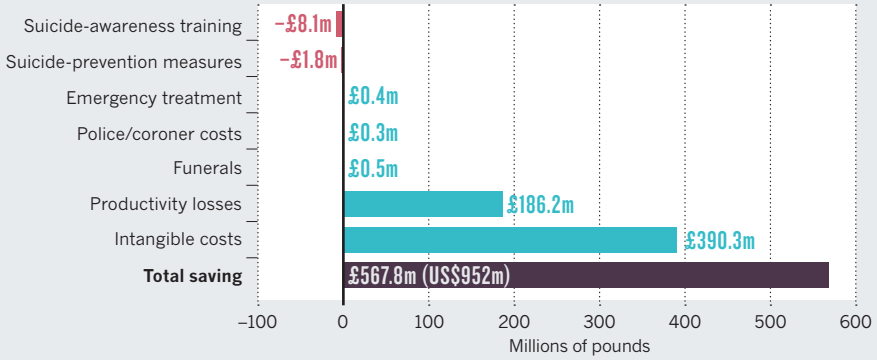
PREVENTION PAYS

Economic modelling predicts that in one year, the costs of training UK general practitioners in suicide prevention, and the ensuing costs of psychological and pharmaceutical therapy they may prescribe to at-risk people, are outweighed by the savings to the public purse owing to the roughly 600 deaths averted.



SOURCE: M. KNAPP, D. MCDAID & M. PARSONAGE (EDS) *MENTAL HEALTH PROMOTION AND MENTAL ILLNESS PREVENTION: THE ECONOMIC CASE* (UK DEPT. HEALTH, 2011)

three years in suicide research. Fatal road accidents have declined steadily over the past decades, whereas suicide rates have levelled or even increased. Suicide awareness and prevention was highlighted in a review published earlier this year, which concluded that there is a return on investment for several mental-health promotion and illness-prevention interventions[8] (see 'Prevention pays').

Risk factors are known from epidemiological studies, which should help to shape developing programmes aimed at prevention. Notable risk factors are mental disorder, previous suicide attempt, anxiety, impulsivity in combination with aggressive tendencies, family history of suicide and stressful life events such as job loss or divorce. Comprehensive prevention programmes should be developed that incorporate state-of-the-art knowledge[3].

"Governments should invest as much in suicide prevention as they do in reducing fatal road accidents."

A good prevention programme would increase awareness and mental-health literacy in the general population to improve people's understanding of warning signs. Better education is also important for general practitioners (GPs), because many people with suicidal thoughts contact their GP in the weeks before attempting suicide. Prevention programmes would offer clear and easy access points for help, and a monitoring service for those at risk. Programmes must enlist governments and other stakeholders to tackle stigma, a major obstacle to suicide prevention.

Few have systematically implemented such programmes. Examples include Finland, Scotland and the US military. Their efforts should now be evaluated to pave the way for evidence-based improvements.

Coordinated efforts are clearly needed from public-health authorities, clinicians and scientists to understand and prevent suicide. Researchers should take advantage of progress in neurobiology and neuroimaging technology to uncover the brain mechanisms involved. Clinicians must focus on suicidal behaviour as a target of treatment in its own right. As Australia's National Mental Health Commission put it[9]: "We can and must do better." ■

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1. Sadock, B. J., Sadock, V. A. & Ruiz, P. (eds) *Kaplan and Sadock's Comprehensive Textbook of Psychiatry* 7th edn 2031–2040 (Lippincott Williams & Wilkins, 2001).
2. Nock, M. K. *et al. PLoS Med.* **6,** e1000123 (2009).
3. World Health Organization *Public Health Action for the Prevention of Suicide: A Framework* (WHO, 2012).
4. Pisani, A. R. *et al. J. Youth Adolesc.* **42,** 807–820 (2013).
5. van Heeringen, C., Bijttebier, S. & Godfrin, K. *Neurosci. Biobehav. Rev.* **35,** 688–698 (2011).
6. Dour, H. J., Cha, C. B. & Nock, M. K. *Behav. Res. Ther.* **49,** 294–298 (2011).
7. Matthews, S., Spadoni, A., Knox, K., Strigo, I. & Simmons, A. *Psychosom. Med.* **74,** 471–475 (2012).
8. Research Prioritization Task Force *A Prioritized Research Agenda for Suicide Prevention: An Action Plan to Save Lives* (Action Alliance for Suicide Prevention, 2014).
9. Lourey, C., Plumb, J. & Mills, A. *A Contributing Life: The 2013 National Report Card on Mental Health and Suicide Prevention* (National Mental Health Commission, 2013).

CORRECTION

The Comment 'Realizing China's urban dream' (*Nature* **509,** 158–160; 2014) wrongly stated that more than 75.8 million hectares of arable land in China could be realized by optimizing rural residential land use. The correct figure is 7.58 million hectares.