A Wicked Public Health Problem of the West: Clinical Perspectives and Organizational Dynamics for Preventing Suicide in Utah

A WICKED PUBLIC HEALTH PROBLEM OF THE WEST:

CLINICAL PERSPECTIVES AND ORGANIZATIONAL DYNAMICS FOR PREVENTING SUICIDE IN UTAH

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ABSTRACT

Our most intractable social problems—like poverty, climate change, and terrorism—are highly complex, contradictory, and cross-cutting. Often termed "wicked" or "adaptive" problems, they differ from the complicated yet resolvable nature of ordinary "tame" or "technical" issues in that there is limited consensus about the etiology of the problem, difficulty deciphering effective responses, a significant degree of overlap with other problems, and a high likelihood of conflict arising between groups trying to solve it. Using a healthcare lens, this DELTA project considers how Utah's high rate of suicide is an example of a wicked problem, and the implications of such characteristics on efforts to reduce suffering and save lives.

The qualitative methodology included: 1) interviews with 30 primary care providers to elicit their experiences, perceptions, and practices regarding suicide assessment and management at a clinical level and to compare their input to a previous study sample of 30 mental health providers; and 2) an ecosystem analysis at Intermountain Healthcare, the non-profit, integrated network that hosted this DELTA project, to understand the organizational and leadership dynamics surrounding suicide prevention at a healthcare delivery system level.

Drawing on analysis of these firsthand perspectives, the research finds that suicide is a wicked problem characterized by a high level of uncertainty surrounding the problem and solutions, a high level of interconnectedness with other problems, and high potential for social

and political conflict. It identifies key areas of collaborative action needed to facilitate coherent response, and offers recommendations for the host organization as it embarks on a system-wide initiative to prevent suicide. It concludes that only by focusing the healthcare system, including primary care providers, on population-oriented and collaborative approaches—especially reductions in access to firearms—can Utah begin to move the dial on suicide.

This project is the first known in-depth application of the wicked problem framework to the issue of suicide. It offers immediate opportunities for improving collaboration and problem-solving on suicide prevention in Utah, and provides a practical model for actionable applications of research to highly-complex public health problems.

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I. INTRODUCTION

Suicide is a major cause of morbidity and mortality, associated with devastating emotional and economic impacts on individuals, families, and communities across the globe (WHO, 2014). Rates of suicide vary considerably by geography, racial and ethnic group, and age. The State of Utah (and the Intermountain West region in which it is situated) has one of the highest suicide rates in the United States, and suicide is the leading cause of death among Utah's youth (CDC, 2018). There is no single cause of suicide, which is linked to an array of risk factors, including psychiatric problems, adverse life experiences, and access to lethal means (Franklin et al., 2017). Recognition of these intertwined individual, relationship, community, and societal factors led national groups and leaders to frame suicide as a public health issue in the 1990s (IOM, 2002). Despite this broad framing, suicide-related prevention and intervention has largely been seen as the domain of mental health professionals (Knox, Conwell, & Caine, 2004). And despite significant investment in both mental and public health efforts over the past several decades, suicide rates remain high across the country.

Over 150 years before the U.S. Surgeon General declared suicide "a significant public health problem" (HHS, 1999, p.1), clinicians and social scientists wrestled with questions of how to describe, categorize, and address suicide. In the 1830s, psychiatrist Jean-Etienne Esquirol wrote *Mental Maladies: A Treatise on Insanity* (1838), the first modern classification of mental health disorders. After compiling statistical records of suicide by method and region, Esquirol came to conclude that suicide is an "effect of disease" and symptom of mental illness—not a sin or crime worthy of punishment, as it had been previously understood. Esquirol's medical basis for suicide and suicide prevention was challenged by sociologist Emile Durkheim in the 1890s.

In *Suicide* (1897), the first book fully devoted to this topic, Durkheim argued that suicide risk arises through a complex interaction of social, rather than psychological, factors. "The victim's acts which at first seem to express only his personal temperament are really the supplement and prolongation of a social condition which they express externally," he wrote. Suicide prevention, from Durkheim's perspective, requires a primary focus on social cohesion and integration, rather than reliance on mental healthcare (Battin, 2015).

In Utah, in 2018, I observe a similar debate underway as healthcare and community stakeholders struggle to explain why Utah's suicide rate is so high—and what to do about it. A surge in attention and concern about suicide comes at a time when healthcare delivery institutions are embracing "population-oriented" and "value-driven" care that "goes upstream" in hopes of improving outcomes and saving costs. While many of these terms await full definition, they signal an increased openness to the non-medical factors that affect health and well-being. Meanwhile, behavioral and physical health are becoming more intertwined at a delivery level, due to increased awareness of the relationships between the two (particularly in the midst of opioid misuse concerns) and new models of treatment to integrate them (particularly through the involvement of mental health providers in primary care). In this evolving context, Intermountain Healthcare ("Intermountain")—a large, mission-driven healthcare system in Utah that is undergoing major restructuring to adapt to a changing payment and delivery landscape—offers a dynamic laboratory to explore the opportunities and challenges for confronting a problem that some see as public health, some see as mental health, and many see as extremely complex.

The first section of the thesis provides an analytical platform describing the problem of

suicide. It outlines the scope and nature of this issue, the public health frameworks for and responses to it, and the role of healthcare systems in suicide prevention. It concludes by introducing Rittel and Webber's concept of a wicked problem and describing the DELTA project. The results section reviews the findings of the project in two parts: 1) the perspectives and practices of Utah primary care providers when it comes to assessing and managing youth suicide risk; and 2) the current landscape of work on suicide prevention at Intermountain, and the realities of implementing a transformational strategy concurrent with other major institutional changes. Drawing on these clinical and organizational perspectives, the discussion section considers suicide as a wicked problem, and argues why making progress may require ways of thinking and acting that differ from customary approaches. It closes with recommendations for Intermountain as it takes on this complex and important work.

II. ANALYTICAL PLAFORM

The Analytical Platform describes the issue of suicide, particularly as it relates to the role of primary care providers. It begins with an overview of suicide, including trends in the United States and Utah, factors underlying both the problem and common interventions, and the empirical challenges of predicting and preventing suicidal behavior based on individual-level risk. It then explores suicide prevention from both a public health and healthcare delivery perspective, focusing attention on the role of primary care providers in suicide assessment and management. It closes by presenting the concept of a wicked problem and describing the DELTA project design. The literature review provided here is in summary form; it is available in full in Appendix A.

1. THE PROBLEM OF SUICIDE

1.1 Scope of the Problem

Worldwide, over 800,000 people intentionally take their own lives each year—and for every suicide there are many more non-fatal suicide attempts that may result in significant injury (WHO, 2014). In the United States, approximately 45,000 people died by suicide in 2016. Rates of suicide in the U.S. have fluctuated over the past several decades, with high rates in the late-1980s and early-1990s, a period of declining rates in the mid-1990s[1], and a steep increase beginning in 1999 through the present (CDC, 2018; Miller, Azrael, & Barber, 2012). Factors that

[1] The lower rates in the mid-1990s were driven by a decline in rates of firearm suicides (that occurred in tandem with a decline in rates of household gun ownership); rates of non-firearm suicide stayed about the same (CDC, 2018).

are driving the sharp increase in both firearm and non-firearm suicides from 1999-2016, absent appreciable changes in rates of household gun ownership or rates of mental illness, are not yet understood (Stone et al., 2018). Today, suicide is the tenth leading cause of death nationally; it is the second leading cause of death among people 15–24 and 25–34 years of age (CDC, 2017b).

The toll of suicide is even more profound when considering its contribution to premature mortality: from 1999 to 2016, suicide was the fifth leading cause of years of potential life lost (YPLL) before age 65, accounting for over 13 million YPLL (6.4% of the total YPLL) in the United States—more than homicide (10 million YPLL, 4.9% of the total YPLL). In addition to the devastating personal toll of suicide on families and communities, it is also associated with significant economic costs: in 2010, suicide led to an estimated $44.7 billion in combined medical and work loss costs (CDC, 2018).

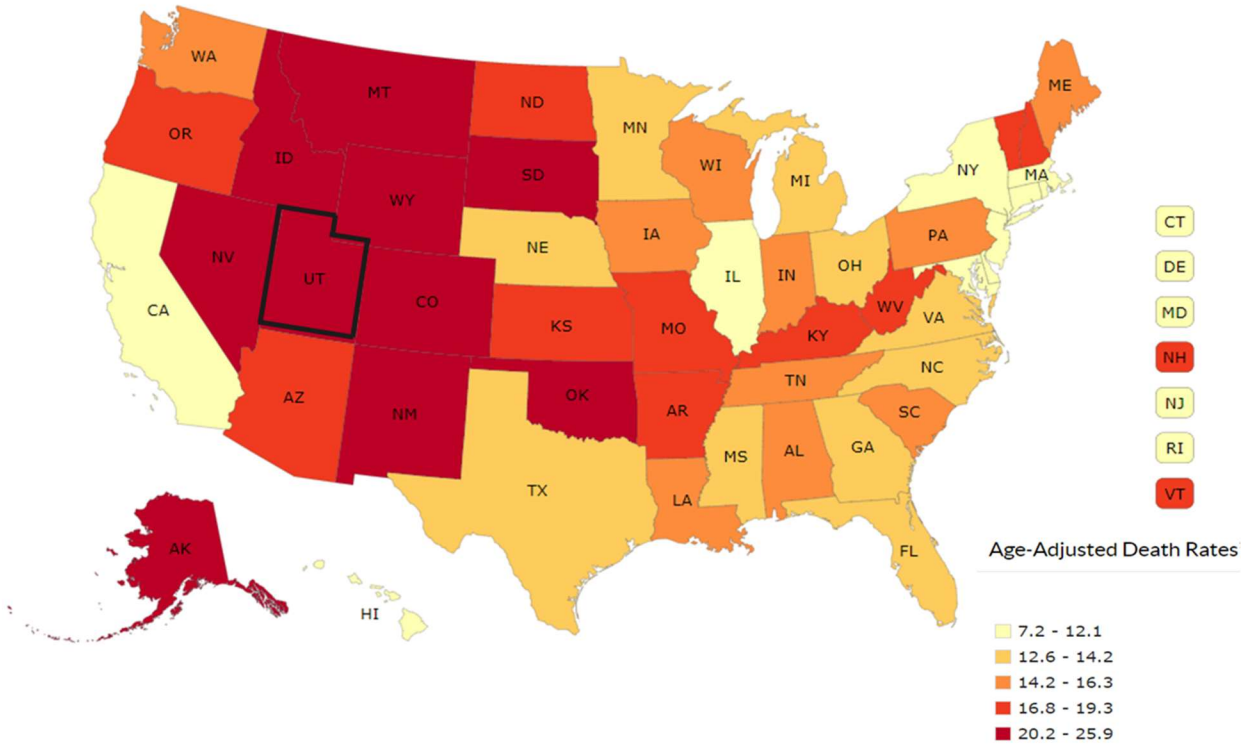

Figure 1 – Suicide Mortality By State, 2016 (Source: CDC, 2018)

In the U.S., suicide rates vary considerably by geographic region. As shown in Figure 1, the Intermountain West states (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Wyoming, and Utah) consistently have some of the highest rates of suicide in the country, leading some researchers to refer to this region as the "suicide belt" (Wray, Poladko, & Vaughan, 2012). Utah sits in the center of this region; its suicide rate (20.3 per 100,000 people) is similar to the rest of the Intermountain West, but exceeds the national rate (13.9 per 100,000 people). The suicide rate varies by other demographic characteristics as well, with the highest rates in Utah among white and American Indian males who are middle-aged or older than age 75. The rate of suicide among young Utahns has undergone a particularly steep rise over the past decade (see Figure 2). Suicide is now the leading cause of death among young people ages 10-17 in Utah, ahead of accidents. This is the reverse of the U.S. overall, where the rate of accidents in this age group exceeds that of suicides (CDC, 2018).

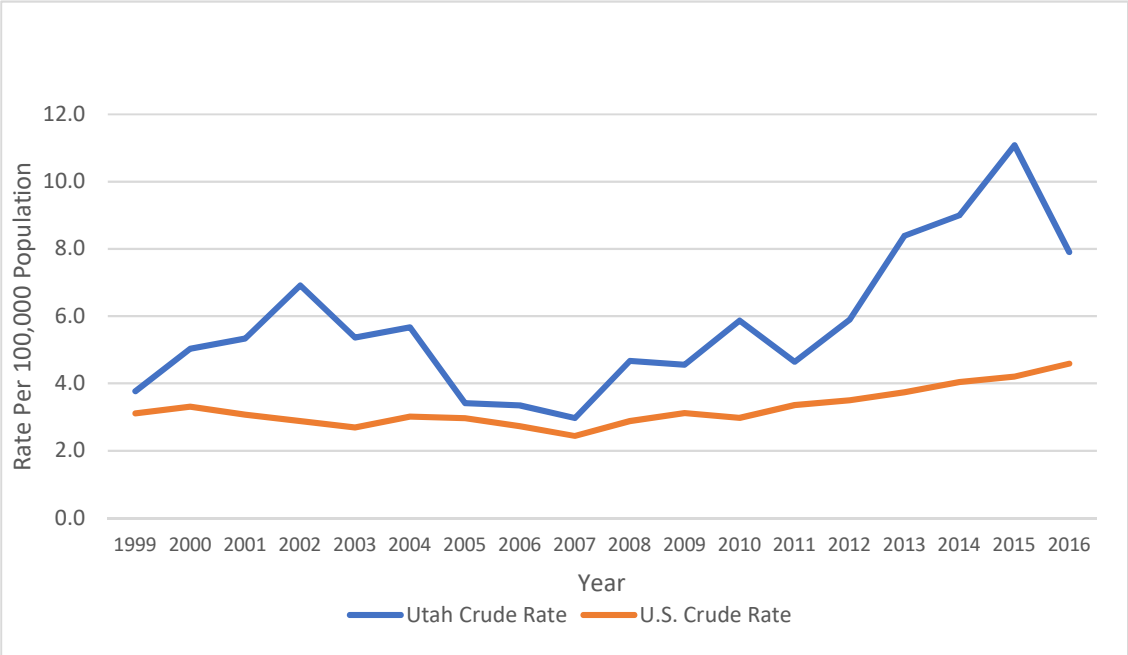

Figure 2 - Suicide Rate By Year, Ages 10-17, Utah and U.S., 1999-2016 (Source: CDC, 2018)

During the five-year period of 2011-2015, a total of 150 Utah youth aged 10-17 years died by suicide; over 90% used either suffocation (46%) or firearms (45%). During approximately the same period, there were 3,005 emergency department visits and 690 inpatient hospitalizations for self-inflicted injuries. As is typically the case with suicidal behavior, the majority of suicide attempts (72%) were among females, while the majority of suicide deaths (77%) were among males (Annor, Wilkinson, & Zwald, 2017).

A recent study, generalizable to the U.S. as a whole, indicates that nearly three out of four youth suicide decedents die on their first attempt, due to the lethality of firearms (McKean, Pabbati, Geske, & Bostwick, 2018). Across all ages, firearms are the leading suicide method in Utah, responsible for half of suicides. Most gun deaths in Utah (85%) are suicides. Firearms are highly fatal and highly accessible: they are the most lethal method of self-injury in Utah, with a Case Fatality Rate of 87% (compared to 2% for drug overdose and sharp instrument wounds). About half of households in Utah have a firearm, with ownership ranging from 36% in Salt Lake City to 70% in most rural counties (Barber et al., 2018).

1.2 Risk and Protective Factors Framework

Suicide research and prevention activity has historically focused on who is at risk for suicide by identifying risk (and protective) factors believed to increase (and decrease) the likelihood of suicidal behavior. These include personal characteristics, family characteristics, socioeconomic factors, and adverse life experiences (Franklin et al., 2017). This risk and protective factors framework provides the underpinnings for most suicide screening and assessment processes undertaken by clinicians. This strategy is premised on the notion that

that clinicians or other "gatekeepers" who administer a screening or assessment can detect when a patient is at high risk, and then intervene in an effective manner to reduce that risk, connect patients with essential therapeutic services, and ultimately prevent a fatality (Gould, Greenberg, Velting, & Shaffer, 2003; APA, 2003; Horowitz, Ballard, & Pao, 2009; Bryan & Rudd, 2006; Schulberg, Bruce, Lee, Williams, Dietrich, 2004; Rudd, Cukrowicz, & Bryan, 2008).

1.3 Limitations of Risk-Based Screening and Assessment

While there are numerous tools and protocols to conduct suicide screening and assessment based on risk and protective factors, there is limited evidence of their effectiveness in predicting or preventing suicidal behavior. First, while suicide-related risk factors are very common, suicide itself is a relatively rare event. It is particularly affected by "false negatives" whereby people who die by suicide are not identified in screenings/assessments by clinicians or other gatekeepers, and by "false positives" whereby the great majority of people who express suicidal ideation in screenings/assessments do not go on to attempt or die by suicide (O'Connor, Gaynes, Burdam Williams, & Whitlock, 2013; Caine, Knox, & Conwell, 2011). Second, categorical determinations of risk tend to emphasize the "highest risk" individuals who comprise a small proportion of those who ultimately attempt or die by suicide. This aggressive, needle-in-the-haystack search for patients with the greatest cumulative exposure to risk factors may not be particularly effective compared with efforts that target the "middle of the risk curve" (Caine et al., 2011; Knox et al., 2004; Rose, 1985). Third, risk-based screenings can miss the short-term and fluid nature of suicide risk. Several studies indicate that the acute period in which an at-risk person moves from suicidal thoughts to an actual attempt is often only a few

minutes or hours (Simon et al., 2001; Deisenhammer et al., 2009; Williams, Davidson, & Montgomery, 1980; Annor et al., 2018). The administration of any single risk-based screening is unlikely to capture the fluctuating nature of acute vulnerability (Bryan & Rudd, 2011). Finally, most of the available treatments to address suicidal behavior have not proven to be effective (Mann et al., 2005; Zalsman et al., 2016).

The lack of evidence around the benefits of suicide screening (and subsequent treatment) is summarized by the U.S. Preventive Services Task Force (USPSTF); for purpose of illustration, Table 1 compares the USPSTF analysis of major depressive disorder (MDD) screening to that of suicide screening, both in primary care settings. Although these two health topics have relatively weak/insufficient evidence on the benefits, harms, and accuracy of *screening*, the strength of evidence surrounding the net benefits of *treatment* for MDD (but not suicide) contribute to the USPSTF recommendation for PCPs to screen for MDD (but not suicide) (USPSTF, 2016a; USPSTF, 2016b).

Table 1 - Summary of USPSTF Recommendations - Depression vs. Suicide Screening (Source: USPSTF, 2016a; USPSTF, 2016b)

	Depression Screening: Evidence Level	Suicide Screening: Evidence Level
Benefits of Screening	Insufficient	Insufficient
Accuracy of Screening Instruments	Weak	Weak
Harms of Screening	Insufficient	Weak
Benefits of Treatment	Medium	Weak
Harms of Treatment	Strong	Medium
USPTF Conclusion	USPSTF recommends primary care providers screen for major depressive disorder in adolescents	USPSTF finds current evidence is insufficient to assess the balance of benefits and harms of screening for suicide risk in primary care

2. The Public Health Approach to Suicide

2.1 Public Health Frameworks

Beyond the empirical limitations, risk-based screening and assessment approaches tend to focus almost entirely on individual-level factors impacting suicidal behavior. This can eclipse the important ways in which suicide risk arises through the interaction of risk and protective factors *across* multiple levels—individual, relationship, community, and societal. This more expansive, contextualized way of locating and influencing risk/protective factors across (and not just within) levels of influence is illustrated in the Social-Ecological Model (Figure 3) (HHS, 2012). It opens the door to population-based approaches that have shown a measurable impact on preventing suicide, such as reducing access to lethal means (Barber & Miller, 2014).

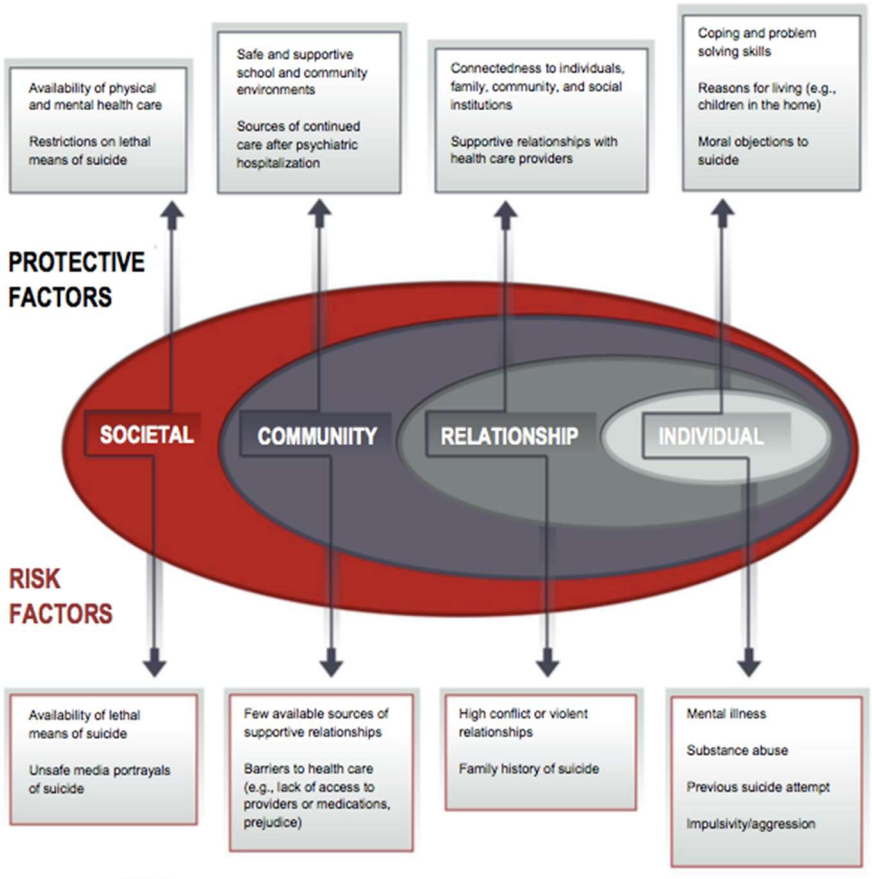

Figure 3 - Social-Ecological Model (HHS, 2012)

Building on the risk/protective factors literature and the social-ecological model, Caine et al. (2011) recommend a “Multilayered Public Health Approach" to suicide prevention. They analogize the model to preventive cardiology—which “target very early risk factors of diet and exercise for heart disease, seeking to change the trajectory of health and illness years before the overt expression of symptoms” (p.309). This approach emphasizes engagement in suicide prevention in diverse settings and time periods in order to reach three main groups: the general population, groups where average level of risk is elevated, and patients requiring active treatment. This comprehensive approach aligns with recommendations by the Centers for Disease Control and Prevention (CDC) to emphasize “complementary and potentially synergistic” strategies that “represent different levels of the social ecology” (CDC, 2017b, p.11-13).

In summary, the Social-Ecological Model and Multilayered Public Heath Approach represent an important shift in conceptualizing suicide prevention. They go beyond individual risks and behaviors to acknowledge and address a greater number and dimensionality of determinants. They posit that reducing suicide at scale will not occur by solely screening and intervening at an individual level, but by decreasing the burden of risk factors and increasing the strength of protective factors in communities and populations (Caine et al., 2011; Knox et al., 2004; CDC 2017b). This approach does not reduce the critical role of clinicians in preventing suicide amongst their patients, but may offer a more contextualized orientation in which their actions will yield greater effect (Pisani, 2016).

2.2 Public Health Response

Across the globe, suicide was largely classified as a mental health concern prior to the 1980s and 1990s. The World Health Organization began a concerted focus on suicide in 1989, urging the adoption of evidence-based policies; the United Nations developed its first guidance on suicide prevention in 1996, encouraging countries to develop comprehensive suicide prevention plans. At that time, Finland was the only country with a national prevention plan, but 25 countries followed its lead over the subsequent 15 years (IOM, 2002; WHO, 2014).

In the United States, suicide was framed as a public health issue in the mid-1990s when numerous foundations and public-private partnerships launched and the first conference on suicide prevention took place in in Reno, Nevada (IOM, 2002). In 1999, U.S. Surgeon General David Satcher issued a Call to Action demanding that the U.S. "address suicide as a significant public health problem" (HHS, 1999, p.1). He commissioned a "National Strategy for Suicide Prevention" (2001) that emphasized public health approaches, though almost all its resulting recommendations relied on "downstream" approaches: more clinical intervention, counseling, and education. There was also no funding to implement the recommendations, no specific actions selected, and no accountable agencies identified (HHS, 2001; Caine, 2013).

Several important developments occurred in the years immediately following release of the 2001 National Strategy to begin to fill its gaps. First was a major improvement in surveillance thanks largely to the launch of the National Violent Death Reporting System (CDC, 2017d; CDC, n.d., Caine, 2013). Momentum grew further with President George W. Bush's New Freedom Commission Report, "Achieving the Promise: Transforming Mental Health Care in America (2003)," which stated that "suicide is a serious public health challenge that has not

received the attention and degree of national priority it deserves" (New Freedom, 2003, p.20). Soon thereafter, President Bush signed the Garrett Lee Smith Memorial Act, providing about $30 million per year in youth suicide prevention funding (Silberner, 2016).

Today, all states have developed suicide prevention plans aligned with the National Strategy, and many have created offices or coordinator positions to implement those plans. Many states also updated their plans after U.S. Surgeon General Regina Benjamin issued a revised National Strategy for Suicide Prevention in 2012, which updated the 2001 plan with more recent data, knowledge, and activities (HHS, 2012).

Utah released a Suicide Prevention Plan in 2017 that aligns with the Surgeon General's National Strategy. It calls for reducing suicide rates by 10% by 2021, with the ultimate vision of a future where zero suicides occur (UT Department of Health, 2017). Following articulation of this aim, the Plan offers facts, data, and frameworks that help the reader understand the general trends and phenomenology of suicide. It then outlines nine strategic goals for Utah:

1. Increase availability and access to quality physical and behavioral health care;
2. Increase social norms supportive of help-seeking and recovery;
3. Reduce access to lethal means;
4. Increase connectedness to individuals, family, community, and social institutions by creating safe and supportive school and community environments;
5. Increase safe media portrayals of suicide and adoption of safe messaging principles;
6. Increase coping and problem-solving skills;
7. Increase support to survivors of suicide loss;

8. Increase prevention and early intervention for mental health problems, suicide ideation, and behaviors and substance misuse; and
9. Increase comprehensive data collection and analysis regarding risk and protective factors for suicide to guide prevention efforts.

The five-year Plan does not reference any baseline or target metrics, beyond the overall 10% goal, so the extent of progress is not clear. The Plan was developed by the Utah Suicide Prevention Coalition Executive Committee, a 15-person group of diverse stakeholders who have a high level of visibility and influence in the State; they are typically the "go-to" sources for newspaper quotes and public testimony on issues of mental health and suicide. Its all-volunteer membership includes local leaders from Utah government, health systems, academic institutions, faith groups, and the Utah chapters of the National Alliance on Mental Illness and American Foundation for Suicide Prevention.

Despite steadily intensifying federal and state efforts over the past 20 years, suicide rates remain high across the country—and, indeed, higher today than at any other time since the Surgeon General's report. No state stands out as a clear "success story" in overcoming the public health problem of suicide (Caine, 2013; Stone & Crosby, 2014; CDC, 2018).

2.3 Public Health Evidence

Systematic reviews of relevant literature from 1966 to 2015 suggest that there is very limited evidence of efficacy behind most existing strategies to prevent suicide. Screening, mental health treatment, public education, crisis helplines, and media guidelines are among the

most widespread strategies to prevent suicide, and yet these interventions lack evidence of effectiveness (Mann et al., 2005; Zalsman et al., 2016).

One of the only empirically-based, high-impact suicide prevention strategies is reducing access to lethal means (Mann et al., 2005; Zalsman et al., 2016). International studies have found that when widely-used, highly lethal means are made less available or less lethal, suicide rates overall decline by 30-50%. Notable examples are detoxification of domestic gas in England, reduced toxicity of pesticides in Sri Lanka, and reduced access to military firearms in Israel and Switzerland (Barber & Miller, 2014).

In the U.S., firearms are the lethal means category of greatest concern, responsible for about half of suicides (CDC, 2018). Firearms are fast and fatal; when used, about 85% of suicide attempts with a gun result in death (Spicer & Miller, 2000). A main reason the lethal means reduction strategy works is that many suicide attempts occur during a short-term crisis (Simon et al., 2001; Deisenhammer et al., 2009). If a person has access to a gun during this high-risk time and uses it, he or she is likely to die (Spicer & Miller, 2000). But if a person chooses a less lethal method, he or she is not only more likely to survive that attempt, but is likely to survive, period; 90% of survivors of non-fatal attempts do not go on to die by suicide later (Carroll, Metcalfe, & Gunnell, 2014).

Despite evidence at the population level that lethal means restriction saves lives and is a crucial part of any public health approach to suicide prevention, it is not a widespread approach in the United States (Barber & Miller, 2014). However, awareness has grown in recent years, particularly after the 2012 National Strategy called for reducing access to lethal means for high-

risk individuals as part of a public health approach to suicide prevention (Runyan, Brooks-Russell, & Betz, 2018; HHS, 2012).

3. The Role of Healthcare Systems in Suicide Prevention

3.1 Zero Suicide

Another one of the 2012 National Strategy objectives that has received the most attention in recent years is to "[p]romote the adoption of 'zero suicides' as an aspirational goal by health care and community support systems that provide services and support to defined patient populations" (HHS, 2012, p.53). Zero Suicide is an emerging, aspirational model for healthcare systems to improve the care and outcomes of patients at risk of suicide. The programmatic and continuous improvement initiative grew out of a depression care project among behavioral health patients at Henry Ford Health System in Detroit, Michigan, and rose in national prominence after numerous endorsements from federal leaders (Hogan & Grumet, 2016; Mokkenstorm, Kerkhof, Smit, & Beekman, 2017).

Premised on the idea that healthcare systems that take responsibility for suicides and improve care for at-risk patients can prevent suicides, Zero Suicide is structured around a framework of core elements including leadership-driven culture, comprehensive training, evidence-based treatment, and data-driven quality improvement. Over 200 healthcare organizations have indicated that they are implementing Zero Suicide, though it is not known to what degree or with what results (J. Grumet, personal communication, July 9, 2018). As Zero Suicide has gained momentum, it has helped persuade many healthcare institutions that

suicide prevention extends beyond behavioral health and emergency department settings, and highlights primary care as a crucial venue for supporting people at risk for suicide (SPRC, 2018).

3.2 Rationale for Engaging Primary Care Providers in Suicide Assessment & Management

In recent years, numerous health organizations, from the U.S. Surgeon General and Joint Commission to the American Academy of Pediatrics, have called for primary care providers (PCPs) to take an active role in detection of and intervention around suicide risk (HHS, 2012; Joint Commission, 2016; AAP, 2016; AAP, 2018). There are three common arguments why PCPs should become more actively involved in suicide assessment and management.

First, PCPs are a main source of physical and mental health services, especially for youth, and the PCP is usually the first point of contact for people who go on to receive care for mental and behavioral issues (Horowitz et al., 2009; Bryan & Rudd, 2011). Families often prefer to receive mental healthcare from a PCP due to a perception of less stigma, fewer access barriers, and shorter wait times than seeking help from a specialized mental health provider (Cheung, Dewa, Levitt, & Zuckerbrot, 2008; Bryan & Rudd, 2011).

Second, a high proportion of people who die by suicide are in contact with or receiving regular care from primary care providers prior to their deaths. Luoma, Martin, and Pearson (2002) found that approximately 45% of suicide decedents in the U.S. visited a PCP in the month prior to their deaths, while only 19% visited a mental health professional during the same period. While a mooring to the base rate is not available (i.e., we don't know the comparative percentage of age-matched *non*-decedents who visit a PCP or mental health provider in a given month), Luoma et al.'s finding suggests a window of opportunity to reach

patients if one could identify and target services to those in need—or intervene in a universally protective manner.

Third, PCPs may be in a unique position to advance a public health-based approach to suicide prevention. Primary care takes a more population-oriented perspective than other medical specialties, through an emphasis on prevention and management of chronic diseases, including mental health conditions. Integrated and collaborative care is core to primary care, especially when it comes to addressing mental and behavioral health conditions (IOM, 1996; IOM, 2012; Bryan & Rudd, 2011). As described in Section 2.1, such integrated thinking is also core to suicide prevention.

3.3 Challenges Facing Primary Care Providers in Suicide Assessment & Management

Despite the rationale for engaging PCPs in suicide assessment and management, most do not regularly ask about suicidality, even among patients with depression (Feldman et al., 2007). There are a number of potential reasons why.

First, suicide is still a very rare event. One study in the Netherlands found 0.31 suicides per general practitioner annually, and concluded a suicide might occur every three years in a typical 2000-patient practice (Diekstra & van Egmond, 1989). It is much more common for primary care patients to think about or attempt suicide than to die by suicide. However, while suicidal ideation and past attempts are known predictors of suicide, the low base rate of suicide means that the positive predictive value of a single suicide screening or assessment is extremely low (6% to 30%): almost none of the people who screen positive will go on to die (Nock et al., 2013; Silverman & Berman, 2014; O'Connor et al., 2013). This is largely why, in 2013, the U.S.

Preventive Services Task Force (USPSTF) systematic review concluded that "evidence was insufficient to determine the benefits of [suicide risk] screening in primary care populations" (O'Connor et al., 2013, p.741). USPSTF acknowledged that the rarity of suicide not only presents difficulties predicting suicidal behavior, but also gaining adequate sample size and statistical power to study the efficacy of interventions; very large trials are required to demonstrate the efficacy of a single suicide prevention intervention (O'Connor et al., 2013).

Second, PCPs may be uncomfortable or reluctant to raise the topic of suicide. Even among mental health providers—for whom the topic of suicide is core to clinical practice—it is well-documented that feelings of anger, guilt, anxiety, incompetence, and frustration often arise when working with patients at risk for suicide (Shea, 2002; Rudd et al., 2008; Schulberg et al., 2004). In addition, many healthcare providers falsely believe that asking directly about suicide can "inspire" patients to harm themselves (Horowitz et al., 2016). Some authors theorize that such discomfort and fear may lead PCPs to avoid the topic of suicide or raise it in ways that inhibit patient disclosure, though the existing literature does not test these hypotheses directly (Vannoy et al., 2010; Schulberg et al., 2004).

Third, PCPs may not focus on suicide because they lack knowledge or time (Sudak et al., 2007; Yarnall, Pollak, Østbye, Krause, & Michener, 2003; Asarnow et al., 2005). Even if they do raise the topic of suicide risk, PCPs are not always aware of what treatments are most appropriate in what circumstances, what the expected impact of such treatment will be, and how to coordinate or consult with specialized services (Feldman et al., 2007; Babeva, Hughes, & Asarnow, 2016; AAP, 2018). Finally, a common reason why PCPs may not undertake suicide

screening or assessment is simply because they lack the time to complete all recommended preventive services during a brief office visit (Yarnall et al., 2003; Asarnow et al., 2005).

3.4 Core Competencies for Primary Care Providers in Suicide Assessment & Management

With an issue like suicide that requires a broad range of "personal, professional, intellectual, and technical capacities" (Pisani, Cross, & Gould, 2011, p.256), having a set of definable and measurable identified skill sets—*competencies*—is important for achieving clinical *competence* (Bryan & Rudd, 2011). In 2004, the American Association of Suicidology (AAS) developed a set of core competencies for mental health providers involved in suicide assessment and management (Rudd et al., 2008). It was based on scholarly literature, expert consensus, and pilot testing by leading researchers and clinicians (AAS, n.d.).

No professional body has issued a set of equivalent competencies for primary care providers or other non-mental health clinicians, or undertaken a similarly rigorous, consensus-based process toward this end. Suicide prevention training is also not a required part of primary care education or clinical certification (Sudak et al., 2007; Taliaferro & Borowsky, 2011). However, one of the members of the Core Competencies Curriculum Committee (Dr. M. David Rudd) and one of the leading authors of the Committee's findings (Dr. Craig J. Bryan) co-authored a book in 2011 that aims to fill the gap. *Managing Suicide Risk in Primary Care* (2011) proposes the following competencies:

1. **Foundations for effective clinical care** – understand basic aspects of suicide (including core terminology and biopsychosocial models of suicide) and manage one's attitudes and emotions relative to suicide.

2. **Screen for suicide risk** – know the most important risk and protective factors and routinely screen all referred patients for suicide risk.

3. **For positive screens conduct a more specific suicide risk assessment** – solicit information on suicidal thinking and behavior in a standardized manner that minimizes patient anxiety.

4. **Arrive at a reasonable assessment of risk level** – determine what risk category a patient falls into based on his or her baseline and acute risk levels, and assess the severity of that risk.

5. **Initiate interventions and management strategies** – develop crisis response and crisis support plans, engage in means restriction counseling, coordinate care with family members.

6. **Refer to specialty mental healthcare when indicated** – refer patients at moderate/higher risk to mental health providers; consider referral for inpatient evaluation for patients at severe risk.

In summary, the development of a core competency model is an important step in suicide prevention, providing a concrete articulation of the skills, capacities, and processes that clinicians need to undertake the challenging work of suicide assessment and management. However, such models for primary care providers are still in their infancy. Rigorous, consensus-based, pilot-tested processes will be needed to validate and refine these competencies and ensure their practical application in a primary care context.

4. Wicked Problems and Adaptive Leadership

4.1 Suicide as a "Wicked Problem"

Suicide may be an example of a "wicked problem." In 1973, Horst Rittel and Mel Webber described this category of social problems—like poverty, climate change, and terrorism—that are highly complex, contradictory, and cross-cutting. Such problems differ from the complicated yet resolvable nature of ordinary, "tame" problems in ten ways:

1. They have no clear problem definition.
2. They have no clear stopping point.
3. Solutions can't be easily evaluated as good/bad or right/wrong.
4. There are no straightforward tests of solutions.
5. Trial-and-error is limited; each attempted solution counts significantly.
6. They do not have a finite set of potential solutions.
7. They are essentially unique problems.
8. They are often symptoms of other problems.

9. They involve many stakeholders with conflicting agendas.

10. There is no room for leaders to be wrong; the public expects complete success.

Subsequent authors have recognized the redundancy of some of the ten points and offered simplified versions (Weber & Khademian, 2008; Head & Alford, 2015; Dentoni, Bitzer, & Schouten, 2018). Table 2 is my attempt at summarizing some of the key features of a wicked problem through a proposed four-part encapsulation of Rittel and Webber's model.

Table 2 - Summary of Characteristics of Tame vs. Wicked Problems

	Tame Problem	Wicked Problem
Level of Uncertainty About the Problem	LOW - Discrete cause/effect - Clear causal chain - Clearly defined future state	HIGH - Etiology unclear - Each attempt to solve changes understanding of problem - Not always clear future state
Level of Interconnectedness with Other Problems	LOW - Can examine problem in relative isolation - Problem can be largely solved by a single entity	HIGH - Problem cuts across diverse issues areas - Problem requires multiple parties to resolve
Level of Social and Political Conflict	LOW - Low potential for social and political conflict	HIGH - High potential for social and political conflict
Level of Uncertainty About Solutions	LOW - Can outline and compare solutions - Can learn from past examples - Flexibility to change course	HIGH - Solutions aren't predictable or easily navigable - Can't apply past experiences - High stakes, limited tolerance for failure

Conklin (2001a) presents school violence is an example of a wicked problem. The example is helpful, as the difference between a tame and a wicked problem can be understood through a comparison of building a school versus addressing school violence. Building a school may be *complicated*—involving architects, engineers, contractors, designers, financial planners, and the wider community. But ultimately the task is relatively discrete, and can be overseen by a central group of people drawing on past models and common blueprints. By contrast, the problem of school violence is highly complex. Even if there is community consensus that violence is a problem, there is often high uncertainty (and limited consensus) about the *factors*

driving it. Different groups may have vastly divergent conceptions of cause and effect. Is bullying the main culprit? Access to weapons? Mental illness? Depending on how the etiology is viewed, proposed solutions will vary. One group may emphasize installing metal detectors, arming teachers, and increasing discipline; another group may recommend hiring more school psychologists and restricting gun ownership. Even if a comprehensive strategy can be designed that encompasses the multi-faceted factors and populations at hand, resolution may still be out of reach due to deep cultural differences, political sensitivities, and commercial interests (Conklin, 2001a).

4.2 Adaptive Leadership for Addressing Wicked Problems

In the nearly half-century since Rittel and Webber published their work, interest in the wicked problems framework has grown, with applications ranging from environmental sustainability and urban planning to healthcare policy and business management (Head & Alford, 2015; Head, 2018). One of the most important contributions to the literature in recent years is a move beyond *what is* a wicked problem to describe *what to do* in the face of such complex and urgent phenomena. Such action-oriented approaches challenge the notion that wrestling with wicked problems is futile, and emphasize that by understanding the most challenging features of these problems, it becomes possible to respond productively (Crowley & Head, 2017; Head & Alford, 2015; Weber & Khademian, 2008; Brookes & Grint, 2017).

The adaptive leadership framework developed by Ronald Heifetz and his colleagues is particularly applicable to this class of complex issues. The hallmark of adaptive leadership is carefully diagnosing whether and why a problem is non-technical/non-tame—and then

carefully avoiding the tendency to apply technical/tame solutions. This occurs by shifting work to people who can experiment and collaborate their way into solutions rather than handing down solutions. By stepping back to understand the dynamics at play while keeping teams focused and empowered outside their comfort zones, it becomes possible to address problems which demand entirely new ways of thinking and acting, which cross systems, which are not well-suited to off-the-shelf solutions—which are, in short, wicked (Heifetz & Laurie, 2001).

5. DELTA Project Design

5.1 Host Organization

The host for this project is Intermountain Healthcare ("Intermountain"), a non-profit, integrated healthcare system based in Salt Lake City, Utah whose mission is "helping people live the healthiest lives possible©." Caring for approximately 50% of Utahns annually, Intermountain has a reach that far exceeds most U.S. healthcare systems. It is Utah's largest provider of healthcare services, with 23 hospitals, 180 clinics, 1,600 employed physicians, and 875,000 health plan members. It is also Utah's largest private company, employing 37,000 people. Beyond its clinical interface with patients, Intermountain is currently making major investments in community and population health (Intermountain, 2017; K. Holzhauser, personal communication, November 16, 2018).

I joined the Community Health Department as an Administrative Fellow in June 2018, building on 1 ½ years working with the healthcare system on shorter-term projects related to suicide prevention. In October 2018, I was promoted to Community Health Program Director.

Part of my earlier work involved coordinating a study with a team from Intermountain and the University of Utah School of Medicine during the summer of 2017 to understand Utah mental health providers' strengths and challenges when assessing and managing youth suicide. We shared our findings (see Appendix B) with hundreds of clinicians, educators, and community members during workshops and listening sessions in the fall of 2017. The research is forming the basis for suicide prevention trainings now offered to mental health providers statewide. In the process of sharing these findings, numerous stakeholders recommended that this study be replicated with primary care providers; their rationale mirrored the arguments for primary care engagement presented in the Analytical Platform (Section 3.2).

Under its new Executive Leadership Team led by its CEO, Dr. Marc Harrison, Intermountain is in the process of dramatic restructuring intended to increase value, improve quality, save costs, and ensure the use of consistent service and evidence-based practices (K. Holzhauser, personal communication, November 16, 2018). The healthcare system was historically defined by geographic administrative regions spread across Utah, which operated with relative independence from the corporate headquarters in Salt Lake City. In the past year, they have been replaced by a "One Intermountain" centralized management structure composed of two divisions: "community-based care" (responsible for primary care and prevention initiatives) and "specialty-based care" (including specialized and inpatient services) (Kacik, 2017). With hundreds of jobs affected by the redesign, employee morale has suffered as confusion around the "why" of change has grown (Piper, 2018). Although the organization is experiencing growing revenues and is situated in a state with the lowest-in-the-country per

capita healthcare expenditures[2], Dr. Harrison emphasizes that early disruption is key to preserving a viable healthcare system in the long-term: “Great organizations go through change at the moment it becomes appropriate,” he says. “They don't wait for things to become an emergency” (Intermountain, 2018).

5.2 Purpose, Aims, Questions, and Hypotheses

The purpose of this project was to understand and help improve how Intermountain Healthcare addresses the problem of suicide in both its patient population and the wider community in which it is situated.

The first aim was to assess how Utah primary care providers approach youth suicide assessment and management and compare their approaches to those of mental health providers. This aim focused on youth (even though the overall DELTA project focused on suicide across the lifespan) because addressing youth suicide from the standpoint of primary care was of particular interest to Intermountain Healthcare. The core research question was: what experiences and challenges do Utah primary care providers have when it comes to assessing and managing youth suicide risk? My hypotheses were that:

- Most PCPs will not have a standardized/systematic process in place for screening, assessment, and risk formulation.

[2] The Office of the Actuary at the Centers for Medicare & Medicaid Services measures per-capita health expenditures by the state of residence and per enrollee spending for the three largest payers (Medicare, Medicaid, and private health insurance). It reflects “all health care goods and services consumed” but excludes certain expenditures like government administrative costs and investments in capital and research (Lassman et al., 2017).

- At a treatment and management level, a major barrier in preventing suicide that PCPs perceive will be access to and coordination of mental healthcare, especially regarding specialty mental health referrals.

- Compared to mental health providers, PCPs will have a broader conceptualization of prevention (primary, secondary, and tertiary) and more holistic understanding of the way risk and protective factors interact *across* multiple levels (individual, relationship, and community).

The second aim was to understand the organizational and leadership dynamics at a healthcare system that is trying to address the problem of suicide—and implications for achieving change. At the heart of this aim was the question: What is the current landscape of work on suicide prevention (across all age groups) at Intermountain, and what are the opportunities and challenges for forging effective approaches to this problem? My hypotheses were that:

- Collaboration on suicide prevention at Intermountain has been difficult to establish and sustain because of unclear goals and differing priorities.

- Leadership on suicide prevention at Intermountain has followed a "tame" mindset; it has focused on managerial, top-down approaches.

5.3 Aim #1 – Methodology

For the first area of work, focused on how Utah primary care providers approach youth

suicide, I conducted telephone interviews with Utah PCPs who care for youth ages 10-17 and who represent diverse clinical backgrounds, institutional affiliations, and geographic regions.

I used purposive sampling to recruit interviewees by phone and email during May and early June 2018. Several local organizations assisted in recruitment, including the Utah Medical Association, Utah Academy of Family Physicians, Utah Chapter of the American Academy of Pediatrics, the Utah Nurse Practitioners, and the University of Utah Department of Family and Preventive Medicine. I assembled a sample of 30 respondents (see Table 3) who mirrored the summer 2017 study with mental health providers (see Table 4) in terms of work location and institutional affiliation; this was intended to help facilitate comparative analysis.

I developed, tested, and followed an interview protocol composed of topics and questions aligned with the literature and with the previous study of mental health providers (see Appendix C). An analyst from the Intermountain Research Department and I completed confidential, semi-structured telephone interviews during June and early July 2018. These elicited respondents' experiences, perceptions, and practices regarding suicide assessment and management.

This study was reviewed by the Institutional Review Board (IRB) at the Harvard T.H. Chan School of Public Health and at the University of Utah; both IRBs deemed it exempt. Consistent with the procedure described in our IRB agreements, a consent letter was provided to each respondent (see Appendix D) and at the start of each interview we asked each respondent for his or her consent to record and transcribe the interview. Informed consent was obtained in all cases, and interviews were transcribed verbatim. All respondent identifiers were removed to ensure confidentiality.

Data analysis involved a systematic process of coding transcripts using Dedoose software. The codebook was developed based on literature review and on new insights gleaned from the interview transcripts. Once codes and themes were identified, I completed thematic network analysis to find and interpret patterns of salient themes (Attride-Stirling, 2001; Braun & Clark, 2006).

I assembled two groups to support and inform the qualitative study: a Project Team and a Project Advisory Group. The Project Team included a University of Utah child psychiatrist; an analyst from the Intermountain Research Department; and an Intermountain family doctor. From April through August 2018, the Project Team met bi-monthly and communicated weekly to guide all aspects of the research; the research analyst on the team also helped to conduct and code several interviews. The Project Advisory Group included ten senior clinicians and administrators involved in community health, behavioral health, pediatrics, and patient safety. The Advisory Group met three times—at the beginning, middle, and end of the project—to provide high-level advice and to connect the Project Team to other relevant internal activities and decision-makers across the healthcare system and community.

To achieve the goal of helping improve how Intermountain addresses the problem of suicide, I prepared a white paper and slide deck with the findings and recommendations, and presented and disseminated these in several internal venues: leadership meetings, email distribution lists, and staff roundtable discussions. Results were also presented to the community at a major annual mental health conference in Salt Lake City, Utah in August 2018 and at a public health conference in Provo, Utah in November 2018.

This project explored suicide prevention from the firsthand perspective of purposively sampled respondents, and findings report a *perception* of clinicians' strengths and weaknesses rather than an *assessment* of their knowledge or behavior. The purpose of this work is "... seeking answers to questions about the 'what', 'how' or 'why' of a phenomenon, rather than questions about 'how many' or 'how much'" (Green & Thorogood, 2013, p.5); thus, findings are not statistically representative and relative frequencies (i.e., the percentage of respondents who refer to a certain attitude or action) only intend to inform exploratory interpretation. Finally, out of emotional sensitivity, we did not explicitly ask providers whether patients under their care had attempted or died by suicide (though many offered this information and told specific stories about such cases), and a varied level of firsthand experience with suicidal behavior is assumed.

Table 3 - Primary Care Provider Sample, 2018

Primary Care Provider Demographics (n=30)		Number	Percent
Credential	MD / DO	24	80%
	PA / NP	6	20%
Primary Work Location	Urban	24	80%
	Rural	6	20%
Primary Affiliation	Intermountain Healthcare	11	37%
	University of Utah	8	27%
	Other	11	37%
Specialty	Family Medicine	19	63%
	Pediatrics	11	37%

Table 4 - Mental Health Provider Sample, 2017

Mental Health Provider Demographics (n=30)		Frequency	Percent
Credential	Mental Health Therapist (LCSW, CHMC, MFT, PhD/PsyD)	24	80%
	Psychiatrist (APRN, MD, DO)	6	20%
Primary Work Location	Urban	23	77%
	Rural	7	23%
Affiliation	Intermountain Healthcare	11	37%
	University of Utah	8	27%
	Other	11	37%
Primary Setting	Outpatient	22	73%
	Hospital	8	27%

5.4 Aim #2 – Methodology

For the second area of work, focused on describing the organizational and leadership dynamics at Intermountain surrounding the problem of suicide (across all ages), the approach was highly experiential. This was designed to align intentionally and organically with the "enabling change" domain of the Doctor of Public Health (DrPH) and DELTA, which emphasizes competencies in strategy, innovation, and teamwork around complex health problems. It was also an ideal fit with the intent of the Intermountain Administrative Fellowship, which seeks to provide firsthand exposure to healthcare system leaders, interdisciplinary teams, and intensive projects.

I began by reviewing the theoretical and applied literature around wicked problems and considering its high-level relevance to suicide. This was informed by case studies and examples ranging from global warming and natural disasters to urban poverty and war (Grint, 2010; Head, 2018, Head & Alford, 2015; Kreuter, DeRosa, & Howze, 2004; Roberts, 2000).

Over the course of three months, I completed an ecosystem analysis. This involved a quasi-ethnographic immersion in which I served as a participant-observer in numerous meetings, conversations, conferences, and site visits. These involved leaders and stakeholders within and across the healthcare system and community. Some of these sessions were regular meetings, others were one-time events. In some cases, I was a "fly on the wall"; in other cases, I was an active contributor. My purpose was to explore people's beliefs, actions, and relations in culturally and socially situated context while reflecting on my own reactions and involvement (Atkinson, Coffey, Delamont, Lofland, & Lofland, 2011). During most of the sessions, I took detailed field notes; I also reviewed relevant documents and journaled each day about my observations and conversations.

During the same period, I set up 18 confidential one-on-one meetings with internal stakeholders to understand their perspective on the dynamics that foster or impede problem-solving on suicide prevention—including efforts specific to both the Intermountain Healthcare delivery ecosystem and to the state of Utah overall. Their titles are not included here, to protect confidentiality, but they lead a wide array of clinical and administrative units. In addition, I set up eight meetings with leading community leaders from local government, faith, academic, and advocacy organizations in Utah to gain their insights about how Intermountain is positioned and perceived in its suicide prevention efforts. All of the internal and external conversations were loosely structured around a set of basic questions regarding the following:

- **Nature of the problem:** To what extent is there clarity and consensus on what is driving suicide? Do you think the problem will ever be completely solved? In what

ways does this problem straddle departmental, institutional, and sectoral boundaries? What is the one thing you wish we knew that we don't?

- **Interaction:** In what types of ways does this require collaboration internally—and externally? To what extent is that collaboration happening? What are some examples of friction? What is the biggest barrier to collaboration? In what ways are there conflicting agendas? What are the important power asymmetries? What are the communication gaps?

- **Solutions:** What are the solutions? Over which of these solutions do you feel a sense of ownership? Where is the most uncertainty when it comes to solutions? What does the desired future state look like? How will we know when we've succeeded? Are there any past experiences and precedents?

- **Context**: What events in your organization, community, state, and country affect this work? How? In what ways does stigma affect this work at an interpersonal, institutional, or societal level?

Analysis involved exploration of my learnings and observations from the literature review, ecosystem analysis, and one-on-one conversations. This interpretation and theorization process was particularly informed by two key frameworks in the change management literature: 1) John Kotter's eight-step process for leading change, which identifies some of the most important strategic factors for organizational transformation, and articulates how the factors build sequentially on one another in phases rather than emerge as a single event (Kotter, 2007); and 2) Ronald Heifetz's adaptive leadership paradigm, which focuses on

principles for the bottom-up *exercise of leadership,* irrespective of authoritative position, for addressing highly-complex problems (see Analytical Platform, Section 4.2) (Heifetz & Laurie, 2001; Heifetz, Linsky, & Grashow, 2009; Heifetz & Linsky, 2017).

Based on this analysis, I developed a set of core implications and recommendations to articulate the different mindset and approach that may be required at leadership, policy, and practice levels to address this problem. I presented my findings to leaders in the form of both written memos and brief in-person presentations.

III. RESULTS

This section will review the findings of the project, based on the methodology discussed in the Analytical Platform. Part I presents the results of the qualitative study (Aim 1) on how Utah primary care providers approach youth suicide. Part II shifts from a clinical to a leadership lens, presenting the results of the firsthand immersion (Aim 2) into the organizational dynamics surrounding Intermountain's response to this public health problem.

Part 1. Suicide Prevention Among Primary Care Providers

For simplicity, the research findings are organized into four categories that align with Bryan and Rudd's (2011) six proposed competencies for primary care providers (discussed previously, in the Analytical Platform, Section 3.4). They are: Foundations for Effective Clinical Care (competency #1); Screening (competency #2); Risk Assessment (competencies #3 and #4); and Planning & Managing Care (competencies #5 and #6).

One of the factors that I will discuss is how providers in primary care practices that have a mental health provider either geographically co-located or fully integrated into the primary care team compare to those with no mental health provider co-located or integrated. This categorization does not fall cleanly along urban vs. rural lines; in fact, the share of respondents with a fully-integrated or co-located mental health provider was slightly larger among rural providers in this sample (83%) compared to the urban practices (75%).

1.1 Foundations for Effective Clinical Care

Depression-Focused, Biopsychosocial Frames – Most of the 30 Utah PCPs we interviewed frame their clinical approach to suicide risk as an extension of their clinical approach to depression. However, they recognize that suicide risk arises from a complex interaction of psychological, biological/genetic, and social factors. A longitudinal relationship with patients allows PCPs to track these factors over time. A physician's assistant in Pleasant View, Utah explains:

> If I've known a kid for six or seven years and I know what sports they're doing, what activities they're involved with, or if their dad just got out of prison, I'm a lot more able to pick up on their changes [in risk].

Many providers describe suicide risk in these broad, multi-factorial terms even if they are not familiar with the formal biopsychosocial models of suicide presented in articles and textbooks. Most attribute their suicide prevention knowledge and skills to clinical training and residency.

Holistic Approaches – This broad conceptualization of suicide risk appears to flow from the holistic orientation of primary care prevention and intervention as extending across time and settings in which a young person lives, learns, and grows. Numerous PCPs emphasize their effort and ability to "try to look at the whole person" including a child's development and family dynamics. "[P]rimary care doctors are the ones who feel responsible for [the] physical, emotional and social health of the child," notes one pediatrician in Salt Lake City, Utah. Across the board, PCPs place psychosocial well-being and injury prevention within the domain of primary care.

Particularly in rural areas, PCPs feel that one of their leading strengths in suicide prevention is the high degree of trust, respect, and visibility they have in the community. Members of the community approach them outside of the clinical context for guidance, and often tip them off on issues affecting families. One family physician in Mt. Pleasant, Utah indicates that rural providers often find out about psychosocial issues or crises early-on "because we get to know grandma, grandpa, mom, dad, all their kids, where they live, see them at church, see them in the store." PCPs also feel they are in a unique position to raise (and normalize) the topic of suicide risk with patients who may otherwise be uncomfortable seeking help, due to stigma.

Stresses of Suicide Assessment and Management – PCPs frequently contrast suicide-related care with other forms of health-related prevention and intervention. PCPs find suicide assessment and management intellectually, operationally, and emotionally difficult. About 60% of PCPs describe this work as stressful or very stressful compared with other aspects of clinical practice, noting it can be associated with considerable anxiety, fear, frustration, and guilt for the clinician. As one family physician in Park City, Utah explains:

> I've definitely woken up in the middle of the night worried about a kid that I just saw that day in clinic. It is absolutely stressful. You know, if somebody committed suicide under my care I would feel like was there something else I could've done ... [If it was] cancer, it's no one's fault, you know? And suicide feels more like it could be poor care that's caused them to take that route.

A family physician in Provo, Utah echoes this, describing suicide-related assessment and

management as “emotionally draining, high-stress, worrisome” work. He explains, “It requires a lot of vigilant effort, and is never a routine kind of an issue that you can just go through the motions with.”

Impulsivity and Unpredictability – One of the main drivers of this stress is the perceived impulsivity and unpredictability of suicidal behavior. Given that the acute period in which an at-risk person moves from suicidal thoughts to an actual attempt is often only a few minutes or hours, PCPs feel they cannot predict exactly *who* is highest risk—and *when* they might attempt suicide. One physician’s assistant in Pleasant View, Utah notes that assessing and managing suicide risk in his pediatric practice typically leads to more questions than answers: “Did I do enough? Or am I going to wake up tomorrow and get a phone call saying this patient committed suicide?” He goes on to contrast a positive screening for suicide with a diagnosis of Type I diabetes:

> With a diabetic patient there are multiple specialists and treatment facilities ... in a lot of cases, the treatment is going to make that patient feel dramatically better within a matter of days. With suicidality, there’s the absence of all of those things, coupled with the impulsivity of it and the finality of it.

We did not explicitly ask whether (or how many times) PCPs were aware of a patient having attempted or died by suicide, leaving open the question of what impact such experiences might have on attitudes or approaches.

Time Demands – For many PCPs, a challenging aspect of this work is the

disproportionate commitment of time it requires. While interviews did not explicitly ask about time demands, 83% of respondents raised lack of time as a major barrier in their work preventing youth suicide. One family physician in Lehi, Utah describes suicide prevention work as "kind of rejuvenating, because so much good can happen," but immediately adds that lack of time to engage in the proper level of risk assessment and treatment is the "biggest frustration." A family physician in West Jordan, Utah states the dilemma bluntly: "I feel like I could always try to help. Except in times when I don't have the time to address it." This prominent emphasis on lack of time as a barrier is particularly interesting, given that *what* to do to make a difference (not just how to find the time to do it) emerged across the screening, assessment, and care planning/management domains as a fundamental concern.

Comparison to Mental Health Providers – Table 5 compares the perspectives and practices of PCPs to those of mental health providers as it relates to these areas. Notably, PCPs are somewhat less likely than mental health providers to find this work stressful, with slightly differing drivers of stress. Time is a major barrier and source of stress from the standpoint of PCPs, but not mental health providers. Perhaps driven by differing time barriers, coping strategies tend to be more individualistic for PCPs, and more relational for mental health providers.

Table 5 - Comparison of Primary Care and Mental Health Providers Interviews re: Foundations

	Primary Care Providers	Mental Health Providers
Source of Knowledge & Skills	Clinical training and post-graduate training	Ongoing continuing education opportunities
Dominant Framing of Suicide Risk	Interaction of psychological, biological/genetic, and social factors	Largely psychological factors, with particular focus on trauma
Greatest Strengths	Normalizing the topic; longitudinal relationship; high degree of trust and visibility in the community.	Experience (# and acuity of at-risk patients, navigating healthcare system)
% Find this Work Stressful or Very Stressful	60%	85%
Driver of Stress	Impulsivity and unpredictability of suicide; lack of time	Anxiety of losing a patient to suicide; professional liability
% Find Limited Time as a Major Barrier	83%	10%
Source of Resilience	Individual providers' sense of being able to make a difference	Supportive relationships with colleagues

1.2 Screening

An Outgrowth of Depression Screening – For PCPs, screening for suicide risk is conceived and operationalized as an extension of screening for depression. Nearly 9 out of 10 use the Patient Health Questionnaire (PHQ)-9 depression scale for this purpose. Most PCPs report that the PHQ-9 is administered only after a patient is found to have depressive symptoms using the brief PHQ-2 scale. Typically, medical assistants or nurses administer these depression screenings. Frequency varies, with about 40% of PCPs trying to screen every patient at every visit and 60% doing it primarily during well-child visits or when the reason for the visit is related to behavioral health. Those who screen every patient at every visit are much more likely to be in a practice with a fully-integrated mental health provider compared to those who do not screen every patient at every visit.

Committed But Skeptical – Overall, PCPs are committed to screening processes. They

see themselves as being at the “front lines” for youth suicide prevention, are critical of themselves for not being more consistent with suicide screening, and commend their organizations and leaders for pursuing ambitious goals toward more universal screening. However, providers in the study question the efficacy of screening due to the perceived rarity of suicide, the subjectivity of risk factors, and the weakness of the evidence base. “There's less scientific evidence encouraging prevention for [suicide] ... there isn't an algorithm,” says one family physician in Provo, Utah. Several respondents mention that screening questions do not offer diagnostic clarity in the way lab tests do. “It's all based on patient and family input,” says a family physician in Orem, Utah. “[Y]ou could absolutely lie your way through them.” Others cite the lack of frequency with which they see adolescents as an impediment to quality screening, noting that they “rarely see” youth after they receive their childhood immunizations.

Complicated Dynamics During the Visit – PCPs indicate that screening can feel out of place. They express a specific sense of awkwardness exploring suicide risk when the purpose of the appointment is not a well-child visit or explicit behavioral health issue. “When you have a kid that comes in for a cough or a cold, sometimes it's hard to take that opportunity to say, ‘Oh, hey, how is your mental health?’" notes a family physician in Blanding, Utah. Many PCPs find it difficult to navigate screening questions and processes with parents present—whether it’s getting parents to leave briefly so that a provider can speak with patients one-on-one about suicide-related issues, or getting parents to take the issue seriously once the provider has concerns. “I’ve had parents tell me straight to my face, ‘I’m not going to leave the room … I don’t think a 13-year-old boy should be questioned about things without his parents there,’”

explains a pediatrician in Salt Lake City, Utah. Several simply indicate that they don't feel "up to date" on best practices around how, when, and where to screen.

Importance of Mental Health Colleagues – Our interviews suggest that practices with a mental health provider fully integrated into the practice team are more likely to engage in suicide risk screening at every visit (58%) compared to practices with a co-located mental health provider (50%) or practices with no mental health provider present (0%).

Comparison to Mental Health Providers – Table 6 compares the perspectives and practices of PCPs to those of mental health providers in terms of screening. While PCPs' understanding of suicide-related factors is broad, the primary care screening process itself is much narrower in (depression-oriented) focus than that of mental health providers. Both groups raise criticisms of screening, and interviews indicate that PCPs may rely on a more standardized process than mental health providers.

Table 6 - Comparison of Primary Care and Mental Health Providers re: Screening

	Primary Care Providers	Mental Health Providers
Relevant Screening Factors	Almost entirely focused on depression	Wide range of risk and protective factors
Screening Tools and Process	85% using PHQ-9; rest using improvised approach to screen for depression	Only 50% using a standardized tool or process (variety, most commonly OQ/YOQ); rest using improvised approach
Frequency of Screening	Varies; 40% indicate they screen every time they see a patient	Varies, 30% indicate they ask about suicide risk every time they see a patient
Greatest Benefit of Screening	Keeps providers consistently addressing suicide risk with patients	Provides helpful reminder of the questions to ask, especially for new clinicians
Criticism of Screening	Rarity of suicide; subjectivity of risk factors; weakness of the evidence base, infrequency of adolescent visits	"One size fits all" doesn't fit the complexity of suicide; youth don't provide reliable responses; bad replacement for comprehensive clinical interview

1.3 Risk Assessment

Limited Familiarity and Standardization – "Risk assessment" or "risk formulation" is the process of soliciting deeper information about suicidal thinking and behavior and then determining a risk level (Rudd et al., 2008). In interviews, it emerged as the area where PCPs express the least knowledge, skill, and confidence. Many don't understand what risk assessment involves, how it differs from screening, and why it matters for treatment. About one-third of PCPs administer a Columbia-Suicide Severity Rating Scale to assess risk. However, most are not using a formal risk assessment process or standardized tool and instead have their own approaches for formulating risk. These individualized practices vary, but most weave together information from the screening with knowledge of family and social context.

Uncertainty Around the Clinical Relevance – Several PCPs acknowledge that even if a patient screens positive for depression or suicidal thoughts and begins treatment for their mental health issues, the patient's risk level remains fluid. The patient's safety can change rapidly after a triggering event, like an argument with a significant other. "[Suicide is] so situational, opportunistic that it's hard to really define in the moment how high risk [patients] are," observes a nurse practitioner in St. George, Utah. To this end, a number of PCPs state that they aren't sure that risk formulation is important or relevant to clinical decision-making. One family physician in Provo, Utah contrasts a young person's suicidal thinking with a leukemia patient's fever: "There's no question if you've got leukemia and you get a fever, you go to the hospital," whereas with depressed or suicidal patients the immediate clinical implications can feel unclear.

Importance of Mental Health Colleagues – PCPs with mental health providers on their team rely heavily on this individual to help guide risk assessment. As one pediatrician in Salt Lake City, Utah notes:

> If anything is positive around this screening questionnaire or my questions [about suicidality], then I'll usually have the social worker come in and talk more. And they'll do more of a risk assessment [around] suicide protective factors and risks or and like that sort of thing … we work together as a team.

A pediatrician in Bountiful, Utah who is getting a mental health provider integrated into her practice emphasizes how much of an asset this person will be, particularly in terms of the quality of risk assessment. "I'll feel like [the patient is] safer because somebody who does this more will be assessing it rather than just me," she says.

Comparison to Mental Health Providers – Table 7 compares the perspectives and practices of PCPs to those of mental health providers as it relates to risk assessment. Both groups struggle with risk assessment; unlike screening, mental health providers are the ones to use more standardized tools in this work. Interestingly, mental health providers are also more critical than PCPs of standardizing risk assessment, and also tend to put more emphasis on intuition and judgement.

Table 7 - Comparison of Primary Care and Mental Health Providers re: Risk Assessment

	Primary Care Providers	Mental Health Providers
General Level of Familiarity with What Standardized Risk Assessment Is – and Entails	Low	Low
% Using CSSRS or Other Standardized RA Process/Tool on Regular Basis	33%	58%
Most Important Factors for Determining Risk Level	Information from the depression screening + knowledge of family and social context	Whether child can be safe at home; ideation, history, past attempts; whether resources/services are available
Level of Opposition to Standardizing Risk Assessment	Low	High
Level of Importance Placed on 'Gut Feeling' for Assessing Risk	Low	High

1.4 Planning and Managing Care

Challenges in Care Connections and Coordination – Upon assessing a pediatric patient as having heightened suicide risk, a PCP may start the patient on mental health medications. Beyond that, PCPs indicate, the process is very uncertain. It can be extremely difficult to connect a patient to additional services, follow up on his or her status, or coordinate care across multiple providers. Three-quarters of PCPs cite challenges 1) finding available outpatient mental health appointments or inpatient beds for patients, and 2) helping families of at-risk patients overcome financial and insurance barriers. Access to care is particularly problematic for low-income and immigrant families. A family physician in West Valley, Utah describes the predicament: "I don't know where to send people [on] Medicaid. Or if they don't have insurance I don't know where to send people. I just have no clue."

Importance of Mental Health Colleagues – Interviews reveal that the presence of a mental health provider on the primary care team is essential for matching the results of

screening and assessment with appropriate clinical response. Respondents indicate that this colleague can develop a treatment modality and safety plan[3], provide counseling to patients/families, and make prescribing recommendations. For example, our interviews found that in practices with a mental health provider fully integrated into the practice team, 43% have a formalized safety planning process, compared to 11% in practices with a co-located mental health provider and 0% with no mental health provider present. In addition, about 70% of PCPs in fully integrated and co-located practices cite major access barriers for patients compared to 100% in practices with no MH provider present. Respondents indicate that this mental health provider, often in concert with a care manager, plays a crucial role in arranging specialized mental health services, clarifying health insurance processes, navigating family dynamics, and arranging reliable transportation. One family physician in Richfield, Utah explains:

> [Our psychologist] has been a huge asset to our clinic … he's almost always willing to see that patient who I am more concerned about. Same day appointment or, you know, right then or within an hour or two … [H]e's made me feel a lot more confident … Having his presence [means] we resolve the issue without sending the [suicidal] patient to the emergency department most of the time.

Other Members of the Team – Critical roles on primary care teams include not only physicians, nurses, and mental health providers, but also medical assistants (who complete

[3] A safety plan is a document developed collaboratively with a patient (and/or patient's family) that generally outlines the patients' individual warning signs of an emerging crisis, internal coping skills, contact numbers of trusted friends and emergency resources, and plans for reducing risks in the home environment (e.g., removing guns and certain medications).

most of the screening), care managers (who provide coordination of services), and patient service representatives (who answer phones and make appointments). The previously quoted family physician in Richfield, Utah tells a story of a patient calling the clinic and the patient service representative sensing something urgent in the patient's voice. She got the patient an appointment the same day. The patient was in suicidal crisis but was able to be stabilized. "It's a simple one-time story and it made a big difference," the physician says. "It's part of our culture now: if we sense any type of panic in anybody's voice, we get them in." Whether it's medical assistants notifying the provider when a risk assessment is warranted, or front desk staff identifying patients who may need to be seen urgently, team-based approaches to suicide prevention are not only about fulfilling individual roles, but about modifying the culture of the wider care context.

Medium-Risk Patients – Several PCPs note that the greatest challenges and stresses in clinical response are with patients who are "medium risk": They aren't in active suicidal crisis. But their level of stability is uncertain and referrals are hard to establish. Some PCPs send these medium-risk patients to the emergency room in hopes of at least getting them to a safe place for a few hours. In these types of scenarios, questions of *where* to send patients are exacerbated by fundamental questions of *what* treatment to offer: "We have limited access, and then what we have access to has limited efficacy," says a family physician in Lehi, Utah. "It often feels like our hands are a little tied."

Safety Planning – In terms of making the home environment more secure, most PCPs

engage in some form of safety planning with at-risk patients that touches on measures to reduce access to lethal means, such as firearms and certain medications. However, only about one in four use a standardized process and none follow up to see if any of the safety plan recommendations are implemented. About 85% of PCPs bring up the topic of access to firearms with higher risk patients. Of these, only about half explicitly identify whether the family has firearms and advise the family to lock and/or store guns more securely; the rest talk about access to guns as increasing risk in a general sense. The time constraints of the interviews precluded deeper discussion about how PCPs feel about these gun-related conversations; in the future, it would be valuable to probe their assumptions, reflections, questions, level of comfort, and perceived efficacy.

Comparison to Mental Health Providers – Table 8 compares the perspectives and practices of PCPs to those of mental health providers as it relates to planning and managing care. Here, complementary roles and perspectives emerge, with PCPs focusing on referrals to mental health, and mental health providers in turn engaging in intensive treatment. PCPs and mental health providers cite access barriers and care coordination as key challenges, and there are similar standardization trends and family-oriented goals across the two groups. PCPs see stigma as a less prominent barrier to care than mental health providers, a view which may reflect the reality that less stigma is attached seeking care in primary care versus mental healthcare settings.

Table 8 - Comparison of Primary Care and Mental Health Providers re: Planning & Managing Care

	Primary Care Providers	Mental Health Providers
Focus of Care Planning & Management	Managing depression; referrals for specialized mental health services, safety planning	Treating suicidality and underlying MH condition; inpatient referrals; safety planning
% Using Standardized Safety Planning Tools / Process	25%	25%
Greatest Challenges	Access barriers (insurance/cost, beds, appointments); care coordination	Same as PCPs
Greatest Strength	Having a MH provider on the team	Knowledge of and connections to local resources
Level of Emphasis Placed on Engaging Family in Care	High	High
Most Difficult Group for Planning/Managing Care	Medium-Risk Patients	Medium-Risk Patients
Level of Barrier Stigma Represents	Low	High

1.5 Summary of Key Findings – Clinical

My first hypothesis—that most PCPs will not have a standardized process in place for screening, assessment, and risk formulation—is partly supported by this research. Almost all PCPs are using the PHQ-9 as a suicide risk screening tool; however, this screening is administered only to patients who first "test positive" for depression, and the respondents (and literature) raise many empirical problems with this approach. In terms of risk assessment, my predictions proved accurate that few PCPs have a formalized risk assessment or risk formulation process; respondents also raise concerns about the clinical relevance of assigning a "low," "medium," or "high" designation relative to suicide risk.

At a treatment and management level, the research supports my second hypothesis: that PCPs perceive access to and coordination of mental health care as a major barrier. Specific barriers include availability of outpatient mental health appointments and inpatient psychiatric beds, as well as financial and insurance barriers. Other related barriers include where to send medium-risk patients, how to coordinate care between difference providers and sites of

service, and how to manage conflicting preferences between provider and parent. A common thread through the first two hypotheses is the importance of having a mental health provider on the primary care team, as both assessment and treatment are perceived as especially challenging processes for practices that lack such a co-located or integrated clinician.

My final hypothesis—that, compared to mental health providers, PCPs will have a broader conceptualization of prevention and more holistic understanding of the way risk and protective factors interact across multiple levels—is partly supported by the research. Whereas mental health providers primarily frame suicide risk in psychological terms, PCPs tend to emphasize the interaction of psychological, biological/genetic, and social factors. However, lack of time, reimbursement, staffing, and "best practice" shifts PCPs' day-to-day suicide risk management approach away from holistic factors and toward a dominant depression screening and mental health treatment modality.

Part 2. Suicide Prevention Among Healthcare Leaders

2.1 Strategic Vision

Zero Suicide – Intermountain has engaged in suicide prevention work in a variety of different ways over the past five years, ranging from charitable investments in school-based programs and participation in community coalitions to training providers in risk assessment and establishing treatment protocols. This work has concentrated on youth, but recently expanded to include adult populations. During the past year, most of Intermountain's efforts have focused on Zero Suicide—a system-wide commitment to suicide prevention for patients under a healthcare system's care, anchored in set of strategies and tools (SPRC, n.d.). This aspirational

programmatic and continuous improvement model has received tremendous attention in recent years following endorsements by major national leaders and groups (Mokkenstorm et al., 2017; Hogan & Grumet, 2016).

Zero Suicide is structured around a framework of seven best practices:

1. Lead: ensure leadership is engaged in promoting a culture committed to suicide prevention;
2. Train: develop a workforce that has the knowledge, attitudes, and confidence to prevent suicide;
3. Identify: screen and assess every patient for suicide risk in a standardized manner;
4. Engage: establish a suicide care management plan for all at-risk patients, including safety planning and reduction of access to lethal means;
5. Treat: address suicidal thoughts and behaviors in a direct and evidence-based way;
6. Transition: provide a smooth and continuous bridge between healthcare sites/services; and
7. Improve: take a data-driven quality improvement approach to improve outcomes.

Each of the seven elements has specific strategies and tactics connected to it. For example, Identify (#3) includes the following:

- Establish policies and procedures for conducting screening and risk assessment at intake for all patients;
- Create policies and procedures to guide clinical decision-making post-screening/assessment and to institute standardized processes for all staff;
- Train staff in screening; and

- Re-evaluate and document findings at each patient visit.

Zero Suicide is headquartered at the non-profit Education Development Center's Suicide Prevention Resource Center (SPRC), and is supported by the Substance Abuse and Mental Health Services Administration (SAMHSA) (SPRC, n.d.). The Education Development Center offers interested healthcare leaders an array of Zero Suicide self-assessments, work plans, articles, and videos at no cost through its online library; invites them to join workshops and webinars; and contracts to provide technical assistance (Hogan & Grumet, 2016; SPRC.org, n.d.). The founders of Zero Suicide indicate that over 200 healthcare organizations are implementing Zero Suicide, though the full extent and impacts of implementation are not known (J. Grumet, personal communication, July 9, 2018). In FY2017, SAMHSA's budget included $26 million in funding to support implementation of this model (HHS, 2016).

Zero Suicide was informed by the Perfect Depression Care initiative of Henry Ford Health System, which alleges to have achieved reductions of 80% in the suicide rate among patients in its health maintenance organization receiving behavioral health services because of the intervention (Ahmedani, Coffey, & Coffey, 2013). However, Zero Suicide has not yet been evaluated in a comprehensive manner (J. Coffey, M. Miller, & D. Azrael, personal communication, July 20, 2018). There is also no empirical evidence that it saves lives. Based on recent systematic analyses reviewing all major suicide prevention studies from 1966 to 2015, the only component of Zero Suicide backed by a consistently high level of evidence is lethal means restriction. Certain psychological treatments in the model (including cognitive behavioral therapy and dialectical behavioral therapy) have medium levels of evidence, and the remaining Zero Suicide elements have weak or no evidence (Mann et al., 2005; Zalsman et al., 2016).

Rigorous evaluation of Zero Suicide is critical, as an increasing chorus of experts raise a number of methodological issues with the data underlying the model, indicating the effects of Perfect Depression Care are likely overstated (Baker, Nicholas, Shand, Green, & Christensen, 2017; Coyne, 2016; J. Coffey, M. Miller, & D. Azrael, personal communication, July 20, 2018).[4]

Getting Utah's healthcare institutions to adopt the principles and strategies of Zero Suicide is a major priority among state advocates and government officials, and is the top goal in the Utah Suicide Prevention Coalition's 2017-2021 plan (UT Department of Health, 2017). Some community stakeholders acknowledge that Zero Suicide is a relatively untested approach, but it represents something important at a time when past solutions don't seem to be working. "I have to believe in Zero Suicide," said one community leader. "If I stop believing in that, everything falls apart." An Intermountain leader emphasized the same: "I'm willing to buy in [to Zero Suicide]. A lot of smart people have spent a lot of time on it and have a lot of experience with it. I'm happy to jump on board."

Zero Suicide was the rationale for convening Intermountain's senior leaders to focus on suicide prevention in a system-wide manner, and the Zero Suicide tools and templates quickly became the centerpieces of their monthly meetings. Despite widespread enthusiasm for this model, Intermountain leaders are in the process of determining what the desired end state looks like, and whether Zero Suicide represents the entirety of the healthcare system's approach, one part of a larger whole, or a menu of potential approaches. There is a sense

[4] The most glaring issue is that Henry Ford Health System didn't fully implement the Perfect Depression Care initiative until 2001-2002 but most of the "80% decrease" they report is from 1999-2000, so the drop really can't be attributed this to the intervention. In addition, there are validity issues, including indications of undercounting suicide deaths due to manner in which they were recording and verifying deaths, lack of controls for confounding factors or selective enrollment/disenrollment, and fluctuation in the suicide rate throughout the 10-year period of analysis beyond what would be empirically sound.

internally that while the aspiration of "zero" is powerful, the strategic vision for Intermountain's adoption is still in formation—and this vision will help determine whether the healthcare system will operationalize any, many, or all of components of the Zero Suicide model.

Identifying "What" and "Why" – One of the aspects of Zero Suicide that is most appealing *and* frustrating to internal leaders is the fact that it is available in a relatively off-the-shelf way: best practices, self-assessments, and work plan templates are highly-organized and accessible. Having such an existing package is helpful because it concretizes the work. However, Henry Ford Health System implemented its approach among patients in its health maintenance organization receiving behavioral health services; without a clear sense how it translates to a large, integrated system, the massive spreadsheets of steps and metrics associated with the model are met with fatigue and overwhelm at Intermountain. "We have a checkbox of 64 things to become a Zero Suicide organization, but there certainly isn't a sense that 'these are the three top priorities,'" one leader acknowledged. When it comes to work plan steps like "establish workflows of screening and identification processes" or "assess fidelity to treatment outcomes," Intermountain stakeholders are unsure how to close the gap between macro aspiration and micro tasks; they crave a more cogent sense of what success entails, how the journey to that place will be sequenced, and how Intermountain will measure progress toward the desired end. They acknowledge there does not seem to be any past roadmap that can be applied to this issue.

In the absence of a clear strategy around suicide prevention, the work has come to be

framed through a behavioral health lens that is most familiar to healthcare leaders, but that many admit does not capture the full set of system-wide issues and interests at hand. Historically, Intermountain's suicide prevention conversations and efforts have been rooted in a belief that unidentified and unmanaged mental illness is to blame for Utah's high suicide rate; therefore, the key to preventing suicide is improved screening and treatment for mental health issues. This has largely been driven by the portfolios and priorities of the leaders at the helm who conceptualize of the problem as driven by failure to screen and diagnose mental health conditions. This logic makes some sense at an individual patient level, since mental illness is a major contributing factor for suicide. However, available literature suggests that screening and treatment will not make a meaningful dent in the suicide rate at a population level because of the lack of effective pharmacological and psychological interventions, the rarity of the outcome, and the high false positive and false negative rates (Silverman & Berman, 2014; O'Connor et al., 2013; Mann et al., 2005; Zalsman et al., 2016).

Intermountain's suicide prevention-related charitable investments, clinical protocols, statewide advocacy, and provider training have occurred in different forms over the past several years, most recently coalescing around Zero Suicide. However, the "what" of activities has not yet been linked to the "why" of impact in a coherent or measurable way. Absent a clear strategy and logic model, "a transformation effort can easily dissolve into a list of confusing and incompatible projects that can take the organization in the wrong direction or nowhere at all," writes business and management expert John Kotter (2007, p.5). Intermountain is just beginning to embark upon the process that experts recommend of candidly debating and discussing the strategy until it can be described succinctly—then harnessing every possible

channel to communicate it across the team and organization (Sirkin, Kennan, & Jackson, 2005; Ashkenas & Khan, 2014).

2.2 Accountability and Concrete Action

Walking the Walk – Within and outside Intermountain, stakeholders believe that Zero Suicide represents a promising approach and positive direction. However, many express concerns that the healthcare system has made numerous ceremonial announcements around Zero Suicide over the past year, yet there has been limited progress toward implementation. Community stakeholders hope Intermountain will aspire to suicide prevention with the same demonstrated rigor and measured goal-setting as the organization has made around preventing opioid misuse. (In 2017, the healthcare system committed to reducing its opioid prescribing by 40% by the end of 2018; it is on track to nearly attain this goal.)

Community Expectations and Voices – Community stakeholders acknowledge they hold Intermountain to a high standard in its Zero Suicide implementation because of the organization's resources, expertise, and values. Several external stakeholders note that this is a natural fit for a mission-driven, integrated healthcare system renowned for continuous improvement and integrated mental healthcare. They also indicate that Intermountain's failure would be a devastating indicator of other healthcare systems' inabilities to address this problem. In essence: if Intermountain can't do it, what system can? Beyond their desire for concrete action, community stakeholders recommend greater transparency in the planning process, including efforts to listen to patients with lived experience around suicide. Internal

stakeholders recognize the importance—and challenge—of inclusivity. “In healthcare, we have trouble acknowledging we aren’t always the expert,” said one Intermountain leader. “It’s not intentional or explicit but I think there’s resistance to [having external stakeholders] tell us how to do our job.” Increasingly, the organization is making a conscious effort to include the voices of patients in their community health, patient safety, and quality improvement efforts.

Promoting Accountability – Establishing and communicating a sense of accountability is critical for transformational initiatives to bear fruit (Kotter, 2007). Intermountain leaders acknowledge that they have a long way to go in building this accountability. Not all frontline clinicians in hospitals and clinics feel responsible for suicides that occur among patients under their care, or see suicide as preventable. “We go through the motions of checking the boxes to screen, but we don’t take accountability when [a suicide] happens,” said one leader. Several described recent clinical cases that illustrate how suicide prevention is perceived as being outside the medical mission of healthcare. Leaders report that stigma surrounding suicide, and bias toward patients who are at heightened risk, is an ongoing challenge that further erodes accountability.

How does an institution like Intermountain establish a culture whereby caregivers feel they have a duty and role in preventing suicide? Many internal stakeholders feel that the best way is by situating Zero Suicide under Zero Harm, a set of error prevention techniques that Intermountain adopted in 2015. Zero Harm has been highly successful at changing beliefs around error prevention, and formalizing identification, reporting, and analysis of events. Intermountain has received attention and accolades for this work at healthcare conferences

and in industry newsletters (Mahoney, 2016; Crowell & Pollard, 2016). However, a system-wide evaluation of Zero Harm's role in preventing serious safety events is not yet available, and internal stakeholders indicate that suicide prevention must be deeply rooted in Intermountain's culture and workflows, not just incorporated into the Zero Harm framework.

Suicide is a terrible outcome that every healthcare professional would like to avert, but few clinicians are convinced that there is a role for them in that work and many are anxious about the expectations that will accompany an initiative like Zero Suicide. A common pitfall at early stages of transformation, writes Kotter (2007) is "[u]nderestimating the difficulty of driving people from their comfort zones" (p.1). When managing complex change, organizations require frank conversations to convey and internalize why the stakes are so high, the status quo is unacceptable, and usual ways of doing things are inadequate (Kotter, 2007; Heifetz et al., 2009).

2.3 Teamwork

Identifying the Leader(s) – While Zero Suicide offers a helpful strategic framework, internal leaders harbor pessimism that this strategy will be fully implemented. They worry that momentum and interest may fizzle, as can happen with new initiatives. Underlying this pessimism is a high level of uncertainty about the person or unit that is ultimately responsible for driving the work forward. Currently, three separate departments share executive responsibility for the work: Behavioral Health Clinical Programs, which oversees the personnel and protocols related to mental and behavioral healthcare across delivery settings; Community Health, which oversees partnerships and initiatives to address the needs of uninsured and

underserved; and the Office of Patient Experience, which is focused on quality improvement, provider engagement, patient experience, and safety. Most meetings begin with a light-hearted questioning of who is "in charge" of the meeting—a microcosm of leadership questions around the initiative as a whole. One leader explained that the conversations at meetings are always interesting, but each meeting is attended by different attendees from each of the three units and it is rarely clear afterward "who is doing what and how we're moving forward."

Complex Work at a Complex Time – Part of the internal challenge relates to the general complexity and confusion of reorganization: the entire skeleton of the organization is in the process of being rebuilt, including major changes to the goals and staffing of all three of the units co-leading Zero Suicide. Many internal stakeholders express uncertainty about how their own roles and responsibilities have changed (or will change)—not to mention how their colleagues are impacted. With leaders focused on the demands of restructuring, virtually all work between meetings is completed by several project management professionals who are new to suicide prevention, and are not well-positioned to oversee the complex, cross-system tasks at hand. This illustrates a common pitfall in the management literature: delegating oversight to someone who does not have adequate power, expertise, and institutional reach to mobilize change (Kotter, 2007; Sirkin et al., 2005; Tuckman & Jensen, 1977).

Hopes for the Team and Quarterback – While internal and external stakeholders believe that suicide prevention activities should cross Intermountain's departments, functions, and locations, there remains a strong sense that it is critical to clarify an accountable oversight

structure and project lead roles. There is also a wish, internally and externally, to align the healthcare system's work and leadership to the efforts of the various local coalitions and aspirations of the statewide five-year Suicide Prevention Plan. Conversations revealed a collective and strong desire for 1) a single, senior person who can drive the work, coordinating across systems both within and outside Intermountain; 2) the creation of a defined and strong team composed of members who understand their overarching charge; and 3) linkage of healthcare system players and goals to community stakeholders and initiatives. In essence, they call for the ingredients of a successful team outlined by Hackman (2002): bounded and stable membership, adequate power, shared commitment, and enabling structures—which are derived in part from the executive sponsor championing the work (Sirkin et al., 2005).

2.4 Context

Demographic Change – Utah is known for being a conservative, white, Mormon state; however, it is changing dramatically: it is experiencing some of the fastest population growth in the U.S., the minority share (Hispanic or non-white population) has increased exponentially over the past several decades; and the percentage of Utahns who identify as belonging to the Church of Jesus Christ of Latter-day Saints ("LDS Church") is declining (Perlich, 2018; Gehrke, 2018). Gun advocates reflect on rapidly changing attitudes toward guns, aware of the gap between the proportion of rural population that own firearms (approximately 70%) compared to the proportion of the fast-growing urban population that does (approximately 35%) (Barber et al., 2018). As Utah becomes a more ethnically, culturally, and politically diverse state, the issue of suicide is set against a backdrop of debate around the role of major institutions in

people's lives. These include issues of gun regulation, Medicaid expansion, and policies of the LDS Church toward the lesbian, gay, bisexual or transgender community. These sensitive and salient issues are not only woven into media and public discourse around suicide, but are often sought out as relevant factors in Utah's high suicide rate (Wood, 2018a; Wood, 2018b; Hale, 2018; Johnson, 2018).

Institutional Change – Caring for approximately 50% of Utahns annually and employing 37,000 people, Intermountain reflects and affects the changing landscape of its home state. It also adds institutional change to the myriad social, cultural, and political metamorphoses at hand in Utah. The Executive Leadership Team, led by a relatively new CEO, Dr. Marc Harrison—who came from a senior leadership position at Cleveland Clinic—has called for top-to-bottom restructuring. This involves moving from a highly regionalized to a highly centralized model of clinical, administrative, and financial oversight. In addition to a complete reconfiguration of Intermountain's leadership and operating model away from a "confederation" of hospitals and regions and into a "single enterprise," the restructuring has affected hundreds of jobs. The high-level rationale for restructuring is to 1) adapt to a healthcare landscape moving away from fee-for-service and toward value and consumer needs, 2) deliver care in a more consistently high-quality manner, and 3) improve access and affordability of care (Intermountain, 2018). However, there are widespread concerns that the "why" of restructuring is not clear and fears that the core mission of the healthcare system is changing.

In some respects, institutional change appears to present opportunities for addressing a major public health issue like suicide, as leadership highlights the opportunity to re-orient

toward patient safety and community health. However, most internal stakeholders feel this is a difficult time for a system-wide initiative, as people at all levels are stretched thin by the actual work and emotional toll of reorganization. Some caregivers are anxious that they may be outsourced, forced to join new departments, or penalized for failing to meet new performance standards.

Challenges to Collaboration – Several people indicated that Intermountain, like Utah, has relatively paternalistic and non-confrontational social norms. “You're supposed to buy-in. And once you are given your marching orders you do it,” said one internal leader, who observed that restructuring has caused people to feel overwhelmed yet unwilling to take a stand. The leader added, “With initiative fatigue comes more passive aggressive behavior. People won’t push back. They just won’t do the work.” Some feel that the institution needs to bolster the resilience and reduce the distress of its employees *before* it tries to do so among its patients. “I really care deeply about [suicide],” said one leader. “I care, but I don't have a way to operationalize that caring to be impactful. We’re in a position of learned helplessness right now.”

Intermountain’s size and complexity contributes to a perception that siloes are a barrier to suicide prevention efforts both internally and externally. One example is a sense of separate approaches in pediatric vs. adult populations, partly due to the fact that behavioral healthcare at Intermountain’s flagship children’s hospital has tended to operate with a high degree of independence from the rest of the healthcare system. Many stakeholders also express a desire for more collaboration between Intermountain and the University of Utah, an academic

healthcare system which is embarking on its own ambitious suicide prevention initiatives and which oversees state's crisis services; while the two healthcare systems work well together in numerous ways (for example, some Intermountain clinicians are University of Utah employees, and some Intermountain employees teach at the University of Utah), their positions as market competitors presents some challenges to collaboration.

"Culture eats strategy for breakfast," write Groysberg et al. (2018, p.1). Suicide prevention in Utah and at Intermountain is embedded in changing landscapes, contested values, community identities, and commercial interests. These situational factors profoundly affect how stakeholders think, act, and relate to one another (Groysberg, Lee, Price, & Cheng, 2018; Head, 2018).

2.5 Summary of Key Findings – Administrative

These results support my initial hypothesis: collaboration on suicide at Intermountain has been difficult to establish and sustain because of unclear goals and differing priorities. While the healthcare system has coalesced around a commitment to Zero Suicide, there is neither a clear strategy in place to articulate the "what" and "why" of this commitment, nor an empowered team to determine how to execute on the model. The intensity and anxiety of institutional restructuring reduces some internal stakeholders' willingness and bandwidth to engage, magnifying the challenges of collective action across the three departments that share executive responsibility for the work.

My second hypothesis—that leadership on suicide prevention at Intermountain has followed a "tame" mindset, focusing on managerial, top-down approaches—is largely

supported by this analysis. Most of the work on suicide prevention at Intermountain consists of isolated announcements and initiatives from people in positions of formal authority, with little input from frontline caregivers, community-based groups, or peer healthcare systems. In its approach to suicide prevention, Intermountain tends to prefer existing clinical logic (e.g., increasing behavioral health diagnosis and treatment) over public health models (e.g., reducing access to firearms). Among internal leaders, there is a sense of cautiousness toward fully inclusive and transparent collaboration, including involvement in the changing political, social, and cultural context surrounding this public health problem.

IV. DISCUSSION

Whether examined from a public health, primary care, or healthcare system perspective, suicide in Utah has many of the characteristics of a wicked problem. This section will discuss those attributes by interpreting the research finding through my four-part summary of Rittel and Webber's model (proposed in the Analytical Platform, Section 4.1). It will then consider the implications of such characteristics for future suicide prevention efforts.

1. SUICIDE AS A WICKED PROBLEM

1.1 Level of Uncertainty About the Problem

Unlike tame problems that follow a discrete causal chain, the etiology and nature of a wicked problem defy easy summary or consensus. Causes and effects are hard to identify, and there are often gaps in the availability and application of knowledge. Different groups may identify or prioritize entirely different drivers of the problem. There is not always an explicit "future state" and thus it is not always clear if or when a solution to a wicked problem has been found; the pursuit of solutions is always ongoing (Rittel & Webber, 1973; Dentoni et al., 2018).

As a public health problem, suicide embodies many of these uncertainties. While most experts agree that combination of individual, relationship, community, and societal factors contribute to suicide risk, it is not clear which of these factors (or combinations thereof) is driving the increased rate of suicide in the U.S. over the past decade. Although many common prevention and intervention approaches have demonstrated impact on risk and protective factors for suicide, most have not been associated with a decrease in suicide attempts or

deaths, increasing the difficulty of defining what a path to success look like (Mann et al., 2005; Zalsman et al., 2016; CDC, 2017b).

My qualitative interviews suggested that Utah PCPs recognize that the deep and tangled biopsychosocial roots of suicide defy simplistic definitions. While they are being pushed to do more screening and assessment, PCPs question whether identification is accurate or can make a difference in preventing deaths. The evidence base cannot assuage their skepticism: there is limited evidence that screening can predict or prevent suicidal behavior. This is because suicide is a very rare event and suicide risk is fluid; thus, false-positives are extremely high, and the administration of any single screening is unlikely to capture the brief and ever-changing levels of acute vulnerability. In addition, most of the current mental health treatments available have not shown any evidence of reducing suicide deaths (Silverman & Berman, 2014; Simon et al., 2001; O'Connor et al., 2013; Mann et al., 2005; Zalsman et al., 2016).

At Intermountain, I observed leaders expressing a parallel sense of uncertainty about the drivers of the problem. For the past several years, the healthcare system's suicide prevention approach has developed under the purview of behavioral health, and focused on lack of diagnosis and treatment as the core drivers of the problem. Zero Suicide has reinforced this conceptualization through its dominant focus on screening and assessment. Such causal thinking sounds logical: if mental illness is a major contributing factor for suicide, find and fix the mental illness and you'll solve the suicide problem. The flaw in this logic is partly the aforementioned limitations of screening; in addition, incidence of mental illness is not tightly tied to incidence of suicide—meaning that the variation in suicide rates between Utah and other states is not due to variation in mental illness (Miller et al., 2012). This doesn't mean that

addressing mental health isn't important for preventing suicide; if a healthcare system like Intermountain could *effectively* address all mental health issues among its patient population, it would see a drop in the suicide rate. Unfortunately, most of the current mental health treatments available have not proven effective at reducing suicide deaths (Mann et al., 2005; Zalsman et al., 2016). Instead, addressing factors that have a strong correlation with suicide *and* are more prevalent in Utah than other places—namely, access to guns—could reduce suicide mortality (Miller et al., 2012). The notion of firearms being a critical driver of Utah's high suicide rate is a new concept for most clinicians and healthcare system leaders.

1.2 Level of Interconnectedness with Other Problems

Whereas tame problems can be examined in relative isolation, wicked problems are tightly entangled with other problems. These problems cut across departments, organizations, jurisdictions, and groups that often have competing values (Rittel & Webber, 1973; Weber and Khademian, 2008; Head, 2018).

Whether in Utah or any other context, suicide is a problem that is intertwined with many other individual, social, relationship, and societal problems. These commonly include mental illness and substance use, as well as exposure to abuse, neglect, childhood adversity, and lethal means (Franklin et al., 2017). Because of the multiple and overlapping nature of risk factors, there are many strategies and institutions that touch this issue both directly and indirectly.

In clinical practice, my interviews suggested, Utah PCPs recognize the complexity and fluidity of suicide risk. Pursuant to their field and training, PCPs conceptualize of a patient's risk

in a broad way—as the interaction of psychological, biological/genetic, and social factors that shift over time and circumstances. Many PCPs reflected on their own role in suicide prevention in similarly broad terms: not just with the patient, but with the family; not just in the examining room, but in the community; not just in the domain of physical health, but also psychosocial well-being. Despite this holistic conceptualization, the demands of time, reimbursement, staffing, and standardization appear to narrow their actual approach. Moreover, even if they had time and resources, "best practice" often remains elusive: depression becomes the main risk factor and mental health treatment the main intervention. Unequipped with the capacity and tools for deeper assessment or upstream intervention, they worry about the varied needs of the patient and family going unmet.

At Intermountain, institutional circumstances impact collaborative response. As Intermountain rebuilds its entire structure in pursuit of long-term resilience, some internal stakeholders feel it is the ideal time to rally around the biggest health challenges of the day; others feel the timing could not be less opportune, and the odds are low of successfully uniting multiple units and levels of the organization around a common strategy. At a community level, Intermountain serves on a number of statewide groups dedicated to suicide prevention, including the Utah Suicide Prevention Coalition Executive Committee and the Governor's Task Force on Youth Suicide Prevention; however, neither of these two prominent statewide groups has a measurable strategy or implementation plan, making it more difficult for Intermountain to direct its resources and actions towards collective, community-based endeavors.

1.3 Level of Social and Political Conflict

Unlike tame problems, where the problem can be crisply explained and a common direction established, wicked problems involve many different groups of people with different conceptualizations of the phenomenon and the priorities for change. There is a high potential for political and social conflict (Rittel & Webber, 1973; Weber and Khademian, 2008; Head, 2018).

In Utah, different groups have different judgments on the validity or importance of a given solution to this problem (Caine et al., 2013). While numerous groups (e.g., healthcare, faith, advocacy, academia, policy) participate in existing suicide prevention coalitions, each member group largely pursues its own goals and actions. The lack of common agenda and mutually reinforcing plan results in the groups largely operating in isolation—and sometimes in apparent *competition* for resources and visibility.

Among primary care providers, one of the key tensions is between different sites of service. While they recognize that hospitals are frustrated by the number of non-acute patients with behavioral health needs flooding emergency departments, PCPs struggle to know where else to send medium-risk patients. Broader coordination of care with mental health and other providers is a constant challenge. PCPs also struggle with parents who sometimes will not permit the provider to discuss suicide risk privately with their children. This study finds that primary care practices with mental health providers on the team may be better equipped to address these challenging scenarios by adding general capacity, knowledge of local resources, and skills in navigating family dynamics.

Intermountain's roots run deep, reaching many people and problems. With facilities spread across both rural and urban areas and longstanding linkages across public and non-profit sectors, Intermountain has a major presence in Utah. And as the state's largest private employer and provider of healthcare services, it has an intimate connection to people's lives and a high level of social and political influence in the state. However, the organization is careful when it comes to wading into the political, social, and cultural controversies that have been part of recent public discourse about suicide; leaders are also wary of fulfilling the "800-pound gorilla" stereotype in community contexts, and intentionally work to avoid heavy-handedness with multi-stakeholder groups and coalitions. Market competition can also impede collaboration, making it difficult for large healthcare institutions like Intermountain and the University of Utah to coordinate services, align outreach, and share information in ways that could close gaps for at-risk patients.

1.4 Level of Uncertainty About Solutions

In contrast to tame problems, in which potential plans of action can be outlined and options compared, it is not possible to bound the number of solutions to wicked problems in an exhaustive manner. Past experience and precedents will often have limited relevance and there may be very few "lessons learned" to apply to wicked problems. Different groups will have different appetites for a given solution. Once strategies are implemented, there may be little tolerance for failure, unintended consequences, or changes of course (Rittel & Webber, 1973).

In general, effective solutions to the problem of suicide are particularly difficult to pinpoint because of the rarity of the event, the lack of evidence surrounding interventions, and

the array of contributing factors (Silverman & Berman, 2014). Although several national plans exist to address suicide, little is known about the efficacy of many of the highlighted strategies—most of which are multifaceted in design, making it more difficult to discern what elements contribute to what (if any) effects (Mann et al., 2005).

In a primary care setting, if screening and assessment do catch someone during a high-risk period, what care and services should that patient receive? Interviews with Utah clinicians suggested that triage is rarely clear; additionally, PCPs and mental health providers emphasized the challenges of helping patients overcome multiple barriers to care or receive services—like counseling on access to lethal means—that could reduce risk. A chicken-and-egg phenomenon also plays out, whereby the formulation of risk often *depends* on the availability of services. Confusion around best (and scope of) practice is why PCPs report sending non-acute patients to the emergency department—*not* because the patients are in active suicidal crisis, but because the PCPs simply do not know what else to do. Interviews indicated that uncertainty about solutions may be intensified for practices that do not have any mental health provider integrated into the primary care team.

Likewise, healthcare system leaders at Intermountain are drawn to Zero Suicide and whole-heartedly convey its aspirational messages, but concretely articulating or operationalizing any solutions remain elusive. More work remains to outline the goals and vision, the changes that need to go into effect to achieve that desired end, and the parts that are highest priority. Part of the challenge is that the healthcare system has embarked on different efforts at preventing and addressing suicide in recent years that have operated in relative silos. These components are yet to be thoroughly inventoried, evaluated, or woven

together into a single framework. In the absence of this clarity, "screen and treat" for depression has become the comfortable focal point of most planning discussions.

Interestingly one of the only suicide prevention solutions (and parts of Zero Suicide) that *is* supported by evidence is not yet a major focus by Intermountain: reducing access to lethal means. This approach, focused on putting time and distance between a person with a suicidal impulse and a highly lethal method like a firearm, is one of the only empirically-based, high-impact suicide prevention strategies (Yip et al., 2012; Mann et al., 2005; Zalsman et al., 2016). Our interviews with PCPs found that while three-quarters bring up the topic of lethal means with higher risk patients, less than half go on to explicitly advise that patients or family lock and/or store guns more securely and none follow up to see if the recommendations were implemented. Among leaders, there is slowly emerging interest in lethal means reduction strategies, but initial investments in this area have been described by several leaders as "outside of scope."

2. Implications and Recommendations

2.1 Implications of "Wickedness" for Coherent Action

Wicked problems are set apart from tame problems not only in their complexity, but in the end goal of "coherent action" rather than "final solution" (Conklin, 2007, p.5). It may not be possible to prevent every suicide, but incredible progress can be achieved by continuously adapting approaches to meet the evolving nature of the problem across the population. While different experts recommend different strategies and tactics, there is general consensus on one thing: achieving this coherent action cannot be accomplished by a single leader or single

organization, but demands collaboration (Grint, 2010; Head, 2018; Camillus, 2008; Head & Alford, 2015; Roberts, 2000; Conklin, 2001b; Dentoni et al., 2018).

As the Utah and Intermountain context surrounding suicide illustrates, such collaboration can be very difficult to establish and sustain within a single system—never mind across a community—because of uncertainty about the overall issue and solutions, and stakeholders' diverse values and perspectives (Head, 2018). Collaboration certainly comes with costs: transaction costs in the form of more meetings and correspondence, investment in team-based problem-solving skills, and uncomfortable flare-ups of conflict. However, these are outweighed by the numerous advantages: better understanding of the problem, pooled risk, reduced redundancies, and improved coordination around solutions (Roberts, 2000; Head & Alford, 2015). Here, I partly summarize the rich literature on maximizing these benefits, and provide a case study from my work collaborating with firearm owners to prevent suicide.

Avoid Trying to Tame the Problem – When organizations face intense and ambiguous problems and feel pressure to take decisive action, managerial or authoritative strategies are appealing (Grint, 2010; Roberts, 2000). By engaging fewer people and setting clear goals, traditional command-and-control techniques maximize speed and minimize controversy, offering a productive space to analyze and apply data (Roberts, 2000; Head & Alford, 2015). However, when managerial or authoritative strategies are applied to wicked problems, relevant cause-effect relationships dissolve and flawed understandings of the problem and solution arise (Dentoni et al., 2018). Such "taming" attempts can also alienate people not in positions of

management or leadership, and miss underlying issues and situational nuances that affected populations are best situated to provide (Roberts, 2000; Head & Alford, 2015).

Trying to tame a wicked problem by handing down single solutions in a hierarchical manner has serious consequences for future work and leadership. Conklin (2001b) writes that it "reinforces blindness about the true nature of the problem" and represents "systematic denial of the complex and ill-structured dynamics of wicked problems" (p.12). In the adaptive leadership framework, this tendency is the equivalent of treating an adaptive problem as if it were technical, which Heifetz et al. (2009) argue is the "most common cause of failure in leadership" because it is trying to apply "authoritative expertise" to a situation that fundamentally requires "changes in people's priorities, beliefs, habits, and loyalties" (p.19).

I have observed this firsthand while working on suicide prevention in Utah. With firearms responsible for half of suicides in Utah, one obvious approach to address the problem is tightening state-level gun regulations. However, relying on enactment and enforcement of regulations is a relatively tame approach in a political and cultural context like Utah, due to the extremely high popularity and availability of guns. While stronger gun laws will save lives, successful strategies to prevent gun deaths Utah must also involve multi-layered, community-oriented approaches for shifting social norms and storage behaviors to reduce access to lethal means for at-risk individuals.

Provide Enabling Conditions – Given the diverse and contested values, cultures, agendas, and orientations of diverse entities working on an issue like suicide prevention, Roberts (2000) advises "getting the whole system in the room" to help stakeholders understand

each other's perspectives, appreciate each other's differences, and begin learning to work together (p.13). While this requires an investment of time, situations as urgent as a wartime crisis have proven well-served by this type of sense-making and strategizing (Roberts, 2000). The adaptive leadership framework uses the metaphor of "getting on the balcony" in a ballroom to gain a clear view of the people and patterns of the "dance" below—then moving back down to the dance floor and back up to the balcony in an iterative, ongoing manner. This zooming in and out can facilitate more accurate diagnosis and intervention—reflecting the true nature of the threat, including whether it is technical (requiring expertise and routine tweaks) or adaptive (requiring whole new ways of engaging) (Heifetz & Linsky, 2017).

Enabling conditions not only bring clarity to the problem, but strengthen collaborative relationships to address it. Inclusive spaces and participatory processes are needed to surface and manage conflicts, frame problems, and generate a collective response that is greater than the sum of its individual parts (Conklin, 2001b; Dentoni et al., 2018; Head, 2018). Such spaces also create the conditions to differentiate between task conflict (difference of opinion about strategy/tactics) and personality conflict (personal friction) to avoid wasting time and eroding relationships (Edmondson, 2014). Thoughtful sequencing of issues is key, since some issues may be particularly contentious and better suited to confront once common ground is established (Roberts, 2000). "The real challenge," writes Roberts (2000), "is to help [stakeholders] begin to build a community of interest where none existed before" (p.14).

Trust is a vital feature of collaborations to address wicked problems. It increases the likelihood that stakeholders will share knowledge openly and cooperate on joint approaches, even in times of great uncertainty (Head & Alford, 2015). To increase trust, Edmondson (2014,

2016) advises making project values explicit, promoting psychological safety, and acknowledging the process as one of learning and experimentation. In the adaptive leadership paradigm, this involves the creation of a "holding environment" where a productive amount of intensity and pressure can develop while still maintaining a high level of camaraderie and cohesion (Heifetz et al., 2009). Wicked problems, by their nature, are fraught with differences in values. To sustain and strengthen trust, leaders and teams can acknowledge conflicts in perspectives and culture; have norms for resolving disputes respectfully; and maintain awareness that new tensions will surface over time (Dentoni et al., 2018; Heifetz et al., 2009).

In Utah, gun advocates and health professionals working together on suicide prevention illustrate many of these principles. The factors that have made this collaborative work a success include a high degree of respect for individuals' differing political, moral, and cultural beliefs as it relates to firearms; a high degree of trust and mutual respect; and repeated emphasis on a common goal. Participants do not expect to agree on gun policy, but instead aim to reduce death and suffering by advancing a new social norm that no person in suicidal crisis should have ready access to a firearm. Similar to the way that shifts in social norms around drunk driving did not require all-out bans on cars or alcohol, a shift in voluntarily putting space and time between a suicidal impulse and a gun is framed in these groups as a preventive, not prohibitive, strategy.

Communicate and Share Knowledge Across Diverse Groups – An important element of effective collaboration is the sharing, receiving, and translating of knowledge across boundaries. Knowledge for understanding and addressing a wicked problem is not a static thing that can be acquired, but is an evolving process of open communication and collective

negotiation (Weber & Khademian, 2008; Head & Alford, 2015; Shapiro, 2015). Rittel and Webber (1973) described this as "an argumentative process" where solutions are critiqued and challenged (p.162). Particularly when the matter is controversial or politically charged, groups need to account for different sources of information; develop mechanisms to respond to new forms of input; and continuously assess the results of decisions that integrated numerous types of knowledge (Head, 2018; Dentoni et al., 2018). Such processes of sharing, learning, and negotiating are not necessarily about coming to a single, agreed-upon truth, but helping stakeholders become aware of different ways of interpreting—and collectively addressing—a problem (Head, 2018; Conklin, 2001a). Important for engagement is fostering a sense of purpose: helping individuals to bring their whole physical, mental, and spiritual selves to an effort. The adaptive leadership framework uses the metaphor "engaging above and below the neck" to describe the fact that wicked problems demand a connection not just with the intellectual dimensions of the situation but with the "values, beliefs, and anxieties" of people mobilizing change (Heifetz et al., 2009, p.38).

Illustrating this in the Utah context, the collaboration between health professionals and gun owners has demanded thoughtful internal communication and knowledge-sharing to build relationships, gather and understand data, establish common direction, and develop concrete plans. Gun owners look to health professionals for data and evidence, and we look to gun owners to craft culturally-relevant messages. Gun owners are among the best messengers: they are often closely affected by the issue, due to their disproportionate personal loss of family and friends to firearm suicide, and they understand the emotional difficulty of temporarily reducing access to guns.

Pursue Execution-as-Learning – Edmondson (2016) refers to an "execution-as-learning" mindset that emphasizes taking experimental approaches in complex, multi-disciplinary, cross-sector projects. Such approaches form and test new hypotheses, allow integration of new data, and help discover new innovations. Finding and piloting incremental strategies instead of trying to lay out all options in advance allows teams to adapt to the changing nature of wicked problems and enhance collective knowledge. Moreover, such experimentation is well-matched with the ultimate goals of managing—rather than fixing—a wicked problem (Camillus, 2008; Head, 2018). Finally, at a cultural level, having an experimental mindset allows creativity to flourish by encouraging risk-taking, cushioning failures, and inspiring the kind of improvisation that can lead to breakthroughs (Heifetz et al., 2009).

Short-term wins should be part of an execution-as-learning approach. "Without short-term wins, too many people give up or actively join the ranks of those people who have been resisting change," writes Kotter (2007, p.7). In addition, these early victories maintain urgency, instill a sense of legitimacy in leadership, and provide knowledge to inform longer-term strategies (Watkins, 2016). Short-term wins can also help overcome one of the biggest obstacles: resistance related to the demands on the scarce time of stakeholders (Sirkin et al., 2005).

A number of experimental "execution as learning" approaches have resulted from our collaborative, culturally-relevant efforts to increase awareness about suicide and reduce access to guns for people at risk for suicide. From clinical protocols and epidemiological research to gun storage solutions and firearm instruction curricula, the work among gun owners and health professionals is ever-growing. While it is not known whether the interventions in individual

states impact suicidal behavior, the short-term wins have created momentum—and we are optimistic that such campaigns, at scale, could contribute to reductions in suicide rates. The model has snowballed into a movement consisting of numerous collaborative and creative endeavors across at least 20 states.

2.2 Recommendations for Intermountain

1. **Assign a Leader and Build a Diverse Team**

   Intermountain is a large and complex system taking on a large and complex problem. With suicide prevention, the healthcare system's internal and external contributions will be more meaningful if it can mobilize change from the frontlines rather than "tame" the problem from above.

   To advance in its team-building and diagnostic work, Intermountain should assign a talented and passionate full-time person to build a highly functional, interdisciplinary team and collaborative strategy. Another integrated healthcare system reported that this diverse team and effective "quarterback" is paramount for implementation success.

   Once the lead is assigned, he or she should: 1) assess and manage the strengths and skills of people on the team and the dynamics at play in a disciplined way; 2) guide the group in completing a comprehensive self-assessment that invites input from frontline caregivers, patients, and community member; 3) help the team to identify and affirm its purpose, direction, and norms; and 4) begin to build appropriate levels of pressure and accountability on the team—and momentum across the organization.

Timeline: November-January 2018

Actions:

1.a – Hire a Suicide Prevention Director

1.b – Assess and manage the team and organizational dynamics

1.c – Complete a comprehensive and transparent self-assessment

1.d – Communicate a compelling high-level direction

1.e – Create a productive level of intensity/momentum for the team and organization

2. Collaborate and Communicate

Intermountain's suicide prevention team should create safe space for candid dialogue about how different internal and external stakeholders conceive of the problem and define success. Possibly launched in a retreat context, the goal should be to "zoom in" and "zoom out" in an iterative fashion to better assess the nature of the problem at a healthcare system and community level, and the potential levers for intervention. Engaging in a transparent dialogue in which community feedback (not just buy-in) is sought can help build trusting relationships and improve the overall vision.

Once an initial vision is formed, Intermountain should relentlessly broadcast it across the organization and community to build a sense of urgency, empowerment, and accountability in actionable terms that are not just perceived as "ceremonial." For example, another integrated healthcare system explained that one of their crucial success factors in Zero Suicide came from doing a "primary care roadshow" where they

went to almost all of their affiliated clinics to dialogue about Zero Suicide, gather feedback, and garner buy-in.

Intermountain should also:

1) Inventory the existing array of community organizations and coalitions focused on suicide prevention, and work with them to assess whether and how the healthcare system can participate, align, and add value.

2) Establish a Community Advisory Board, including people with lived experience around suicide, to inform strategy and foster alignment with outside groups and initiatives; and

3) Set up an email listserv of healthcare administrators and providers from across the state (of all institutional affiliations, and especially other organizations implementing Zero Suicide) to share approaches, resources, and advice.

Timeline: February-April 2019

Actions:

2.a – Facilitate candid community and organizational dialogue about the strategic vision

2.b – Broadcast the vision internally and externally

2.c – Engage with and bring resources to existing community organizations

2.d – Invite community to inform and advise Intermountain's work

2.e – Create communication linkages among healthcare systems pursuing Zero Suicide

3. Experiment with Population-Oriented Models of Risk Reduction and Service Delivery, Especially Lethal Means Reduction

Experimentation in suicide prevention by a healthcare system requires thinking

openly, critically, and creatively about managing the problem. It also demands thinking about both the realms of existing impact on the health of Utahns, as well as new ways of stretching the definition of "health" outside of clinic and hospital walls. By embracing an experimental mindset, Intermountain can try certain untapped or non-traditional approaches that hold promise.

For example, improving screening and treatment is a worthy pursuit for identifying individual patients with depression and connecting them to resources, but in the case of suicide it is a tame solution in the face of a wicked problem; it is unlikely to demonstrably affect mortality. Similarly, Intermountain should be cautious in setting the expectation that it will experience anything *close* to an 80% decrease in the suicide rate among its patients, as Henry Ford Health System claims to have achieved by improving depression care. Better identifying and managing depression is a critical goal, but it should not be the entirety (or centerpiece) of a suicide reduction strategy.

As it refocuses its priority goals and interventions, Intermountain should experiment with a population-oriented strategy at addressing suicide that emphasizes universal precautions, collaborative solutions, and existing evidence. Given the strong evidence surrounding lethal means reduction and the importance of firearms in driving Utah's high suicide rate, the top action Intermountain can take is helping reduce access to lethal means for at-risk patients. This can include developing and implementing clear clinical protocols for safety planning and lethal means counseling among high-risk patients, building provider skills and buy-in around these approaches, and distributing gun storage devices (such as gun locks and medication/gun lock boxes). Other solutions

that could make a difference include:

- Shifts in attitudes and social norms – One of Utah's most celebrated recent public health successes is an ongoing, comprehensive, well-evaluated campaign to prevent and reduce underage drinking that engages dozens of stakeholder groups, from policymakers to faith leaders, to shift beliefs and behaviors around alcohol consumption. Intermountain can help fund and launch a similar large-scale, multi-stakeholder public awareness and education campaign to promote and normalize: 1) safe storage of firearms (the most lethal method of attempt) and medications (the most common method of attempt); and 2) help-seeking behaviors and attitudes, including sources and steps for help.
- "Caring for caregivers" initiatives – Intermountain has wide reach as Utah's largest private employer. The above attitudes and social norms messaging can be tailored to and pushed throughout internal channels, from weekly newsletters and physical/virtual signage to online learning modules and the Employee Assistance Program. As part of this effort, Intermountain can develop "postvention" protocols and messaging after a suicide occurs among patients or providers, to help survivors grieve and cope, to conduct root cause analysis for continuous improvement, and to avoid suicide contagion by identifying people who may be at risk of subsequent suicide-related behaviors. These "caring for our caregivers" efforts can help promote resilience and safety at a time of significant internal turbulence associated with restructuring.
- Improved access to effective behavioral health treatment – Intermountain can

help expand access to behavioral healthcare treatments with strong evidence in suicide prevention by: 1) expanding mental health integration (MHI) programs in its own primary care facilities and offering its nationally-recognized experience with this model to support other institutions across the state trying to develop/expand MHI programs; and 2) offering specialized training of a small number of its behavioral health providers in cognitive behavioral therapy and dialectical behavior therapy, the two specialized psychological treatments shown to reduce suicidal behavior.

- Improvements in crisis response – Current Utah systems for crisis response are fragmented, creating major gaps in effectively serving people who do reach out for help in times of acute crisis. Intermountain can help facilitate greater coordination of short- and long-term response through partnership with other healthcare systems and state agencies that manage crisis response; by increasing its number of Access Centers offering hospital diversion and support for people in psychiatric crisis needing safe de-escalation, therapeutic assessment, and referrals to additional services; and by offering support to expand capacity and clinical-linkages for state mobile crisis outreach teams, which are face-to-face "first responders" for behavioral health crises in homes, schools, communities.

Timeline: February-May 2019

Actions:

3.a – Shift screening and treatment efforts to *depression care*-related quality improvement efforts, rather than suicide

3.b – Reduce access to lethal means for at-risk patients

3.c – Pursue other population-level strategies, including shifts in attitudes and social norms, “care for caregivers” initiatives, improved access to effective behavioral health treatment, and improved crisis response

4. Develop a Clear Vision and Deploy a Flexible Strategy

The Intermountain team should articulate a clear and compelling sense of where their efforts are headed and ensure there is a strong logic model linking the “as is” (initial inputs and activities) to the “to be” (near-term outcomes and long-term impacts). Key performance indicators should be explicit but flexible enough to adapt to evolving aspects of the problem and experimental solutions. The plan and indicators should be reviewed regularly to evaluate progress, gaps, or risks, and to facilitate necessary shifts in course.

As part of this work, it is crucial to plan for and create short-term wins; these will build internal and external momentum that respects the institutional and community context at hand. This was one of the core success factors reported by another integrated healthcare system, which decided to focus its first year of Zero Suicide on training *all* mental health and addiction staff in safety planning. Another example is targeting employees and their families with some core component(s) of Zero Suicide (e.g., lethal means restriction, social norms messaging, and bystander/gatekeeper training), built around a notion of “keeping our own safe at a time of rapid change.”

Timeline: May 2019 and ongoing

Actions:

4.a – Establish clear vision and logic model with flexible metrics

4.b – Regularly assess progress and need for changing course

4.c – Plan and implement short term wins

5. Empower Others to Act on the Vision

Kotter (2007) emphasizes that in any transformational change effort, obstacles (perceived and real, structural and personal) may undermine the initiative and prevent team members from exploring innovative ideas, activities, and perspectives. This can be particularly intense during times of institutional instability or dynamic change like Intermountain is currently undergoing. Another integrated healthcare system found that it tended toward top-down solutions, and its leaders needed to gain facilitation skills in ground-up approaches. It is crucial to name these barriers and threats, rather than brush them under the table.

For example, silos can be a barrier at Intermountain, and the team will want to thoroughly and regularly inventory its work and cross-organization linkages to ensure comprehensive representation of voices and activities. Such voices should include those of community stakeholders, advocates, and people with lived experience as survivors of suicide attempts or survivors of loss.

As Intermountain comes to understand and embrace its role within a broader public health approach to suicide statewide, it can enhance momentum by leveraging

Fresina's (2001) "Power Prism®" elements**:** research and data collection; coalition building and maintenance; fundraising and development; grassroots and key contacts; media advocacy; and decision-maker advocacy. Putting the work at the center of the effort, as adaptive leadership recommends, can help create a high level of engagement—building both knowledge and purpose to sustain the work.

Timeline: May 2019 and ongoing

Actions:

5.a – Acknowledge the sources of tension and pain

5.b – Constantly identify and remove obstacles to collaboration and change

Table 9 – Summary of Recommendations for Intermountain

1. Assign a Leader and Build a Diverse Team	
1.a	Hire a Suicide Prevention Director
1.b	Assess and manage the team and organizational dynamics
1.c	Complete a comprehensive and transparent self-assessment
1.d	Communicate a compelling high-level direction
1.e	Create a productive level of intensity/momentum for the team and organization
2. Collaborate and Communicate	
2.a	Facilitate candid community and organizational dialogue about the strategic vision
2.b	Broadcast the vision internally and externally
2.c	Engage with and bring resources to existing community organizations
2.d	Invite community to inform and advise Intermountain's work
2.e	Create communication linkages among health systems pursuing Zero Suicide
3. Experiment with Population-Oriented Approaches, Especially Lethal Means Reduction	
3.a	Shift screening and treatment efforts to *depression care*-related quality improvement
3.b	Reduce access to lethal means for at-risk patients
3.c	Pursue other population-level strategies (attitude/social norm shifts, improved crisis response, etc)
4. Develop a Clear Vision and Deploy a Flexible Strategy	
4.a	Establish clear vision and logic model with flexible metrics
4.b	Regularly assess progress and need for changing course
4.c	Plan and implement short term wins
5. Empower Others to Act on the Vision	
5.a	Acknowledge the sources of tension and pain
5.b	Identify and remove obstacles to collaboration and change
5.c	Leverage "Power Prism" elements to help sustain the work

V. CONCLUSIONS

This project aimed to understand and help improve how Intermountain Healthcare addresses the problem of suicide in both its patient population and the wider community in which it is situated. First, it assessed how Utah primary care providers approach youth suicide assessment and management and compared their approaches to mental health providers. Second, the project explored the organizational and leadership dynamics for addressing the problem of suicide. Whether seen through a clinical or institutional lens, suicide has many characteristics of a wicked problem. Suicide is a biologically, psychologically, politically, and socially complex phenomenon. These characteristics have critical implications for mobilizing change.

In Utah, urgency to address suicide and readiness for action are high. Clinicians and healthcare leaders are among those deeply concerned about suicide and eager to do something. Every one of the primary care providers and leaders interviewed for this project felt this work was important and that they had some role to play in addressing this problem, even if that role is stressful, challenging, or not yet clear. Both groups bring many important strengths: for clinicians, an ability to build on long-term relationships with patients and on foundations of trust with communities, as well as a skill for delivering care in a family-centered, context-responsive manner; for healthcare leaders, an integrated payer/provider system, a high level of reach across the region and across care settings, and a growing commitment to community and population health.

If Intermountain and its partners are to contribute to a demonstrable reduction in the suicide rate in Utah, it will require a shift in conceptualization and approach that recognizes

suicide not simply as a “healthcare problem” or a “public health” problem, but as a wicked problem. In clinical practice and system leadership, suicide prevention has largely been approached in tame terms: defined as an extension of depression, examined in relative isolation from other problems, managed like other forms of health-related prevention, and addressed through internal processes and traditional hierarchies. Healthcare leaders are beginning to see that managing suicide risk requires a concerted effort to care for patients across their full journey of achieving safety and stability. This means engaging in work that has not traditionally been emphasized in clinical practice: ensuring adequate transitions across the healthcare and social safety net; reducing stigma and normalizing help-seeking; and ensuring the home environment is safe if a crisis were to occur.

An example of this non-traditional, population-oriented direction is focusing explicitly on access to guns as a crucial, and modifiable, risk factor. Intermountain can play an important role in lethal means reduction. This is one of the only empirically-based, high-impact suicide prevention strategies. It has the support of diverse groups (including most gun owners and advocates), and is a concrete step that clinicians, families, and communities can advance together to reduce risk. Limiting access to firearms need not be the only step Intermountain takes, but it must be at the center of any suicide prevention approach.

Ultimately, addressing suicide as a wicked problem is not about bringing in more expertise or authority. It demands collaborative action—across the healthcare system and across the community—characterized by experimentation and a learning mindset that empowers all people involved to drive the work. Whether PCPs are skilled at suicide assessment and management is of little consequence if they don’t have time to connect a

family with services or help ensure a safe home environment; instead, collaborating with mental health and care management colleagues is paramount to matching the results of a risk assessment with an appropriate clinical response. Similarly, leaders opting to tighten individual providers' screening requirements are unlikely to have any positive effect on suicide rates, no matter how familiar or manageable it feels to a healthcare system; instead community-based partnerships around lethal means reduction or social norms change are far more likely to effect population-based change. Collaborative action acknowledges that just as there is no single cause of suicide, there is no single person, group, or intervention to prevent it. Only by bringing diverse entities together can we harness the wickedness toward powerful change.

Above all, achieving coherent action to prevent suicide demands humility. Wicked problems confound, intertwine, evolve, and persist. Humility keeps clinicians vigilant, while also offering perspective that can reduce their anxiety or sense of impotence; it encourages team-based problem-solving, revealing the crucial role of the scheduler who ensures a follow-up appointment was made or the analyst who points out a strategic gap; and humility keeps stakeholders at the same table, designing new approaches, identifying and discarding what's not working, and continuously learning together how to save lives. What a healthcare system contributes and tries will not always work—but each attempt, from improved depression treatment and enhanced coordination of care to reduced access to firearms and better working relationships with community partners—can yield other benefits, increase collective knowledge, and serve Intermountain's ultimate mission of "helping people live the healthiest lives possible.©"

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VI. APPENDICES

Appendix A. Full Literature Review

The Analytical Platform describes the issue of suicide, particularly as it relates the role of primary care providers. It begins with an overview of suicide, including trends in the United States and Utah, factors underlying both the problem and common interventions, and the empirical challenges of predicting and preventing suicidal behavior based on individual-level risk. It then explores suicide prevention from both a public health and healthcare delivery perspective, focusing attention on the role of primary care providers in suicide assessment and management. It closes by presenting the concept of a wicked problem and describing the DELTA project design.

Specifying terms matters in any literature review, but is particularly important in the context of a sensitive and stigmatized topic like suicide. In this document, the term *suicide* refers to "death caused by self-directed injurious behavior with an intent to die as a result of the behavior"; *suicide attempt* means "non-fatal, self-directed, potentially injurious behavior with an intent to die as a result of the behavior"; *suicidal ideation* to describes "thinking about, considering, or planning suicide" (CDC, 2017a); and *suicidal behavior* refers to suicide, suicide attempts, and suicidal ideation (O'Connor, Gaynes, Burdam Williams, & Whitlock, 2013). In addition, for purposes of this project, I am defining primary care provider as "a specialist in Family Medicine, Internal Medicine or Pediatrics who provides definitive care to the undifferentiated patient at the point of first contact, and takes continuing responsibility for providing the patient's comprehensive care" (AAFP, n.d.).

1. The Problem of Suicide

1.1 Scope of the Problem

Worldwide, over 800,000 people intentionally take their own lives each year—and for every suicide there are many more non-fatal suicide attempts that may result in significant injury (WHO, 2014). In the United States, approximately 45,000 people died by suicide in 2016. Rates of suicide in the U.S. have fluctuated over the past several decades, with high rates in the late-1980s and early-1990s, a period of declining rates in the mid-1990s[5], and a steep increase beginning in 1999 through the present (CDC, 2018; Miller, Azrael, & Barber, 2012). Factors that are driving the sharp increase in both firearm and non-firearm suicides from 1999-2016, absent appreciable changes in rates of household gun ownership or rates of mental illness, are not yet understood (Stone et al., 2018). Today, suicide is the tenth leading cause of death nationally; it is the second leading cause of death among people 15–24 and 25–34 years of age (CDC, 2017b).

The toll of suicide is even more profound when considering its contribution to premature mortality: from 1999 to 2016, suicide was the fifth leading cause of years of potential life lost (YPLL) before age 65, accounting for over 13 million YPLL (6.4% of the total YPLL) in the United States—more than homicide (10 million YPLL, 4.9% of the total YPLL). In addition to the devastating personal toll of suicide on families and communities, it is also associated with significant economic costs: in 2010, suicide led to an estimated $44.7 billion in combined medical and work loss costs (CDC, 2018).

[5] The lower rates in the mid-1990s were driven by a decline in rates of firearm suicides (that occurred in tandem with a decline in rates of household gun ownership); rates of non-firearm suicide stayed about the same (CDC, 2018).

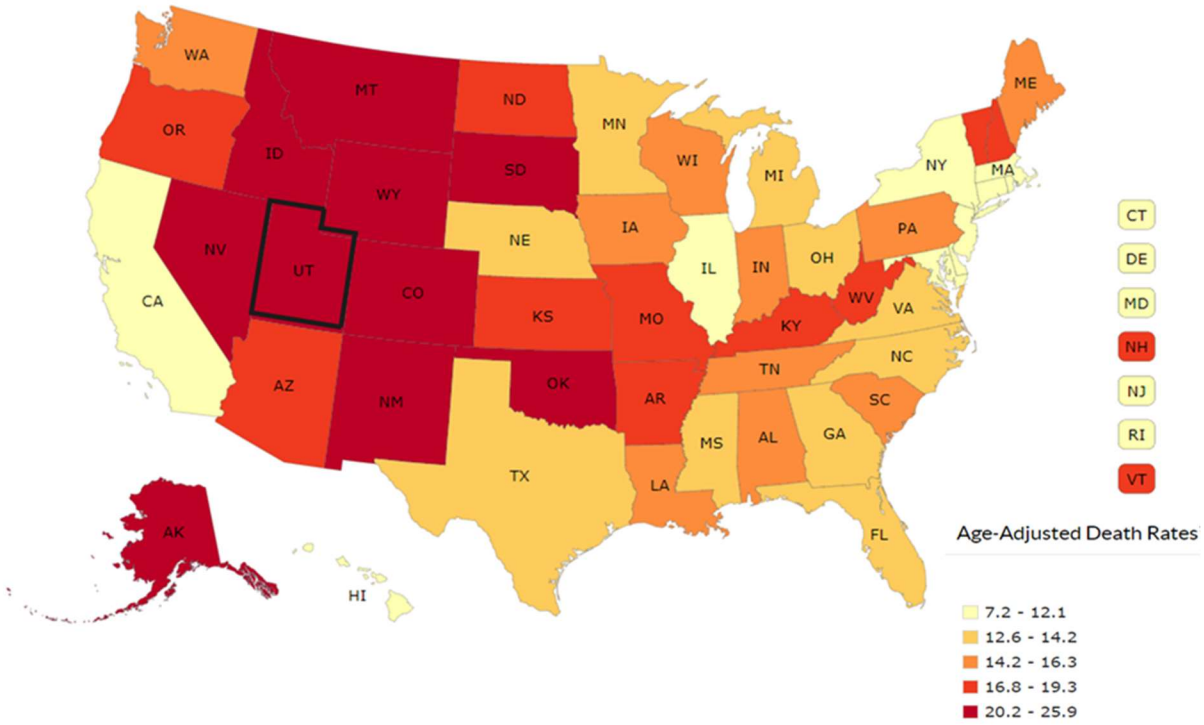


Figure 1 – Suicide Mortality By State, 2016 (Source: CDC, 2018)

In the U.S., suicide rates vary considerably by geographic region. As shown in Figure 1, the Intermountain West states (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Wyoming, and Utah) consistently have some of the highest rates of suicide in the country, leading some researchers to refer to this region as the "suicide belt" (Wray, Poladko, & Vaughan, 2012). Utah sits in the center of this region; its suicide rate (20.3 per 100,000 people) is similar to the rest of the Intermountain West, but exceeds the national rate (13.9 per 100,000 people). The suicide rate varies by other demographic characteristics as well, with the highest rates in Utah among white and American Indian males who are middle-aged or older than age 75. The rate of suicide among young Utahns has undergone a particularly steep rise over the past decade (see Figure 2). Suicide is now the leading cause of death among young people ages

10-17 in Utah, ahead of accidents. This is the reverse of the U.S. overall, where the rate of accidents in this age group exceeds that of suicides (CDC, 2018).

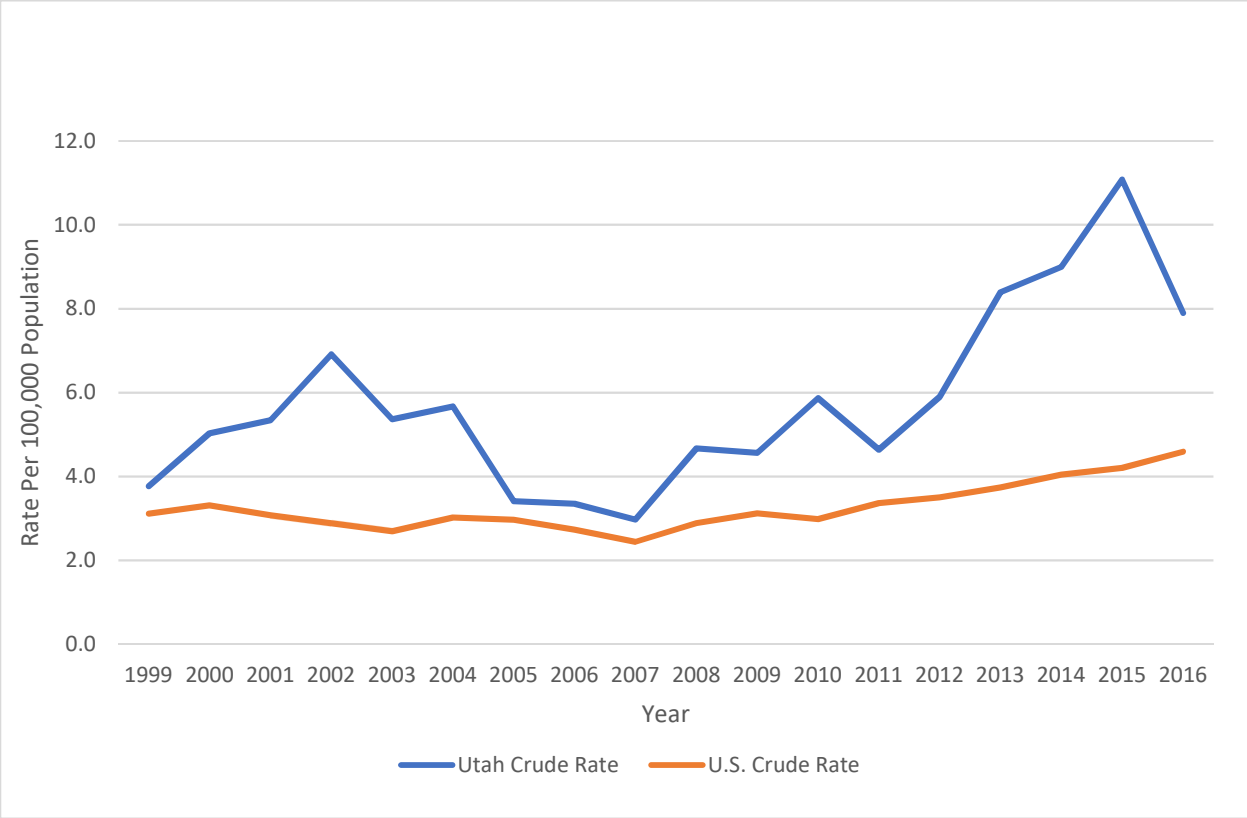


Figure 2 - Suicide Rate By Year, Ages 10-17, Utah and U.S., 1999-2016 (Source: CDC, 2018)

From 2011-2015, 150 Utah youth aged 10-17 years died by suicide; over 90% used either suffocation (46%) or firearms (45%). During approximately the same period, there were 3,005 emergency department visits and 690 inpatient hospitalizations for self-inflicted injuries. As is typically the case with suicidal behavior, the majority of suicide attempts (72%) were among females, while the majority of suicide deaths (77%) were among males (Annor, Wilkinson, & Zwald, 2017).

Suicidal ideation is also very common in Utah. A 2015 Utah Student Health and Risk Prevention Survey found that, during the past 12 months, 14.4% of youth in grades 6-12 had seriously considered attempting suicide—an increase of 53% since 2011. In the same survey, 11.6% of respondents reported having made a plan in the last year about how to die by suicide—an increase of over 70% since 2011 (UT Department of Health, 2017).

A recent study, generalizable to the U.S. as a whole, indicates that nearly three out of four youth suicide decedents die on their first attempt, due to the lethality of firearms (McKean, Pabbati, Geske, & Bostwick, 2018). Firearms are the leading suicide method in Utah, and 85% of gun deaths in Utah are suicide. Firearms are the most lethal method of self-injury in Utah, with a Case Fatality Rate of 87% (compared to 2% for drug overdose and sharp instrument wounds). About half of households in Utah have a firearm, with ownership ranging from 36% in Salt Lake City to 70% in most rural counties (Barber et al., 2018).

1.2 Risk and Protective Factors Framework

Suicide research and prevention activity has historically focused on who is at risk for suicide by identifying factors associated with suicidal behavior. These include personal characteristics (e.g. psychiatric problems and previous suicide attempts), family characteristics (e.g. family history of suicide), socioeconomic factors (e.g. school and work problems), and adverse life experiences (e.g. abuse and trauma) that may increase the likelihood of suicidal behavior (Franklin et al., 2017).

In addition, suicide experts refer to *protective factors* that reduce the likelihood of suicidal behavior. Protective factors in the literature include access to mental health treatment;

family and community support; and spiritual or cultural beliefs that discourage suicide (CDC, 2017b). There is a much smaller body of evidence surrounding protective factors; however, they are increasingly recognized as an important element of suicide prevention (CDC, 2017c).

This risk and protective factors framework provides the underpinnings for most suicide prevention strategies. These include primary prevention activities oriented around a foundation of knowledge and awareness that enable risk identification; secondary prevention which takes steps to mitigate or eliminate those risks; and tertiary prevention which aims to reduce the impact of an adverse situation, including helping communities avoid suicide "contagion" (Silverman & Berman, 2014; Gould, Greenberg, Velting, & Shaffer, 2003; Waldvogel, Rueter, & Oberg, 2008).

In addition, evaluation of a patient's risk and protective factors form the basis for most screening and assessment processes undertaken by clinicians (Gould et al., 2003; APA, 2003). *Screening* refers to the use of a standardized instrument to identify people who may be at risk for suicide; it may be a universal screening or used selectively with groups known to be higher risk. By contrast, suicide *assessment* tends to be more comprehensive and is explicitly linked to triage and treatment. It may include structured screening questions, but also involves open-ended discussion with the patient and/or family "to gain insight into the patient's thoughts and behavior, risk factors, protective factors, and medical and mental health history" (SPRC, 2014).

Thus, mainstream suicide prevention activity focuses on who is at risk for suicide by zeroing in on individual risk (and protective) factors believed to increase (and decrease) the likelihood of suicidal behavior. The strategy is premised on the notion that that clinicians or other "gatekeepers" who administer a screening or assessment can detect when a patient is at

high risk, and then intervene in an effective manner to reduce that risk, connect patients with essential therapeutic services, and ultimately prevent a fatality (Gould et al., 2003; APA, 2003; Horowitz, Ballard, & Pao, 2009; Bryan & Rudd, 2006; Schulberg, Bruce, Lee, Williams, Dietrich, 2004; Rudd, Cukrowicz, & Bryan, 2008).

1.3 Limitations of Risk-Based Screening and Assessment

While there are numerous tools and protocols to conduct suicide screening and assessment based on risk and protective factors, there is limited evidence on their effectiveness in predicting and preventing suicidal behavior. First, while suicide-related risk factors are very common, suicide itself is a relatively rare event. It is particularly affected by "false negatives" whereby people who die by suicide are not identified in screenings/assessments by clinicians or other gatekeepers, and by "false positives" whereby the great majority of people who express suicidal ideation in screenings/assessments do not go on to attempt or die by suicide (O'Connor et al., 2013; Caine, Knox, & Conwell, 2011). Nevertheless, the lack of conclusive evidence around predictive validity and outcomes does not necessarily diminish the importance of screening and assessment. Such processes lead to increases in clinical referrals, and can be used as part—rather than in place—of comprehensive clinical evaluation (APA, 2003; Caine et al., 2011).

Second, categorical determinations of risk tend to emphasize the "highest risk" individuals who comprise a small proportion of those who ultimately attempt or die by suicide. This aggressive, needle-in-the-haystack search for patients with the greatest cumulative exposure to risk factors may not be particularly effective compared with efforts that target the

"middle of the risk curve." For example, a high-risk strategy to combat alcohol-related death would identify those extremely heavy drinkers who fall into the very upper end of the normally distributed risk curve. However, most cases of alcohol-related death are not among people in the upper 2.5% of the risk curve, but occur among drinkers with lower risk, somewhere in the middle of the normal distribution. This phenomenon, known as Rose's Theorem, suggests that broad-based prevention efforts may reduce the rate of suicide more effectively than an aggressive needle-in-the-haystack search for the "highest risk" patients (Caine et al., 2011; Knox, Conwell, & Caine, 2004; Rose, 1985).

Third, risk-based screenings can miss the short-term and fluid nature of suicide risk. Several studies indicate that the acute period in which an at-risk person moves from suicidal thoughts to an actual attempt is often only a few minutes or hours (Simon et al., 2001; Deisenhammer et al., 2009). This research is consistent with earlier studies that found that about one-third to four-fifths of attempts are made with little planning (Williams, Davidson, & Montgomery, 1980). It is also consistent with research in Utah showing that only 35.2% of youth suicide decedents with known circumstance information had a diagnosis of a mental health problem, yet 55.3% had experienced a recent crisis (e.g. relationship problem, school problem) before taking their lives (Annor et al., 2018). The administration of any single risk-based screening is unlikely to capture the fluctuating nature of acute vulnerability (Bryan & Rudd, 2011).

Finally, most of the available treatments to address suicidal behavior have not proven to be effective (Mann et al., 2005; Zalsman et al., 2016). The lack of evidence around the benefits of suicide screening (and subsequent treatment) is summarized by the U.S. Preventive Services

Task Force (USPSTF); for purpose of illustration, Table 1 compares the USPSTF analysis of major depressive disorder (MDD) screening to that of suicide screening, both in primary care settings. Although these two health topics have relatively weak/insufficient evidence on the benefits, harms, and accuracy of *screening*, the strength of evidence surrounding the net benefits of *treatment* for MDD (but not suicide) contribute to the USPSTF recommendation for PCPs to screen for MDD (but not suicide) (USPSTF, 2016a; USPSTF, 2016b).

Table 1 - Summary of USPSTF Recommendations - Depression vs. Suicide Screening (Source: USPSTF, 2016a; USPSTF, 2016b)

	Depression Screening: Evidence Level	Suicide Screening: Evidence Level
Benefits of Screening	Insufficient	Insufficient
Accuracy of Screening Instruments	Weak	Weak
Harms of Screening	Insufficient	Weak
Benefits of Treatment	Medium	Weak
Harms of Treatment	Strong	Medium
USPTF Conclusion	USPSTF recommends primary care providers screen for major depressive disorder in adolescents.	USPSTF finds current evidence is insufficient to assess the balance of benefits and harms of screening for suicide risk in primary care.

2. The Public Health Approach to Suicide

2.1 Public Health Frameworks

Beyond the empirical limitations, risk-based screening and assessment approaches tend to focus almost entirely on individual-level factors impacting suicidal behavior. This can eclipse the important ways in which suicide risk arises through the interaction of risk and protective

factors *across* multiple levels—individual, relationship, community, and societal. This more expansive, contextualized way of locating and influencing risk/protective factors across (and not just within) levels of influence is illustrated in the Social-Ecological Model (Figure 3) (HHS, 2012).

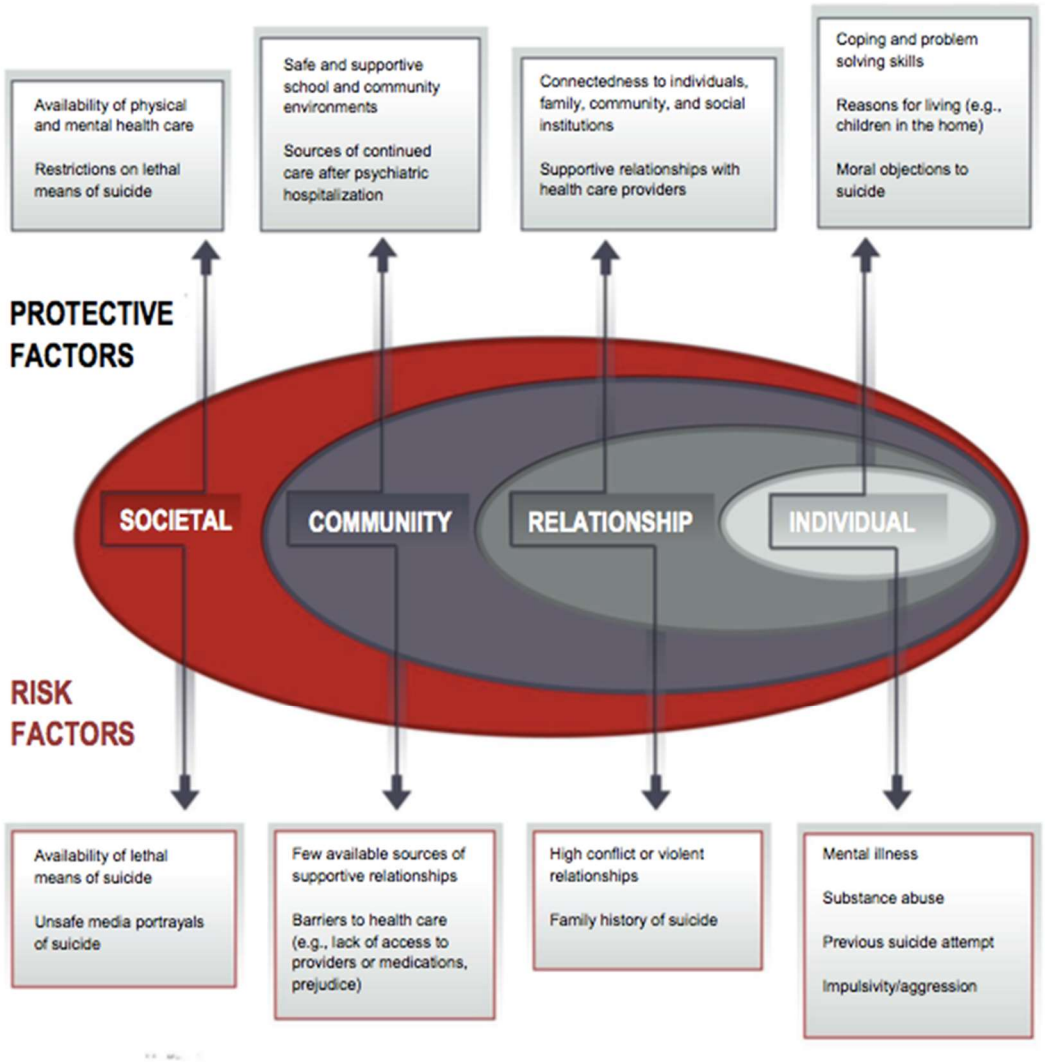


Figure 3 - Social-Ecological Model (HHS, 2012)

By thinking beyond individual-level risk factors, the Social-Ecological Model opens the door to population-based approaches that have shown a measurable impact on preventing suicide.

Building on the risk/protective factors literature and the social-ecological model, Caine et al. (2011) recommend a “Multilayered Public Health Approach" to suicide prevention. They analogize the model to preventive cardiology—which “target very early risk factors of diet and exercise for heart disease, seeking to change the trajectory of health and illness years before the overt expression of symptoms” (p.309). This approach emphasizes engagement in suicide prevention in diverse settings and time periods in order to reach three main groups: the general population, groups where average level of risk is elevated, and patients requiring active treatment. This comprehensive approach aligns with recommendations by the Centers for Disease Control and Prevention (CDC) to emphasize “complementary and potentially synergistic” strategies that “represent different levels of the social ecology” (CDC, 2017b, p.11-13).

In the Multilayered Public Heath Approach, the focus for the general population is on implementing *distal prevention* interventions in communities that are not based upon individual risk, such as restricting access to lethal means, offering crisis call lines, and improving access to care. For people belonging to groups that may have higher-than-average risk, the model recommends *selective prevention* interventions such as a court-based program to support people with substance use disorders. Finally, for high-risk patients with symptoms of mental or emotional distress, *proximal prevention* interventions could include screening and treatment in primary care settings and/or psychotherapy focused on suicidal behaviors (Caine

et al., 2011). The latest CDC technical guidance mirrors Caine et al.'s population-level model, advising prevention steps that go even further "upstream," such as economic policies to strengthen housing and financial security (CDC, 2017c).

In summary, the Social-Ecological Model and Multilayered Public Heath Approach represent an important shift in conceptualizing suicide prevention. They go beyond individual risks and behaviors to acknowledge and address a greater number and dimensionality of determinants. As the preface to the Institute of Medicine's 2002 "Reducing Suicide: A National Imperative" begins: "If ever a condition begged for an integrated understanding that takes into account biological, clinical, subjective, and social factors, this is it" (2002, p.ix). This integration is at the crux of public health approaches to suicide prevention, which posit that reducing suicide at scale will not occur by solely screening and intervening at an individual level, but by decreasing the burden of risk factors and increasing the strength of protective factors in communities and populations (Caine et al., 2011; Knox et al., 2004; CDC 2017b).

Moreover, taking such a broad-based approach does not reduce the critical role of clinicians in preventing suicide amongst their patients, but offers a more contextualized and orientation in which actions will yield greater effect. As psychiatrist and researcher Dr. Anthony Pisani articulates (2016):

> The time is right to move beyond outdated frameworks, including categorical risk predictions, and move toward new models that are anchored in the context of patients' lives (past, present and future) and the clinical settings where they are seen. The goal of risk formulation is not to categorize or predict but to plan collaboratively toward life-saving preventive actions.

This clinical shift aligns with a growing mainstream belief that psychosocial health and suicide prevention are not just the domain of mental health. It emerges at a time when "population-oriented" and "value-driven care" are challenging traditional boundaries between specialists, and at a time of heightened public awareness of other public health crises, including opioid addiction, that are not solely the responsibility of mental health providers.

2.2 Public Health Response

While the Social-Ecological Model and Multilayered Public Heath Approach were formalized in the past decade, suicide itself was framed as a public health issue 30 years ago. The World Health Organization began a concerted focus on suicide in 1989, urging the adoption of evidence-based policies; the United Nations developed its first guidance on suicide prevention in 1996, encouraging countries to develop comprehensive suicide prevention plans. At that time, Finland was the only country with a national prevention plan, but 25 countries followed its lead over the subsequent 15 years (IOM, 2002; WHO, 2014).

In the U.S., suicide was framed as a public health issue in the mid-1990s when numerous foundations and public-private partnerships launched and the first conference on suicide prevention took place in in Reno, Nevada (IOM, 2002). In 1999, U.S. Surgeon General David Satcher issued a Call to Action demanding that the United States "address suicide as a significant public health problem" and commissioned a report to establish "national strategies to prevent the loss of life and the suffering suicide causes" (p.1). The resulting 2001 "National Strategy for Suicide Prevention" established 11 goals and 68 objectives. While the report repeatedly emphasized public health approaches, some experts criticized the fact that almost

all its recommendations relied on “downstream” approaches: more clinical intervention, counseling, and education. There was also no funding designated to implement the recommendations, no specific actions selected, and no accountable agencies identified (HHS, 2001; Caine, 2013).

Several important developments occurred in the years immediately following release of the 2001 National Strategy to begin to fill its gaps. First was a major improvement in surveillance thanks largely to the launch of the National Violent Death Reporting System (NVDRS). This groundbreaking system pooled violent death data from multiple sources, including law enforcement, vital statistics, and medical examiner records. It offered far more comprehensive and detailed information about the decedent and circumstances of death than had ever been available before. NVDRS data also became widely available to the public through the interactive WISQARS (Web-based Injury Statistics Query and Reporting System) and WONDER (Wide-Ranging Online Data for Epidemiologic Research) online tools (CDC, 2017d; CDC, n.d.; Caine, 2013).

The need for more research and surveillance was also a focus of a 2002 consensus study report from the Institute of Medicine (IOM), “Reducing Suicide: A National Imperative.” Among the IOM’s other core recommendations was a greater role for primary care providers, noting that they are “often the first and only medical contact for suicidal patients” and calling for improved tools and training for medical professionals to screen for suicide risk (IOM, 2002, p.13).

Momentum grew further with President George W. Bush’s New Freedom Commission Report, “Achieving the Promise: Transforming Mental Health Care in *America* (2003),” which

stated that “suicide is a serious public health challenge that has not received the attention and degree of national priority it deserves” (p.20). Soon thereafter, President Bush signed the Garrett Lee Smith Memorial Act, providing about $30 million per year in funding to implement many of the components of the 2001 National Strategy for Suicide Prevention focused on youth (Silberner, 2016).

Today, all states have developed suicide prevention plans aligned with the National Strategy, and many have created offices or coordinator positions to implement those plans. Many states also updated their plans after U.S. Surgeon General Regina Benjamin issued a revised “National Strategy for Suicide Prevention” in 2012, which updated the 2001 plan with more recent data, knowledge, and activities, and introduced the Social-Ecological Model for the first time (HHS, 2012; AFSP, n.d.) Developed in collaboration with the Action Alliance for Suicide Prevention, a group comprised of 200 public- and private-sector organizations, it outlined 13 goals over four strategies: 1) Healthy and Empowered Individuals, Families, and Communities; 2) Clinical and Community Preventive Services; 3) Treatment and Support Services; and 4) Surveillance, Research, and Evaluation (HHS, 2012). ‘

Utah released a Suicide Prevention Plan in 2017 that aligns with the Surgeon General’s National Strategy. It calls for reducing suicide rates by 10% by 2021, with the ultimate vision of a future where zero suicides occur (UT Department of Health, 2017). Following articulation of this aim, the Plan offers facts, data, and frameworks that help the reader understand the general trends and phenomenology of suicide. It then outlines nine strategic goals for Utah:

1. Increase availability and access to quality physical and behavioral health care;
2. Increase social norms supportive of help-seeking and recovery;

3. Reduce access to lethal means;
4. Increase connectedness to individuals, family, community, and social institutions by creating safe and supportive school and community environments;
5. Increase safe media portrayals of suicide and adoption of safe messaging principles;
6. Increase coping and problem-solving skills;
7. Increase support to survivors of suicide loss;
8. Increase prevention and early intervention for mental health problems, suicide ideation, and behaviors and substance misuse; and
9. Increase comprehensive data collection and analysis regarding risk and protective factors for suicide to guide prevention efforts.

The five-year Plan does not reference any baseline or target metrics, beyond the overall 10% goal, so the extent of progress is not clear. The Plan was developed by the Utah Suicide Prevention Coalition Executive Committee, a 15-person group of diverse stakeholders who have a high level of visibility and influence in the State; they are typically the "go-to" sources for newspaper quotes and public testimony on issues of mental health and suicide. Its all-volunteer membership includes local leaders from Utah government, health systems, academic institutions, faith groups, and the Utah chapters of the National Alliance on Mental Illness and American Foundation for Suicide Prevention.

Despite steadily intensifying federal and state efforts over the past 20 years, suicide rates remain high across the country—and, indeed, higher today than at any other time since the Surgeon General's report. No state stands out as a clear "success story" in overcoming the public health problem of suicide (CDC, 2018). Among the most common explanations provided

by experts is that: 1) suicide prevention still has not risen to the level of concern and action among public health leaders as issues like HIV/AIDS, smoking, or motor vehicle deaths; and 2) suicide prevention has remained primarily focused on the highest risk individuals and mental health needs, missing opportunities to "go upstream" and focus on distal prevention opportunities—including addressing integral social and economic factors, coping skills, and lethal means (Caine, 2013; Stone et al., 2018).

2.3 Public Health Evidence

Systematic reviews of relevant literature from 1966 to 2014 suggest that there is very limited evidence of efficacy behind most existing strategies to prevent suicide. Screening, mental health treatment, public education, crisis helplines, and media guidelines are among the most widespread strategies to prevent suicide, and yet these interventions lack evidence of effectiveness (Mann et al., 2005; Zalsman et al., 2016).

One of the only empirically-based, high-impact suicide prevention strategies is reducing access to lethal means (Mann et al., 2005; Zalsman et al., 2016). International studies have found that when widely-used, highly lethal means are made less available or less lethal, suicide rates overall decline by 30-50%. Notable examples are detoxification of domestic gas in England, reduced toxicity of pesticides in Sri Lanka, and reduced access to military firearms in Israel and Switzerland (Barber & Miller, 2014).

In the U.S., firearms are the lethal means category of greatest concern, responsible for about half of suicides (CDC, 2018). Firearms are fast and fatal; when used, about 85% of suicide attempts with a gun result in death (Spicer & Miller, 2000). A main reason the lethal means

reduction strategy works is that many suicide attempts occur during a short-term crisis (Simon et al., 2001; Deisenhammer et al., 2009). If a person has access to a gun during this high-risk time and uses it, he or she is likely to die (Spicer & Miller, 2000). But if a person chooses a less lethal method, he or she is not only more likely to survive that attempt, but is likely to survive, period; 90% of survivors of non-fatal attempts do not go on to die by suicide later (Carroll, Metcalfe, & Gunnell, 2014).

Despite evidence at the population level that lethal means restriction saves lives and is a crucial part of any public health approach to suicide prevention, it is not a widespread approach in the United States (Barber & Miller, 2014). However, awareness has grown in recent years, particularly after the 2012 National Strategy called for reducing access to lethal means for high-risk individuals as part of a public health approach to suicide prevention (Runyan, Brooks-Russell, & Betz, 2018; HHS, 2012).

3. The Role of Healthcare Systems in Suicide Prevention

3.1 Zero Suicide

One of the 2012 National Strategy objectives that has received the most attention in recent years is to "[p]romote the adoption of 'zero suicides' as an aspirational goal by health care and community support systems that provide services and support to defined patient populations" (HHS, 2012, p.53).

Zero Suicide is an emerging, aspirational model for healthcare systems to improve the care and outcomes of patients at risk of suicide. The programmatic and continuous improvement initiative grew out of a depression care project among behavioral health patients

at Henry Ford Health System in Detroit, Michigan. It rose in national prominence after 2010, when U.S. Health and Human Services Secretary Kathleen Sebelius and Secretary of Defense Robert Gates convened several task forces to examine possible strategies to reduce suicide and ultimately recommended Zero Suicide for healthcare systems (Hogan & Grumet, 2016). It gained further momentum following endorsements by the Surgeon General (2012) and by the Joint Commission (2016) (HHS, 2012; Mokkenstorm, Kerkhof, Smit, & Beekman, 2017).

Premised on the idea that healthcare systems that take responsibility for suicides and improve care for at-risk patients can prevent suicides, Zero Suicide is structured around a framework of core elements including leadership-driven culture, comprehensive training, evidence-based treatment, and data-driven quality improvement.

Zero Suicide is headquartered at the non-profit Education Development Center's Suicide Prevention Resource Center (SPRC), and supported by the Substance Abuse and Mental Health Services Administration (SPRC, n.d.). The Education Development Center offers interested healthcare leaders an array of Zero Suicide self-assessments, work plans, articles, and videos at no cost through its online library; invites them to join workshops and webinars; and contracts to provide technical assistance (Hogan & Grumet, 2016; SPRC.org, n.d.). Over 200 healthcare organizations have indicated that they are implementing Zero Suicide, though it is not known to what degree or with what results (J. Grumet, personal communication, July 9, 2018). In FY2017, the Substance Abuse and Mental Health Services budget added $26 million in funding to support implementation of this model (HHS, 2016).

As Zero Suicide has gained momentum, it has helped persuade many healthcare institutions that suicide prevention extends beyond behavioral health and emergency

department settings, and highlights primary care as a crucial venue for supporting people at risk for suicide. It offers a toolkit specifically designed to implement suicide prevention in primary care settings (SPRC, 2018).

3.2 Rationale for Engaging Primary Care Providers in Suicide Assessment & Management

In recent years, numerous health organizations have called for primary care providers (PCPs) to take an active role in detection of and intervention around suicide risk. In 2012, the U.S. Surgeon General's suicide prevention strategy described suicide assessment and preventive screening as "an integral part of primary care" (HHS, 2012, p.58). In 2016, the Joint Commission mandated that PCPs provide suicide-related screening and treatment as part of institutional accreditation (Joint Commission, 2016). The same year, the American Academy of Pediatrics issued updated guidance urging pediatricians to screen young people for suicidal behaviors and factors (AAP, 2016); the organization bolstered this guidance in 2018 by advocating for universal depression screening for adolescents, while urging pediatricians to develop safety plans with families of depressed youth to reduce suicide risk (AAP, 2018).

There are three common arguments why PCPs should become more actively involved in suicide assessment and management: 1) PCPs are already a main source of healthcare contact, especially for youth; 2) suicide decedents are very likely to visit their PCP in the months and year before death; and 3) PCPs are critical stakeholders in solving complex public health problems; and 4) most PCPs do not currently discuss suicide even with high-risk patients.

First, PCPs are a main source of physical and mental health services, especially for youth. Seven out of ten adolescents visit a physician at least annually, and the PCP is usually the first

point of contact for people who go on to receive care for mental and behavioral issues (Horowitz et al., 2009; Bryan & Rudd, 2011). By contrast, annual check-ups with a mental health provider are not typical, and more than 50% of adolescents with depression receive psychosocial care from their PCP. Young people and their families often prefer to receive mental healthcare from a PCP due to a perception of less stigma, fewer access barriers, and shorter wait times than seeking help from a specialized mental health provider (Cheung, Dewa, Levitt, & Zuckerbrot, 2008; Bryan & Rudd, 2011). In turn, organizations like AAP acknowledge that PCPs are well-positioned to provide mental health services given the growing evidence base to guide clinical practice, medication management, and mental health consultation (Zuckerbrot, Cheung, Jensen, Stein, & Laraque, 2018).

Second, a high proportion of people who die by suicide are in contact with or receiving regular care from primary care providers prior to their deaths. Luoma, Martin, and Pearson (2002) found that approximately 45% of suicide decedents in the U.S. visited a PCP in the month prior to their deaths (23% of those under age 35), while only 19% visited a mental health professional during the same period (15% of those under age 35). While a mooring to the base rate is not available (i.e., we don't know the comparative percentage of age-matched *non*-decedents who visit a PCP or mental health provider in a given month), Luoma et al.'s finding suggests a window of opportunity to reach patients if one could identify and target services to those in need—or intervene in a universally protective manner.

Third, PCPs may be in a unique position to advance a public health-based approach to suicide prevention. In 1996, the Institute of Medicine defined primary care as "the provision of integrated, accessible health care services by clinicians who are accountable for addressing a

large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community" (IOM, 1996, p. 1). Primary care takes a more population-oriented perspective than other medical specialties, through an emphasis on prevention and management of chronic diseases, including mental health conditions. Integrated and collaborative care is core to primary care, especially when it comes to addressing mental and behavioral health conditions (IOM, 1996; IOM, 2012; Bryan & Rudd, 2011). As described in Section 2.1, such integrated thinking is also core to suicide prevention.

Finally, while PCPs are in regular contact with patients who later die by suicide (Luoma et al., 2002) and there is some evidence that training of PCPs can prevent suicidal behavior among patients (Gould et al., 2003), PCPs do not regularly ask even about suicidality, even among patients with depression (Feldman et al., 2007). Nationally, only 37% of primary care providers consistently conduct suicide screening with their adolescent patients (Babeva, Hughes, & Asarnow, 2016). In addition, patients rarely disclose information about suicide-related behavior unprompted. In only 19% to 54% of medical visits did patients who were thinking or planning to kill themselves inform their PCP of their suicidal ideation. This usually means the topic does not come up, as patients rarely disclose information about suicide-related behavior unless they are asked (Schulberg et al., 2004).

3.3 Challenges Facing Primary Care Providers in Suicide Assessment & Management

There are a number of reasons why PCPs may not consistently assess and manage suicide risk amongst their patients. First, suicide is still a very rare event. One study in the Netherlands found 0.31 suicides per general practitioner annually, and concluded a suicide

might occur every three years in a typical 2000-patient practice (Diekstra & van Egmond, 1989). (Diekstra & van Egmond, 1989). Similarly low rates were found by analyzing death certificates for 1992-1994 (Simon & Von Korff, 1998). It is much more common for primary care patients to have suicidal ideation. For example, Nock et al. (2013) studied a sample of 6483 U.S. youth (13-18 years old) and their parents and found that the lifetime prevalence for suicidal ideation among the adolescents was 12.1% and the prevalence of suicide attempts was 4.1%. However, while suicidal ideation and past attempts are known predictors of suicide, the low base rate of suicide means that the positive predictive value of a single suicide screening or assessment is extremely low (6% to 30%): almost none of the people who screen positive will go on to die (Nock et al., 2013; Silverman & Berman, 2014; O'Connor et al., 2013). This is largely why, in 2013, the U.S. Preventive Services Task Force (USPSTF) systematic review concluded that "evidence was insufficient to determine the benefits of [suicide risk] screening in primary care populations" (O'Connor et al., 2013, p.741). USPSTF acknowledged that the rarity of suicide not only presents difficulties predicting suicidal behavior, but also gaining adequate sample size and statistical power to study the efficacy of interventions; very large trials are required to demonstrate the efficacy of a single suicide prevention intervention (O'Connor et al., 2013).

Second, PCPs may be uncomfortable or reluctant to raise the topic of suicide. Physicians tend to rely on patients to initiate the discussion about suicidal ideation, possibly due to a sense of vulnerability physicians feel in broaching the topic (Schulberg et al., 2004). Even among mental health providers—for whom the topic of suicide is core to clinical practice—it is well-documented that feelings of anger, guilt, anxiety, incompetence, and frustration often arise when working with patients at risk for suicide (Shea, 2002; Rudd et al., 2008; Schulberg et al.,

2004). Thus, it is not surprising that PCPs—for whom suicide has not always been core to clinical practice—may also feel such discomfort. In addition, many healthcare providers falsely believe that asking directly about suicide can "inspire" patients to harm themselves (Horowitz et al., 2016). Some authors theorize that such discomfort and fear may lead PCPs to avoid the topic of suicide or raise it in ways that inhibit patient disclosure, though the existing literature does not explore this directly (Vannoy et al., 2010; Schulberg et al., 2004).

Third, PCPs may not focus on suicide because they lack knowledge or time. One study by Sudak et al. (2007) surveyed directors of training programs of several primary care specialties and found that "[73%] of pediatrics directors were not confident in their residents' abilities to treat depression, and 30% were not confident in their ability to recognize suicide risk" (p.346). The level of pediatrics directors' confidence in both areas was significantly lower than their internal medicine and family practice counterparts (Sudak et al., 2007). Even if they do raise the topic of suicide risk, PCPs are not always aware of what treatments are most appropriate in what circumstances—e.g., pharmacotherapy, referrals to a mental health provider, emergency department assessment, or something else—as well as what the expected impact of such treatment will be and how to coordinate or consult with specialized services (Feldman et al., 2007; Babeva et al., 2016; AAP, 2018). Finally, a common reason why PCPs may not undertake suicide screening or assessment is simply because they lack the time to complete all recommended preventive services during a brief office visit (Yarnall, Pollak, Østbye, Krause, & Michener, 2003; Asarnow et al., 2005).

3.4 Core Competencies for Primary Care Providers in Suicide Assessment & Management

Epstein and Hundert (2002) define competence in medicine as "the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individuals and communities being served" (p.226). With an issue like suicide that requires a broad range of "personal, professional, intellectual, and technical capacities" (Pisani, Cross, & Gould, 2011, p.256), having a set of definable and measurable identified skill sets—*competencies*—is important for achieving clinical *competence* (Bryan & Rudd, 2011).

In 2004, the American Association of Suicidology (AAS) developed a set of core competencies for mental health providers involved in assessing, managing, and treating patients at risk of suicide. Their model describes core skills and processes that range from managing a clinicians' own complex emotions and beliefs toward suicide to managing treatment and care plans (Rudd et al., 2008). It was developed based on scholarly literature, expert consensus, and pilot testing by a "Core Competencies Curriculum Committee" consisting of nine leading suicide researchers and clinicians (AAS, n.d.).

Neither the AAS nor any other major professional body has issued a set of equivalent competencies for primary care providers or other non-mental health clinicians, nor undertaken a similarly rigorous, consensus-based process toward this end. Suicide prevention training is also not a required part of primary care education or clinical certification (Sudak et al., 2007; Taliaferro & Borowsky, 2011). However, one of the members of the Core Competencies Curriculum Committee (Dr. M. David Rudd) and one of the leading authors of the Committee's findings (Dr. Craig J. Bryan) co-authored a book *Managing Suicide Risk in Primary Care* in 2011

that aims to fill the gap. In addition, in 2017 the Suicide Prevention Resource Center (SPRC) and the Western Interstate Commission for Higher Education Mental Health Program (WICHE MHP) prepared a "Suicide Prevention Toolkit for Primary Care Practices" that outlined specific knowledge and skills for PCPs engaged in suicide prevention.

Bryan and Rudd's *Managing Suicide Risk in Primary Care* (2011) focuses on the core competencies. Although they are geared toward behavioral health consultants—providers embedded within and collocated with the primary team—they apply to a wide array of integrated and non-integrated contexts:

1. **Foundations for effective clinical care** – understand basic aspects of suicide (including core terminology and biopsychosocial models of suicide) and manage one's attitudes and emotions relative to suicide.

2. **Screen for suicide risk** – know the most important risk and protective factors and routinely screen all referred patients for suicide risk.

3. **For positive screens conduct a more specific suicide risk assessment** – solicit information on suicidal thinking and behavior in a standardized manner that minimizes patient anxiety.

4. **Arrive at a reasonable assessment of risk level** – determine what risk category a patient falls into based on their baseline and acute risk levels, and assess the severity of that risk.

5. **Initiate interventions and management strategies** – develop crisis response and crisis support plans, engage in means restriction counseling, coordinate care with family members.

6. **Refer to specialty mental healthcare when indicated** – refer patients at moderate/higher risk to mental health providers; consider referral for inpatient evaluation for patients at severe risk.

The structure and content of these competencies is very similar to the AAS competencies for mental health providers. In fact, items #1-4 are virtually identical. Where the competencies diverge is in item #5 and #6: the PCP version focuses on preventive and treatment interventions that can be delivered to in a primary care context, and guides PCPs in making specialty mental health referrals for higher risk patients (Bryan & Rudd, 2011).

The SPRC and WICHE MHP's Toolkit aligns with Bryan and Rudd's guidance, focusing on prevention practices across five learning and prevention modules:

- **Module 1: Prevalence and Comorbidity** – focused on "the magnitude of the suicide problem in the U.S. and [associations with] mental health or substance abuse problems."

- **Module 2: Epidemiology** – "summarizes the epidemiology of suicide attempts and suicide deaths in various demographic groups."

- **Module 3: Prevention Practices** – "discusses general practices that can be incorporated into primary care settings to lower the risk of suicide across their entire patient population."

- **Module 4: Suicide Risk Assessment** – "presents a methodology for gathering information about a patient's suicidal thoughts and plans and an approach for assessing the level of suicidal intent. It concludes with pointers for clinical decision making regarding the assessment of risk."

- **Module 5: Intervention** – "discusses a range of patient management approaches that can be implemented in the primary care setting according to the level of risk" (SPRC, 2018).

In summary, the development of a core competency model is an important step in suicide prevention, providing a concrete articulation of the skills, capacities, and processes that clinicians need to undertake the challenging work of suicide assessment and management. However, such models for primary care providers are still in their infancy. To date, Bryan and Rudd's *Managing Suicide Risk in Primary Care* (2011) and the Western Interstate Commission for Higher Education Mental Health Program's (2018) "Suicide Prevention Toolkit for Primary

Care Practices*"* demonstrate important progress; rigorous, consensus-based, pilot-tested processes will be needed to validate and refine these competencies and ensure their practical application in a primary care context.

4. Wicked Problems and Adaptive Leadership

4.1 Suicide as a "Wicked Problem"

Suicide may be an example of a "wicked problem." In 1973, Horst Rittel and Mel Webber described this category of social problems that are highly complex, contradictory, and cross-cutting. They differ from the complicated yet resolvable nature of ordinary, "tame" problems which, like a puzzle, only need the right information and operating steps to be tackled successfully. By contrast, wicked problems—like poverty, climate change, and terrorism—lack ready-made processes or solutions; the nature of the problem is different over time and from one stakeholder to another, and solutions involve contested space and difficult trade-offs (Grint, 2010). Traditional solutions will not only fail to solve wicked problems, but may actually create unintended consequences that worsen the situation (Camillus, 2008).

Rittel and Webber (1973) argued that there are 10 common characteristics of wicked problems:

1. There's no clear problem definition of a wicked problem.
2. Wicked problems lack a clear stopping point
3. Solutions to wicked problems can't be easily evaluated as good/bad or right/wrong.
4. There is no immediate or straightforward test of a solution to a wicked problem.

5. Each attempt at solving a wicked problem counts significantly.
6. Wicked problems do not have a finite set of potential solutions.
7. Every wicked problem is essentially unique.
8. Wicked problems are symptoms of other problems.
9. Wicked problems involve many stakeholders with conflicting agendas.
10. There is no room for leaders to be wrong.

Subsequent authors have recognized the redundancy of some of the ten points and offered simplified versions (Weber & Khademian, 2008; Head & Alford, 2015; Dentoni, Bitzer, & Schouten, 2018). These newer models reframe Rittel and Webber's characteristics into indicators of whether a problem is wicked, rather than formal tests for a problem to qualify as such (Camillus, 2008). Table 2 is my attempt at summarizing some of the key features of a wicked problem through a proposed four-part encapsulation of Rittel and Webber's model.

Table 2 - Summary of Characteristics of Tame vs. Wicked Problems

	Tame Problem	Wicked Problem
Level of Uncertainty About the Problem	LOW - Discrete cause/effect - Clear causal chain - Clearly defined future state	HIGH - Etiology unclear - Each attempt to solve changes understanding of problem - Not always clear future state
Level of Interconnectedness with Other Problems	LOW - Can examine problem in relative isolation - Problem can be largely solved by a single entity	HIGH - Problem cuts across diverse issues areas - Problem requires multiple parties to resolve
Level of Social and Political Conflict	LOW - Low potential for social and political conflict	HIGH - High potential for social and political conflict
Level of Uncertainty About Solutions	LOW - Can outline and compare solutions - Can learn from past examples - Flexibility to change course	HIGH - Solutions aren't predictable or easily navigable - Can't apply past experiences - High stakes, limited tolerance for failure

Conklin (2001a) presents school violence is an example of a wicked problem. The example is helpful, as the difference between a tame and a wicked problem can be understood through a comparison of building a school versus addressing school violence. Building a school may be *complicated*—involving architects, engineers, contractors, designers, financial planners, and the wider community. But ultimately the task is relatively discrete, and can be overseen by a central group of people drawing on past models and common blueprints. By contrast, the problem of school violence is highly complex. Even if there is community consensus that violence is a problem, there is often high uncertainty (and limited consensus) about the *factors driving* it. Different groups may have vastly divergent conceptions of cause and effect. Is bullying the main culprit? Access to weapons? Mental illness? Depending on how the etiology is viewed, proposed solutions will vary. One group may emphasize installing metal detectors, arming teachers, and increasing discipline; another group may recommend hiring more school psychologists and restricting gun ownership. Even if a comprehensive strategy can be designed that encompasses the multi-faceted factors and populations at hand, resolution may still be out of reach due to deep cultural differences, political sensitivities, and commercial interests (Conklin, 2001a).

4.2 Adaptive Leadership for Addressing Wicked Problems

In the nearly half-century since Rittel and Webber published their work, interest in the wicked problems framework has grown, with applications ranging from environmental sustainability and urban planning to healthcare policy and business management (Head & Alford, 2015; Head, 2018). One of the most important contributions to the literature in recent

years is a move beyond *what is* a wicked problem to describe *what to do* in the face of such complex and urgent phenomena. Such action-oriented approaches challenge the notion that wrestling with wicked problems is futile, and emphasize that by understanding the most challenging features of wicked problems, it becomes possible to design responses to them (Crowley & Head, 2017; Head & Alford, 2015).

In particular, authors point to different authoritative forms required for managing tame vs. wicked problems. These require understanding that the biggest roadblocks to progress are the conventional ways that leaders make decisions, organize people, distribute resources, and oversee performance. By reconfiguring structure, roles, and process to be more flexible, collaborative, and nuanced, leaders and teams can begin to make a dent in wicked problems (Conklin, 2007; Weber & Khademian, 2008; Brookes & Grint, 2017).

The adaptive leadership framework developed by Ronald Heifetz and his colleagues is particularly applicable to this class of complex issues. The hallmark of adaptive leadership is carefully diagnosing whether and why a problem is non-technical/non-tame—and then carefully avoiding the tendency to apply technical/tame solutions. This occurs by shifting work to people who can experiment and collaborate their way into solutions rather than handing down solutions. The work is inherently distressing, as it involves "new roles, new values, new behaviors, new approaches" on the part of people responsible for carrying out the work who can no longer wait for the solutions to be provided by leaders (Heifetz & Laurie, 2001 p.132). By stepping back to understand the dynamics at play while keeping teams focused and empowered outside their comfort zones, it becomes possible to address problems which

demand entirely new ways of thinking and acting, which cross systems, which are not well-suited to off-the-shelf solutions—which are, in short, wicked (Heifetz & Laurie, 2001).

Appendix B. Summer 2017 Summary Findings

- **Study Design:**
    - **Purpose –** to better understand mental health providers' experiences, perceptions, and practices related to suicide assessment and management in order to help improve their confidence and competence.

    - **Methodology –** 30-45 min confidential semi-structured phone interviews with 30 mental health providers; analysis involved a systematic process of coding to identify and interpret patterns of salient themes in the transcripts.

    - **Sample –** Participants were mental health providers serving youth (ages 10-17) in urban or rural hospital, outpatient, and assessment center settings across Utah.

- **Key Findings:**

    1. *Respondents reported a high level of emotional challenges involved with this work*—particularly feelings of frustration and exhaustion, as well as anxiety of losing a patient to suicide. At the same time, they demonstrated self-awareness of the emotional demands, and relied extensively on colleagues for support.

    2. *There was high variability in the type and manner of suicide assessment information collected*; some approaches were far more comprehensive than others. The most

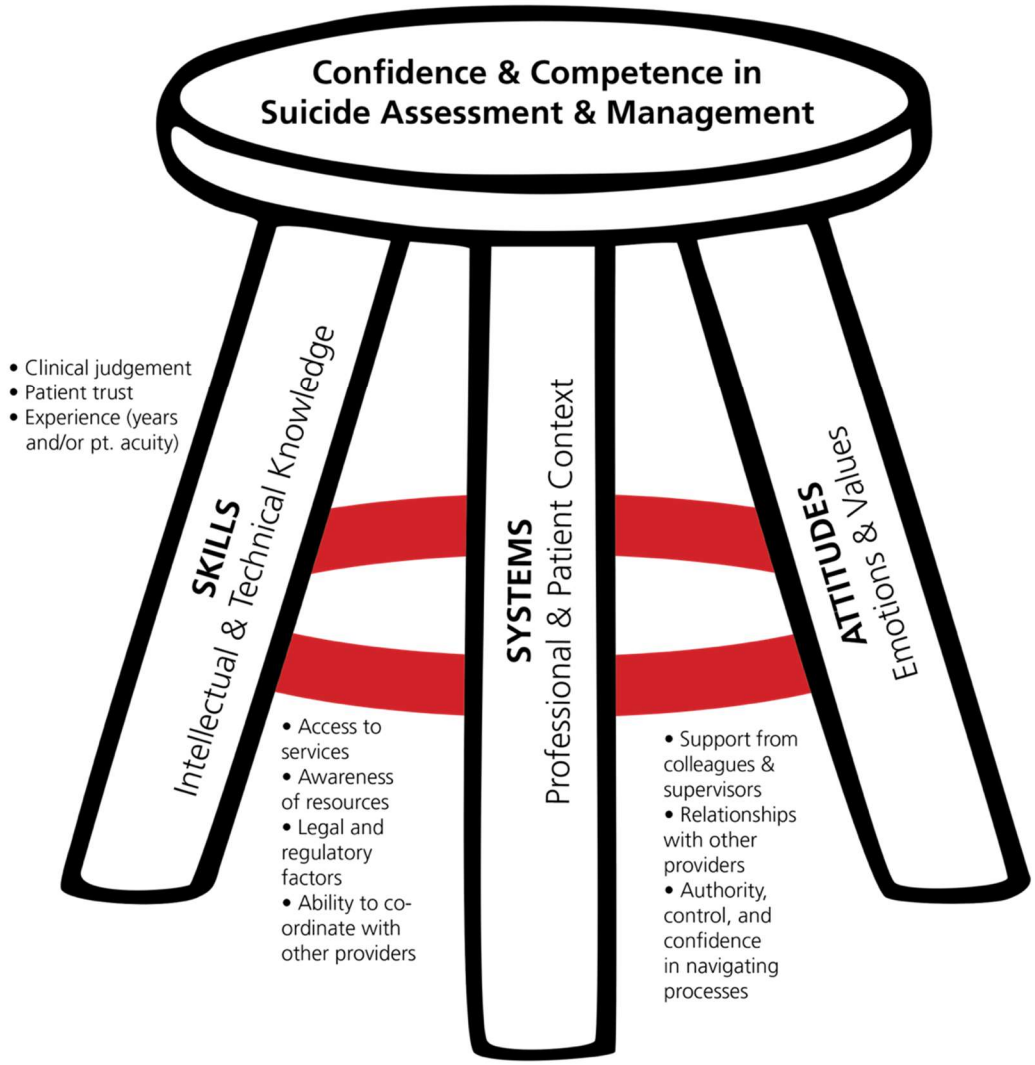
common assessment strength that emerged was the use of standardized screening instruments to help guide clinical interviews and prompt difficult questions. The most common challenges were lack of time, lack of consistency, and the unique challenges of gathering information from youth.

3. *Formulating Risk proved to be the most challenging domain*. Only a few respondents understood what risk formulation entailed and used consistent, standardized processes. About half felt that having a standardized process of risk formulation was important, but they lacked knowledge about the steps or tools involved in doing so. For the other half, the notion of risk formulation centered around a "gut feeling" that emphasized experience and intuition, rather than a standardized process that prioritized knowledge and skills.

4. *The Treatment and Services Plan and Managing Care domains revealed prominent individual-level strengths and system-level challenges.* Respondents excelled at coordinating care with providers, family, and community stakeholders. However, they struggled with issues of access—both to clinical care and community services referrals—that they felt were crucial to improving the mental health and safety of their patients.

5. *Competencies are not static*. Providers involved in suicide assessment and management of youth experience a constant interplay between 1) intellectual and technical

knowledge (“skills”); 2) emotions and values (“attitudes”); and 3) professional and patient context (“systems”). These three areas appeared to function like three legs of a stool: challenges or strengths in one leg could weaken or enhance a provider’s overall level of confidence or competence. Moreover, like an actual stool, leg strength was not simply a reflection of the individual leg integrity, but also cross-bars between them. The “cross-bars” in this sense are the factors bulleted in the figure below.



Appendix C. Interview Protocol

INTRODUCTION

Introduce self: Thank participant for their time, explain who you are and your role in the study.

Remind of purpose: The purpose of this interview is to learn more about your experiences working with pediatric patients who may be at risk for suicide. Your perspectives will help to inform the work of diverse organizations in Utah on suicide prevention. I

The interview should last about 30 minutes. It will be fairly informal, although we do have a set of questions we're hoping to cover during this time. There are no right or wrong answers, and we welcome your personal stories, opinions, and anecdotes.

If it's ok, I'd like to record the conversation. This will help us to analyze the information and ensure we capture your comments correctly. We won't directly quote you in any reports or academic/outside publications without your explicit approval. Once we are done with the study we will delete the recording.

If anything is uncomfortable or you opt not to answer, you can skip any question at any time and stop at any time.

If you have any questions, comments or concerns in the future, I will be your point of contact, so please contact me directly. (Interviewer to offer direct contact information.)

DEMOGRAPHICS

1. Tell us a little about the setting in which you practice. Approximately how many years have you been working as a primary care provider? How large is your personal panel of patients? What is the percentage of your patients that are under the age of 18? How many other providers are there in your practice? Is any form of mental or behavioral healthcare integrated into your practice? [if yes, try to get a little more detail about what type of integration – co-location, consultation, etc]

2. Have you had any specific training around the topic of suicide? Consider your educational background and any additional training you may have attended. [If none, ask where they have mostly learned about suicide – e.g medical training; talking with colleagues; media; other?]

OPENING QUESTIONS

I would like to start by getting your quick reactions to some questions we'll explore in more depth later in the interview.

3. What do you feel are some of most significant opportunities primary care providers have when it comes to helping prevent youth suicide?

4. What are the most significant barriers that primary care providers face in helping prevent youth suicide?

5. How does youth suicide prevention compare to other types of health-related prevention that primary care providers focus on in their practice? Do you think primary care providers' suicide prevention efforts should focus on ALL youth patients or just those known to be at higher risk?

Interviewer explains: the next questions may sound a little repetitive, as they are structured around some of the different steps in suicide assessment and manage as some researchers like to organize them. We don't at all expect that all these steps will be familiar to you.

SCREENING & ASSESSMENT

6. Do you ever conduct suicide screening or assessment with your pediatric patients? [if they aren't sure what this means, explain - for example, collecting information about risk and protective factors, suicidal behaviors, and warning signs of imminent risk of suicide]

    a. If **NO** – is there any particular reason why you do not? [Explore with them some potential areas – e.g., don't believe it's important, lack of knowledge, lack of tools, lack of time, lack of comfort with the topic. – then skip to questions D-F.]

b. If **YES** – What suicide-related screening and assessment information do you collect? How do you gather it? Are you conducting the screening or is another provider (e.g., nurse, medical assistant)? Are family members ever involved? Do you use any particular tools or processes to collect this information?

c. Do you screen <u>every</u> pediatric patient you see on <u>every</u> visit, or just certain patients at certain times? [If "just certain" try to get a better sense of what the general <u>criteria</u> and <u>frequency</u> is – e.g., it's helpful to know if the PCP is screening every adolescent patient with a history of depression on every visit

d. When it comes to collecting screening and assessment information around suicide risk, how do you rate yourself on a scale from 0 (being not at all knowledgeable, skilled, and confident) to 4 (being very knowledgeable, skilled, and confident)

   And why would you say ____?

e. How confident do you feel with the process of collecting assessment information around suicide? Would you say…

f. What are the greatest strengths of your screening and assessment process?

g. What is most challenging or could be improved?

h. Many providers are reluctant to ask about topics for which they feel there is little they can do to intervene or prevent an adverse outcome. Do you think this is ever the case with suicide risk?

FORMULATING RISK

7. Next I'd like to ask about actually using information about a patient to determine their level of suicide risk.
    a. How do you make a clinical judgment of whether a patient is low-risk, medium-risk, or high-risk for suicide? What factors do you consider? Do you usually make this determination on your own, or is anyone else involved (e.g., other clinicians, integrated mental health provider, patient's family members, etc)?

    b. What steps would you take if someone you assess seems to pose a heightened risk for suicide?
        i. At what point do you send someone to specialized mental health services?
        ii. At what point do you send someone to an Emergency Department or psychiatric hospital?

    c. When it comes to risk formulation, how do you rate yourself on a scale from 0 (being not at all knowledgeable, skilled, and confident) to 4 (being very knowledgeable, skilled, and confident)

And why would you say ____?

d. What are the greatest strengths of this risk formulation process?

e. What is most challenging or could be improved?

PLANNING TREATMENT & MANAGING CARE

8. Now we'll move on to the process of developing treatment and safety plans and managing care of patients who may be at risk for suicide.

    a. Once you or another healthcare provider has determined a patient's suicide risk level, what if any involvement do you have in developing treatment and care plans for the patient? Is anyone else involved in developing and implementing this plan (e.g., other clinicians, care manager, integrated mental health provider, family or teachers of the patient, other)?

    b. Does a patient ever receive mental or behavioral healthcare services at your primary care practice, or are they always referred elsewhere?

        i. If yes, clarify a bit more about what services are available (medication management, short-term therapy, long-term therapy, other?)

c. Do you talk about any preventive things families can do to make the home environment safer if a suicidal crisis were to occur? [If respondent is unclear about the question, can explain we are talking about things like reducing access to lethal means.]

    i. If so, what specific things do you discuss?

    ii. Do you discuss these preventive steps only with families of patients *currently* at heightened risk for suicide? Or with families of patients who may have *low* or *no* acute risk at the time they see you?

d. Do you (or someone in your clinic) ever create a specific crisis or safety plan with a patient?

    i. If so, do you use a specific template?

    ii. If not, what are the barriers?

e. When it comes to developing and managing treatment and care, how do you rate yourself on a scale from 0 (being not at all knowledgeable, skilled, and confident) to 4 (being very knowledgeable, skilled, and confident)
And why would you say ____?

f. What are the greatest strengths of your process of developing and managing treatment, care, and safety plans?

g. Specifically when it comes to referring someone for additional care and treatment, what are the biggest strengths and barriers you face?

h. What is most challenging or could be improved?

SELF CARE

9. Research shows that assessing a young person's suicide risk can be very emotionally challenging work for providers, associated with feelings like anxiety, fear, or frustration on the part of the provider. Have you experienced or witnessed that at all?

    a. What supports, if any, have you used to help you manage your personal beliefs, attitudes, and emotions in treating young persons who have suicide-related risks?

10. Anything you'd like to add that you haven't had a chance to share?

Appendix D. Consent Cover Letter

Perceptions of Screening, Triage, Referral & Treatment Needs to Address Youth Suicide

Online Consent Cover Letter

Thank you for your interest in participating in this study. The purpose is to better understand the needs of mental health and primary care providers in our community, specifically regarding the screening, triage, referral, and treatment of adolescents who present with an increased risk of suicidal behavior.

We would like you to participate in a 30-minute phone interview. Although there are no direct benefits to yourself, your thoughts and experience will help us better serve adolescents in the community who may be at risk for suicidal behaviors. The only potential risks are being uncomfortable discussing suicide in young people and the small risk that confidentiality would be lost.

Participant's privacy and confidentiality will be protected by the study team. Phone interviews will take place in a private location at Primary Children's Hospital. All research data will be stored on a password protected computers and will only be available to the immediate study team. After analysis of transcribed interviews is complete, the recordings will be reviewed. Individuals will not be directly quoted and research findings will be presented in aggregate.

If you have any questions, complaints or if you feel you have been harmed by this research please contact Dr. Lisa Giles, University of Utah Department of Pediatrics, Behavioral Health at (801)662-

6755 or lisa.giles@hsc.utah.edu. Contact the Institutional Review Board (IRB) if you have questions regarding your rights as a research participant. Also, contact the IRB if you have questions, complaints or concerns which you do not feel you can discuss with the investigator. The University of Utah IRB may be reached by phone at (801) 581-3655 or by e-mail at irb@hsc.utah.edu.

Once the phone interview is scheduled, it should take approximately 30 minutes. Participation in this study is voluntary. You can choose not to take part. You can choose not to finish the interview or skip any question you prefer not to answer without penalty or loss of benefits.

By participating in the phone interview, you are giving your consent to participate.

Thank you again for your participation.