The population-level effectiveness of suicide prevention strategies that might be used in a systems-based approach

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Reducing suicide through a systems-based approach

The National Mental Health Commission's recent review of Australia's mental health system called for a 50% reduction in suicides and suicide attempts over the next decade (National Mental Health Commission, 2014). To achieve this, it suggested that 12 regions should be established as pilot sites for the introduction of systems-based approaches to suicide prevention (National Mental Health Commission, 2014).

Modelling the effectiveness of selected suicide prevention strategies

The article by Krynska et al. (In press) attempts to model the potential effects of each of nine evidence-based suicide prevention strategies that might be implemented under a systems-based approach: reducing access to lethal means; media guidelines on responsible reporting of suicide; public awareness campaigns; school-based suicide prevention programs; gatekeeper training; training of GPs in identifying and treating depression and suicidality; follow-up for individuals who have made a recent suicide attempt; and training of frontline staff.

Krynska et al take each strategy in this list and calculate its population preventable fraction (PPF), or the percentage of suicides or suicide attempts that could be prevented if the population was exposed to the strategy. They use published data on the relative risks (RRs) and likely exposures associated with each strategy, finding relevant information for all strategies except training of frontline staff. Although they argue that, under a systems-based approach, the whole would be greater than the sum of the parts, they acknowledge that implementing the strategies they advocate will not have a simple additive effect on suicide and suicide attempt rates. For this reason, they appropriately use a conservative approach and take the highest-performing strategy in terms of each of these effects (GP training for suicides, and follow-up of individuals who have made a suicide

attempt for suicide attempts) and treat the PPF for these as the minimum likely impact that the suite of strategies would have under a systems-based approach. They conclude that this would yield a 6.3% reduction in suicides and a 19.8% reduction in suicide attempts.

Checking the estimates and testing some of the assumptions

When I calculated the PPFs for myself using data from Krysinaka et al's Table 1 in , I didn't get quite the same numbers, although the highest-performing strategies were the same; my PPFs suggested lower overall minimum impacts of 6.2% ($0.769 \times (1-0.920)$) for suicides and 9.8% ($0.163 \times (1-0.397)$) for suicide attempts. However, even these figures are likely to be inflated because several of Krysinaka et al's strategies would, by definition, only apply to certain sub-groups. For example, following up individuals who have made a suicide attempt is only relevant to those who present to hospital for self-harm in a given year (<0.4% of the population (Johnston et al., 2009)), which makes the total population exposure more like 0.1% (i.e., $16.3\% \times 0.4\%$), and the PPF more like 0.6% ($0.1 \times (1-0.397)$). Even this assumes that the RR is the same for the whole population, which it clearly isn't. Additionally, Krysinaka et al's PPFs assume a baseline of zero, and that no action has occurred in any of these areas. This is untrue – e.g., guidelines to improve reporting of suicide have been extensively rolled out under the Mindframe initiative and psychotherapy has become more readily available through the Better Access and Access to Allied Psychological Services programs.

Future use of the model to guide strategy selection in a systems-based approach

These questions about the calculations aside, Krysinaka et al's model provides a useful way of thinking about the strategies that might be implemented through a systems-based approach. The strategies they present have intuitive appeal, combining a mix of universal, selective and indicated interventions. Some communities might favour other interventions, and these could also be

modelled – e.g., improving access to care for at-risk individuals, which has been shown to be effective in the context of systems-based approaches (van der Feltz-Cornelis et al., 2011). Other communities might want to finesse the existing strategies – e.g., Krysinaka et al’s current data on restricting access to means relate to barriers at sites where suicide by jumping occurs, but data on interventions to restrict access to other sorts of suicide means (like limiting the availability of drugs and other toxic substances that account for significant numbers of fatal and non-fatal suicide attempts) might also be modelled. Still others might want to be more specific about what particular strategies should involve – e.g., the data on school-based programs come from a multi-centre trial that involved implementing three programs; one (a program aimed at raising mental health literacy and encouraging help-seeking among students) was found to be successful, whereas the other two (programs involving screening and gatekeeper training) weren’t (Wasserman et al., 2015).

Conclusions

Although a 50% reduction in suicides and attempted suicides over the next ten years is a desirable goal, Krysinaka et al’s model raises questions about the likelihood of our achieving it, even under a perfectly-executed systems-based approach. With some tweaking, the model can inform the strategies that communities might want to implement, however.

References

- Johnston A, Pirkis J and Burgess P (2009) Suicidal thoughts and behaviours among Australian adults: Findings from the 2007 National Survey of Mental Health and Wellbeing. *Australian and New Zealand Journal of Psychiatry* 43: 635-643.
- Krysinaka K, Batterham P, Tye M, et al. (In press) Best strategies for reducing the suicide rate in Australia. *Australian and New Zealand Journal of Psychiatry*.

National Mental Health Commission (2014) *Contributing Lives, Thriving Communities: Report of the National Review of Mental Health Programmes and Services*. Sydney: National Mental Health Commission.

Van Der Feltz-Cornelius C, Sarchiapone M, Postuvan V, et al. (2011) Best practice elements of multilevel suicide prevention strategies: A review of systematic reviews. *Crisis* 32: 319-333.

Wasserman D, Hoven C, Wasserman C, et al. (2015) School-based suicide prevention programmes: The SEYLE cluster-randomised, controlled trial. *Lancet* 385: 1536-44.