



## Using the stress–vulnerability model to better understand suicide in prison populations

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Suicide is the culmination of the interaction of a number of factors with the critical component being distress. The contribution of mental illness as a vulnerability factor in an individual case of suicide by a prisoner may be significant, marginal or non-existent. Because of the high prevalence in prison populations of all risk factors for suicide, relying solely on those factors is of little use in elaborating the risk of suicide for a given prisoner. Whilst a current mental illness or past history of a suicide attempt are two factors that appear to be strongly associated with completed suicide, no screening or risk assessment tool has any proven efficacy in predicting suicide in prison populations. The stress–vulnerability model offers a more sophisticated and comprehensive assessment and also informs a more individualised needs-based management of the risk of suicide with an emphasis on detecting and responding to a prisoner’s distress.

**Key words:** assessment; prison; risk factors; stress–vulnerability model; suicide.

### Introduction

The incidence of both attempted and completed suicide in prison populations is much higher than that in the community (Fazel et al., 2011). Data from 24 high-income countries suggest that suicide rates among prisoners were typically three times higher for men and nine times higher for women than in the general population (Fazel et al., 2017). In England and Wales, rates of suicide are five and 20 times higher among male and female prisoners, respectively, than in the age- and sex-standardised general population (Fazel & Benning, 2009; Fazel et al., 2005). An early Australian study found that the rate of suicide is five and 12 times higher among men and women, respectively, than in the general population (Kariminia et al., 2007). During their lifetime, at least a fifth of

prisoners attempt suicide (Favril, O’Connor, et al., 2020). A recent Australian study found that 31% of prisoners reported attempting suicide at some point in their lives (Butler et al., 2018). However, although suicide is a leading cause of death in custodial settings, suicide in prison still has a low base rate and varies across jurisdictions and prisons and between male and female prison populations.

Coronial inquests and sentinel event inquiries into prison suicides frequently defer to some form of psychological autopsy, which, with hindsight bias, often implicates putative unrecognised or untreated mental illness. However, suicide by prisoners is usually the endpoint of a complex interplay of other proximal and distal factors including adverse life events and psychological problems in the

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This article has been corrected with minor changes. These changes do not impact the academic content of the article.

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context of the usually quite toxic prison environment (Suto & Arnaut, 2010).

The stress–vulnerability model conceptualises suicidal behaviour as a multi-dimensional process that evolves through the interaction of social, emotional, cognitive, behavioural and environmental variables. All prisoners import into correctional custody their own set of vulnerabilities, which might include mental illness, intellectual disability, a prejudicial childhood and personality vulnerabilities. Stressors in prison include separation from family and supports, uncertainty and despair, victimisation and exposure to violence. Under the stressful circumstances of imprisonment and in the context of poor coping skills, the ‘prison correlates’ may evoke negative cognitions and suicidal ideation, which may progress to suicidal behaviour.

Managing the risk of suicidal behaviour is the aspirational goal for prison mental health clinicians and policy makers. The current COVID pandemic has exacerbated the anxiety, stress and uncertainty for prisoners with lockdowns, quarantine or curtailment of usual movements and activities (Suhomlinova et al., 2021), including contact with family and other supports and delays in legal outcomes (Hewson et al., 2020; Kothari et al., 2020; Mitchell et al., 2021), all of which are ‘prison-context’ stressors. Applying the stress–vulnerability model encourages a more sophisticated formulation, which considers not only the vulnerabilities and coping skills of the prisoner but also static and dynamic factors related to the prison environment.

There is no prospective study demonstrating the efficacy of any screening protocols or risk assessment tools for predicting suicidal behaviour in prison populations. Rather than reverting to formulaic ‘tick box’ screens or risk assessments, which have poor sensitivity and specificity, by adopting an ethnographic approach, the stress–vulnerability model offers a more sophisticated understanding of the interaction of various

factors that may be implicated in the suicide of a prisoner and also informs a more individualised needs-based management of the risk of suicide.

## Method

To consider the current research and the application of the stress–vulnerability model to prison suicides, PubMed, PsychINFO, Ovid MEDLINE and Google Scholar were searched using combinations of the key words ‘prison’, ‘gaol’, ‘prisoners’, ‘suicide’, ‘near lethal’, ‘self harm’, ‘risk’, ‘screen’, ‘assessment’, ‘prediction’ and ‘stress vulnerability’ from 2005 onwards published in English-language journals. Notable psychiatry and psychology journals were also hand-searched. This selective narrative review considered targeted research (controlled studies or closed question surveys) as well as large-scale qualitative research and observational studies. The paper introduces the discussion of the research into prison suicides by highlighting the limitations of psychological autopsies and coronial inquests. The paper briefly summarises significant research into assessing the risk of suicide in non-prison populations to demonstrate important general principles and to highlight study limitations. The descriptive findings of studies of risk factors associated with prison suicides are separated into static and dynamic prisoner correlates, including mental illness, and static and dynamic prison-context correlates including single cell occupation. The paper concludes by demonstrating how the stress–vulnerability model informs a more sophisticated formulation of the risk of suicide in any prisoner, which has important implications for interventions and management.

## ‘Psychological autopsies’ and coronial inquests into suicides in prisons

In the absence of the personal account of the decedent (or his or her ‘suicide note’) or any recent observations or mental state examination findings, the information available for

the investigation of the circumstances of an apparent self-inflicted death in a prison is usually quite limited (Pouliot & De Leo, 2006).

In epidemiological research, recall or reporter bias is a systematic error caused by differences in the accuracy or completeness of the recollections retrieved from study participants or subjects regarding events or experiences from the past. Research based on psychological autopsies that rely on retrospective data from proxy informants (Conner et al., 2001) have a number of methodological weaknesses, particularly recall bias (Bennewith et al., 2005; Pirkis et al., 2019). Sampling biases in the selection of control subjects, confounding influences of extraneous variables and an over-emphasis on arriving at a diagnosis of a mental disorder for which there is a descriptor in the *Diagnostic and Statistical Manual of Mental Disorders* or the *International Classification of Diseases* (Ernst et al., 2004; Hjelmeland et al., 2012) all limit the validity and generalisability of findings based on psychological autopsies (Shahtahmasebi, 2015).

Hindsight bias refers to the tendency to exaggerate the extent to which a past event could have been predicted beforehand (Banham-Hall & Stevens, 2019). With hindsight bias, coronial inquests and sentinel event inquiries into prison suicides often invoke some form of psychological autopsy (Patterson & Hughes, 2008) with little intellectual rigor (Hobbs, 2001). In making a finding of 'suicide' as the cause of death in prison, coronial inquests are necessarily deferential to the concerns about the social stigma of suicide and the sensitivities of the families of the decedent (Tomaczak, 2019; Wiig et al., 2021). However, the growth of 'therapeutic jurisprudence' in which coronial inquests assume the role of a therapeutic agent (Tait & Carpenter, 2013) may lead to the inquest extending its remit to wide-ranging 'narrative findings' (Carroll et al., 2012), which generate broad policy recommendations intended to reduce the likelihood of future deaths (S. Pridmore &

Maajid, 2016; Tait et al., 2015). It is in this context that coronial inquests into prison suicides may be overly subjective and use deterministic reasoning (St John-Smith et al., 2009) to arrive at simplistic conclusions in which 'mental illness' is assumed to explain a completed suicide (Bray & Martin, 2016).

### **Bias in coronial inquests findings in prison suicides**

Reporting bias includes the selective reporting or emphasis on an outcome or outcomes. At the conclusion of an adversarial and often highly legalistic process (Wright et al., 2012), prejudiced by both reporting and hindsight bias (Large et al., 2012) and often defaulting to an unsophisticated 'mental-illness-causes-suicide' paradigm (S. Pridmore, 2015; Shahtahmasebi, 2013), the findings of a coronial inquest may be unfairly critical of the management of the prisoner in the lead-up to a suicide and include sweeping recommendations for even more rigorous 'screening' or 'risk assessments' for mental illness whilst neglecting to consider broader prisoner and prison correlates of suicide (Manuel et al., 2018; Tait et al., 2020). The contribution of mental illness, even when present, in an individual case of a suicide by a prisoner, may be significant, marginal or non-existent (Milner et al., 2013; W. Pridmore & Pridmore, 2016; Ross et al., 2017), and prison mental health services may have very limited ability to modify the prison-context risk factors for suicide.

A coronial inquest may find it difficult to accept that active or untreated mental illness is not an essential feature in suicide by a prisoner. A coronial inquest may also find it difficult to accept that suicidal ideation leading to a suicide in prison may result from a range of dynamic prisoner and prison-context factors unrelated to mental ill health. Socio-demographic factors and the various vulnerabilities of a particular prisoner in the context of the prisoner's negative emotional well-being and irrational cognitions must be factored into any

retrospective investigation of a prison suicide. Given the salience of the prison-contextual factors, any retrospective examination of suicide must also examine the unique prison environment that contributes to the stressors experienced by the prisoner in the prelude to suicide.

### The stress model for suicide

The term ‘stress’ denotes a person’s reaction to a threat, challenge or change in circumstance that disrupts the equilibrium of the person’s life. Whilst stress is often conceptualised as negative, discontinuous events that have a significant impact on a person’s mental health (Lopez-Castroman et al., 2014), chronic stress may also increase the risk of a deterioration in a person’s mental health and the development of suicidal behaviour (Fergusson et al., 2000). Stress may elicit a complex range of psychological and behavioural responses, which may abate as the stressor disappears or as the individual adapts to a persisting stressor (Koolhaas et al., 2011).

The stress model of suicidal behaviour was founded on the observation that stressful life events often appear to be the precipitants of suicidal ideation and that stressful life events may be the harbinger of suicidal behaviour even in a person who appears to have no predisposing social, psychological or psychiatric risk factors and no past history of suicidal ideation or behaviours (Zaroff et al., 2014).

Psychosocial stressors such as poor social adjustment, unemployment or declining health have been shown to be associated with an increased risk of suicidal behaviour (Blackmore et al., 2008), and, longitudinally, health- and work-related life events have been shown to greatly increase the risk of a subsequent suicide attempt among depressed subjects (Oquendo, Perez-Rodriguez, et al., 2014).

However, a stress model for suicidal behaviour fails to explain why some subjects do not develop suicidal ideation even when subjected to extreme or sustained stress whilst others may become suicidal in the context of

what appear to be less severe stressors (Nock et al., 2010). It appears that the development of suicidal ideation and behaviour involves a vulnerability as a distal risk factor that predisposes the person to suicidal ideation when a particular stress or stressors are present.

Resilience is the capacity and dynamic process of adaptively overcoming stress and adversity while maintaining normal psychological functioning (Sher, 2019). A 21-year longitudinal birth cohort study found that although young people who developed major depression had increased rates of suicidal ideation and suicide attempt, the majority did not develop suicidal ideation or make suicide attempts (Fergusson et al., 2003). The authors concluded that although suicidal ideation was influenced by an accumulation of factors, including family history of suicide, childhood sexual abuse and personality factors, and that negative configurations may increase vulnerability, positive configurations of these factors and other factors may actually confer increased resiliency and apparently reduce the risk of developing suicidal ideation.

### Vulnerability (diathesis) to suicide

The term ‘diathesis’ (from the Greek word *diatithenai* ‘propensity, to dispose’) refers to a person’s predisposition or vulnerability to developing irrational or negative cognitions in which the person contemplates suicide. Whilst the diathesis is a necessary precursor, the diathesis alone is not sufficient to produce the negative or irrational cognitions. The diathesis requires some other potentiating factor or factors (Ingram & Luxton, 2005).

### The stress–vulnerability model for suicide

Some of the early elaborations of the roles of diathesis and stress in the development of suicidal ideation considered the cognitive characteristics of the individual (Rubinstein, 1986). An early study of undergraduate suicide ideators found that poor problem-solvers under high stress scored significantly higher for

depression, hopelessness and suicidal ideation and behaviour (Schotte & Clum, 1982).

The first transactional, stress–vulnerability model conceptualised suicidal ideation and behaviour as a multi-dimensional process that evolves through the interaction of social, emotional, cognitive, behavioural and environmental variables (Bonner & Rich, 1987). By the stress–vulnerability model, social–emotional alienation, cognitive distortions and deficient adaptive resources are factors that create a ‘coping vulnerability’, which, under stressful situations, renders the person vulnerable to suicidal ideation. Once suicidal ideation is provoked, the person is at increased risk of increasing alienation and depression, all of which may further aggravate the suicidal ideation. With repeated exposure to stress or a failure to cope with stress over time, a person may develop a sense of increasing hopelessness, which may lead to suicidal behaviour.

An early multiple-regression analysis study found that current suicidal ideation, hopelessness, dysfunctional cognitions and few reasons for living explained more than half the variance in future suicide probability (Rich & Bonner, 1987). To cross-validate a stress–psychosocial vulnerability model in a prison population, a landmark study of vulnerability factors found that more than half of the variation in suicide ideation could be accounted for by the linear combination of hopelessness, loneliness, irrational beliefs and the stress of imprisonment (Bonner, 1990). The study concluded that psycho-social vulnerabilities interacting with the stress of imprisonment best explained suicide ideation in a prisoner.

The stress–vulnerability model can be extended to integrate neurobiology and psychopathology (Sokolowski et al., 2015). Those who attempt suicide may have a vulnerability for suicidal behaviour independent of the presence, severity or duration of any mental illness (Cannon & Hudzik, 2014). This extended model posits that common factors associated with suicidal behaviour could be classified as

state (stressor)-dependent or trait (diathesis)-dependent. For example, dysfunction of the serotonergic system might be a trait-dependent factor, which is associated with disturbances in the regulation of anxiety, impulsivity and aggression (van Heeringen, 2003). Other research has found a large range of neurobiological systems that may be linked to suicide (Dwivedi, 2012). Dysregulation in stress response systems, especially the hypothalamic–pituitary–adrenal axis, has also been implicated as a diathesis for suicide (Oquendo, Sullivan, et al., 2014).

### **More recent theories of suicide**

The stress–vulnerability model of suicide is complemented by three more recent theories of suicide within the ‘ideation-to-action’ framework, which postulates that factors associated with suicidal ideation can be distinguished from those factors associated with progression from ideation to suicidal action (Klonsky et al., 2018). The interpersonal theory of suicide (Joiner, 2005; Ribeiro & Joiner, 2009) proposes that severe suicidal ideation is associated with the combination of thwarted belongingness and perceived burdensomeness, features that are over-represented in prison populations (Mandracchia & Smith, 2015; Simlot et al., 2013).

The motivational–volitional theory postulates that suicidal behaviour is an end-result of a complex interplay of several factors (Conner, 2011). The motivational–volitional theory features three phases: (a) the pre-motivational phase, which encompasses the predisposing factors and triggering events, (b) the motivational phase, in which the person experiences ‘defeat, humiliation and entrapment’ and develops the suicidal ideation and forms the intent, and (c) the volitional phase, in which the person engages in the suicidal behaviour (O’Connor & Kirtley, 2018). The three-step theory hypothesises that suicide ideation results from the combination of pain (usually psychological pain) and hopelessness

and that connectedness is a key protective factor against escalating suicidal ideation (Klonsky & May, 2015). By the three-step theory, the progression from ideation to suicide attempt is facilitated by dispositional, acquired and practical contributors to the capacity to attempt suicide.

These more recent theories resonate with the stress–vulnerability model of suicide because all three theories highlight the interplay of different factors specific to the person and the person’s circumstances and also emphasise the importance of distinguishing suicidal ideation from suicidal behaviour.

In the ‘suicide crisis syndrome’, persons with trait vulnerabilities facing the stressful life events associated with imprisonment may develop irrational cognitions and acute suicidality (Bloch-Elkouby et al., 2020; Cohen et al., 2019; Schuck et al., 2019). Persistent and desperate feelings of hopelessness (Chapman et al., 2005; Palmer & Connelly, 2005), entrapment (Slade et al., 2014), affective disturbance and hyperarousal (Yaseen et al., 2019) are a common constellation in prisoner cohorts. The construct of ‘suicide capability’ refers to how an individual, through exposure to painful and provocative life events like childhood abuse, develops the capability to cross the behavioural threshold from suicidal ideation to action (May & Victor, 2018). The role of suicide capability has also expanded beyond acquired contributors to also include dispositional contributors. Non-suicidal self-injury and violent offending may facilitate habituation to violence and pain thereby promoting a propensity for a prisoner to act on suicidal ideation (Favril & O’Connor, 2021; Jordan & Samuelson, 2016). Prisoners may be at particularly high risk for death by suicide due to higher levels of the acquired capability resulting from exposure to painful life events prior to and during the current incarceration (P. N. Smith et al., 2016).

By the stress–vulnerability model, the risk of suicidal behaviour is determined not merely by whether a prisoner has a mental illness (which may be a vulnerability or a current

stressor) but also by vulnerabilities that may be reflected in tendencies to experience more suicidal ideation and to be more impulsive and, therefore, more likely to act on suicidal ideation (Bryan & Rudd, 2006).

### **The stress–vulnerability model: prisoner correlates**

In an early landmark study of male prisoners in the United States, a hierarchical regression model of suicide ideation found significant interactions between a history of mental health problems, suicide attempt lethality history and hopelessness with the stress of being housed in a prison segregation unit, which was independent of a depressed mood (Bonner, 2006). Moderately high correlations between the vulnerability factors and suicide ideation support the proposition that vulnerable prisoners, and specifically those who appraised segregation placement as highly stressful, were more likely to report suicide ideation (Gooding et al., 2017). Some prisoners, particularly older prisoners (Mann, 2012) or those with intellectual or physical disabilities or mental illness (Pare & Logan, 2011; Vadini et al., 2018), are more likely to suffer victimisation in prison (Stoliker & Galli, 2019; Teasdale et al., 2016). A logistic regression analysis of suicidal ideation in a cohort of women serving life sentences found significant group differences for abuse histories, depression, family and prison supports (Dye & Aday, 2013).

A matched case-control study of 60 male prisoners who had made near-lethal suicide attempts found a range of associated psychosocial factors (Rivlin, Hawton, et al., 2013). Compared with controls, cases reported higher levels of depression, hopelessness, impulsivity and aggression and lower levels of self-esteem and social support. Adverse life events and criminal history factors have also been shown to be associated with near-lethal self-harm, especially having a prior incarceration and having been victimised in prison (Favril, O’Connor, et al., 2020). A family history of

suicide (Marzano, Hawton, et al., 2011; Rivlin et al., 2010) and history of childhood trauma have also been found to be significantly associated with suicidal behaviour in prison (Blaauw et al., 2002; Clements-Nolle et al., 2009; Mandelli et al., 2011; Milligan & Andrews, 2005; Sanchez et al., 2019). Prisoners who had made multiple suicide attempts have been found to have significantly more childhood trauma and were less resilient than those prisoners who had made a single suicide attempt (Roy et al., 2014). These findings support a stress–vulnerability model of suicidal behaviour that incorporates the imported vulnerability factors of a prisoner and the current stressful prison experience (Armour, 2012).

### **Deliberate self-harm and completed suicide in prisoner populations**

Prisoners who self-harm are at least at six times increased risk of completing suicide, and half of those who complete suicide in prison have a recorded history of self-harm (Fazel et al., 2008). Many of those prisoners who take their own lives will do so within a month of self-harming (Hawton et al., 2014; Humber et al., 2013)

The most recent systematic review and meta-analysis found that across the 40 risk factors examined, the strongest associations with self-harm in prison were suicide-related antecedents, including current or recent suicidal ideation, lifetime history of suicidal ideation and previous self-harm (Favril, Yu, et al., 2020). The authors concluded that prisoners import into prison vulnerabilities for self-harm characterised by social disadvantage, trauma, violence and poor health and that these factors might interact with custody-specific stressors including isolation, victimisation and long sentences, thereby increasing the likelihood of self-harming in prison.

However, use of the term ‘deliberate self-harm’ to include any act of intentional self-poisoning or self-injury irrespective of the

degree of suicidal intent or underlying motivation is problematic (Kapur et al., 2013; Mars et al., 2014) particularly in studies of prison populations. Most studies of factors associated with suicide in prisons rely upon retrospective analyses of clinical and prison records of those who have completed suicide. Only studies based on ethnographic accounts of prisoners who survive near-lethal suicide attempts (defined as acts that had a reasonably high likelihood of being fatal had it not been for intervention or chance) have the potential to fully capture the various prisoner and prison-context correlates of suicide (Borrill et al., 2005).

There are limited studies of prison near-lethal suicide attempts, (Marzano et al., 2009; Marzano, Fazil, et al., 2011; Marzano, Hawton, et al., 2011; Rivlin et al., 2012; Rivlin, Fazel, et al., 2013; Rivlin, Ferris, et al., 2013; Rivlin et al., 2010; Sanchez et al., 2018). Studies that include both suicide attempt (self-injurious behaviour with inferred or actual intent to die) and non-suicidal self-injury (self-injurious behaviour without any intent to die) conflate two behavioural phenomena that are significantly related to one another, are more common in prison populations than in community populations and have similar risk factors (Favril, 2019; Lohner & Konrad, 2006). But studies that include both suicide attempt and non-suicidal self-injury by prisoners are likely to distort pooled effect sizes, which may over-report the association of certain factors that are not independent of each other.

### **Mental illness: a significant factor in prison suicides?**

The study of the relationship between mental disorders and suicide in community populations comes from psychological autopsy studies, cross-sectional studies and clinical samples from those persons presenting to hospital emergency departments or community mental health services and have significant

biases and limitations that diminish their generalisability to prison populations. Community studies are vulnerable to selection bias since they over-represent those with more severe affective or psychotic disorders who also more commonly present to emergency departments and mental health services with suicidal ideation or make a suicide attempt (Adhikari et al., 2020; Too et al., 2019).

Any current psychiatric diagnosis, particularly major depression and borderline personality disorder, is strongly associated with self-harm by prisoners. Whilst severe mental illness is over-represented in prison populations (Baranyi et al., 2019; Blaauw et al., 2005; Conn et al., 2010; Fazel et al., 2016; Fazel & Seewald, 2012; Prins, 2014), retrospective prison studies are even more biased with more limitations and almost invariably highlight that mental disorders or illness are common factors for near-lethal attempts (Marzano et al., 2016; Rivlin et al., 2010) or completed suicides (Favril et al., 2019; Fruehwald et al., 2004).

The most recent systematic review and meta-analysis found a current psychiatric diagnosis, particularly depression, as a prominent factor associated with suicide in prisons (Zhong et al., 2021). However, a recent study of over 18,000 prisoners across the United States found that whilst 14% of prisoners had attempted suicide in their lifetime, several individual-level sample characteristics, unrelated to serious mental illness, may predict odds for attempted suicide (Stoliker, 2018). At the individual level, 40% were currently serving a sentence for a violent offence, 50% had engaged in heavy substance use in the month before imprisonment, 23% engaged in heavy alcohol use in the year prior to imprisonment and 13% had been victimised during their current imprisonment.

A recent national sample of over a thousand New Zealand prisoners found that most mental disorders were not associated with suicide attempts above and beyond their relationship with suicidal ideation (Favril, Stoliker, et al., 2020). The authors of the study

emphasised that substance dependence, alcohol dependence and post-traumatic stress disorder distinguished suicide attempters from ideators and concluded that, consistent with many epidemiological studies in the general population, most mental disorders are best conceptualised as risk factors for suicidal ideation rather than for suicide attempt and that once prisoners develop suicidal ideation, other bio-psychosocial factors beyond the mere presence of mental disorders may account for the progression from suicidal ideation to suicidal behaviour.

### **From suicidal ideation to suicide attempt in prison**

Current and lifetime psychopathology, adverse life events such as childhood trauma, personality characteristics and physical illness may influence a prisoner's adaptation to the prison environment including whether the prisoner develops suicidal ideation (Armour, 2012; Dye & Aday, 2013; Friestad et al., 2014; Godet-Mardirossian et al., 2011).

Whilst nearly all mental disorders may increase the risk of suicidal ideation, those disorders characterised by anxiety (Bentley et al., 2016) and poor impulse control appear to be most strongly associated with the transition to suicide attempt (Klonsky et al., 2018; Nock, Hwang, & Sampson, 2009). Substance use, interpersonal violence and deliberate self-harm, which can be characterised as 'dysregulated' behaviours (Bresin, 2020), appear to increase the risk of suicide in the context of suicidal ideation rather than the mere presence of a mental illness (Flansborg-Madsen et al., 2009; Folk et al., 2018; Poorolajal et al., 2016).

An Australian study found that violent offending, traumatic brain injury, depression, self-harm and past hospitalisation for mental illness were correlates of suicidal ideation in prison (Larney et al., 2012). But whilst childhood out-of-home care, parental incarceration and hospitalisation for mental illness were



univariate correlates of suicide attempt among suicide ideators, no factor remained significant in a multivariate model.

A history of drug use, violent offending and non-suicidal self-harm each at least double the odds of suicide attempt among prisoners with suicidal ideation (Favril, O'Connor, et al., 2020). Although they are related to suicidal thoughts, markers of psychiatric morbidity appear to be less associated with the transition to suicide attempt by prisoners (Favril, Indig, et al., 2020). Factors associated with the transition from suicidal ideation to suicide attempt in prison also appear to be characterised by behavioural disinhibition (Favril & O'Connor, 2021; Folk et al., 2018), a vulnerability that an individual already has when he or she is imprisoned.

### **Prisoner coping and suicide**

Coping ability refers to the capacity to offset challenges and problems and tolerate or overcome stressors (Gooding et al., 2015). The results of early research highlighted the importance of the interaction between situational and environmental factors and a prisoner's coping ability (Danto, 1973; Gullone et al., 2000; Liebling, 1992; Toch, 1992; Zamble & Porporino, 1988). A heuristic typology of prison suicide developed from data collected by the United Kingdom Suicide Awareness Support Unit identified three groups: life/long-sentence prisoners, the mentally ill and 'poor copers' (Liebling, 1999). Each group had a different profile with regard to age, history, possible motivation and the types of situational factors that appeared to contribute to their suicides. 'Poor copers' or 'vulnerable prisoners' constituted the most numerous of prison suicides and were the most significant in relation to the prison experience as they resembled other prisoners most closely. Motivations included fear, helplessness, distress and isolation. Young prisoners (Liebling, 1993; Stoliker et al., 2020a) and prisoners during their first incarceration who

have poorly developed coping skills may be particularly vulnerable. Women prisoners may also be more vulnerable and find the impact of imprisonment more stressful (Slotboom et al., 2011).

A recent study based on the interviews of 60 male prisoners who made near-lethal suicide attempts arrived at five classifications: prisoner unable to cope, psychotic prisoner, prisoner with instrumental motive, prisoner who made an 'unexpected' suicide attempt and prisoner withdrawing from drugs (Rivlin, Ferris, et al., 2013). A third of the 60 prisoners were classified as 'poor copers' who found imprisonment an overwhelming experience. The 'poor copers' were considered 'vulnerable prisoners' who attributed their suicide attempts to a combination of past abuse, on-going prison-related troubles and other serious problems outside prison.

'Poor copers' are arguably the most preventable group of prison suicides but only if the significance of their immediate situation is identified. Other research has confirmed the relationship between prisoner distress and dysfunctional coping and self-harming (Dear, Slattery, & Hillan, 2001; Ireland & York, 2012) and suicidality in prisoners (Chapman et al., 2005; Liebling, 1995, 2006; Power et al., 2002).

### **The stress-vulnerability model: prison-context correlates**

For any individual, being imprisoned rates very highly as a stressful life event (Scully et al., 2000). Stressors in the prison setting may include general aspects such as adjustment to incarceration and removal from a familiar environment, as well as more specific aspects of imprisonment, including withdrawal from alcohol or substances, uncertainty about their legal disposition or sentence, lack of purposeful activity such as work, or education and boredom (Chapman et al., 2005; Goomany & Dickinson, 2015; Leese et al., 2006). In the sociological literature, the term

'pains of imprisonment' has been proposed to comprehend the oppression and many privations experienced by prisoners including loss of liberty, security and privacy (Edgemon & Clay-Warner, 2019; Liebling, 2011; Sykes, 1958; van der Kaap-Deeder et al., 2017), disconnection from family and societal supports and loneliness, as well as frustrations from the conditions of noise and overcrowding (Crewe, 2015; van Ginneken et al., 2017), disturbed sleep (Carli et al., 2011; Vogger et al., 2014) and exposure to threats and violence (Caravaca-Sánchez et al., 2021; Marzano, Fazel, et al., 2011).

In an early study of 295 suicides in prisons in England and Wales between 1972 and 1987, the motivation for the suicide was inferred from any suicide note, observations made before the suicide by other prisoners or prison staff and collateral information including accounts of family members and findings of coronial inquests (Dooley, 1990). Factors relating to the prison context included imprisonment being intolerable (the prisoner being unable to face the possibility/length of sentence, unable to cope with the regime, fear of intimidation, or actual or perceived victimisation by other prisoners), lack of communication with the outside world (no visits or correspondence, failure of a visitor to attend) and inability to cope with confinement due to low frustration tolerance. The study also identified other outside pressures including a threat to a close relationship (separation, divorce, ostracism by family members) and receiving distressing news (domestic problems, failure of an appeal or parole application). Of the 295 suicides, 40% were putatively motivated by the 'prison situation', and 15% were motivated by 'outside pressures'.

It is often difficult to distinguish the apparent manipulative self-harming gesture from a genuine suicide attempt, and the two groups are not mutually exclusive. A failure to manage a self-reported or apparent self-reported manipulative act in response to a prison-context stressor may result in a subsequent

completed suicide (Bonner, 2006; Dear et al., 2000; Dear, Slattery, & Hillan, 2001). A thematic analysis of self-report by 91 prisoners in a study from Western Australia identified a stressful event that occurred in prison as the most common (71%) precipitate of a self-harm incident (Dear, Thomson, et al., 2001). The four specific themes were conflict with other prisoners, conflict with correctional staff, problems related to placement within the prison system and stress associated with being managed on a restricted regime, for example a disciplinary temporary loss of privileges.

Fear and anxiety from prisoner-on-prisoner violence (Blaauw et al., 2001) or witnessing violence are common stressors experienced by prisoners (Encrenaz et al., 2014; Marzano, Hawton, et al., 2011). Up to a third of prisoners use substances while incarcerated (Mundt & Baranyi, 2020). In 2019, the Health of Australian Prisoners survey found that 16% of prison dischargees reported using substances in prison, and 8% reported injecting substances in prison (Australian Institute of Health and Welfare, 2019). Serving prisoners are at high risk of harms associated with substance-related intimidation and violence (Larance et al., 2011) and disciplinary sanctions for substance use. A study of 76 suicides in New York State correctional centres found that the three most common stressors preceding suicide were prisoner-on-prisoner violence, recent disciplinary action and receiving distressing news such as a disruption of a family or other relationship (Way et al., 2005). A recent systematic review highlighted that in seven of eight studies of near-lethal prison suicide attempts, associations were found with prison-context factors, especially bullying and social isolation (Marzano et al., 2016).

Points of movement for prisoners, including from a watch house to a remand centre, from a remand centre to a sentence prison or from a mainstream or general population unit to a protection or segregation unit, are likely to be stressful for prisoners particularly after they have developed a support network of other

prisoners or have developed some rapport with correctional officers on a particular prison unit (Kottler et al., 2018). The risk of suicide has been shown to be highest early during imprisonment, particularly around prison reception (Daniel & Fleming, 2006; Forrester & Slade, 2014; Humber et al., 2013; Liebling, 1992; O'Driscoll et al., 2007; Radeloff et al., 2021; Shaw et al., 2004). Data collected by the Australian National Deaths in Custody Program have shown that the risk of completed suicide was highest in the first 1–3 months of imprisonment (Willis et al., 2016).

Isolation, disciplinary sanctions, significant change in sentencing or legal status, fear for their personal safety and serious medical conditions have all been shown to be associated with completed suicide in prisons (Patterson & Hughes, 2008). Inconsistent experiences relating to perceived unfairness, disrespect and neglect have been found to contribute to prisoner distress (Liebling, 1995, 2005). Low staff engagement, 'enforced idleness', negative staff–prisoner relationships, high prison population turnover rates (Liebling & Ludlow, 2016) and the absence of opioid substitution programmes (Fiscella et al., 2018; Larney et al., 2014; Wakeman, 2017) are other prison-context factors associated with suicide.

On the supranational level, the nature of the prisoner's offence and sentence appear to have the strongest influence on the prison suicide rate (Sánchez et al., 2021). Macrostructural factors associated with completed suicide by prisoners include sexual offenders (Gullotta et al., 2021; Katsman & Jeglic, 2020), offenders charged with violent crimes and prisoners sentenced for short- and long-term imprisonment (Duthé et al., 2013; Rabe, 2012). Prison overcrowding may increase the risks of suicide by a number of ways, including increased unwanted interactions and violence between prisoners and unstable social structures, reduced access to medical and mental health care and fewer opportunities for exercise and meaningful activity (Baggio et al., 2018).

A study of over a thousand state prisons in the United States examined how prisoner characteristics (importation) and prison conditions (deprivation) were associated with prison suicide (Dye, 2010). The number of suicides was significantly increased in 'supermaximum' and maximum-security prisons relative to minimum-security prisons, under conditions of overcrowding and violence and in prisons where a greater proportion of prisoners received mental health services. Similarly, a recent study of 18,000 prisoners across state and federal prisons in the United States found that being incarcerated in a prison with higher proportions of prisoners who exhibit assaultive behaviour was associated with increased attempted suicides (Stoliker et al., 2020b). Although deprivation variables appear to be strongly associated with completed suicide, the results of these and other studies (van Ginneken et al., 2019) point to the combined effects of prisoner characteristics and institutional conditions.

### **Single cell occupation: a significant factor in prison suicides?**

Segregation or solitary confinement with the conditions of profound isolation and sensory deprivation have long been recognised as potentially highly aversive and stressful to some prisoners (Dellazizzo et al., 2020; Luigi et al., 2020; Metzner & Fellner, 2010). Disciplinary segregation in prison is disproportionately imposed on mentally ill prisoners (Clarke, 2018; Dellazizzo et al., 2020; Luigi et al., 2020; A. T. Ryan & De Vylder, 2020), and segregation and solitary confinement have been found to be associated with suicidal ideation (Brown, 2020; S. P. Smith, 2006). A study of 154 prison suicides in California found that 73% occurred in single cells while 46% occurred in single cells in administrative segregation or secure housing units (Patterson & Hughes, 2008). The authors highlighted that 38% of the suicide victims had previously been assessed by health clinicians as 'not in

need of mental health treatment'. The most recent systematic review and meta-analysis of risk factors for suicide found that institutional factors associated with suicide included occupation of a single cell and having no social visits (Zhong et al., 2021).

Occupation of a single cell is frequently cited as a risk factor for suicide (Boren et al., 2018; Fazel et al., 2008; Humber et al., 2013) with the corollary that isolation in a single cell increases the risk of completed suicide either because it is stressful for the prisoner or because it reduces the routine observation of the prisoner, or both. Studies have found a negative correlation between overcrowding and prison suicide (Duthé et al., 2009; Fruehwald et al., 2002), which may reflect the protective effect of sharing a cell with another prisoner.

However, a distinction must be made between prolonged 'disciplinary' segregation or solitary confinement and elective single cell occupation in a mainstream unit by a prisoner who may have a history of sexual abuse or post-traumatic stress disorder. Whilst it might be hypothesised that those prisoners identified as at risk of suicide should not be placed in single cells because they may be more likely to have the opportunity to suicide when no one is nearby to intervene, the research supporting this proposition is not compelling. Depending on the nature of cellmate relationships, cell sharing can enhance or diminish the well-being beyond what a prisoner experienced in a single cell (Schliehe & Crewe, 2021; van Harreveld et al., 2007). Cellmate relationships may influence the extent to which a prisoner may feel stress from concealing their emotions and vulnerabilities, obtain social support from their cellmate or feel safe or unsafe with their cellmate (Muirhead et al., 2021; Wulf-Ludden, 2013). Prisoners who have recently self-harmed or disclosed self-harming or suicidal ideation may attract a 'notification of concern' or 'at risk' status and be transferred to a single cell in the prison 'detention unit' or 'safety unit'. By reverse causality, that prisoner may

experience further exacerbation of stressors related to suicidal behaviours, or, by outcome bias, may later contribute to an over-representation of completed suicide in a 'single cell' in that prison. In contrast, transfer to a single cell in a 'detention unit' or 'safety unit' may reduce the likelihood of further self-harm or suicide in the context of closer observations, increased support and enhanced or more reliable access to psychological interventions or medication.

Findings from some studies from the United States may not be generalisable because of the high incidence of violence, over-crowding, poor conditions and untreated mental illness in prisons in the United States (Appelbaum, 2011). A national study of suicides in prisons in England and Wales found that a third of the 172 suicides occurred in double cells, just under half of which occurred when the cellmate was actually present (Shaw et al., 2003). The better perspective may be that a prisoner in a single cell in the mainstream prison population with access to the common areas, exercise yard and prison health services may be at no greater risk of suicide than a prisoner who is 'doubled up' in a cell with another prisoner (Felthous, 2011). Other factors, including disciplinary lockdown, reduced levels of routine observation as a result of overcrowding or sub-optimal correctional officer staffing levels (Huey & McNulty, 2005) and limited access to mental health and general health services, may be more relevant to the risk of suicide by prisoners housed in single cells.

### **Risk management and the suicidal prisoner**

Managing the risk of a suicidal patient, including a patient who is imprisoned, is challenging (Scott, 2016). Just as occurs in community populations (Ahmedani et al., 2014; Luoma et al., 2002), there will be those prisoners who will complete suicide in their first attempt or without ever having had contact with either

primary health care providers (Owens et al., 2004) or the in-reach mental health service of the prison (Trestman et al., 2007). In one study of near-lethal suicide attempts, the majority of prisoners who made a near-lethal suicide attempt were not identified as ‘at risk’ at the time of the incident, and only 40% were on an open ‘Assessment, Care in Custody and Teamwork’ document following a suicide risk assessment (Rivlin et al., 2010). A later study found that 46% of the prisoners who had died by suicide between 2005 and 2008 had never been on an open risk management document during their imprisonment (Humber et al., 2013).

### **Nondisclosure of suicidal ideation**

Most suicide attempters deny experiencing suicide ideation when asked by healthcare providers (Berman, 2018; Louzon et al., 2016). Despite the clinical importance of eliciting suicidal ideation, several robust meta-analyses have highlighted only a modest strength of association between suicidal ideation and later suicide (Franklin et al., 2017; McHugh et al., 2019; Ribeiro et al., 2016).

While conscious suicidal ideation may or may not precede suicide, only a minority of suicide decedents reveal their suicidal ideation through self-report (Blanchard, 2020; Høyen et al., 2021; Levi-Belz et al., 2019; Lungu et al., 2019). A recent study of over 20,000 suicide decedents found that of those who had been diagnosed with a mental health or substance use disorder, only 25% had disclosed suicidal intent (Stone et al., 2018). Of those who had not been diagnosed with a mental health disorder, only 22% had disclosed suicidal intent.

A recent analysis of 69 cases of completed suicide of persons who had contact with a large Australian public mental health service within the preceding 31 days found that 78% of persons had been asked if they were experiencing suicidal ideation during their last consultation (Wyder et al., 2021). Eighty-seven

per cent denied suicidal ideation. Of these subjects, 26% were asked about their suicidal ideation three days prior to their suicide, and a further 26% were asked within 14 days of their suicide. Furthermore, 70% had a formal risk assessment completed in the month prior to their suicide, and 26% of these risk assessments were completed within three days prior to the suicide. No person’s suicide risk was rated as ‘high’, and for 75% of the subjects, the suicide risk was rated ‘low’.

While subjects often failed to disclose their suicidal ideation, denial may also be genuine since such ideation and intent may fluctuate within hours or minutes (Hallensleben et al., 2019; Kleiman et al., 2017) and may peak within only minutes of a suicide attempt (Rimkeviciene et al., 2015; T. R. Simon et al., 2001; Wyder & de Leo, 2007). Whilst recent research has begun to identify psychological processes that occur in the days, hours and minutes leading up to a suicide attempt (Bagge et al., 2013; Rogers & Joiner, 2017), suicidal ideation can be a very late phenomenon in the suicidal process, appearing within the 10 minutes preceding the suicide attempt (Deisenhammer et al., 2009; Kleiman & Nock, 2018).

Self-reported history of self-harm in prisoners has been found not to be an accurate indicator of prior self-harm nor is it sensitive in predicting future self-harm (Borschmann et al., 2017). Also, just as occurs in community populations (Hom et al., 2015; Walby et al., 2018), even those prisoners who report suicidal ideation may be reluctant to engage in treatment (Way et al., 2013). Paranoid prisoners or those prisoners concerned about the stigma of a diagnosis of mental illness or who are fearful that they may be intimidated to divert their sedating medication may also be reluctant to self-present or continue to accept treatment in prison.

Community studies show that over a quarter of people who die by suicide had been in recent contact with mental health services (National Confidential Inquiry into Suicide &

Safety in Mental Health, 2018) or had self-presented to an emergency department (Da Cruz et al., 2011). A significant proportion of those who had made previous suicide attempts or who had previous treatment (Hunt et al., 2006; Stene-Larsen & Reneflot, 2019) including inpatient treatment for mental illness (Chung et al., 2017) go on to ultimately complete suicide. However, one meta-analysis that considered the data from 81 studies estimated that the absolute risk of suicide of those with suicidal ideation was only 1.4% in the first year of follow-up in psychiatric patients and less than 0.3% over a year in non-psychiatric subjects (Hubers et al., 2018).

Whilst some prisoners with psychotic or mood disorders, post-traumatic stress disorder or borderline personality disorder are likely to be at higher risk of suicidal behaviour, severe mental illness, even untreated severe mental illness, is not the *sine que non* of suicide by prisoners. Even as depression and negative or irrational cognitions of hopelessness, helplessness and worthlessness are the usual features of the common final pathway to suicidal behaviour, just as occurs in community populations (Abrutyn & Mueller, 2021; T. Foster, 2011), the vast majority of distressed or dysphoric prisoners do not progress from suicidal ideation to suicidal behaviour.

### **The positive predictive value of suicide screens and risk assessments**

In screening or assessing the risk of suicide, the binary classification of any instrument holds that a subject is either truly at risk (sensitivity) or is truly not at risk (specificity). Any improvement in the sensitivity of the instrument, reflected in the proportion of true positives, comes at the cost of an increase in the rate of false positives (Pokorny, 1983; Roos et al., 2013). The trade-off between sensitivity and specificity can be varied by the threshold or cut-off score used to define a case. The negative predictive value (NPV) of a suicide screen or risk assessment tool refers to the

likelihood that a person who scores low on the screen or tool won't actually complete suicide. The positive predictive value (PPV) refers to the likelihood that a person who scores high will actually complete suicide. The PPV is important because it defines the number of false-positive cases who must be treated in order to treat each true positive. However, a high false-positive rate has important cost benefit and resource allocation implications (Large et al., 2017; Nielssen et al., 2017). Also, in prison, the ramifications of being identified as a false positive (being segregated or placed in solitary confinement under observation, being made to wear a 'suicide smock', losing privileges like employment, and other restrictions) are at best unpleasant and at worse highly stressful for a prisoner.

### **No efficacy of any screens or risk assessment tools for suicide in the community**

A large meta-analysis of over a thousand suicides found that a past history of suicide attempt or self-inflicted injury and depressive symptoms were only moderately associated with suicide (Large, Sharma, et al., 2011). A subsequent systematic review of in-patient suicides found that despite the apparently strong association between high-risk assessment and subsequent suicide, the low base rate of suicide meant that the PPV of a high-risk assessment was still very poor (Large, Smith, et al., 2011). A later meta-analysis of longitudinal studies found that over an average follow-up period of 5 years, the proportion of suicides among the high-risk patients was 5.5%, and among the low risk patients the proportion was 0.9% (Large et al., 2016). The meta-analytically derived sensitivity and specificity of a high-risk categorisation were poor. The authors further qualified the findings by noting that there was evidence of publication bias in favour of studies that inflated the pooled odds of suicide in high-risk patients.

Whilst a current mental illness or past history of a suicide attempt are two factors that appear to be strongly associated with completed suicide, the PPV of suicide risk assessments incorporating those two risk factors is still very poor (Large & Ryan, 2014; Nielssen et al., 2017). Similarly, whilst those with a history of intentional self-injury are a greater risk of completed suicide than the general population, a systematic review of prospective studies of risk factors and risk assessment scales to predict suicide following self-harm found that none of the 12 studies on risk factors and none of the seven studies on risk scales showed sufficient evidence to support their use (Chan et al., 2016). The authors of the study cautioned that an over-reliance on the identification of risk factors may provide false reassurance in the management of the risk of suicide.

#### **No efficacy of any screens or risk assessment tools for suicide in prisons**

Whilst the lifetime prevalence of suicidal ideation in the general population is approximately 10% (O'Connor & Nock, 2014), up to a third of prisoners experience suicide ideation during their lifetime (Favril, Indig, et al., 2020). Although fluctuating suicidal ideation may be common in prison populations, near-lethal suicide attempts and completed suicide in prison have a low base rate. The high prevalence of putative static or historical suicide risk factors in prisoner populations means that using these factors to attempt to estimate the risk of suicidal behaviour in a given prisoner is of little utility (Large et al., 2017; Oquendo et al., 2003).

Preventing suicidal behaviour in prisons is the aspirational goal for prison mental health clinicians and policy makers (Belsher et al., 2019; Graney et al., 2020; Rogan, 2018; Sequeira et al., 2019; World Health Organisation, 2014). Unfortunately, just as there is no published randomised prospective trial demonstrating the efficacy of any screening protocols or risk assessment tools for

community populations (Carter et al., 2017; Large et al., 2018; Large & Ryan, 2014), all current suicide risk assessment tools have poor face validity, and none have been shown to have any efficacy in predicting suicidal behaviour in prison populations (Berman & Canning, 2021; Gould et al., 2018; Perry & Horton, 2020; Perry et al., 2010).

A prospective cohort study that examined five screening instruments commonly used in prisons in the United Kingdom found that none of the summary scores derived from the instruments showed a meaningful ability to predict self-harm in 452 prisoners over a 6-month follow-up (Horton et al., 2018). The authors of the study also emphasised that many of the 105 items were static in nature and that immutable factors took no account of current prisoner or prison-contextual correlates.

Face validity refers to the extent to which a tool appears to measure what it purports to measure. The recently developed Oxford Self-harm in Prison screening tool appeared to show good face validity in predicting self-harm in 542 prisoners (Ryland et al., 2020). With only 3% of the total sample going on to harm themselves in the 6-month follow-up period, the study was underpowered to discriminate between any self-harm and severe, potentially lethal self-harm. Of those prisoners who scored on 5 or more of 11 screening questions, less than 5% went on to self-harm, which represented a sensitivity of 35%, a specificity of 73% and a PPV of 5%. The high NPV of 97% demonstrated the limited potential of the tool to screen out those prisoners at low risk of self-harm. The authors of the study suggested that weighting the two items 'previous suicide attempt or self-harm in prison' and 'current thoughts of self-harm' according to the effect size might improve the screening tool's predictive performance.

However, the application of screening tools and risk scales is dependent on the clinical context. In prisons, inquiring about a past history of self-harm or any current self-harming ideation is fundamental to any mental

state examination or risk assessment. Weighting of self-evidently important factors or adding even more impressionistic static risk factors for suicide in prison further reduces what little sensitivity or specificity any screening or risk assessment tool may have in predicting a low base rate event (Corke et al., 2021; Fazel & Wolf, 2018; R. I. Simon, 2009).

Indeed, the routine use of *proforma* ‘tick box’ screens or assessments, which neglect to take account of the lived experience of the prisoner, is likely to simply waste time and resources (Quinlivan et al., 2017; Völlm & Dolan, 2009). In contrast, using questions derived from the component factors in the stress–vulnerability model of suicide in prison (Table 1)

Table 1. Stress–vulnerability model: correlates for prison suicide.

Prisoner correlates	Prison-context correlates
<b>Vulnerabilities</b>	
Previous self-harm outside of prison	Previous self-harm in prison
Previous suicide attempt outside of prison	Previous suicide attempt in prison
Lifetime history of suicidal ideation	Previous victimisation in prison
Childhood neglect, abuse or trauma	Multiple previous imprisonments
Family history of suicide	Previous episodes of juvenile, youth detention
History of mental illness (particularly depression, post-traumatic stress disorder, borderline personality disorder)	
History of alcohol, substance abuse	
History of violent victimisation	
Intellectual disability	
Traumatic brain injury	
Parental incarceration	
<b>Stressors</b>	
Current, recent self-harm or suicidal ideation	First imprisonment
Current feelings of hopelessness, helplessness or worthlessness	Remand, early stage of imprisonment
Current symptoms of mental illness	Current conflict or association issues in prison
Relapse of substance abuse in prison	Current threats or victimisation in prison
Chronically disturbed sleep	Loss of contact with children
Serving sentence for violent, sexual offences	Lack of personal supports, visits
Serving long or indefinite sentence	Recent distressing news (sentence, parole)
Medical problems including chronic pain	Recent relationship breakdown
Recent diagnosis of hepatitis, HIV	Recent bereavement
Poor coping	Current disciplinary sanction segregation
Low self-esteem	Current solitary confinement
Poor prospects, not future-orientated	Current, recent sanction for disciplinary breach
No post-release plans	Uncertainty of sentence, transfer
	Suicide by another prisoner
	Exposure to prison violence
	Overcrowded, understaffed prison
	Limited access to prison mental health services
	Limited access to prison health services
	Limited access to opioid substitution therapy
	Lack of opportunities for work, rehabilitation
	Lack of opportunities for meaningful activity



informs a more holistic and therapeutic assessment, which considers not only a prisoner's predisposing factors and clinical presentation but also the prisoner's current contextual factors in a needs-based approach. Rather than defaulting to some probabilistic assessment with poor predictive validity, the stress-vulnerability model of suicide informs an enhanced interaction between the mental health clinician and prisoner, which, by enhancing the therapeutic alliance (Berman et al., 2015; Espeland et al., 2021) and mobilising strengths and supports, is more likely to ameliorate the modifiable factors relevant to an individual prisoner (E. P. Ryan & Oquendo, 2020).

#### **The stress-vulnerability model: implications for clinical practice in prisons**

The object of assessing the risk of suicide in prison populations is not to improve medium- to long-term prediction but rather to identify the vulnerabilities and stressors that increase the likelihood that a particular prisoner may attempt suicide. Rather than being preoccupied with foreseeability, prediction and risk stratification, risk management should focus on vulnerabilities and contextual stressors to develop prevention-orientated interventions (Kene et al., 2019; Pisani et al., 2016). Since the risk of suicide by a prisoner is not static, risk assessment needs to be a continuous process from the time of reception. The dynamic, individual-level vulnerabilities and coping abilities of a prisoner and stressors that the particular prisoner experiences in the prison *milieu* must always be considered in assessing that prisoner's ongoing risk of suicide. Applying the stress-vulnerability model enables a more sophisticated ethnographic formulation of the complex processes by which some prisoners may, under certain stressful circumstances, contemplate, plan and act on suicidal ideation. A formulation informed by the stress-vulnerability model is fundamental to

suicide prevention in the prison context (Bolton et al., 2015; Humber, Piper, et al., 2011).

The suicide of any prisoner is a tragedy that often has catastrophic effects on the prisoner's families, the prison health service (Gibbons et al., 2019; Ratkowska et al., 2013; Seguin et al., 2014), correctional officers (Barry, 2017; Hemming et al., 2020; H. P. Smith et al., 2019) and other prisoners (Favril et al., 2017; Hales et al., 2015; Hawton et al., 2014; McKenzie & Keane, 2007). But screening and suicide prevention strategies that focus on mental illness as the salient factor may paradoxically increase the risk of suicidal behaviour by failing to identify and intervene in respect of more compelling non-mental-illness-related factors (Mulder, 2011). Cluster 'B' personality traits are markedly over-represented in prison populations, particularly among women prisoners, and each prisoner also harbours their own array of other factors statistically associated with suicide. But many of these are generic static factors that only indicate a statistically elevated risk of future suicide. Information about possible dynamic factors and particular acute stressors personal to the prisoner are often not known or not documented or are poorly communicated by the prisoner (Folk et al., 2018). Rather than trying to predict which prisoner may attempt suicide, understanding a prisoner's vulnerabilities and particularly the stressors that prisoner is experiencing will enable a more focused, needs-based management approach. Even with the limitations of staff availability and resources in prisons (Ismail & de Viggiani, 2018) and the inability to prevent suicides that occur without warning, a needs-based approach informed by the stress-vulnerability model of suicide should be the collective responsibility of correctional and health staff in prisons (Daniel, 2006; Forrester et al., 2014; Samele et al., 2016).

#### **A collaborative, multi-agency approach to reducing suicide in prisons**

In 1995, the World Health Organisation introduced the 'Healthy Prisons' approach as a

system-wide strategy for improving the health of prisoners (World Health Organisation, WHO, 1995). The main objectives of the 'Healthy Prisons' initiative were to address prisoners' health needs and risks, recognise and mitigate the harmful health impacts of imprisonment and safeguard prisoners' human rights including their right of access to health services comparable to those available to the general population. By the 'principle of equivalence', it is accepted that prisoners have the right to a standard of health care at least equivalent to that available outside of prisons (Fuller & Eves, 2017; Lines, 2006; Niveau, 2007; Till et al., 2014).

The 'moral climate' of a prison refers to the standard of integrity, procedural fairness and the genuine focus on providing for the psychological needs including the personal safety and well-being of prisoners (Liebling, 2006; Liebling & Kant, 2018). Reducing the incidence of prison suicides requires a collaborative, multi-agency approach (Daniel, 2006; Kovaszny et al., 2004; Kupers, 2006). The multi-agency approach requires corrective services, prison health services, prison mental health services, drug and alcohol services, in-reach education and training services, outside counselling services, family and other supports and post-release throughcare and accommodation services to work collaboratively to address both the psycho-social and clinical vulnerabilities and, most importantly, the prison-related stress factors experienced by the prisoner (Fazel et al., 2016). This targeted management, informed by the stress-vulnerability model of suicide, requires senior management support for cultural change with cross-professional collaboration and investment in all those services (Slade & Forrester, 2015).

Corrective services must strive to reduce the stressful prison-context factors like overcrowding, intimidation and violence and reduce the importation of substances into prisons. Corrective services need to address the harms within prisons associated with substance misuse and diversion of prescribed

medication by making opioid agonist therapies freely available to all prisoners (Komalasari et al., 2021; Scott et al., 2021; Vail et al., 2021). As well as enabling regular visits from family members, children and other supports, including by 'virtual visits', and providing teleconferencing logistics to facilitate legal advice and remote attendance at court hearings, corrective services must offer recreational activities including exercise yards and gym equipment and meaningful educational and training opportunities for prisoners. The collaborative, multi-agency approach involving correctional officers and psychologists, prison health staff, mental health clinicians, prisoner peer support persons and cultural liaison officers must prioritise screening for psychological vulnerability and poor coping in prisoners and develop methods for identifying and promptly responding to distressed prisoners (Dear, 2017). This targeted, inter-disciplinary approach may be best operationalised by also promoting the training of correctional officers (Daigle et al., 2007; Hayes et al., 2008; Humber, Hayes, et al., 2011; Konrad et al., 2007) and personal support persons (Barker et al., 2014; J. Foster, 2011; Snow & Biggar, 2006) in identifying distress and poor coping particularly in those prisoners who have recruited adversity. Future research on prison suicide risk management should also focus on developing a stress-vulnerability psychometric tool that could be administered by clinicians when assessing and monitoring the risk of suicide by a prisoner.

## **Ethical standards**

### ***Declaration of conflicts of interest***

Russ Scott has declared no conflicts of interest  
Andrew Aboud has declared no conflicts of interest

Tamara Smith has declared no conflicts of interest

**Ethical approval**

This article does not contain any studies with human participants or animals performed by any of the authors.

**Authors' confirmation**

The manuscript has been submitted solely to this journal and is not published, in press or submitted elsewhere.

All the research meets the ethical guidelines.

A complete text with a separate title page and acknowledgements, and any running headers of author names, to allow blinded review has been prepared.

The authors have no conflict of interest.

The manuscript is not a candidate for a special issue.

The authors confirm that they have read and understood the publisher guidelines on copyright and author rights.

No third-party material has been used for which formal permission is required.

There is no data set associated with this submission.

The authors confirm that they do not disclose any identifiable, confidential information or characteristics of individuals.

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