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Prevention-Oriented Risk Formulation

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Update and Expansion

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Abstract

In this chapter, we review the background to prevention-oriented risk formulation Pisani et al., Acad Psychiatry 40(4):1–7, 2016 and provide updates about its implementation. Section "The Background: From Prediction to Prevention" begins with a critical examination of traditional approaches to suicide risk assessment which seek to stratify those at risk into categories based on likelihood of future suicidal behavior. Responding to the limitations of such approaches, we set out the criteria for a clinically useful "prevention-oriented" approach. Section "Prevention-Oriented Risk Formulation" outlines a framework for prevention-oriented risk formulation, originally published by Pisani et al. Acad Psychiatry 40(4):1–7, 2016, which seeks to meet these criteria. Since its publication, this framework has gained increasing traction in clinical settings around the world. Section "Updates and Modifications" examines what we have learned from the different contexts in which the model has been applied and how we have modified the model itself and methods for teaching it. Section "Prevention-Oriented Risk Assessment for Violence" then turns to the case for applying prevention-oriented risk formulation to risks other than suicide. Starting with a review of the science concerning co-occurrence of different types of risk, we argue that a unified approach to risk formulation may provide deeper insights into an individual's risk. At the same time, such an approach also has the potential to streamline the risk formulation process to make its clinical application more efficient.

Keywords

Suicide risk assessment · Violence risk assessment · Risk formulation · Person-centered assessment · Prevention-oriented assessment

Introduction

Section "The Gold Coast Achievement" describes the successful rapid implementation of the framework across a health care system in Australia. We outline the procedures put in place to promote a paradigm shift in culture and to ensure fidelity using a data-driven continuous quality improvement approach. We then describe the results of this implementation, including a 35% reduction in suicide attempts for those placed on a pathway that includes prevention-oriented risk formulation. Finally, we describe recent efforts to develop an Integrated Formulation that combines risk of violence, vulnerability, and suicide into a single risk formulation process.

We end the chapter by considering the next steps to be taken to strengthen and develop the framework in both scholarly and clinical contexts.

The Background: From Prediction to Prevention

Initial Motivations

For a long time in our field, we have had difficulties with how to synthesize, summarize, and communicate about a person's risk for suicide. Traditionally, a suicide risk assessment has sought to assign a person a level of risk that predicts the likelihood of future suicidal behavior – typically "high," "medium," or "low." Clinicians then select appropriate interventions based on the assigned risk level. However, there are significant problems with both the conduct and the conceptualization of such assessments.

Although risk stratification is necessary in certain contexts, there is a danger that risk categories rather than individual needs will be used to determine the allocation of resources and interventions [6, 51]. The clinician's efforts will thus be channeled primarily into identifying and responding to a risk level, rather than engaging explicitly with the factors underlying suicidal ideation and behavior.

More fundamentally, short-term prediction of suicidal behavior is currently not achievable. And even if future advances enhance predictive power, having better categorization tools will only bring meaningful clinical advances if we have frameworks to contextually anchor risk and to communicate and respond in a personalized way. Many studies have documented that psychiatrists and other mental health professionals are very poor predictors of future self-harm. A recent meta-analysis of 365 studies conducted across 50 years [17] concluded that, "across odds ratio, hazard ratio, and diagnostic accuracy analyses, prediction was only slightly better than chance for all outcomes" and that "no broad category or subcategory accurately predicted far above chance levels." The authors also found that "predictive ability has not improved across 50 years of research" and thus advocate for new approaches to determining risk that do not rely on traditional risk factors. New technologies and computational approaches that draw on massive datasets from people's lives and records [36, 39] may be able to improve our predictive power in the future, but the traditional distinctions between "high," "medium," and "low" levels of risk do not provide a framework for making decisions and communicating about identified risk at an individual level.

A further problem with traditional risk stratification is that risk is dimensional rather than categorical. It is very difficult to find consensus on where boundaries lie between risk levels or to arrive at agreed methods for assigning category membership (e.g., by reference to clusters of symptoms; designations based on self-reports). Similarly, "acute risk," is variously defined as risk of suicidal behavior "within days," "within weeks," or even "within several months."

Categorization of risk into "high," "medium," or "low" assumes that the baseline for comparison is the population as a whole (e.g., "high in comparison to the general norm"), but use of this baseline can obscure important information and limit intervention opportunities. For instance, someone who has just lost their job might be judged

as "low risk" compared to the population as a whole. Yet even if this assessment is accurate, it fails to communicate that the person is at a higher risk than they have ever been before in their life and offers no path to responding to their elevated risk.

A New Approach

Lack of predictive validity, conceptual problems with a categorical approach, and lack of context relevant to the individual mean that standard approaches to suicide risk assessment provide inadequate clinical grounding for therapeutic management plans, and, ultimately, for the prevention of future suicidal behavior [38, 51].

What, then, can we do instead? Carter et al. argue that our goal should be to perform "an individual needs-based assessment followed by intervention to meet patient needs and to reduce exposure to modifiable risk factors" [7], p. 392. In the 2016 paper [34], we suggested that one way of achieving such a goal would be to shift from prediction-oriented assessments to *prevention*-oriented thinking, language, and actions. We identified the following three criteria that a practical approach to risk should meet.

1. Risk formulation should be anchored in the clinical context and patient population in which the assessment occurs [8]. Rates and risk of suicide differ across contexts [22], so clinicians in different practice contexts (e.g., outpatient, inpatient, and emergency services) will have a different experience base with distressed patients and hence different judgments about risk. A patient considered high risk in one context (e.g., a college counseling center) might be considered low risk in another context (e.g., an inpatient psychiatric hospital). These risk appraisals differ, not only because patient populations differ but also because each setting has different resources available for intervention. Likewise, the purpose of an assessment varies by setting. So clinicians must conceptualize and describe risk in relative terms. Describing a patient as "low risk" or "high risk" in the abstract is far less meaningful than describing the patient as at lower or higher risk *relative to other patients in the same context*.
2. Risk formulation should capture the fluid nature of suicide risk in the life of an individual patient [16, 37, 50] and explicitly state the following: (a) how the person's current risk compares to risk at previous time points, and (b) how risk might change in response to future events.
3. Risk formulation should lead directly to intervention strategies [25]. Data points included should provide the building blocks needed to produce risk management plans.

Source: Pisani et al. [34]

To meet these criteria, we proposed moving away from the identification of risk levels. After some consideration, the language of "risk" was retained, despite its inherently predictive connotation. This language is widely used in clinical settings,

and "risk assessments" are often formal requirements in health and payer systems. Removing all talk of "risk" would thus create insurmountable institutional obstacles to the adoption of a new prevention-oriented approach. Nevertheless, the authors argued that the goal of risk assessments should be reframed. Rather than forming the basis for a predictive determination of risk level, the risk assessment process should instead be understood as the gathering of information that leads to a *formulation* of the individual's current status. This formulation – a concise synthesis of evidence-based suicide risk data – can then lead to a treatment plan that is tailored to the individual.

Risk formulation is an example of what [5] describe as "structured professional judgement." A formulation draws on data from a range of sources based on the clinician's knowledge of suicide risk and then structures this data in a way that contextualizes risk. The goal of a formulation is to understand the patient through past, present, and future, creating a narrative that explains how the person's current circumstances, behaviors, beliefs, thoughts, actions, etc. have come to be, how they have altered the patient's life, and how they can be changed or supported in the future. An understanding of a patient's past and present means we can better plan for the continuation of symptoms, the development of new symptoms, or the eradication/lessening of current symptoms.

This new approach is already impacting the field. As of 2021, the original paper has been accessed more than 24,000 times and has received 73 citations in other peer-reviewed papers. According to Altmetric, it is ranked in the 96th percentile of tracked articles of a similar age. The framework itself has been adopted in many health systems – in some cases at a regional or national level – and empirical data has shown that it can lead to a substantial reduction in suicide risk (see section "The Gold Coast Achievement," below).

In addition to drawing attention to the need for prevention-based formulation, the paper also offered a method for carrying out such formulations. This method includes the gathering and synthesis of eight categories of data, only two of which relate explicitly to suicide ideation and behavior. Expanding the information base in this way has pushed those working in the field to think more holistically about suicide risk, which has sometimes been identified solely with the severity of suicidal thinking. The introduction of other relevant categories has led to a shift in focus that helps clinicians set reports of suicide ideation or behavior within a contextually anchored picture of the person and their situation as a whole. In addition, the graphical representation of the eight categories in a spatial relationship to risk has allowed for a new perspective on what that risk means for the individual.

One key advance made by this approach is the distinction between "risk status" and "risk state," terms adapted from the literature on violence risk assessment and management [14]. These contextually grounded categories relate risk to the person's own particular circumstances at different times and in relation to different groups. Again, the goal when using these categories is not to predict future behavior, but to use these contexts to inform prevention-oriented planning. A second advance is the insistence on the identification of (a) available resources on which the particular individual can draw, and (b) foreseeable changes that are likely to lead to crisis.

Identification of the challenges the specific individual might face and the resources they have available to them steers the formulation toward practical prevention-oriented planning that is contextually anchored in the individual's circumstances.

In brief, the new approach:

- Moves away from a focus on prediction
- Sets aside the determination of risk in terms of stratified categories
- Provides a structure for considering the biopsychosocial dimension of the individual's presentation by considering more than just their current feelings/thoughts
- Distinguishes between risk state and risk status
- Includes within risk formulation explicit attention to what might change in the future to increase risk state (foreseeable changes) and what internal and external resources are available to address risk and aid care planning
- Provides a visual model that is repeatable and can be shared
- Focuses on practical outcomes: the things that might change in a person's life and how the person can be supported through these changes

Prevention-Oriented Risk Formulation

The approach to risk formulation advanced in [34] involves collecting clinical data relating to eight broad categories of information about the individual and their context. This data is then synthesized into a prevention-oriented formulation that can guide planning both to secure the person's safety and to help them get better. The categories fall into two loosely defined classes: those factors that are more enduring and those that are more dynamic. The naming of these categories acknowledges that there are almost no factors that are either entirely static or entirely fluid (Fig. 1).

More enduring factors provide the contextual background for understanding the person and their risk for suicide. They are identified by talking with the person and family members about their personal history and experiences. **More dynamic factors** relate to the present and future and may be subject to faster or slower change. Information about dynamic factors is crucial for helping the clinician identify changes that might result in someone being more or less susceptible to risk.

More Enduring Factors

More enduring factors include the following: (1) strengths and protective factors; (2) long-term risk factors; (3) impulsivity and self-control, including history of substance misuse; and (4) past suicidal behavior and ideation.

Strengths and protective factors. Starting an assessment by gathering information about what makes a person strong and special not only identifies background factors that will be important in understanding how to manage suicide risk, but also helps clinicians to see the person as a unique individual rather than just a case to be solved.

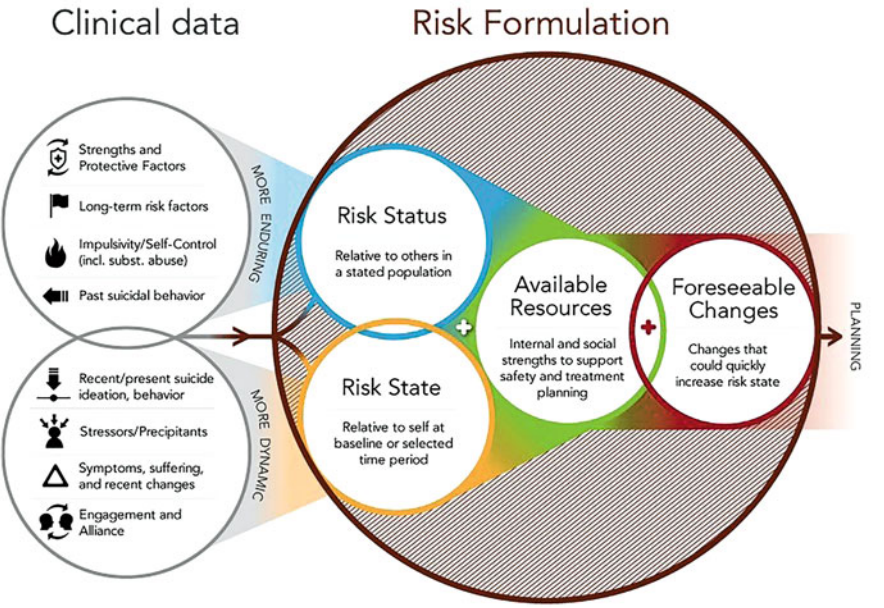

Fig. 1 Risk formulation as presented in [34]

This personal approach is particularly important when working with those at risk of suicide, since responding effectively to suicide risk requires forming a meaningful connection with the person.

Long-term risk factors. These factors provide the historical setting to a person's suicide risk. They are important both because they can guide assessments of relative risk and because they are central to understanding the individual's story – their struggles, burdens, and challenges. When gathering data under this category, it is particularly important to include information on childhood trauma and whether there is a family history of suicide, as well as a mental health history that goes beyond just asking about depressive symptoms. In addition, clinicians will also want to consider demographics under this category. While it is true that certain demographics are at greater or lesser risk than others, this is not the primary reason for collecting this data. Instead, the goal is to understand the challenges a person may have faced because of, for example, their ethnicity or sexual orientation, as this can help a clinician better respond to their needs as an individual.

Impulsivity/self-control (inc. substance abuse). A person's degree of impulsivity reflects the likelihood that they will act without thinking through the consequences. Misuse of drugs or alcohol can have an extremely high impact on impulsivity and judgment and can also impair the person's ability to find alternative solutions to problems. Knowing how likely it is that a person will stop to reflect before taking potentially dangerous actions can both help with understanding an individual's current situation and with planning for the future.

Past suicidal behavior. Information about past suicidal behavior is perhaps the most intuitively obvious data to gather when preparing a risk formulation. However, it is important to remember that, while there is a strong correlation between past and future suicidal behavior, the goal here is not predictive. Rather, knowing the "when" and the "why" of past behavior helps the clinician understand the kinds of situations that may precipitate such behavior in the future. This enables planning to avoid or respond to such situations if they arise again.

More Dynamic Factors

More dynamic factors include the following: (1) recent/present suicide ideation or behavior; (2) stressors/precipitants; (3) symptoms, suffering, and recent changes; and (4) engagement and alliance.

Recent/present suicide ideation or behavior. Again, recent or present suicide ideation or behavior is an obvious starting point. When asking about this category, it is important to pay attention to the feelings that lie behind or accompany the events, so clinicians should also ask about the stressors and precipitants to which the ideation or behavior is a response. Many of the stressors that are correlated with suicide are relatively commonplace events – e.g., relationship breakup or job loss – which most individuals will experience at some point in their lives.

Symptoms, suffering, and recent changes. Often, what turns stressful events into precipitants for suicidal behavior is that they leave the person feeling isolated, like a burden to others, socially defeated or humiliated, and/or trapped, with no way to escape from their painful experiences. Understanding recent changes in such symptoms and suffering – whether they are increasing or decreasing – will play an important role in developing a contextual grasp of a person's risk and in shaping a risk formulation to make it useful for future planning.

Engagement and Alliance. The final category to assess is a person's engagement and reliability. This will help the clinician to determine the quality (i.e., accuracy and completeness) of the other data they have collected. This is important not only because it impacts the likely accuracy of the formulation reached when synthesizing the data, but also because it can have significant consequences for safety and treatment planning. For instance, recognizing that there may be significant gaps in what has been shared can help a clinician determine the degree to which a more restrictive environment may be necessary to keep a person safe. Conversely, high engagement and reliability can increase confidence that all details of a safety plan are likely to be followed through. Judging a person's reliability and openness does not involve a moral assessment of their honesty. Rather, this judgment is simply an important factor in helping the person achieve the best possible outcome.

Risk Formulation

Once all relevant information has been gathered, the next step is to synthesize it into a form that can guide prevention-oriented planning and be communicated easily and

effectively with the patient and other professionals. A prevention-oriented risk formulation will be contextually anchored in the person's history and their current setting. It will not be a static determination but will be sensitive to the changes that are an inherent part of the fluid nature of suicide risk. In particular, the formulation will state how a person's risk now compares to their own risk at different points in time and how it might change in response to the evolving circumstances of the person's life. Most importantly, it will be *actionable*, providing positive guidance toward steps that can reduce risk and move the person toward getting better.

A prevention-oriented risk formulation will include four elements: (1) risk status; (2) risk state; (3) available resources; and (4) foreseeable changes.

Risk status and risk state. Risk status and risk state are two ways of contextualizing risk in relation to baselines specifically chosen for their practical utility. Risk status is risk *compared to whom*, i.e., the individual's risk compared to a given population or setting. Risk status tells us how the person's risk relates to the healthcare setting they are in, or to the setting they have come from or may be transitioning into. For instance, we might say that John is at considerably higher risk than most of the other people in the primary care setting in which he is being assessed. This can help guide a decision that he may be cared for more appropriately in a specialist setting in which most of those being treated have a risk level that is similar to his. Risk state is risk *compared to when*, i.e., relative to the person's own risk at other times. For instance, Peter may have a low risk status relative to a given population but still have a high risk state relative to his own past history. Knowing this can help the clinician see that Peter may need more support now than he did previously, allowing support plans to be framed accordingly. In comparison to simple risk stratification, risk status and risk state allow responses to risk to be tailored to the circumstances of the individual.

Available resources. Available resources can often be identified by reflecting on the strengths and protective factors noted when gathering data about the at-risk person. However, it is important to remember that not all protective factors will be available resources on which a person can draw directly when in need (e.g., having children in the house is a protective factor but not a resource that someone can access specifically in response to a change in their situation). Available resources can either be internal resources, such as a person's ability to process feelings or solve problems, or external resources, such as a good friend or an AA sponsor who is committed to the person's sobriety and well-being.

Foreseeable changes. Foreseeable changes are the types of events that might happen or circumstances that might arise which have the potential to increase risk rapidly. By drawing on a person's history and context to identify changes that might precipitate a crisis, the clinician can work with the person proactively to develop safety plans that will respond to these specific situations. For instance, Rob tried to end his life after finding out that his wife was having a relationship with another man. A foreseeable change identified by the team that treated Rob in the ED was the possibility that Rob's wife, Louise, might decide to leave him. When Rob and Louise engaged in marital therapy, the therapist was made aware of the ED's risk formulation, including the foreseeable changes. Rob was optimistic that trust could be rebuilt, and Louise insisted that she had no intention of leaving. However, to build

a plan around the foreseeable change, she agreed that she would inform the therapist first if she did decide to leave. When Louise ultimately did decide to leave, she acted in accordance with the contingency plan and told Rob in the therapist's office, so Rob had immediate help on hand to ensure that he was supported through the moment of crisis.

When identifying foreseeable changes, the clinician should pay particular attention to the data gathered under "Stressors/Precipitants" to pinpoint scenarios that may leave the person feeling as if they have no control of events, are isolated, humiliated, trapped, and/or a burden on others. In developing a risk formulation, the clinician should identify at least two foreseeable changes to address in the person's safety plan.

Updates and Modifications

Since the initial publication of the prevention-oriented risk formulation approach in 2016, a range of improvements and developments have emerged from ongoing research. In addition, tens of thousands of health care workers have now received training that includes exposure to risk formulation. This adoption has both increased confidence in the usefulness of the approach and has allowed for the delivery system to be refined in response to direct feedback, with the goal of facilitating the clinical understanding and application of the framework.

A. Embedding Risk Formulation Within a Broader Framework for Recovery-Oriented Suicide Prevention. A major development has been the embedding of risk formulation into wider frameworks for recovery-oriented suicide prevention. This has been attempted in various ways in different settings and countries around the world. One such framework has its origins in Pisani's work with a wide range of organizations to transfer research from academic settings to live healthcare contexts. This framework was first introduced in New York State and has since been rolled out at the regional and national level in health systems across the USA, Australia, and New Zealand.

The SafeSide Framework supports the gathering and synthesizing of data and then defines steps for responding to the formulation with safety planning and interventions as appropriate, and then extending care and support beyond the immediate healthcare context. The core tasks of the framework (Connect-Assess-Respond-Extend) act as a map of best practices that provides health systems with a common language and consistent structure for approaching suicide prevention.

- **Connect.** Involves asking directly about suicide and about the person's story and experience. The goal is to form a meaningful and collaborative connection with the person so that the clinician and the at-risk individual can work together toward the person's safety and future well-being. This connection is foundational for the successful gathering of the data that inform the risk formulation.
- **Assess.** This core task involves gathering data under the eight domains discussed above and then synthesizing this information into a risk formulation.

- **Respond.** The respond core task covers the specific actions, plans, and resources identified as appropriate for the person at risk and for others in their lives. This includes how best to work as a team to provide and document the care that is delivered.
- **Extend.** Focuses on extending the impact of care beyond the individual and beyond the specific healthcare setting in which they initially receive it. This gives additional confidence that plans and treatments will continue to have a positive impact on the person's life in the long term. Steps taken to extend care can range from ensuring a warm handoff when making a referral to the use of empirically validated techniques such as nondemand caring contacts.

B. Conceptual Evolution of Risk Status and Risk State. Feedback on the presentation of risk status and risk state has led to a number of clarifications.

The presentation of the elements in the original diagram led some clinicians to assume a linear connection between more enduring factors and risk status, on the one hand, and more dynamic factors and risk state, on the other. To avoid this misunderstanding, we have removed the shading that appeared to identify these as fixed connections (as seen in Fig. 2, below).

A confusion sometimes arose from the use of the language of "populations" in the description of risk status as "risk relative to others in a stated population." While many found this phrasing helpful, the term acted as a barrier in other cases because it evoked epidemiological language for some trainees. This led some clinicians to question their ability to make judgments if they did not know the suicide risk rates for a given group, while others were uncomfortable with their ability to formally define a given population. After experimenting with different wording in training sessions over several months, Pisani settled on "Risk relative to others in a given setting (current or being considered)." This phrasing led both to greater clarity about how to use the framework and to fewer questions about how to select a "population" with which to compare the person. Although level-of-care decisions are not the only kinds clinicians need to make, they are decisions that need to be made often. Being able to say, "This person is at higher risk than anyone else we have seen in our clinical setting in the last three months" provides a clear way of understanding and communicating how a person can be helped. Conversely, if someone in inpatient care is at a lower level of risk than is typical among such patients, and is at a level of risk that is similar to that of other people typically referred to the outpatient service, then that is a good sign they may be ready for discharge.

In addition to, or instead of, using a person's current or prospective setting for the comparison to determine risk status, other reference groups can usefully be selected. It is often the case that making *multiple* comparisons will help the clinician to understand and explain the situation of a particular person. For instance, we might want to say to someone, "The current risk you're facing is more than we feel we can support you with safely just with you coming here every few weeks and keeping in touch by phone. On the other hand, the risk isn't at the level where we would normally think a hospital might be an appropriate setting. So, as we have found with other people in a similar situation, what we think would work best for you is to have

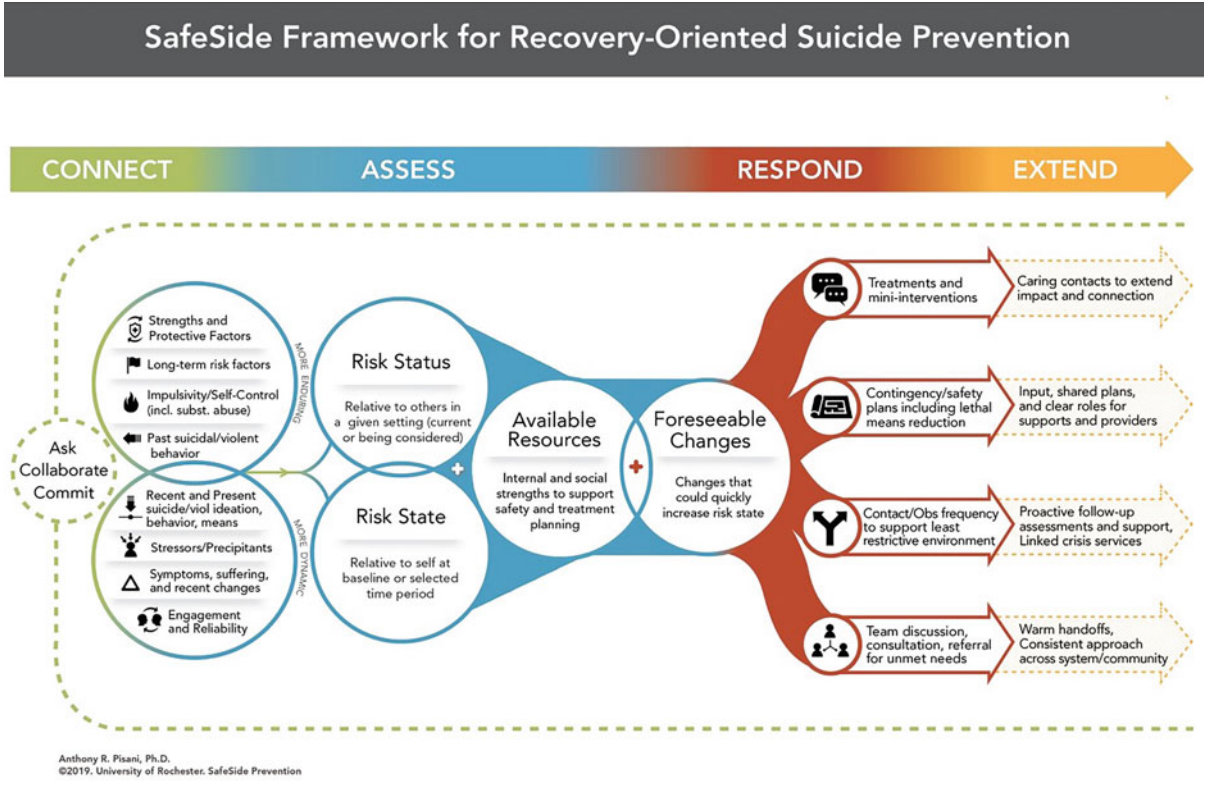

Fig. 2 A framework for recovery-oriented suicide prevention

an outreach team visit regularly with you and your family for the next six weeks to provide you with some additional support."

Some clinicians found making comparisons with other people they work with uncomfortable when talking to an at-risk person. A common worry was that such a comparison could be dispiriting if it was understood as implying that the person was worse off than many others. To avoid running this risk, Pisani now advises framing these comparisons in terms of the appropriateness of the match between what a person is going through and the supports that would typically be offered in a given setting ("We feel that the current setting doesn't offer enough support for someone in your position"). Approaching the language in this way enables clinicians to avoid direct comparisons to other people while still conveying the same clinically useful information.

Finally, to make it clear that risk status is not just a new term for "chronic risk," additional emphasis is now placed on the goal of anchoring the risk in a context that facilitates communication, drives decisions, and nudges the individual and system toward greater transparency.

C. Emphasizing the "Why" Over the "What." An important point that was not stressed in the original article is that the "why" that lies behind someone's suicidal behavior or ideation is more important than the "what." This means that the reasons a clinician identifies for assessing that risk state is higher now or risk status is similar to others supported in a given setting are at least as important as the assessment of the state/status itself. This is because the formulation is primarily a tool aimed at prevention, communication, and making the thinking behind decisions transparent. Saying that someone is at "higher risk than X" gives a clinician less to work with in relation to these goals than does grasping the reasons *why* this is the case. The reasons identified will be specific to the person and are more likely to be useful in planning and prevention than just knowing whether someone's risk is at a higher or lower status or state.

D. Moving Beyond the Prediction/Prevention Polemic to a Greater Emphasis on Personalization. The 2016 article had a polemical goal: to argue that a focus on categorical stratification was unhelpful for communicating about suicide risk and informing preventive responses. This was framed in terms of a shift from prediction to prevention. With more experience, and with the broad adoption of our formulation model in everyday practice, polemical focus has since diminished in our work.

We now see risk stratification and the endeavor to develop predictive models as two separate issues. Risk stratification has to do with the attempt to categorize who is at greater risk and to allocate resources accordingly. While studies continue to confirm problems with stratification (e.g., Wyder et al.), we also accept that some degree of stratification is inevitable when seeking to manage limited resources and when assigning people to pathways according to their relative needs. In addition, we have seen that organizations do not, in practice, need to completely reject stratification if they are to successfully adopt the type of risk formulation we advocate: Formulation can, for instance, live alongside the use of stratification when it is required in certain types of documentation.

Although our article emphasized the futility of rigid categorization in the face of a lack of predictive capability, this has sometimes been misunderstood as a rejection in principle of research into potentially useful predictive techniques. In fact, with more advanced technologies and the ability of machine learning algorithms to parse very large numbers of variables, it is possible that our capabilities in this field may advance significantly in the future. Of course, if this happens, we will still need a framework for thinking through and contextualizing this data. However, a commitment to risk formulation does not imply a rejection of the search for better data to inform our assessments.

Updates to the Model Since 2016

- Risk formulation embedded into broader frameworks for recovery-oriented suicide prevention
- Evolution of conceptual presentation of risk status and risk state
  - Revision of diagram to avoid suggestion of fixed connection between a) more enduring factors and risk status, and b) more dynamic factors and risk state.
  - Change in language from "risk relative to others in a stated population" to "Risk relative to others in a given setting (current or being considered)." Encouragement to use multiple comparisons.
  - Rather than make comparisons to other people, clinicians have the option of making comparisons between a person's needs and the levels of support offered in different settings.
  - Additional emphasis placed on anchoring risk in context that facilitates communication, drives decisions, and nudges individual and system towards greater transparency.
- Emphasizing the "Why" over the "What"
- Moving beyond the prediction/prevention polemic

Prevention-Oriented Risk Assessment for Violence

Many clinicians who adopted the prevention-oriented risk formulation for suicide were quick to ask whether the process might be expanded to address violence risk. The reasons for this question are straightforward. First, many clinical contexts require assessments of both types of risk, whether due to internal clinical policies and procedures, or to broader legal requirements. Indeed, conditions described using phrases such as "danger to self or others" are common bases for involuntary civil commitment to psychiatric facilities in the USA and other countries. Second, maintaining entirely separate approaches to assessing risk for violence and risk for suicide seems inefficient. After all, clinicians will explore many of the same domains (e.g., substance abuse, impulsivity, resources, coping strategies, etc.) to inform each assessment and might consider many of the same interventions to prevent either type

of harm. Might there be a way, clinicians asked, not only to efficiently gather the data needed to consider both types of risk, but also to approach violence risk with a prevention-oriented model?

Like the field of suicide risk assessment, the field of violence risk assessment has long struggled with an overemphasis on prediction, imprecise risk categories, and other similar challenges. Yet those working in some areas of the field, primarily within forensic psychology, often acknowledge many of the limits to prediction-focused models and have consequently moved toward distinguishing between violence-prediction approaches and those that focus on violence risk management [21]. There are, thus, good reasons to think that the fields of violence risk assessment and suicide risk assessment may be mutually informative, and that emerging practices in one may also be applicable to the other. For example, the explicit distinction between risk status and risk state – a key element in the prevention-oriented suicide risk formulation model – was drawn from emerging best practices in violence risk assessment [14].

In short, there are strong conceptual reasons to think that both violence risk assessment and suicide risk assessment should move toward more prevention-oriented approaches. There is also a strong scientific basis for thinking that clinicians should simultaneously consider both the risk of violence and the risk of suicide.

Scientific Basis

Put simply, self-harm and harm-to-others often co-occur, and each form of harm is a risk factor for the other. Data supporting this conclusion have been drawn from a variety of methods (e.g., comprehensive reviews, population-based studies, individual samples, etc.) and populations (e.g., clinical and nonclinical, adolescent and adult, etc.). While a comprehensive literature review is beyond the scope of this chapter, it will be useful to consider a number of illustrative key findings.

In a systematic literature review of 123 studies, violence and self-harm were clearly associated with greater aggression in self-harming populations and greater self-harm in aggressive populations when compared to control groups [31]. The researchers emphasized that this finding was robust across population, setting, measures, and data collection methods. They concluded that engaging in one behavior increases the chance of engaging in the other, and thus patients referred for suicidality should be screened routinely for their risk of violence as well.

An influential single-sample study reached similar conclusions. The MacArthur study of violence and mental disorder [26, 44] is considered the most comprehensive and exhaustive study of violence and mental disorder, the "gold standard" study underlying modern violence risk assessment. In a follow-up to the original study sample, researchers examined 951 psychiatric patients and found that violence against others, violence against self (self-harm), and being a victim of violence (victimization) were highly co-occurring [28]. A total of 30% of the sample had engaged in both self-harm and harm to others, and the vast majority

of these had experienced violence from others as well. The authors concluded that "given the substantial overlap among the three forms of violence, clinicians should routinely screen patients who report one form for the occurrence of the other two" [28], p. 516.

In a population-based longitudinal cohort study of nearly 2 million young (age 15–32) Swedish citizens, researchers identified those who received clinical care for deliberate self-harm (3% of the total sample) and considered their risk for subsequent violent crime [40]. Those who had received clinical care for self-harm were far more likely (i.e., a five-times higher crude hazard ratio) to be convicted of a violent crime than those who had no known instances of self-harm. Even after adjusting for psychiatric comorbidity and environmental factors, self-harm was still associated with violent crime, and this relation was particularly strong for women. On a practical level, the authors concluded that "the risk of violence, as well as the risk of suicide and self-harm, should be assessed among offending and self-harming individuals" (p. 615).

Another study of the general population underscored the co-occurrence of self-harm and harm to others. In data from the US National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III), which included several questions related to self-directed violence and other-directed violence, 4.4% of the adult population endorsed self-directed violence, while 2.8% endorsed *both* self-directed and other-directed violence [20]. Substance abuse and psychiatric disorders were more common among those who endorsed both forms of violence, as compared to those who endorsed either one or neither. Personality disorders (particularly antisocial and borderline personality disorders) were most strongly associated with the combined category of violence. Once again, researchers concluded with practical guidance: "Clinicians are advised to explore homicidal risk among patients who attempt suicide or who have suicidal ideation and, conversely, assess suicidal risk among patients who report violence" (p. 391).

Of course, even without such explicit guidance that one type of harming behavior should prompt clinicians to assess for the other type, an exploration of relevant risk factors may lead clinicians to consider both types of risk. Researchers have long noted the substantial overlap among the risk factors for violence and suicide and even speculated that these may reflect a shared propensity for impulsive aggression [1, 23, 35]. Knowing, for example, that a patient tends to act impulsively, drink heavily, and react strongly to fears of abandonment should probably prompt a clinician to consider that patient's risk for violence *and* suicide, and to take steps to mitigate both risks, even if the patient is known *only* to have previously been aggressive toward self *or* aggressive toward others. Finally, an obvious, explicit threat of one type of behavior should prompt consideration of the other. Researchers recently concluded that "threatening homicide was . . . a novel predictor of suicide risk" [3]. That is, among a unique sample of "threateners," known to the health and/or justice systems for threatening to kill a person other than themselves, half of those who died in the follow-up period died by suicide (more than any other cause). Threateners were more likely to kill themselves than to kill others [48, 49].

Practical Basis

In light of the strong scientific basis for considering suicide and violence risk together, it is reasonable to reflect on the practical rationale as well. Certain rationales, mentioned earlier, are obvious. Concerns about violence arise in many of the same contexts as concerns about suicide: psychiatric hospitals, community clinics, and even schools. Many health care settings already *require* clinicians to address both types of risk in their intake assessments and documentation. Either type of risk may provide a basis for involuntary hospitalization. Given that the risk factors for each type of risk overlap to such a significant extent, assessing these risks through separate processes may be inefficient and unnecessarily duplicative. Conversely, assessing both risks in a complementary manner offers the chance of not only greater efficiency, but also greater insight, given the possibility that each type of risk will cast light on the other when considered together.

There may also be a number of less obvious advantages to the integration of violence risk assessment into a combined prevention-oriented risk formulation. Violence risk assessment is "a required professional ability for every clinical psychologist" [19], p. 928, and most other mental health professionals, just as is suicide risk assessment. Yet violence risk assessment is not a standard component of most clinical training programs, and most clinicians in routine practice have had little, if any, formal training in violence risk assessment or management [4, 24, 41]. Psychiatry textbook sections addressing violence risk typically mention commonplace, static risk factors for violence (e.g., young age, male sex) and instruct clinicians to ask about violent ideation [36, 39], but this guidance stops far short of a detailed approach to risk formulation. To be clear, there exists extensive research and training on violence risk assessment, but these have rarely spread beyond the professional specialties of forensic psychology and forensic psychiatry, and the related discipline of threat assessment. These fields have developed a rich literature addressing base rates of violence and risk factors for violence, as well as tools and practices to assess the risk of violence (for summaries, see [8, 21, 32]). However, these resources are more often used in the context of forensic facilities and formal forensic evaluations that allow for ample time to conduct extensive record review and collateral interviews, which clinicians in routine clinical practice settings (e.g., busy community clinics) may be less able to perform. In short, nonforensic clinicians in routine practice settings usually lack substantial knowledge of violence risk assessment and thus default to unstructured prediction-type approaches. Many would greatly benefit not only from a basic literacy in the fields of violence risk assessment and threat assessment [29], but also from a prevention-oriented approach that can be integrated into routine clinical practice.

Therefore, the integration of a violence risk assessment approach with a well-established prevention-oriented suicide risk assessment approach may allow for richer consideration of the risk-relevant data that may be less fully or formally considered in standard, default approaches to violence risk. This sort of integration would also address the need in violence risk assessment, as in suicide risk assessment, to move beyond prediction. When the goal is violence *prevention*, the aim

becomes not only an overall risk estimate, but rather, ongoing identification and mitigation of any factors that may be conducive to violence or that may suggest a patient is progressing toward violence, as well as strategies to collaborate with the patient and others in these efforts (see [29]).

Process

In our view, the prevention-oriented risk formulation model for suicide, first advanced in [34] and since modified as described in section "Updates and Modifications" above, lends itself well to facilitating a similar assessment of violence risk. Given the substantial overlap in the risk factors for violence and for suicide, much of the clinical data-gathering process is the same. Thus, "adding" a violence risk formulation is less a matter of conducting a second assessment, and more a matter of considering much of the same data (with a few additions) in light of its potential relation to violence as well as suicide. Indeed, so closely aligned are the factors that we were able to develop a supplemental module on violence risk formulation and easily integrate it with a training program developed for suicide risk.

Of course, there are a few additional elements that are crucial when considering violence risk. The most obvious is eliciting a detailed history of prior violent behavior. Although identifying past violence is also prioritized in predictive models – based on the strong empirical relation between past violence and future violence – the goal here is to understand not just the occurrence, but the context, antecedents, motivators, and consequences of the violence. While asking explicitly about violence risk may seem self-evident, clinicians are often reluctant to do so. We thus urge all clinicians to *ask questions specific to past violence*, just as they would ask about past suicidal behaviors. Such questions include a thorough review of all past instances of violence.

Eliciting information about past violence is essential to understanding the contexts and situations in which the patient would most likely commit violence in the future. These details not only help inform assessments of risk status, but also inform both the "foreseeable changes" later in the model and strategies to extend care. We also encourage clinicians to ask about instances in which the patient was nearly violent but did *not* proceed with violence. These instances may provide clues to patient strengths and resources, as well as risk-management strategies a clinician can use later.

Example Questions for Reviewing Past Violence

- What was the nature, type, frequency, and severity of the violence?
- Who were the past victims?
- What was the context or setting for the violence?
- What events preceded and followed the violence?

(continued)

- How recent was the last instance of violence?
- Is there any evidence of escalation of violence?
- Were there incidents in which the person was nearly violent but did not proceed with the violence?

Beyond considering past violence (or near-violence), other clinical data to be gathered generally follows that summarized in the prevention-oriented suicide risk formulation model [34] and in Fig. 2. As in the case of suicide risk, it is important to consider impulsivity, self-control, substance abuse, and mood, as well as "symptoms, suffering, and recent changes." Some clinical conditions – such as paranoia and irritability or anger – may bear a stronger relation to risk of violence than risk of suicide. Although psychiatric symptoms are a primary focus for clinicians, clinicians must also consider the much broader range of (nonpsychiatric) risk factors for violence. As Monahan and Steadman emphasize, "A person with serious mental illness – *even one that bears a causal relationship to violence* – may have a high (or low) overall likelihood of violent recidivism for reasons independent of their illness" ([27] p. 247). Thus, clinicians should consider carefully "stressors and precipitants" that may be less psychiatric in nature, and more related to relationship conflict, loss of status, and perceived provocation.

As in the application of the original model to suicide risk, in the assessment of violence risk we emphasize the distinction between *risk status* and *risk state* (this distinction was, itself, originally drawn from the violence risk literature; see [14]). Risk status involves *a patient's risk of violent behavior relative to others in a particular population or context.* Some patients remain at higher risk status and warrant closer risk monitoring for long periods of time because of unalterable historical characteristics, such as past violence or early onset violence. In contrast to risk status, risk *state* refers to a person's *current* violence risk compared with their own risk at baseline or prior points in time. In other words, *risk state* involves the "individual's propensity to become involved in violence at a given time, based on particular changes in biological, psychological, and social variables in his or her life" ([14], p. 349).

Therefore, assessing risk state involves a focus on current clinical status. Are there changes in the psychiatric symptoms that seem most relevant to violence risk? Is the patient increasingly abusing substances? Has conflict with family escalated? In many ways, these are the types of tasks with which clinicians are already most comfortable – assessing improvement or decline in clinical functioning and intervening appropriately. But clinicians must be comfortable considering these clinical changes as they relate to violence potential, and explicitly discussing with patients the prospect of violence.

As with the suicide risk formulation, *available resources* are a crucial focus. The identification of internal or social strengths on which the person can draw to help mitigate their risk of violence is an essential aid for safety planning. Likewise, identifying *foreseeable changes* that are liable to increase risk or precipitate a crisis

can help in shaping a safety plan that responds directly to the circumstances that are most likely to lead to violence.

Fairly recently, violence risk scholars have begun recommending "scenario planning" [15], a similar concept in that it involves identifying the most likely changes or scenarios that may leave a person more inclined to act aggressively, based on their particular risks and vulnerabilities. Identifying foreseeable changes, or conducting scenario planning, may involve identifying potential victims. In contrast to suicide risk formulation, in which the potential victim is obvious, violence risk formulation must consider the person(s) at risk of harm. This may involve clearly identifiable victims (e.g., a spouse or partner in situations marked by relational conflict or violence; an individual toward whom the patient has a grievance), but it also may involve potential victims unknown to the patient, but at risk due only to proximity or chance.

Indeed, the need to consider victims illustrates one of the challenges to prevention-oriented risk formulation that may be greater with violence than with suicide. Although both outcomes can be impulsive, many types of violence are even less deliberative than suicide, reflecting greater impulsivity and more immediate contextual influences: Consider the man who is intoxicated in a bar and responds aggressively to another angry and provocative patron, or consider the psychotic woman who misperceives a stranger's innocuous behavior in ways shaped by her paranoid delusion. We acknowledge that it is likely impossible to plan for *all* foreseeable changes, risky contexts, or potential victims. But as with suicide risk formulation, the goal is to identify the primary, or most likely, types of changes (e.g., losses of support, status, or protective factors; increases in substance abuse or particular symptoms) that would contribute to violence.

Conclusions and Future Directions

Integrating a prevention-oriented violence risk formulation into the suicide risk formulation has strong conceptual and practical appeal. Accounts from GCMHSS of steps taken to develop an "Integrated Formulation" (described in section "The Gold Coast Achievement," below) suggest that it may be practically feasible to bring these elements together in ways that improve both efficiency and comprehensive care.

Of course, much work remains to be done. Recent moves toward integrating violence and suicide risk formulation will require study from a variety of perspectives, addressing both the feasibility of implementation and the potential outcomes.

The Gold Coast Achievement

Rapid Implementation of Prevention-Oriented Risk Formulation

In 2016, Gold Coast Mental Health and Specialist Services (GCMHSS), in Queensland, Australia, rapidly implemented prevention-oriented risk formulations into routine clinical practice across the entire mental health service. GCMHSS is a public

mental health service serving all age groups across a population of approximately 600,000. It provides inpatient and community care and supports one of the busiest emergency departments in the country.

The implementation of prevention-oriented risk formulation occurred within the context of the broader implementation of a Zero Suicide framework within the service (see Table 1, below), with high fidelity to the seven core elements of leadership, training, identify, engage, treat, transition, and improve [9, 46].

The leadership component of the Zero Suicide framework underpinned a shift in the mindset on a range of topics, which spread from service leadership to staff at every level. This change in perspective led to (1) a growing understanding of the limitations of a categorical risk prediction approach; (2) a move away from using diagnosis as a gateway to treatment; (3) the introduction of suicide-specific interventions; and (4) a shift in culture that aspires to the elimination of suicide in consumers (the GCMHSS terminology for "patients") under care. At the same time, the Zero Suicide framework led to the embedding of a restorative Just Culture that supports consumers, families, clinicians, and the organization as a whole in feeling safe. This developing culture challenges nihilistic views about suicide prevention efforts and engages staff actively in understanding that, although we cannot predict suicide risk, we can improve safety and well-being through a systems approach to suicide prevention.

A Restorative Just Culture

Incident review processes should align with principles of a Restorative Just Culture, which focuses on forward looking accountability and the avoidance of blame, and supports a healing, learning, and improvement process.

Restorative Just Culture

- replaces backward-looking accountability with a focus on the hurts, needs and obligations of all who are affected by the event.
- asks: Who is hurt? What do they need? and Whose obligation is it to meet those needs?
- promotes the healing of trust, relationships, and people and empowers first and second victims.
- moves away from asking *who* did something wrong and what should be done about them, to *what* was responsible for things going wrong and how this can be addressed.
- accepts that involved staff can have both accountabilities and needs, and is predicated on the principle of inclusive engagement of all stakeholders.
- is action oriented, assigning roles and responsibilities for all who have a stake in the event.

Adapted from: "Inconvenient Truths in Suicide Prevention: Why a Restorative Just Culture should be implemented alongside a Zero Suicide Framework," Turner et al. (2020).

Table 1 Elements of Zero Suicide framework, associated goals, and steps taken by GCMHSS in achieving those goals

ZSF element	Goal	Steps taken at GCMHSS
Leadership	Create a leadership-driven, safety-oriented culture committed to dramatically reducing suicide among people under care. Include suicide attempt and loss survivors in leadership and planning roles	Engagement of all stakeholders through a clinical redesign process Challenging the status quo and current culture; introducing new ideas Review of models of Just Culture
Train	Develop a competent, confident, and caring workforce	Training identified and modified to be specific to the clinical pathway of care to be implemented within the service. Supervision and support provided to assist embedding training into practice
Identify	Systematically identify and assess suicide risk among people receiving care	Development of the clinical pathway of care (Suicide Prevention Pathway)
Engage	Ensure every person has a pathway that is both timely and adequate to meet their needs. Include collaborative safety planning and restriction of lethal means	
Treat	Use effective, evidence-based treatments that directly target suicidality	
Transition	Provide continuous contact and support, especially after acute care	This overlapped with the pathway of care and focused on transitions of care Strengthening connections with the broader community and partnership with the Primary Health Network
Improve	Apply a data-driven quality improvement approach to inform system changes that will lead to improved patient outcomes and better care for those at risk	Development of a Research and Evaluation Strategy Review of responding to and learning from suicides with a focus on embedding new practices that aligned with Restorative Just Culture principles

The systems approach taken by GCMHSS included the development of a clinical pathway of care (the Suicide Prevention Pathway, or SPP) which built on existing skills and approaches to the assessment of and engagement with the consumer. The goal here was to include support for clinicians to improve their skills in the exploration of suicidal intent through the use of Shawn Shea's "Chronological Assessment of Suicide Events" (CASE) model and in the use of the prevention-oriented risk formulation [42]. This approach provided support for a move away from categorical risk prediction. Instead, staff focused on understanding individual and contextual factors that could support the development of an individualized care plan, safety planning interventions (including counseling on access to lethal means and consumer and family education), and rapid follow-up into the community with warm handovers of care. Importantly, the systems

approach also includes tailored training to support all components of the pathway, including cultural and mindset shifts, and has a strong focus on data-driven continuous quality improvement.

As part of the implementation of this framework, deliberate efforts were made to engage clinicians right across the organization. The initiative included face-to-face discussions between the leadership of the service and all mental health teams, enabling stakeholders to explore these important cultural and mindset shifts, as well as the opening up of working groups to all clinicians via expressions of interest. These working groups contributed to the development of the pathway and the training needed to support its implementation.

When the SPP was initially being developed in early 2016, there was a lack of guidance in the literature regarding how to support staff in moving away from categorical risk prediction approaches, and the statewide electronic medical record forms continued to expect the use of the terms "high," "medium," and "low" to denote risk levels. The publication of [34] provided a potential solution to this issue. GCMHSS contacted Pisani, who provided guidance on the use of the prevention-oriented risk formulation. Pisani also provided training videos initially developed for a study that examined educational outcomes in primary health care [13, 33].

Building on the completion of the Suicide Prevention Pathway and the work already underway across the service to actively engage clinicians in this cultural shift, the service collaborated with the Queensland Centre for Mental Health Learning to adapt their training for Suicide Risk Assessment and Management in Emergency Departments. This training included both online (3 h) and face-to-face (1 day) elements and was updated to include training in prevention-oriented risk formulation, safety planning interventions, the SPP, and the philosophy of the Zero Suicide approach.

For planning purposes, following the engagement of clinicians across the service, a start date was selected for the SPP. This provided a target to work toward for the training of all medical staff and community staff (including those inreaching into the two emergency departments). As a result of competing demands stemming from the need to implement a change mandated by the statewide Mental Health Act, inpatient staff training was postponed to a later date. A roster of senior staff and educators was created to support the rollout, including through the provision of support across all shifts for a two-week period from the time of commencement of the new pathway. These staff provided coaching on and modeling of the application of new skills, including the use of the prevention-oriented risk formulation. Resources such as flowcharts and example formulations were printed and placed in all workplaces, as well as being made available online. An evaluation plan was developed that included a data-driven continuous quality improvement approach to embedding the new processes.

The training program initially used a "train the trainer" model, with a range of staff across the service being trained to disseminate the new practices. However, practical experience and new research on the train the trainer model [10–12, 18] and practical experience both drew attention to the severe limitations of this approach. Over time, it became clear that the most effective means of reliably delivering the

training was to use two experienced senior clinical staff members with training expertise and dedicate time to train the vast majority of staff across the service.

The Acute Care Team, who saw most of the consumers being placed on the SPP, faced some challenges during the initiation of the pathway. These were likely the result of a period of increased demand that coincided with the slowing down of processes as staff became familiar with the new approach and efficient in its deployment. These teething problems lasted for approximately 2 weeks, during which period a number of clinicians from across the service volunteered some of their time to support the team until the challenges were resolved.

An evaluation plan included the identification of all consumers placed on the pathway and measurement of fidelity to the core components of the pathway. This process included a manual review of electronic medical records (EMRs) to determine whether the components were being completed both in full and correctly. For example, for the prevention-oriented risk formulation, information was gathered to determine whether all components were being commented upon and whether terms such as "risk status" and "risk state" were being used correctly. The data gathered was then fed back to teams, including through the use of communiques which outlined areas of strength and reminded clinicians of processes in cases in which confusion or gaps were identified in the EMRs. The communiques also provided links to training that reinforced the SPP components. The pair of clinicians who provided the bulk of the training then provided further in-services and top-up training to teams who identified gaps in their performance. One familiar theme in the early implementation of prevention-oriented risk formulation was a degree of confusion around the terms "risk status" and "risk state," so clarification of the meaning of each was a focus of the ongoing training.

In addition to a data-driven continuous quality improvement approach to drive ongoing improvement, sustainability across the system continues to be supported by the embedding of the training as part of the mandatory training expected at orientation for all new staff.

Results. As part of the evaluation process, an audit was undertaken of all consumers presenting with a suicide attempt pre- and postimplementation of the Suicide Prevention Pathway (including prevention-oriented risk formulation). Comparing March and April 2015 ($n = 132$) and March and April 2017 ($n = 95$), there was very strong alignment with a categorical risk prediction approach prior to the implementation, seen in the use of the terminology of "high," "medium," and "low" (88.6% using the categorical risk prediction approach in 2015; the majority of consumers in 2015 were rated as either low (58.3%) or medium (25%) risk). Following implementation of the pathway, there was a rapid move away from categorical approaches to prevention-oriented risk formulations (5.3% using a categorical risk prediction approach in 2017).

Fidelity to the prevention-oriented risk formulation for those placed on the pathway has continued to be tracked over time, with feedback provided to the teams. Fidelity to the formulation was reported across 2017 to 2019 and maintained levels over 80% [46]. Evaluation of the impact of the Suicide Prevention Pathway with its embedded prevention-oriented risk formulation has been undertaken,

demonstrating that the pathway is associated with a 35% reduction in suicide attempts for those who are placed on it [43]. Determining which components of the pathway have the greatest impact on these positive outcomes is the subject of further important work.

Conclusion. Prevention-oriented risk formulation was embraced by the GCMHSS as a solution to the dilemma of how to support clinicians in a move away from unhelpful paradigms of categorical risk prediction approaches. The available data shows that risk formulation was rapidly adopted, and clinicians have maintained a high fidelity in its use across multiple years. The implementation was supported by addressing cultural and attitudinal factors, and then supporting staff through both initial and ongoing training, including the provision of training in multiple modalities, such as online, in person, update communiques, and flowcharts for the workplace. The provision of high-quality data has assisted not only in evaluation of the Suicide Prevention Pathway, but also in a continuous quality improvement process which has seen sustained high fidelity to its use.

Developing and Implementing an Integrated Formulation

GCMHSS had significant success in rapidly embedding prevention-oriented risk formulation with good fidelity into routine practice within a Suicide Prevention Pathway. However, there was less evidence that risk formulation was being used as a routine practice for consumers who were not placed on the pathway. In addition, a number of issues were identified that required attention in order to further embed the Suicide Prevention Pathway and to mitigate any unintended consequences.

The following issues were among those identified:

- Consumers rarely present with just one domain of risk; those with suicide risk frequently also have risk for violence and/or vulnerability as well. Vulnerability includes a broad range of considerations, such as domestic and family violence, financial vulnerability, impaired decision-making, sexual disinhibition, and vulnerability to exploitation. There are complex and multidirectional relationships between these various domains of risk, including significant overlap between risk factors for both violence and suicide (discussed in section "Prevention-Oriented Risk Assessment for Violence," above). Risk factors such as past trauma, lack of social supports, sexual disinhibition, and cognitive impairments can increase vulnerability and other domains of risk. Some specific subpopulations, such as the recently incarcerated, may have increased risk in all domains. Using one process for suicide and different processes for other risks would lead to duplication and inefficiency for busy clinicians in our acute settings and would represent a potential missed opportunity to understand the interaction between risk domains.
- A risk-screening tool was already in use at the state level throughout Queensland, and it was felt that there was a need to further clarify how this screening tool and the recently implemented prevention-oriented risk formulation related to one another.

- In line with the Zero Suicide framework, a focus of the suicide prevention efforts occurring in the service was a move away from using diagnosis as a "gateway" to care and toward ensuring suicide-specific interventions. However, it was also important to diagnose and intervene in cases of mental illness, substance use disorders, physical health issues, and other issues when present, and it was felt that there was, at times, an underarticulation of mental illness and co-occurring disorders.
- It was recognized that formulation in general is an essential component of comprehensive care. Formulation takes a longitudinal perspective, ideally developed with the consumer in a collaborative manner, and helps to make sense of evolving information through the consumer journey via the development of hypotheses that can then guide care planning. It may include, but is not limited to, information regarding risk. It was also recognized that there are a range of formulation approaches available, including both theoretical and atheoretical approaches, and that current use of broader formulations across the service was inconsistent. How prevention-oriented risk formulation related to the broader formulation approaches was not clear.

A working group was engaged by GCMHSS in early 2019 to develop a formulation which addressed these issues. The working group included representatives from Child and Youth, Adult, Older Persons, and Alcohol and Other Drugs services within GCMHSS, as well as lived experience advocates, educators (including those with a statewide role), and Pisani, author of [34].

The working group created the "Integrated Formulation," a prevention-oriented risk formulation suitable for gathering data about and guiding clinical responses to risks of violence, vulnerability, and suicide. The Integrated Formulation was shaped to do the following:

- Build on a familiarity with the "5 Ps," with the specific aim of integrating this structure with a number of other important aspects of formulation. The "5 Ps" is an atheoretical formulation approach which synthesizes information under the headings of Presenting, Precipitating, Predisposing, Perpetuating, and Protective.
- Move from a focus on problems and deficits to integrating a more strengths-based approach and a more holistic view of the consumer, contributing thereby to the creation of more individualized care plans.
- Promote a more collaborative process in the development of the formulation and explicitly integrate the goals of the consumer into the formulation.
- Include a "pause to reflect" (cognitive forcing function) on the data gathered (more enduring and more dynamic factors) during risk screening and documented in the Risk Screen form. In addition to the central consideration of more enduring and more dynamic factors, consideration should also be given to the meaning of the events for the consumer. For example, in the case of suicide, some theoretical frameworks consider feelings of humiliation, social defeat, entrapment, thwarted belongingness, or burdensomeness to be particularly significant [30, 47], while for violence the senses of losing status, feeling provoked, or feeling humiliated are important.

- Embed an overt consideration of diagnosis, with a prompt for a "pause to reflect" to specifically challenge cognitive bias. This prompts consideration of a range of differential diagnoses (Mental Illness, Substance Use, Personality Disorder, Physical Illness, and Cognitive Impairment).
- Integrate a prevention-oriented risk formulation into the broader formulation, bringing together risk for suicide, violence, and vulnerability into a single formulation.
- Provide a practical approach to give staff clearer guidance on integrating the prevention-oriented risk formulation.
- Focus strongly on how the formulation links into an individualized care plan.

Later in 2019, a second statewide working group trialed a number of approaches to formulation across the state and obtained feedback from clinical teams. The Integrated Formulation obtained positive feedback, with the caveat that it would require training to accompany its rollout. There was variability across different services with respect to their familiarity with prevention-oriented risk formulation, so training specific to the use of this approach was also a requirement for some services.

A range of resources was developed with a focus on supporting implementation within teams and developing commitment to the approach. These included consumer and clinician handouts to support the collaborative development of formulation and sharing; handouts and posters of the flowchart of the Integrated Formulation, including prompts for considering the details to include in each section; a fictional consumer scenario which gave tangible examples of the Integrated Formulation; and webinars which gave insights from the perspective of Alcohol and Other Drugs and Child and Youth services, as well as raising cultural considerations. A video was produced to present the perspectives of consumers, carers, and clinicians regarding the benefits of the Integrated Formulation, with particular reference to collaborative approaches. Later, a further statewide video resource was produced, modeling the use of the Integrated Formulation as an effective and comprehensive, yet efficient, communication tool within a busy Emergency Department setting.

Further work is being carried out to continue to support clinicians as they implement the Integrated Formulation into an increasing number of teams. This is being implemented through a Brief Breakthrough Collaborative methodology, [2] supporting clinicians across the state to embed formulation, with one of the options being the Integrated Formulation. The project is being supported by the Queensland Mental Health Alcohol and Other Drugs Branch. A range of tools for evaluation are being developed, including audits, feedback surveys, and word searches within the electronic medical record.

What Comes Next

Prevention-oriented risk formulation has gained traction in many areas since 2016 and is becoming a highly prominent model in the suicide prevention community. It is now on the cusp of even wider adoption in Australia and the USA, with the approach

being rolled out across New South Wales in Australia, at a national level with the Australian Department of Veteran Affairs, and in several state-level projects in the USA. In light of this widespread adoption, preparatory steps are being taken for the next stage of development and scholarship.

The first step is to carefully consider the lessons that have been learned in large public health systems, such as Gold Coast Mental Health and Specialist Services. The challenges these systems have faced, and the solutions they have developed, provide a playbook for preparing other systems for change. In particular, the data gathered so far points toward the importance of informing and engaging leadership across the system to gain widespread support for a paradigm shift. In addition, strong educational support at all levels is a *sine qua non* for success, including ongoing training, mandatory training when onboarding new staff, and continuous data-driven quality improvement. With educational processes and materials now in their 5th generation, and empirical data to help inform us about what works [33], we now know what it takes to transfer learning into practice and to support sustained fidelity. The good news is that this training can be delivered rapidly and without imposing a heavy burden on already busy staff, so long as it is implemented thoughtfully [45].

The next phase of development and implementation will involve adapting the processes that have been tested in large organizations to make them appropriate for smaller systems and institutions (community-managed systems, NGOs, etc.). It seems likely that these smaller organizations will have significant advantages that can be leveraged, in that they may have more agility concerning workflows, procedures, and documentation, which are more challenging to change in very large systems.

With fidelity measures and systems for organizing change now in place in some systems, more research is needed to understand the precise effects of a prevention-oriented approach to risk on patient care and outcomes. A particular challenge to research on risk formulation is that it is often implemented as part of the adoption of a wider Zero Suicide framework that includes changing other elements of care at the same time. Consequently, it can be difficult to isolate the effects of the formulation from the other changes that usually accompany it, such as improved care planning, enhanced support pathways, integration of lived experience perspectives, and changing workforce attitudes. Nevertheless, research is ongoing.

One study in New Zealand (Fortune et al. unpublished) is carrying out a qualitative examination of service user and clinical staff experiences of prevention-oriented risk formulation to gather data about the effect of using the formulation on those involved. A second study (Veich et al.) is using a dynamic weight list design and a randomized rollout to evaluate the effectiveness of the SafeSide Framework for Recovery-Oriented Suicide Prevention, a suicide prevention framework that has prevention-oriented risk formulation at its heart.

It is also expected that ongoing research at GCMHSS will continue to yield important insights. In particular, the rollout of the Integrated Formulation will provide valuable data on the time savings generated by a combined risk formulation approach, while study of care plans will provide a vital link between assessment, treatment, and planning.

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