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## General practice based intervention to prevent repeat episodes of deliberate self harm: cluster randomised controlled trial

Olive Bennewith, Nigel Stocks, David Gunnell, Tim J Peters, Mark O Evans, Deborah J Sharp

Division of Primary Health Care, University of Bristol, Bristol BS6 6JL

Olive Bennewith  
research associate  
Nigel Stocks  
clinical lecturer  
Deborah J Sharp  
professor of primary care

Department of Social Medicine, University of Bristol

David Gunnell  
senior lecturer in epidemiology and public health  
Tim J Peters  
reader in medical statistics

Division of Psychiatry, University of Bristol  
Mark O Evans  
lecturer in psychiatry

Correspondence to:  
D Sharp  
[debbie.sharp@bristol.ac.uk](mailto:debbie.sharp@bristol.ac.uk)

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### Abstract

**Objectives** To evaluate the impact of an intervention based in general practice on the incidence of repeat episodes of deliberate self harm.

**Design** Cluster randomised controlled trial in which 98 general practices were assigned in equal numbers to an intervention or a control group. The intervention comprised a letter from the general practitioner inviting the patient to consult, and guidelines on assessment and management of deliberate self harm for the general practitioner to use in consultations. Control patients received usual general practitioner care.

**Setting** General practices within Avon, Wiltshire, and Somerset Health Authorities, whose patients lived within the catchment area of four general hospitals in Bristol and Bath.

**Participants** 1932 patients registered with the study practices who had attended accident and emergency departments at one of the four hospitals after an episode of deliberate self harm.

**Main outcome measures** Primary outcome was occurrence of a repeat episode of deliberate self harm in the 12 months after the index episode. Secondary outcomes were number of repeat episodes and time to first repeat.

**Results** The incidence of repeat episodes of deliberate self harm was not significantly different for patients in the intervention group compared with the control group (odds ratio 1.2, 95% confidence interval 0.9 to 1.5). Similar findings were obtained for the number of repeat episodes and time to first repeat. Subgroup analyses indicated that there was no differential effect of the intervention according to patient's sex ( $P=0.51$ ) or method used to cause deliberate self harm ( $P=0.64$ ). The treatment seemed to be beneficial for people with a history of deliberate self harm, but it was associated with an adverse effect in people for whom the index episode was their first episode (interaction  $P=0.017$ ).

**Conclusions** An invitation to consult, sent by the general practitioner of patients who have deliberately harmed themselves, and the use of management guidelines during any subsequent consultation did not reduce the incidence of repeat self harm. A subgroup analysis that indicated that patients who had

previously harmed themselves benefited from the intervention was inconsistent with previous evidence and should be treated with caution. More research is needed on how to manage patients who deliberately harm themselves, to reduce the incidence of repeat episodes.

### Introduction

Deliberate self harm is a serious clinical problem in England and Wales, accounting for 140 000 hospital presentations a year.<sup>1</sup> About 15-23% of patients will be seen for treatment of a subsequent episode of deliberate self harm within a year.<sup>2-3</sup> About 4% of those who harm themselves die by suicide within 5-10 years.<sup>4</sup>

Evidence on how best to manage patients in primary care who have deliberately harmed themselves is lacking.<sup>5</sup> We examined the effectiveness of an intervention based in primary care, aimed at reducing the incidence of repeated deliberate self harm. The intervention comprised a letter from the general practitioner inviting the patient to make an appointment to consult, and guidelines on assessing and managing patients for the general practitioner to use in any subsequent consultation.

### Methods

#### Protocol

**Recruitment of practices**—In total, 49 practices were allocated to the intervention arm and 49 to the control arm (figure). The practices are based in the areas covered by the Avon, Wiltshire, and Somerset Health Authorities.

**Recruitment of patients**—We identified patients eligible for inclusion in the trial from a case register for deliberate self harm. Recruitment data were collected on a weekly basis from the records of the hospitals' accident and emergency departments between 26 May 1997 and 29 February 1999.

**Exclusions**—We excluded cases of alcohol (taken alone) and illicit drug overdose, except where the casualty officer felt that the purpose of the act was self harm or suicide. We excluded patients who were under 16, of no fixed abode, or imprisoned; who had requested that nobody was to be informed of the episode or had harmed themselves deliberately in response to a

psychotic hallucination or delusion; or whose episode of deliberate self harm was managed entirely in primary care.

**Intervention**—If an episode of deliberate self harm was the patient's first within the trial period, their general practitioner was sent a letter informing them of the incident, a letter to forward to the patient (at their discretion) inviting them to make an appointment for a consultation, and a copy of guidelines for the management of deliberate self harm, which were developed for the trial (see [bmj.com](http://bmj.com)).<sup>6</sup> The general practitioners were asked to insert the guidelines into the patient's notes so that they were available for use during consultation.

**Usual care**—Apart from the Royal United Hospital, Bath (which had a specialist nurse), the hospitals from which patients were recruited had no specialist services for patients who deliberately harm themselves.

**Primary and secondary outcomes**—The primary outcome measure for the trial was a repeat episode of deliberate self harm in the 12 months after the index episode. Secondary outcomes were the time (days) to the first repeat episode and the number of repeats.

**Sample size calculation**—We needed 1920 patients to detect a reduction of five percentage points (from 15% to 10%) in the rate of repeat deliberate self harm in 12 months (giving 80% power, 5% significance level, and 40% inflation to allow for the cluster randomisation).

### Data analyses

For the primary analysis, which compared the intervention and control groups on an intention to treat basis, we carried out a logistic regression analysis with repeat episodes of deliberate self harm within 12 months of the index event as the outcome variable. This analysis controlled for practice size (two categories) and quartile of rates of deliberate self harm by practice at baseline and allowed for clustering by practice, using random effects logistic regression.

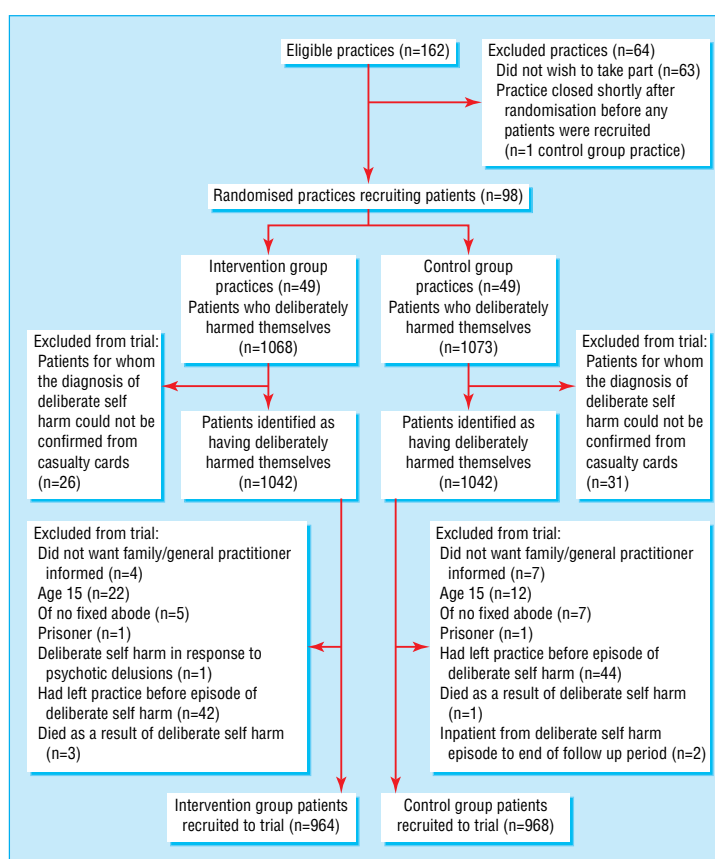
We used a Poisson regression analysis to compare the intervention and control groups in terms of differences in the number of repeat episodes. We used Cox's proportional hazards regression for time (in days) to first repeat episode. Clustering was taken into account for both of these (intention to treat) analyses. Further regression analyses adjusted for factors with large baseline differences across randomisation groups.

## Results

In total, 2084 potentially eligible patients were identified over the 21 month period of recruitment. We excluded 152 of these (figure).

Patient characteristics (table 1) were comparable for the participating and non-participating practices. Although the control group had fewer training practices than the intervention group, other practice characteristics were reasonably well balanced between the trial arms (see [bmj.com](http://bmj.com)).

Patient characteristics in the intervention and control groups differed for a recent recorded episode of deliberate self harm, general practice Townsend score (weighted by the number of patients recruited from each practice), and hospital attended for the index episode (table 1). The Royal United Hospital in Bath contributed more patients to the control group than in the intervention group (table 1).



Practice and patient recruitment

### Primary analysis

The proportion of participants who had a repeat episode of deliberate self harm within 12 months of the index episode was only slightly but not significantly higher in the intervention group (table 2). The results were not noticeably different when we adjusted for clustering. The observed degree of clustering would have led to an inflation factor of 11% rather than the 40% that was estimated in the sample size calculation.

### Secondary analyses

Although more repeat episodes of deliberate self harm and fewer days to first repeat episode were seen in the

**Table 1** Characteristics of patients in intervention and control practices. Values are numbers (percentages) unless otherwise specified

Characteristic	Intervention practice	Control practice
Mean (range; SD) age (years)	32.3 (16-83; 13.0)	32.8 (16-95; 13.5)
Sex:		
Men	383 (39.7)	413 (42.7)
Women	581 (60.3)	555 (57.3)
Method used to cause deliberate self harm:		
Self poisoning	869 (90.1)	864 (89.3)
Laceration	76 (7.9)	82 (8.5)
Other	19 (2.0)	22 (2.3)
Patients with a recent recorded episode of deliberate self harm*	134 (13.9)	110 (11.4)
Hospital attended for index episode:		
Royal United Hospital	209 (21.7)	388 (40.1)
Frenchay Hospital	220 (22.8)	171 (17.7)
Southmead Hospital	188 (19.5)	136 (14.1)
Bristol Royal Infirmary	347 (36.00)	273 (28.2)
Mean (range; SD) Townsend score†	0.09 (-1.10 to 3.62; 1.05)	-0.37 (-1.20 to 1.10; 0.62)

\*Defined as an episode recorded in the case register from 1 October 1994 to 25 May 1997. †Avon only.

**Table 2** Repeat episodes of deliberate self harm within 12 months of index episode

	Group		Comparative statistic (95% CI)	Type of statistic	P value
	Intervention	Control			
No (%) of patients with repeat episode	211/964 (21.9)	189/968 (19.5)	1.17 (0.94 to 1.47)	Odds ratio	0.16
Mean repeat episodes per patient	0.48	0.37	1.24 (0.92 to 1.68)	Incidence rate ratio	0.16
Mean days to first repeat episode	104.9	109.5	1.15 (0.94 to 1.42)	Hazard ratio	0.17

\*All controlled for stratification (number of general practitioners in practices and baseline rate of deliberate self harm) and clustering.

intervention group than in the control group, Poisson and Cox regression analyses showed that these differences were not significant (table 2). When we also adjusted for the practice's training status, previous recorded episodes of deliberate self harm, Townsend score, and hospital attended by the patient, no appreciable impact on the result for the primary outcome was seen (odds ratio 1.14, 0.88 to 1.50).

### Subgroup analyses

Subgroup analyses, agreed on before the trial began, showed that the intervention effect did not differ by sex (interaction  $P = 0.51$ ) or method of deliberate self harm (interaction  $P = 0.64$ ). A similar analysis showed that the treatment effect differed depending on whether or not the patient had a previous recorded episode of deliberate self harm (interaction  $P = 0.017$ ). The odds ratio for the effect of intervention in patients with a history of deliberate self harm was 0.57 (0.33 to 0.98), indicating a beneficial effect, and in those with no history was 1.32 (1.02 to 1.70), indicating a harmful effect.

### Analyses of process data

Information about contact with the patient (letter, consultation, or both) was obtained from questionnaires completed by general practitioners for 1383 (72%) patients. Of 612 patients in the intervention group for whom the relevant information was provided, 352 (58%) had been sent the letter inviting them to make an appointment for a consultation. General practitioners in the control group had initiated contact with only 97/642 (15.1%) patients.

## Discussion

The development of guidelines to be given to general practitioners had to rely largely on existing opinion on best practice and on research on the assessment and management of problems known to be associated with deliberate self harm. In line with evidence from the literature that was available when we planned the study, the guidelines included information relevant to local

circumstances and acted as a patient specific reminder. They were not disseminated with an active educational intervention.<sup>2</sup> Deliberate self harm is a relatively rare event for each general practitioner—the mean annual number of patients recruited per general practitioner was about three in our study. It was thought unlikely that all general practitioners in the intervention arm could be attracted to attend specific educational sessions. Furthermore, a recent study using a practice based educational programme for depression—a much more common disorder—failed to change doctors' behaviour appreciably.<sup>7</sup> Our guidelines probably enhanced the routine primary care of deliberate self harm because general practitioners have relatively little formal training in its management.

Though only a short delay occurred between the index episode and the general practitioner receiving the letter and guidelines, many patients had already consulted their general practitioner. This delay may be critical when we consider the increased risk of repeat episodes in the weeks immediately after the index event; in one study more than 10% of patients who deliberately harmed themselves again did so within one week of the index episode.<sup>8</sup> Nevertheless, more general practitioners in the intervention group had initiated contact with their patients in response to the index episode of deliberate self harm than in the control group. All general practitioners in the intervention arm received copies of the guidelines at the outset of the trial and once a patient who deliberately harmed himself or herself had been identified. Receipt of the guidelines for previous patients may have influenced the management of "early attending" patients, even if the general practitioner had not received the guidelines and letter for that particular patient.

Our trial was pragmatic; the obstacles to its potential success were those that would arise if such a system was introduced in the service setting. Nevertheless, the implementation of the intervention showed that a more efficient form of communication with general practitioners is needed. An intervention aimed at reducing the incidence of repeat episodes of deliberate self harm must be initiated within one or two days of the index episode, because of the rate of repetition in this period and because help from general practitioners may already have been sought. Although the letter seems to have had little effect in instigating face to face contact between patients and general practitioners, this may have been because of the delay in sending it to patients. Where the letter did not result in patients contacting their general practitioner in the short term, their awareness of the interest shown by their general practitioner may have led them to seek help in future.

### Conclusion

The lack of benefit from the intervention evaluated in this trial leaves open the question of the most effective

### What is already known on this topic

About two thirds of patients consult their general practitioner in the three months after an episode of deliberate self harm

There have been no previous large scale randomised controlled trials of general practice based interventions aimed at reducing the incidence of repeat episodes of deliberate self harm

### What this study adds

An intervention comprising an invitation to consult from a patient's general practitioner and the use of guidelines for the assessment and management of deliberate self harm in a subsequent consultation does not reduce the incidence of repeat episodes of deliberate self harm

management in general practice of patients with self harm. The role of the general practitioner in the after-care of patients who deliberately harm themselves is important, as more than half of these patients receive no psychiatric follow up. The high proportion of patients who make contact with general practitioners after an episode of deliberate self harm suggests that more research is needed on how best to manage such patients in primary care to reduce the incidence of repeated episodes.

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## Commentary: Clinical guidelines have limitations

Richard Morriss

Bennewith et al provide further evidence that the provision of centrally derived clinical guidelines to general practitioners may be insufficient to improve the outcome of patients with mental health problems. The problems with the intervention in the trial amount to more than how quickly guidelines to prevent deliberate self harm were sent to general practitioners. The intervention resulted in many more interviews with patients who committed deliberate self harm being initiated by general practitioners, but just as many patients who deliberately harmed themselves consulted their general practitioners and received mental health care in the control group. Did the trial change the management of patients in the control group so that general practitioners referred more patients for mental health care to prevent suicide as a result of increased awareness surrounding the research? Did the hospitals routinely tell the patients to seek help from their general practitioners or to ask their general practitioners for a referral for mental health care? Are the patients who were seen by general practitioners or mental health providers in the intervention and control groups the patients at highest risk of episodes of deliberate self harm in the future?

The trial data suggest that the conclusions of a systematic review on changing doctors' behaviour,<sup>1</sup> and, more specifically, a review about improving the mental health skills of general practitioners,<sup>2</sup> are sound. Centrally derived guidelines can improve knowledge and remind doctors about aspects of practice with which they have previously been familiar. However, guidelines may have a modest effect on changing doctors' performance, especially when they need to develop technical skills, they are not confident about how to implement the guidelines, or the guidelines do not fit easily with

their usual practice. The intervention for deliberate self harm in the appendix (see bmj.com) for the study by Bennewith et al requires advanced communication and mental health management skills from doctors. Centrally derived guidelines do not give models on how to use these skills, opportunities to practise them under supervision, or opportunities for general practitioners to explore how they might be compatible with their perception of patients' needs and their usual practice.<sup>2</sup> A model of providing skills based training to improve primary care teams' assessment and management of people at risk of suicide, using academic detailing to deliver the training at a time and place convenient to a team, has been shown to be feasible<sup>3</sup>; a similar form of educational intervention showed lasting improvements in the management of health problems in adolescents.<sup>4</sup>

A final note of caution stems from another recent trial showing that only 22% of episodes of deliberate self harm resulted in treatment at accident and emergency departments.<sup>5</sup> Unsuspected outcomes of interventions for deliberate self harm, including suicide, may be missed if studies do not include patients whose episodes of deliberate self harm do not result in hospital care.

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University of  
Liverpool, Royal  
Liverpool Hospital,  
Liverpool L69 3GA  
Richard Morriss  
professor of psychiatry  
rmorriss@  
liverpool.ac.uk