techniques and skills for completing lethal means assessment with clients and families. The preliminary research found that counselors who engaged in the training created by the authors Frank and Ciocco were more likely to have assessed their clients for access to lethal means. Despite this, the findings show that as time progressed mental health professionals asked clients less about access.

Horn, A, Grossman, D.C., Jones, W., & Berger, L.R. (2003). Community-based programs to improve firearm practice in rural Alaska. *Injury Prevention,* 9, pp. 231-234. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1730982/pdf/v009p00231.pdf

To prevent access to firearms for children and youth two small Alaskan villages were selected to have gun safes and trigger locks randomly distributed. To participate in the program individuals had to be 18 years old or older, own 2 or more guns, own or be the primary renter of the home, and not currently use gun safety storage devices. At a three month follow up 86% of homes were using gun safes to store their guns. The remaining participants either had guns in the gun safe but it was not locked or were not using their gun safe. Of the triggers locks distributed only 30% were in use.

Grossman, D.A., Stafford, H.A., Koepsell, T.D., Hill, R., Retzer, K.D., & Jones, W. (2012). improving firearm storage in Alaska Native villages: A randomized trial of household gun cabinets. *American Journal of Public Health,* 102(2). DOI: 10.2105/AJPH.2011.300421

A follow-up study of Horn et, al. was completed to examine additional implications of gun safes as a means of restriction to firearms in Alaska. The intervention for this study was the installation of gun safes in houses that included instructions on proper operation and information about the safety values of keeping firearms and ammunition locked in the gun safe. The intervention was given to one group at the baseline and then the control group at 12 months with surveys occurring at 12 and 18 months for both groups. The team found at 18 months both groups had less unlocked guns (35% compared to the base of 89% at beginning of the study) and unlocked ammunition (36% intervention group 1 compared to 84% intervention group 2 at 12 months). There was no statistical difference between either group in regard to keeping loaded firearms in the home. Overall, the study validates the findings validated the early findings that households who were given gun safes utilized them for storage of unloaded and loaded guns and ammunition.

Miller, M.; Azrael, D.; & Hemenway, D. (2002). Household firearm ownership levels and suicide across U.S. regions and states, 1988-1997. *Epidemiology*, (13), pp. 517-524.

Retrieved from
http://journals.lww.com/epidem/Fulltext/2002/09000/Household_Firearm_Ownership_
and_Suicide_Rates_in.6.aspx

The relationship between access to firearms and suicide was analyzed by a research team.   The team looked at publicly available data for the years of 1988 to 1997. They found a positive relationship between the number of households with firearm owners and overall suicides in the overall population. These results were positive for every age group and all genders. Firearm use was the highest risk for youth and elders.

Miller, M., Azrael, D., & Hemenway, D. (2006). Belief in the inevitability of suicide: Results from a national survey. *Suicide and Life-Threatening Behavior*, 36: 1–11. doi:10.1521

The research team conducted a study using a survey from adults in the United States to assess public perceptions and helpfulness of means restriction in the decrease of deaths by suicide (IE fence on the Golden Gate Bridge). Each state had a representative number of households selected as research participants. The findings found that about 33% of Americans believe that means a restriction on the Golden Gate Bridge would not prevent an individual attempting suicide and 40% believe that the person would have sought out another equally lethal means. Individuals living in a home with a firearm were almost twice as likely to believe that suicide is unavoidable for someone with active suicidal ideation.

Mozaffarian, D., Hemenway, D. & Ludwig, D.S. (2013). Curbing gun violence: Lessons from public health successes. *JAMA*, 309(6), pp. 551-2. doi: 10.1001

The use of a public health model was assessed for its ability to effectively reduce many health challenges faced by children and youth. In this brief article, the authors overview how youth tobacco use, unintentional poisoning, and motor vehicle deaths have all been decreased using public health interventions at the micro to macro level. The authors highlight how the use of taxation, changing of cultural norms (media campaigns), increased safety packaging, routine pediatrician interaction, routine inspections, education and licensure procedures, and advocacy may be utilized to decrease the number of deaths by suicide that involves a firearm.

Rowhani-Rahbar, A.; Simonetti, J. A.; & Rivara, F. P. (2016). Effectiveness of interventions to promote safe firearm storage. *Epidemiologic Reviews, (38).* DOI: 10.1093.epire/mxv006

Authors completed a systematic meta-analysis of the current research on the use of firearm means restriction as a form of intervention. Most of the studies provided a form of counseling

and many delivered the information through family practice or pediatric clinic visits. Some studies provided risk information and prevention measures to families without firearms in the home and all provided risk reduction information to families with firearms in the home. Many of these programs also provided highly discounted or free access to gun locks and gun safes. The research team found the highest success rate from services that provided free means reduction storage devices. The team also found that services providers may need to increase the number of devices per household since about half of all gun owner owns more than one firearm.

Gatekeeper Trainings

Cerel, J., Padgett, J., Robbins, V., & Kaminer, B. (2012). A state's approach to suicide prevention awareness: Gatekeeper training in Kentucky. *Journal of Evidence-Based Social Work, 9*(3), 283-292. http://dx.doi.org.weblib.lib.umt.edu:8080/10.1080/15433714.2010.498672

Researchers evaluated Kentucky's suicide prevention plan by gathering data from 3958 participants from 213 QPR sessions over 2 years. The participants included school educators and staff, higher education faculty and staff, mental health providers, community members, faith leaders, correctional staff, and first responders. The study examined knowledge about 'facts about suicide', 'signs of suicide', 'how to persuade someone to get help', 'how to get help', and 'local resources'. The results of these trainings found participants were satisfied with the training. The highest level of satisfaction reported from participants whose trainings were under an hour that did not include role plays. Participants with prior suicide prevention training reported less satisfaction than those who had no prior training. In fact, mental health professionals reported low satisfaction, increase in knowledge, and belief in capacity to help. A limitation of this study is that 20 of the 60 gatekeeper trainers did not have participant's complete evaluations on their training.

Cross, W., Matthieu, M., Lezine, D., & Knox, K. (2010). Does a brief suicide prevention gatekeeper training program enhance observed skills? *Crisis: The Journal of Crisis Intervention and Suicide Prevention, 31*(3), 149-159. Retrieved from https://search-proquestcom.weblib.lib.umt.edu:2443/docview/745195153?OpenUrlRefId=info:xri/sid:primo&accountid=14593

Researchers sought to identify if there is an immediate impact on gatekeeper training. The team assessed university employees and student group leaders who had previously participated in Question, Persuade, Refer (QPR) gatekeeper trainings. The researchers

highlighted the positive impact the 1-hour training had on participants such as about half of all participants rated positively for demonstrating gatekeeper skills. The team also found participants were significantly more likely to have the skills to directly ask about suicide and to use additional skills to refer to a mental health professional after the training. Despite this, the findings found gatekeepers did not have an increase in active listening or ability to empathize. Like other studies, the team found that QPR had no impact on increasing the skills of individuals with pre-existing suicide prevention training experience.

Cross, W., Seaburn, D., Gibbs, D., Schmeelk-Cone, K., White, A., & Caine, E. (2011). Does Practice Make Perfect? A Randomized Control Trial of Behavioral Rehearsal on Suicide Prevention Gatekeeper Skills. Journal of Primary Prevention, 32(3-4), 195-211.

To examine if active role-plays increased the efficacy of gatekeeper training the researchers evaluated school staff and parents who participated in gatekeeper training. Pre-and post-test were completed by participants examining their awareness of suicide and risk-factors before and after the training. The evaluation asses their knowledge of suicide risk factors, identification, and basic facts. In addition, following the training, each participant was videotaped interviewing a trained actor that played the role of a 'distressed youth' with feedback from researchers. Researchers found there was no baseline difference of knowledge about suicide between school staff and parents. They also found that overall training participants enjoyed the training and almost all participants spoke to another adult or referred someone else to participate.

In addition, school staff was also more likely to feel confident providing referrals. The research team hypothesizes this may be due to the institutional nature of support within schools. The state adaptions to this model may be needed for parents and others outside of institutions since referral making can be a challenge for this group. Additionally, individuals who were provided the opportunity to role-play and practice had more positive observed gatekeeping skills at post-evaluation. Despite this all individual's skills and confidence to intervene decreased by the time of follow-up. The team stressed that though the model had promising results focus should be placed on building rapport between educators and youth. The team highlights the strengths of programs that focus on increasing help-seeking behaviors of youth.

Isaac, M., Elias, B., Katz, L., Belik, S., Deane, F., Enns, M., & Sareen, J. (2009). Gatekeeper Training as a Preventative Intervention for Suicide: A Systematic Review. *The Canadian Journal of Psychiatry, 54*(4), 260-268. Retrieved from http://journals.sagepub.com/doi/pdf/10.1177/070674370905400407

Researchers performed a systematic review of the literature on gatekeeper suicide prevention trainings. The team looked for peer-reviewed literature that addressed suicide prevention through gatekeeper interventions that involved training on suicidal ideation, thoughts, and behaviors that had pre- and post-test evaluations. They found 54 articles that met their initial search terms and were eventually narrowed to 9 articles that met all their criteria. Gatekeeper trainings were found to increased awareness and skills of participants, were adaptable to meet community needs, and decreasing feelings of helplessness of gatekeepers. Despite this, the team found very few articles that provided evidence of decreasing suicidal thoughts, ideation, attempts, or deaths.

Litteken, C., & Sale, E. (2017). Long-term effectiveness of the Question, Persuade, Refer (QPR) suicide prevention gatekeeper training program: Lessons from Missouri. *Community Mental Health Journal,* Community mental health journal, 24 August 2017. Retrieved from https://link-springer-com.weblib.lib.umt.edu:2443/article/10.1007/s10597-017-0158-z

Litteken and Sale analyzed 2988 pre- and post-tests from Question, Persuade, Refer (QPR) in Missouri. The team sought to prove their hypothesis that QPR is an effective gatekeeper training with long-term effects on participants. Upon completion of both post-test participants had increased knowledge of warning signs. Researchers state this finding suggests there is not a significant loss of knowledge over time stressing QRP effectiveness as an intervention. The team also found the number of adults who outreached to youth increased compared to their self-reported numbers from before receiving QPR. Despite these positive findings more research due to a small follow-up sample the team was unable to produce findings of significance between post-test one and two.

Shtivelband, A., Aloise-Young, P., & Chen, P. (2015). Sustaining the effects of gatekeeper suicide prevention training. *Crisis: The Journal of Crisis Intervention and Suicide Prevention, 36*(2), 102-109. doi:http://dx.doi.org.weblib.lib.umt.edu:8080/10.1027/0227-5910/a000304

Researchers set out to explore the sustainability of gatekeeper training and found that gatekeepers, like other training participants, encounter challenges in applying trainings into practice. To seek solutions, they completed 44 interviews with suicide prevention gatekeepers from Colorado. The interviews were coded by trained coding analysts.   Gatekeepers reported they often lack emotional support and a social network that limit their effectiveness. In addition, they need continual simulated practice to maintain skills and confidence in their ability to intervene. The gatekeepers reported seeing the needs for community outreach by

another party, increasing access to follow-up training refresher or materials would be helpful, and support through ongoing feedback from external sources. The team concluded additional research is needed to test the sustainability of the gatekeeper's recommendations.

Tompkins, T., Witt, J., & Abraibesh, N. (2010). Does a gatekeeper suicide prevention program work in a school setting? Evaluating training outcome and moderators of effectiveness. *Suicide and Life-Threatening Behavior, 40*(5), 506-515. DOI: 10.1521/suli.2010.40.5.506

A research team examined the effectiveness of Question, Persuade, and Refer (QPR) amongst 107 school personnel in a rural school district. School personnel completed pre-and post-test evaluations after completing a 1-hour QPR session. Control participants completed a similar pre-and post-test without receiving the training. A 3-month follow-up evaluation was given to both groups with only about 25% of the initial sample participating. The evaluation found that QPR participants having increased belief that the training would increase their ability to identify a suicidal individual, that 'suicide is a major issue' and the training would help others. However, these findings were not found in all groups. School staff did not have an increase in skill development as the administrators and educators did. Young teachers who had no previous training in suicide prevention appeared to benefit the most. The researchers were unable to conclude the effectiveness due to attrition of evaluation participants.

Wexler, L., White, J., & Trainor, B. (2015). Why an alternative to suicide prevention gatekeeper training is needed for rural Indigenous communities: Presenting an empowering community storytelling approach. *Critical Public Health, 25*(2), 205-217. Retrieved from http://www.tandfonline.com.weblib.lib.umt.edu:8080/doi/abs/10.1080/09581596.2014.904039

Researchers found articles that found gatekeeper training was not culturally responsive to tribal communities (i.e. referring to a stranger was counter to the value of interconnectedness). Multiple articles were also found that found no significant impact or even decreases in helping behaviors by gatekeepers. The researchers challenge the idea that suicide is a private individual problem and highlight that pathologizing native youth only further isolates them from their community and family. To address native youth suicide, a comprehensive program that examines cultural, political, and historical oppression must be included in the model. Another challenge raised by the research team is the limited number of native youth who utilizes services even when referred. Youth were unlikely to utilize services due to the stigma around help-seeking and treatment that doesn't fit their cultural and spiritual preferences. Youth who did seek help often experienced trauma due to the incompetent nature of the helper.

A final challenge the researchers found is that the didactic nature of gatekeeper training. The researchers also found gatekeeper trainings to focus on one way of knowing and not to honor traditional ways of knowing. They suggest instead of gatekeeper training that a more collaborative and intergenerational storytelling model is more culturally relevant. This model focuses more on vulnerability and all crisis no just suicide. This model is person-centered and is focused on relationship building. The model strives to connect folks to supportive individuals, not just mental health providers and encourages 'gatekeepers' to stay involved in the lives of the person in crisis. This model has also shown to have effectiveness in rural communities.

Wyman, P. A., Brown, C. H., Inman, J., Cross, W., Schmeelk-Cone, K., Guo, J., & Pena, J. B. (2008). Randomized trial of a gatekeeper program for suicide prevention: 1-year Impact on secondary school staff. *Journal of Consulting and Clinical Psychology*, *76*(1), 104–115. http://doi.org/10.1037/0022-006X.76.1.104

Researchers randomly selected staff from 32 schools to participate in research exploring the universal effects of gatekeeper trainings. Sixteen schools served as a control group and sixteen different schools participated in the gatekeeper training Question, Persuade, and Refer (QPR). Both schools were surveyed on their knowledge of suicidal behaviors, questions on appropriate QPR behaviors, feelings of preparedness, past gatekeeper experiences and current communication level with students. Staff who participated in QPR trainings at one-year post training had increased knowledge, positive self-perception of preparedness to intervene. Despite this, it did not increase the number of educators intervening and outreaching to students at-risk.

The team also found in schools where awareness of suicidal risks already existed the training had minimal impact compared to those with no to limit understanding of suicidal identification and risk-factors. This study is unique in that it also surveyed 2059 students on suicidal ideation and behaviors over the past year and help-seeking behaviors and attitudes. What they found was students with past suicidal behaviors reported they were less likely to seek help from an adult, have confidence the adult will be able to assist them and to believe friends and family would want them to talk to an adult at school. The researchers highlighted that training must be provided to youth to address stigma around help-seeking in addition to schools fostering relationship and rapport building between students and staff.

MEDIA Campaigns

Daigle M, Beausoleil L, Brisoux J, Raymond S, Charbonneau L, Desaulniers J. (2006). Reaching suicidal people with media campaigns: new challenges for a new century. *Crisis: The Journal of Crisis Intervention and Suicide Prevention,* 27(4):172–80. Retrieved from https://search-proquest-com.weblib.lib.umt.edu:2443/docview/614457846/fulltextPDF/B2EAF24BD4A0424CPQ/1?accountid=14593

Researchers studied the impact of universal media campaigns that were implemented in 1999, 2000, and 2001 in Quebec, Canada. The study was comprised over 1000 men (19% which were exposed to the universal prevention campaign and 81% who were not exposed) over the age of 18 through telephone surveys. The results found the men exposed to the campaign had significantly increased knowledge around suicide risk and prevention. Despite this, there was have statistically significant increases in gaining help-seeking behaviors.

Hegerl, U., Althaus, D., Schmidtke, A., & Niklewski, G. (2006). The alliance against depression: 2-year evaluation of a community-based intervention to reduce suicidality. *Psychological Medicine, 36*(9), 1225-1233. doi:10.1017/S003329170600780X

A universal suicide prevention media campaign was launched in Nuremberg, Germany with a comparison control of Wuerzberg, Germany. There were four levels of intervention used in this model that took place over 2 years. The first level was an interactive training for primary-care physicians (20% of all general practitioners, family doctors, and specialist were trained). This training included training on a 5-point well-being screening tool that practitioners could implement in practice. The next level of the intervention was releasing 25,000 brochures and 150,000 handbills with resources, 43 lectures, and events, posters with campaigns messaging, movie theatre commercials, and the creation of a website about depression was created.

In addition, the media was given a 10-point guideline on reporting best practices in relation to suicides. Over the two years, the researchers found a significant reduction in suicidal behaviors and reduction in secondary attempts from individuals with past suicidal attempts. Regardless of positive results, the overall number of deaths by suicide were not significantly lower in Nuremberg over the two years. There was a significant drop in the first year but the second-year number of deaths by suicide rose again. More research is needed into the individual efficacy of each tier of the intervention.

MEDICAL Practitioner Interventions

Carter, G.L., Clover, K., Whyte, I.M., Dawson, A.H., D'Este, C. (2005). Postcards from the EDge project: Randomized controlled trial of an intervention using postcards to reduce repetition of hospital treated deliberate self-poisoning. The BMJ, 331(7520):805. doi: https://doi.org/10.1136/bmj.38579.455266.E0

Researchers in Australia followed patients from 1998 to 2001 who had been hospitalized for a deliberate suicide attempt using poisoning. The team tracked these patients 16 years old and older for over 12 months with a randomized group receiving a postcard at 1, 2, 3, 4, 6, 8, 10, and 12 months after they had been discharged from the hospital. The results found that patients the intervention reduced the number of repeated suicide attempts by 50% in 12 months in women. The research team suggests more research with a larger sample size in needed to make more generalizable implications but that this low-cost intervention should be invested more because of its potential for significant results and cost and resource saving capabilities.

Rutz, W. (2001). Preventing suicide and premature death by education and treatment. *Journal of Affective Disorders,* 62(1-2), pp. 123-129. doi: 10.1016/S0165-0327(00)00356-6

Noting that about half of all individuals who have died by suicide have had recent visits with their general practitioner an increased importance has been placed on training medical providers in suicide prevention strategies. In the 1980s the Swedish island of Gotland had the highest suicide rates in Sweden and was chosen as a test site where all general practitioners would receive a 2-day training over the course of 2 years. Significant reductions were seen in the populations with about an 80% overall reduction in suicide death by women. However, the research found men who did not regularly see a primary care physician did not see a reduction in deaths by suicide. The research found men were less likely to seek help and that practitioners had more challenges diagnosing a man with depression. From this study, the creation of the Gotland Scale for Male Depression was created as an additional tool for practitioners.

DEMOGRAPHIC FACTORS

YOUTH Prevention Programs - Schools

Aseltine, R.H., James, A., Schilling, E.A., & Glanovsky, J. (2007). Evaluating the SOS suicide
    program: A replication and extension. *BMC Public Health, 7(161). doi: 10.1186/1471-*
    2458-7-161

Researchers evaluated the Signs of Suicide (SOS) prevention program in Georgia,
Massachusetts, and Connecticut in high schools between 2001 and 2003. In this study,
students were primarily random assigned to a health or social studies class over 2 days. Both
the treatment and control group completed evaluations 3 months following the intervention.
Youth who were part of the intervention reported fewer attempts and increased awareness of
mental health challenges such as depression. However, the program did not increase help-
seeking behaviors of youth. These findings are similar to other studies of the program and a
more long-term follow-up evaluation is needed to determine long-term results and impacts of
the programs.

King, K. A., Strunk, C. M., & Sorter, M. T. (2011). Preliminary effectiveness of Surviving the
    Teens® Suicide Prevention and Depression Awareness Program on adolescents'
    suicidality and self-efficacy in performing help-seeking behaviors. *Journal of School*
    Health, 81, pp. 581–590. doi:10.1111

Surviving the Teens® Suicide Prevention and Depression Awareness Program was evaluated for
its effectiveness at reducing high school suicide. The program is offered as a mini-series of
four 50 minutes sessions. The program provides information about suicidal ideation,
recognition of depression symptoms, and coping mechanisms for youth with hopes of
increasing young people's self-efficacy to seek help instead of attempting suicide. The authors
found at 3 months out youth had a decrease in suicidal ideation, an increased inability to
identify a friend who is suicidal, and an increase in youth behaviors to report if they or a friend
were suicidal to an adult.

McCormick, E., Thompson, K., Stoep, A.V., & McCauley, E. (2009). The case for school-based
    depression screening: Evidence from established programs. *Report on Emotional &*
    Behavioral Disorders in Youth, 9(4), pp. 91–96. Retrieved from
    https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4594945/pdf/nihms180106.pdf

The author's overview of the need to view depression from a public health perspective. They
highlight the value of adding to the universal screenings that youth undergo in school to add a

screening to detect depression in youth. In addition, the authors stress the widespread impact of introducing school-based mental health programs can have on youth in America. The authors argue that school-based screening has minimal risk to youth though they have been highly contentious in American politics. The authors examined the following four depression screening models:

Reynolds' Multi-stage Depression Screening as a model does not offer a formal diagnosis but rather highlights youth for the school-based mental health team intervention. This model offers a three-tiered response with the first being a universal intervention. The second screening is offered for about a month following the first and is only administered to those who scored high during the first round. The final round is a formal clinical evaluation with youth that scored high again. Programs such as Teen Screen and Signs of Suicide (SOS) are based on this model.

Teen Screen is based on Reynold's model but only has two components instead of a three-tiered approach. This model administers a questionnaire that evaluates the risk factors such as symptoms of depression and anxiety, suicidal ideation, and substance use behaviors. Youth with higher scores then complete a face-to-face interview that assesses the validity of the survey for the youth. Critics have challenged the model as being redundant because it identifies youth who were already identified by school staff. However, a recent study found that 34% of youth were identified as at-risk by the assessment were not identified as high risk by school staff.

Signs of Suicide (SOS) is a program based program that works to empower peers to intervene when their peers are exhibiting signs of depression. In addition, this program is voluntary for the at-risk youth to complete, the youth then score their own questionnaire, and then youth have the responsibility to access interventions or services is on the young person. This program has shown some ability in the short term to decrease suicide attempt and increase knowledge about suicide prevention and depression. However, there have not been long-term evaluations completed.

Developmental Pathways Screening Program is a universal intervention program utilized between the transitions from elementary school to middle school. Like many other programs if children test high on the scale a mental health professional completes a follow-up assessment of the young person. If needed from there the youth is linked to school and community-based support services based on their needs (IE academic, social skills, mental health, etc.). Like SOS more long-term assessment is needed to evaluate the long-term impact of this intervention.

Wasserman, D., Hoven, C.W., Wall, M., Einsenberg, R., Hadlaczky, G., Kelleher, I., Sarchiapone,
M., Apter, A., Balazs, J., Bobes, J., Brunner, R., Corcoran, P., Cosman., Gullemin, F.,
Haring, C., Iosue, M., Kaess, M., Kahn, J.P., Keeley, H., Musa, G.J., Nemes, B., Postuvan,
V., Saiz, P., Reiter-Theil, S., Varnik, A., Varnik, P., & Carli, V. (2015). School-based suicide
prevention programmes: the SEYLE cluster-randomized, control trial. *The Lancet,*
385(9977), pp. 1536-1544. doi: doi.org/10.1016/S0140-6736(14)61213-7

Saving and Empowering Young Lives in Europe (SEYLE) is a large-scale study that was completed through a partnership of ten countries in Europe to assess suicide prevention programs and behaviors of youth. The study included 168 schools, and which consisted of 11,110 youth. The study included a baseline assessment and follow-up assessments at 3 and 12 months post-intervention. The questionnaire assessed youth's suicidal ideation, risky behaviors, and symptoms of depression. The study compared Question, Persuade, and Refer (QPR), Youth Aware of Mental Health Programme (YAM), Screening by Professionals programme (ProfScreen), and a control group. The study found there was no statistical significance between the control group and any of the three interventions at the 3 months follow-up assessment. At the 12-month follow-up, YAM was the only intervention that showed a statistical decrease in young people's suicidal ideation, suicide planning, and suicide attempts.

Wilcox, H.C., Kellam, S.G., Brown, C.H., Poduska, J., Ialongo, N.S., Wang, W., & Anthony, J.C.
(2008). The impact of two universal randomized first and second-grade classroom
interventions on young adult suicide ideation and attempt. *Drug and Alcohol
Dependence,* 95(1), pp. 60-73. Retrieved from
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2637412/pdf/nihms53592.pdf

The Good Behavior Game (GBG) was created in 1969 as a universal classroom-based intervention that rewards youth for good behaviors. The intervention focuses on increasing young people's ability to cooperate with their peers, self-regulate negative or disruptive behaviors, and practice positive social interactions with peers and adults. The GBG has multiple research articles that found youth who participated to have a reduction in aggressive acts, disrupting behaviors in the classroom, and drug and alcohol use into early adulthood. The study also found a reduction in a suicidal ideation and behaviors. However, researchers found that suicidality and other risk factors did not reliably decrease when classroom teachers did not offer consistent classroom management. The study found classroom teachers need support through monitoring and mentorship.

YOUTH Prevention Programs - Families and Parents

Connell, A.M., McKillop, H.N., & Dishion, T.J. (2016). Long-term effects of Family Check-Up in early adolescence on risk of suicide in early adulthood. *Suicide and Life-Threatening Behavior,* 46(1). DOI: 10.1111/sltb.12254

Family Check-Up (FCU) is a research-based program that strives to support parents by highlighting their strengths and matching services with existing challenges. The model uses motivational interviewing throughout a 3-session in the school setting. FCU is a tiered system that collaborates with school staff (IE family resource center staff). In the study youth in 6th grade were randomly assigned based on the assessment to a universal classroom, selective FCU, or more targeted intervention family management treatment group. The research team then assessed the students at age 18-19 and again at age 28-30. The research team found there was a decrease in suicide risk across adolescence and into early adulthood. The study provides important insight into the value of broad-based family interventions in reducing risk factors related to suicide and other behavioral health challenges faced by youth.

Hawkins, J. D., Oesterle, S., Brown, E.C., Abbott, R.D., & Catalano, R.F. (2014). Youth problem behaviors 8 years after implementing the Communities That Care prevention system: A community-randomized trial. *JAMA Pediatrics,* 168(2), 122-129. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/24322060

Communities that Care (CTC) is a wraparound service that uses evidence-based interventions to address risk and protective factors for positive youth development around prioritized problem behaviors. The research team evaluated 24 communities in Colorado, Illinois, Kansas, Maine, Oregon, Utah, and Washington. The study found youth who were lived in communities that implemented CTC were significantly less likely to abstain from drugs and alcohol, engage in violent behaviors, and delinquency. The research team has found that CTC has longitudinal effects on behaviors and 8 years post-intervention implementation that youth in the communities were still less likely to use substances, participate in violence and delinquency, and delayed the age of first use of alcohol.   The researchers state this study is most applicable to smaller urban and suburban communities and more research is needed to cross apply to larger metropolitan areas.

YOUTH Prevention Programs - Mental Health Provider(s)

Diamond, G. S., Wintersteen, M. B., Brown, G. K., Diamond, G. M., Gallop, R., Shelef, K., & Levy, S. (2010). Attachment-based family therapy for adolescents with suicidal ideation: A

randomized controlled trial. *Journal of the American Academy of Child & Adolescent Psychiatry*, 49(2), 122–131. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/20215934

Researchers explored the efficacy of Attachment-based family therapy (ABFT) compared to Enhanced Usual Care in reducing depression and suicidal ideation in teenagers. ABFT is a 16-week treatment that strives to strengthen the parent-child relationship to increase protective factors. The team states that family-based therapy such as this decrease risk factors for poor attachment, family conflict, lack of emotional support, and lack of supervision. This study recruited youth based on their Suicidal Ideation Questionnaire and Beck Depression Inventory scores. Youth who were recently or in current need of hospitalization or had significant intellectual disabilities were excluded.   The team evaluated adolescents ages 12 to 17 assessed at 6 weeks, 12 weeks, and 24 weeks. The researchers found that youth had experienced decreases in self and clinical reporting of suicidality and decreases in symptoms of depression. In addition, youth who participated in ABFT stayed in treatment longer. Despite the positive results, the researchers believe larger sample sizes and more longitudinal studies are necessary to further validate their claims.

Eskin, M., Ertekin, K., & Demir, H. (2008). Efficacy of a problem-solving therapy for depression and suicide potential in adolescents and young adults. *Cognitive Therapy and Research*, 32(2), 227–245. Retrieved from https://link.springer.com/article/10.1007/s10608-007-9172-8

Problem-solving treatment has become standardized interventions for working with youth to treat emotional challenges. A team of researchers wanted to test its efficacy in reducing suicidal ideation and treating depression in young adults. Each student was assessed with the Hamilton Depression Rating Scale, Beck Depression Inventory, Suicide Probability Scale, Problem-Solving Inventory, Scale for Interpersonal Behavior, Rosenberg Self-Esteem Scale, and Therapeutic Alliance Scale and participants were selected for the study if they then met the DSM-IV diagnosis for depression. Students were given six 38-minute sessions. The results found students reported lower levels of depression and suicidality and increased protective factors. The results were consistent at the 12-month follow-up, but researchers think a larger study with a control group and more control for therapist bias would strengthen their findings.

VETERANS Prevention Programs

Harmon, L.M., Cooper, R.L., Nugent, W.R., & Butcher, J.J. (2016). A review of the effectiveness of military suicide prevention programs in reducing rates of military suicides. *Journal of*

Human Behavior in the Social Environment, 26(1). Retrieved from http://www.tandfonline.com.weblib.lib.umt.edu:8080/doi/full/10.1080/10911359.2015 .1058139?scroll=top&needAccess=true

A review of suicide prevention programs for current military personnel and veterans was completed. Longitudinal studies found that veterans, like civilians, experience risk associated with suicidal thoughts and behaviors due to untreated mental illnesses and untreated substance abuse disorder. Other studies found the habitual nature of trauma exposure and access were both found to be contributing variables for lethal deaths by firearms. Programs are being adapted to help improve the resilience of military staff and a few that were found noteworthy were:

Caring Letters Pilot Program was an intervention created in the 1970s that focused on recurrent outreach through letters (or emails) with individuals following hospitalization for suicidal behaviors or mental health disorders such as depression. The first correspondence was sent at 1 week, then 9 more letters were sent over the course of 2 years. Researchers found overall positive outcomes from participants but advise more research is completed on the model due to their inability to create a control group, interview all program participants, and not able to track all participants.

Army infantry division suicide prevention created a multidisciplinary team of chaplains, social workers, and clinical psychologists. The multidisciplinary team provided trainings, resources, support to soldiers and families, and mental health support to soldiers with identified mental health risk factors. The program also created a crisis intervention team to support soldiers during times of crisis. Though the program has anecdotal results no initial intake survey or final evaluation was ever completed.

US Naval Training Command was a program established in the late 1980s to training higher-ranking officers to increase their capacity to identify and intervene in soldiers experiencing suicidal thoughts and behaviors. The program was found to have a statistical significance for reducing suicide attempts. Regardless of the results, the research team noted that the baseline for this study was following an unprecedented cluster of suicides thus skewing final results and know that during this time the US Navy began discharging members with significant mental health and personality disorders.

US Air Force study designed an 11-component program to addressed risk factors. The program included over 5 million participants from 1990 to 2002 (1990 to 1996 control group and 1997 to 2002 treatment group). The program utilized crisis teams during challenging times or during

disciplinary processes which were identified as a risk for increased suicidal thoughts and behaviors. The program was found to increase resiliency and encourage help-seeking behaviors of service members.

NATIVE AMERICAN Prevention Programs

May, P.A., Serna, P., Hurt, L., & DeBruyn, L.M. (2005). Outcome evaluation of a public health approach to suicide prevention in an American Indian Tribal Nation. *The American Journal of Public Health, 95*(7), 1238-1244. Retrieved from http://ajph.aphapublications.org.weblib.lib.umt.edu:8080/doi/abs/10.2105/AJPH.2004.040410

A longitudinal study of the Western Athabaskan Tribal Nation of New Mexico found a reduction in suicidal gestures, attempts, and completion of the fourteen-year study. The study evaluated the effectiveness of a public health approach to universally targeted programs, increase in access to mental health services, and community programming. The team found three key factors for programmatic success.   First, the researchers found the broad approach of the program focusing on 'social, psychological, and developmental issues' in addition to suicidal risk factors helped to ensure success. In addition, the early engagement of community leaders and key stakeholders helped to ensure this program was culturally relevant to the targeted population. Lastly, the research team found the continued evaluation and modification based on feedback helped alter activities while staying true to the original goals and mission of the programming. The program has a correlational relationship related to a reduction in suicidal gestures and attempts. A reduction did not occur in relation to deaths by suicide, but the number of deaths did stabilize according to the research team.

LaFromboise, T.D. & Lewis, H.A. (2008). The Zuni Life Skills Development Program: A school/community-based suicide prevention intervention. *Suicide and Life-Threatening Behavior,* 38(3), pp. 343-53. Retrieved from http://www.atypon-link.com/GPI/doi/abs/10.1521/suli.2008.38.3.343

The Zuni Life Skills Development Program is a comprehensive school and community-based intervention that focuses on engaging youth through skill building to decrease symptoms of depression and stress, increase problem-solving and emotional regulation, and learn about suicide risk factors and peer intervention. This program had a framework based on the cultural traditions and norms of the Zuni people which were integrated into the activities. The researchers found a decrease of hopelessness, suicidal ideation, and peer intervention. Despite promising results, the Zuni Life Skills Development Program was canceled after a few

years due to district leadership transitions. The researchers believe that additional resources and research are needed to ensure Native youth have access to culturally competent programming and interventions.

May, P. A., Serna, P., Hurt, L., & DeBruyn, L. M. (2005). Outcome evaluation of a public health approach to suicide prevention in an American Indian tribal nation. *American Journal of Public Health*, *95*(7), 1238–1244. http://doi.org/10.2105/AJPH.2004.040410

The Adolescent Suicide Prevention Project (ASPP) was created to following 50 community meetings where transcripts were compiled and analyzed to assess the needs and challenges existing within the Western Athabaskan Tribal Nation. ASPP was created in 1988 through a partnership with the Tribe, Indian Health Services, and Bureau of Indian Affairs to reduce the number of suicides within the community. The program which targeted 11 to 18 years-old included extensive data collection, school-based life-skills interventions, and community-based trainings and learning opportunities focused on parenting skill development. Over the almost 15 years of the program, there was a significant decrease in suicidal behaviors and deaths by suicide. The success of this program is attributed to the comprehensive integrated public health model, inclusion of skill building not just suicide prevention, collaboration from the community to address community risk factors and address programming cultural barriers, and co-current program refinement with evaluation.

United States Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services. (2010). To live to see the great day that dawns: Preventing suicide by American Indian and Alaska Native youth and young adults. (Substance Abuse and Mental Health Service Administration publication number SMA10-4480) Retrieved from https://store.samhsa.gov/product/To-Live-To-See-the-Great-Day-That-Dawns-Preventing-Suicide-by-American-Indian-and-Alaska-Native-Youth-and-Young-Adults/SMA10-4480

To live to see the great day that dawns is a 184-page manual that provides a framework for work for suicide prevention programming targeting both Native youth on the reservation and Native youth in urban schools. The manual provides insight on the unique risk factors faced by Native youth, the need for culturally grounded programming, and promising practices and interventions. The manual also includes tools and resources for community engagement, an overview of evidence-based programming, and federal resources for suicide prevention for tribes and Native youth.