

Life-saving post-ER suicide prevention strategies are cost effective

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Three interventions designed for follow up of patients who are identified with suicide risk in hospital emergency departments save lives and are cost effective relative to usual care. A study led by researchers at the National Institute of Mental Health (NIMH) modelled the use of the approaches in emergency departments and found that all three interventions compare favorably with a standard benchmark of cost-effectiveness used in evaluating healthcare costs. NIMH is part of the National Institutes of Health.

One [intervention](#), sending caring postcards or letters following an [emergency](#) visit, is more effective and less expensive than usual care. The report appears in the September 15 issue of the journal *Psychiatric Services*.

According to the Centers for Disease Control and Prevention (CDC), [suicide](#) is the 10th leading cause of death in the United States; 44,193 people died by suicide in the United States in 2015 (the most recent year for which statistics are available). One approach to reducing the suicide rate is to direct [prevention strategies](#) at high-risk groups or settings. An example is emergency departments, which according to the CDC, treat more than 500,000 people each year for self-harm injuries.

"In the face of a gradually rising suicide rate, the need for effective prevention strategies is urgent," said NIMH Director Joshua Gordon, M.D., Ph.D. "These findings of cost-effectiveness add to the impetus for implementing these life-saving approaches. Importantly, they also make

a strong case for expanding screening, which would allow us to reach many more of those at risk with life-saving interventions."

Research has found several emergency department-based interventions to be effective in preventing post-emergency suicide attempts, but none has been widely disseminated or adopted yet. They are:

- Postcards: hospital staff mail follow-up postcards each month for four months to all patients identified as at risk, and then every other month for a total of eight cards.
- Telephone outreach: One to three months after discharge, [hospital staff](#) call patients to offer support and encourage engagement in follow-up treatment.
- Cognitive behavioral therapy: Hospital staff connect patients to a suicide-focused cognitive behavioral therapy program.

Each of these interventions has been tested via randomized controlled trials and found to reduce patients' [suicide risk](#) on the order of 30 to 50 percent. The current study extends this prior research by estimating the cost-effectiveness of these interventions, relative to usual care. The investigators carried out Monte Carlo simulations, a method of evaluating the possible consequences of an action when many unpredictable factors could affect the outcome. Software designed for this purpose enables investigators to carry out repeated simulations of the chain of events following a choice—in this case, alternative emergency department-based suicide prevention interventions—with different values assigned to factors that can influence the outcome. Thousands of simulations reveal the range of outcomes possible and the probabilities of each.

The investigators, led by Michael Schoenbaum, Ph.D., Senior Advisor for Mental Health Services, Epidemiology, and Economics in NIMH's Division of Services and Intervention Research, modelled a roughly year-

long period following the arrival of patients at an emergency department. The chain of events they considered encompassed entry of the patient to an emergency department, screening for suicide risk, emergency department-based treatment or hospitalization, and outcomes. It could also include additional visits to the emergency department, if the person considered or attempted suicide again during the follow-up period.

The investigators estimated the cost of each intervention by combining information on health services reported in previous clinical trials and national rates for medical procedures, emergency department visits, and hospitalizations. Assessing the cost-effectiveness of an intervention—and providing a basis for comparing one intervention with another—involves estimating the cost of achieving a defined health outcome. In this case, investigators looked at the cost incurred against life years (gained as a result of suicides prevented) in the cohort of cases modelled in the study.

Relative to usual care, the use of postcards both reduced suicide attempts and deaths and slightly reduced [health care costs](#), making it a "dominant" intervention in terms of cost-effectiveness. Telephone outreach and cognitive behavioral therapy reduced [suicide attempts](#) and deaths while increasing health care costs slightly, the former by \$5,900 and the latter by \$18,800 per additional life-year saved. A commonly used benchmark for cost-effectiveness—the amount a society is willing to pay for the benefit accrued by a health care procedure—is \$50,000 per additional life-year. And recent research suggests that that amount is conservative—that is, our society is willing to pay considerably more per life-year.

The simulation results suggest that, even if the societal willingness to pay is assumed to be lower than \$50,000, the approaches are still likely to be cost effective relative to usual care. Telephone care is almost certain to be cost effective relative to usual care if willingness to pay is \$20,000,

while the probability that [cognitive behavioral therapy](#) will be more cost effective is 67 percent.

The authors also point out that even if these prevention approaches were widely used, their impact is limited by the extent to which people at risk are identified for treatment through screening. A recent study reported that screening all those (18 and older) entering an emergency department, regardless of the reason for the visit, nearly doubled the rate of identification of those at risk. The model suggests that universal screening of patients could substantially increase the public health benefits of implementing the prevention strategies modelled in this study.

"Suicide risk is relatively common among people who seek care from a hospital [emergency department](#)," said Schoenbaum. "It's really important for us to identify better ways to reduce suicide risk in this group, and to implement those widely."

Provided by National Institutes of Health

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