# It is illegal to post this copyrighted PDF on any website. Combining Postcards, Crisis Cards, and Telephone Contact Into a Decision-Making Algorithm to Reduce Suicide Reattempt: A Randomized Clinical Trial of a Personalized Brief Contact Intervention

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# ABSTRACT

**Background:** There is growing evidence in the literature that brief contact interventions (BCIs) might be reliable suicide prevention strategies.

**Objective:** To assess the effectiveness of a decision-making algorithm for suicide prevention (ALGOS) combining existing BCIs in reducing suicide reattempts in patients discharged after a suicide attempt.

*Methods:* A randomized, multicenter, controlled, parallel trial was conducted in 23 hospitals. The study was conducted from January 26, 2010, to February 28, 2013. People who had made a suicide attempt were randomly assigned to either the intervention group (ALGOS) or the control group. The primary outcome was the rate of participants who reattempted suicide (fatal or not) within the 6-month study period.

**Results:** 1,040 patients were recruited. After 6 months, 58 participants in the intervention group (12.8%) reattempted suicide compared with 77 (17.2%) in the control group. The difference between groups (4.4%; 95% CI, -0.7% to 9.0%) was not significant (complete-case analysis, P = .059).

**Conclusions:** These results may help researchers better integrate BCIs into routine health care and provide new insights concerning personalized suicide prevention strategies.

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previous suicide attempt is a strong **A** predictor of suicide-related premature death.<sup>1</sup> Approximately one third of those attempting suicide seek treatment for their injuries from hospital emergency departments (EDs).<sup>2</sup> For people who have made a suicide attempt, the immediate postdischarge period constitutes a critical challenge for emergency and mental health care services.<sup>3</sup> Thus, much research has been conducted to develop indicated prevention programs targeting patients with a history of suicide attempt. However, these strategies face specific issues related to the characteristics of suicide attempts and those attempts suicide. First, suicide is a rare event, which makes the design of powerful studies especially challenging.<sup>4</sup> Furthermore, in those who have had a suicide attempt, adherence to intensive treatment over time is often poor.<sup>5</sup> Finally, specific interventions can be difficult to perform in the emergency setting, where psychiatric staff availability is often limited or absent.<sup>6</sup> Given these issues, there has been growing interest in developing interventions that focus on maintaining postdischarge contact and offering re-engagement with health care services to people who have made a suicide attempt.<sup>7</sup> These brief contact interventions (BCIs) occur according to a structured schedule and remain operational over a sustained period of time. BCIs can be employed in parallel to any existing health care. These programs do not impose on the daily life of people who have made a suicide attempt; BCIs can be short letters,<sup>8</sup> postcards,<sup>9</sup> phone calls,<sup>10</sup> and "crisis cards."<sup>11</sup> All these forms of support encourage help-seeking and may facilitate access to health care services in the case of recurrence of suicidal ideation. A recent review showed that only a few studies indicated that BCIs significantly

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- **Clinical Points**
- There is growing evidence that brief contact interventions might be reliable suicide prevention strategies for different groups of patients.
- Our personalized intervention showed an absolute reduction in global adverse events outcome (suicide reattempt and loss to follow-up) at 6 and 13 months after a suicide attempt.

reduced repeat suicide attempts and deaths by suicide in the intervention group.<sup>12</sup> Other BCIs showed mixed or inconclusive results but did show trends toward preventive effects in several at-risk subgroups: crisis cards, sometimes also referred to as "green cards," for people who have made a first suicide attempt; telephone contact for people with history of 1 or more suicide attempts; and postcards for unreachable or noncompliant patients.<sup>12</sup> Within these groups, the medium used to make contact with patients seems also to have an important impact on the preventative effect of the BCI. For example, the Postcards from the EDge study found an effect for women (but not men) who had self-poisoned.<sup>13</sup> Furthermore, it is likely that BCIs based on new technological devices may have specific effects in the young at-risk population.<sup>14</sup> These results are consistent with recent findings showing that clusters of suicide behaviors may influence the efficacy of prevention programs.<sup>15</sup>

Thus, by taking into consideration the strengths and limitations of each of these results, we designed a decisionmaking algorithm that assigned each BCI to the subgroup in which the intervention generated trends or significant results in reducing suicide reattempts in suicide attempters.<sup>16</sup> This algorithm for suicide prevention (ALGOS) combines several BCIs that showed a significant reduction in the number of suicide attempt repeaters: systematic telephone contact (effective in those with a previous suicide attempt) and crisis cards (effective following a first attempt). Participants who were assigned to receive phone calls but could not be contacted, and those who declined follow-up care from other services, could then benefit from a postcard BCI (following the short letters of Motto<sup>8</sup> or the postcards of Carter<sup>13</sup>). The algorithm aims to introduce a dimension of personalized medicine in suicide prevention. Our study design takes into account the baseline characteristics of patients in order to determine the preventative strategy to be applied. We sought to evaluate the effectiveness of the ALGOS algorithm in reducing fatal and nonfatal suicide reattempts during the 6-month period after a suicide attempt when compared to a control group receiving only treatment as usual (TAU).

#### METHODS

ALGOS was a multicenter, prospective, comparative, single-blind, randomized controlled trial with 2 parallel groups. See Supplementary Figure 1 for a study flowchart. Participants in the intervention group were assigned to a BCI according to the ALGOS algorithm for 6 months and were assessed at baseline, 6 months, and 13 months. Participants and were also assessed at 6 and 13 months. All patients gave written informed consent before randomization. This study was authorized by the French Health Ministry and approved by an independent Ethical Committee according to the Declaration of Helsinki. This study was registered in ClinicalTrials.gov (NCT01123174).

#### **Participants and Centers**

The study was conducted in 23 emergency departments and psychiatry crisis centers in France (see author affiliations). Patients were included in this study after a suicide attempt; included patients were defined as those with self-injury and suicidal intent according to an emergency physician. This inclusion criterion implies that, as recommended by other authors, patients with nonsuicidal self-injury (those without suicide intent) were not included.<sup>17</sup>

In accordance with the French Ministry of Health recommendations,<sup>18</sup> patients were discharged within a day of presentation or were hospitalized in a crisis unit depending on their clinical state. Participation in the study was proposed to male and female patients, 18 years or older, who had survived a suicide attempt with suicide intent that had occurred within the previous 7 days. Recruitment of patients to the study was performed during business hours on weekdays to ensure a uniform recruitment procedure among participating centers, as some centers did not provide access to psychiatric evaluation during night shifts and weekends.

The patients had to be contactable by phone for 13 months. Patients who self-harmed without suicide intent, were homeless, were under guardianship, or presented with 4 or more suicide attempts in the past 3 years were not invited to participate.

#### Randomization

After the patients provided signed consent, they were randomly allocated to a group in each center. The allocation sequence was provided by a statistician who did not take part in the assessment of patients at any point in the study. The sequence was based on a computer-generated list of pseudorandom numbers that were used to assign the patients to either the "ALGOS + TAU" or the "TAU" group, in blocks of 4 participants (2:2 per block).

#### Intervention

We designed a decision-making algorithm that combines BCIs that showed a significant reduction in the number of suicide attempt repeaters: systematic telephone contact (effective in those with a previous suicide attempt) and crisis cards (effective following a first attempt). Participants who were assigned to receive phone calls but could not be contacted, and those who declined follow-up care from other services, can then benefit from a postcard BCI (following the "short letters" of Motto<sup>8</sup> or the "postcards" of Carter<sup>13</sup>). The algorithm assigned each patient to a BCI based on the subgroup in which the intervention had either shown a trend or significantly reduced suicide reattempts:

# It is illegal to post this copy 1. Delivery of a crisis card for a first attempt. During the

discharge process, patients were provided with a crisis card,<sup>11</sup> which is a paper card displaying the emergency room phone number, reachable 24 hours a day.

2. Telephone contact for those with previous attempts. A phone call was conducted between the 10th and 21st day after the suicide attempt. The phone call was made on behalf of the initial unit in which the patient had been included. The telephone contact provided psychological support.<sup>10</sup> The aim of this call was to verify the adequacy of the patient's responses regarding their existing health care and to encourage and advise the patient to make new contacts. If it was not possible to contact the patient after 3 attempted calls, on 3 different days, at 3 different times of day, then the phone calls were discontinued and postcards were scheduled to be sent, as described in the next section.

**3.** Sending postcards. Postcards were sent to patients from the telephone contact group who were not available at the 10th–21st day phone call, who were contacted by telephone but refused further care or were noncompliant, or who were identified during the phone call as being under stress or experiencing a suicidal crisis. This intervention consisted of programmed mailing of postcards<sup>9</sup> at months 2, 3, 4, and 5. These handwritten cards were sent in sealed envelopes.

Immediately after the patient left the hospital, the general practitioner (GP) was informed of the patient's recruitment to the ALGOS study. This information included a report of the telephone calls made during the course of the study. When our attempt to contact the patient failed, we informed the GP and eventually the psychiatrist treating the patient.

The 6-month duration of the BCI was chosen to focus on the early postdischarge period, which is known as a critical period in suicide prevention.<sup>3,19</sup> Patients from each of the ALGOS groups also received TAU. Patients from the control group received only TAU.

## **Treatment as Usual**

Patients in both the intervention and control groups received TAU as recommended by the French Health Ministry.<sup>18</sup> TAU for both groups included an emergency follow-up appointment at 24-48 hours for discharged patients and a referral to a psychiatrist or physician consultation. Centers that participated in the study undertook this procedure as routine TAU. We controlled TAU using a medico-economic assessment checklist. We explored at 6 and 13 months the medical consumption in terms of GP and psychiatric counseling and hospitalization for any reason. However, due to the naturalistic setting of our study, and that half of the patient sample was followed in the private sector, it was not possible to tightly control and check these reports using electronic databases. This may be a limitation in controlling for TAU received; however, it reflects the naturalistic setting of our study.

## **Baseline Assessments**

After verifying the inclusion criteria, a physician collected the following data: sociodemographic characteristics, anted PDF on any website. number of previous suicide attempts, and highlights of the care plan defined in the ED (ie, the presence or absence of a companion at hospital discharge, recommended psychiatric care, scheduled appointments, and prescription of psychotropic drugs). Psychiatric diagnoses were assessed at baseline using the Mini-International Neuropsychiatric Interview (MINI), a short, structured diagnostic interview developed for *DSM-IV* and *ICD-10* psychiatric disorders.<sup>20</sup>

# **Outcome Assessments**

The primary outcome was the proportion of participants who reattempted suicide (fatal or nonfatal) within 6 months of discharge.

The secondary outcomes were as follows:

- proportion of participants who reattempted suicide (fatal or nonfatal) within the 13-month study period;
- global adverse events at 6 months, including fatal suicide, nonfatal suicide attempts, and loss to follow-up;
- the number of repeat suicide attempts per patient at 6 and 13 months;
- the time until first repeat suicide attempt.

The outcome measures were monitored through a phone call at 6 months (end of the BCI) and 13 months (end of study participation). These monitoring interviews were conducted by 2 trained psychologists blinded to group allocation. These data were complemented by checking the electronic health records at each participating center to confirm and/ or identify fatal and nonfatal suicide attempts that occurred during the follow-up period. We also contacted the local municipality office of patients who were lost to follow-up at 13 months to check for possible death.

By choosing the 13th month for the second monitoring session, we expected to avoid the anniversary date of the suicide attempt that led to the participant's inclusion in the study. Anniversary dates of suicide attempts may significantly affect the emotional state of patients with a history of suicide and therefore may impact the reliability of the assessment. The 13th month monitoring meeting was performed to identify a reversibility of the potential preventive effect of the intervention.<sup>8</sup>

Fatal and nonfatal suicide attempts were assessed during the phone interview and by the screening of electronic health records from the 23 EDs, which was performed by an independent clinical research assistant. Information about participants who were lost to follow-up was obtained by consulting the patient's caregivers, the patient's GP, or the registry of the Municipal council where the patient was born. These outcome assessment phone calls were distinct from those conducted within the BCI algorithm (described in the Intervention section).

# **Statistical Analysis**

The SYSCALL<sup>5</sup> study showed a difference in the rate of repetition of suicidal behavior of about 10% over 12 months

**It is illegal to post this copy** between the group contacted at 1 month and the control group. In the same study, the repetition rate at 6 months was 17.6% in the group with usual treatment and 9.6% in the intervention group. Thus, 409 participants per group are required for a 90% statistic power in the ALGOS study. With a rate of loss of contact estimated at about 10% (in the earlier SYSCALL study, we observed 9.2% loss of contact), 450 participants per group were to be included. The data were analyzed using SAS software version 9.3 (SAS Institute, Cary, North Carolina).

Analyses of primary and secondary outcomes were performed for all randomized patients in their original group of randomization, regardless of the treatment received, after excluding patients who withdrew their consent during the trial. Missing data for the primary outcome (due to loss to follow-up) were treated using multiple imputation by chained equations, with 50 imputations. The covariates used to generate the multiple imputed data sets (using R statistical software, version 3.03 [http://CRAN.R-project.org]) were all of the baseline characteristics described in Table 1. Perprotocol sensitivity analyses were performed.

Differences in primary and secondary outcomes between the study groups were calculated as absolute and relative risk reductions (ALGOS vs controls) with a 95% confidence interval and were tested using the  $\chi^2$  test. A between-group comparison of the number of new suicide attempts at 6 months was performed using the Cochran-Armitage trend test after pooling the patients with more than 3 suicide attempts. This analysis was restricted to patients who were not lost to follow-up at 6 months. A similar approach was used to compare the number of new suicide attempts during the entire follow-up period. The time until the first occurrence of a new suicide attempt was compared between the 2 study groups using the log rank test; Kaplan-Meier curves for survival free of suicide attempt were generated after excluding patients who were completely lost to follow-up after randomization.

#### RESULTS

#### **Characteristics of the Patients at Baseline**

The study was conducted from January 26, 2010, to February 28, 2013. A total of 1,040 patients were enrolled in the ALGOS trial, with 520 patients assigned to the ALGOS algorithm and 520 patients assigned to TAU. Of the patients enrolled in the ALGOS group, 263 received a crisis card, **control group**, based on the different protocol deviations.

The baseline characteristics of the participants are shown in Table 1, including the characteristics of the 2 trial arms. The ALGOS and control groups were well balanced with respect to baseline characteristics.

## Proportion of Participants With Any Episode of Reattempted Suicide

After 6 months, 58 participants in the intervention group (12.8%) had a repeat suicide attempt (fatal and nonfatal) compared with 77 (17.2%) in the control group.

Table 1. Baseline Characteristics of Participants <sup>a</sup>				
	All Patients	ALGOS	Control	
Characteristic	(N=987)	(n=493)	(n=494)	
Age, mean ± SD, y	38.3±13.3	38.4±13.4	38.1±13.1	
18–35 y	423 (42.9)	210 (42.6)	213 (43.1)	
36–55 y	456 (46.2)	229 (46.5)	227 (46.0)	
>55 y	108 (10.9)	54 (11.0)	54 (10.9)	
Men	361 (36.6)	181 (36.7)	180 (36.4)	
Living alone	522 (52.9)	260 (52.7)	262 (53.0)	
Employed	624 (63.2)	306 (62.1)	318(64.4)	
Lifetime no. of suicide attempts <sup>b</sup>				
1	535 (54.2)	263 (53.3)	272 (55.1)	
2	265 (26.8)	142 (28.8)	123 (24.9)	
3	121 (12.3)	55 (11.2)	66 (13.4)	
>3	66 (6.7)	33 (6.7)	33 (6.7)	
Suicide attempt by medication overdose	926 (93.8)	468 (94.9)	458 (92.7)	
Suicide attempt with alcohol	428 (43.3)	215 (43.6)	213 (43.1)	
Treated or followed for				
MDD	417 (42.2)	209 (42.4)	208 (42.1)	
AD	463 (46.9)	230 (46.7)	233 (47.2)	
Alcohol and/or drugs	173 (17.5)	94 (19.1)	79 (16.0)	
Lifetime diagnosis (per MINI)				
MDD	481 (48.7)	246 (49.9)	235 (47.6)	
Dysthymia	103 (10.4)	53 (10.8)	50 (10.1)	
Mania/hypomania	36 (3.6)	17 (3.4)	19 (3.8)	
Panic disorder	110 (11.1)	50 (10.1)	60 (12.1)	
Social phobia	44 (4.5)	22 (4.5)	22 (4.5)	
PTSD	75 (7.6)	36 (7.3)	39 (7.9)	
Eating disorder	47 (4.8)	18 (3.7)	29 (5.9)	
GAD	136 (13.8)	68 (13.8)	68 (13.8)	

<sup>a</sup>Data available for 69% of patients. Values are expressed as n (%) unless otherwise indicated.

<sup>b</sup>Including the suicide attempt that led to study recruitment. Abbreviations: AD = anxiety disorder, ALGOS = algorithm for suicide

prevention, GAD = generalized anxiety disorder, MDD = major depressive disorder, MINI = Mini-International Neuropsychiatric Interview, PTSD = posttraumatic stress disorder, SD = standard deviation.

Table 2. Primary and Secondary Outcomes					
	ITT Analyses, Number/Total (%)				
	ALGOS	Controls	P Value	Relative Risk (95% Cl	
Primary outcome: suicidal event (fatal or not) at 6-month follow-up					
Without imputation (complete-case analysis)	58/455 (12.8)	77/447 (17.2)	.059	0.74 (0.54-1.01)	
After 50 imputations	71/493 (14.5)	92/494 (18.6)	.10	0.78 (0.58-1.05)	
Secondary outcomes: suicidal event (fatal or not) reattempted at 13-month follow-up					
Without imputation (complete-case analysis)	85/426 (20.0)	97/494 (24.1)	.15	0.83 (0.64-1.07)	
After 50 imputations	100/493 (20.3)	114/494 (23.1)	.31	0.88 (0.68-1.13)	
Fatal and nonfatal reattempted suicide or loss to follow-up 6 months	96/493 (19.5)	124/494 (25.1)	.034	0.78 (0.61-0.98)	
Fatal and nonfatal reattempted suicide or loss to follow-up at 13 months	152/493 (30.8)	188/494 (38.1)	.017	0.81 (0.68–0.96)	
Abbreviations: ALGOS = algorithm for suicide prevention $ TT$ = intent to treat					

website.

It is illegal to post this copyrighted PDF on any Figure 1. Elapsed Time Between Recruitment to the Study and Suicide Reattempt<sup>a</sup>



<sup>a</sup>The *P* value for between-group comparisons (log-rank test) is reported. Abbreviation: ALGOS = algorithm for suicide prevention.

# Table 3. Baseline Characteristics of Patients Lost to Follow-Up and Completers at 6 and 13 Months<sup>a</sup>

	Lost to Follow-Up at 6 mo		Lost to Follow-Up at 13 mo			
Characteristic	No (n = 902)	Yes (n = 85)	P Value	No (n = 829)	Yes (n = 158)	P Value
Age, mean ± SD, y	38.7±13.3	33.6±12.7	<.001	39.3±13.2	32.8±12.3	<.001
Men	318 (35.2)	43 (50.6)	.005	291 (35.1)	70 (44.3)	.028
Living alone	469 (52.1)	53 (62.3)	.071	430 (52.0)	92 (58.2)	.15
Employed	573 (63.7)	33 (39.3)	.58	525 (63.6)	99 (63.1)	.91
No. of previous suicide attempts						
1	484 (53.6)	51 (60.0)	.021	445 (53.7)	90 (57.0)	.093
2	237 (26.3)	28 (32.9)		216 (26.0)	49 (31.0)	
3	117 (13.0)	4 (4.7)		110 (13.3)	11 (7.0)	
>3	64 (7.1)	2 (2.4)		58 (7.0)	8 (5.0)	
Suicide attempt by medication	855 (95.0)	71 (83.5)	<.0001	786 (95.0)	140 (88.6)	.002
Overdose	207 (12 0)	41 (40 2)	12	266 (AE 1)	62 (20 E)	20
Treated or followed for	567 (45.6)	41 (40.2)	.45	500 (45.1)	02 (39.3)	.20
MDD	396 (44.1)	21 (24.7)	<.001	370 (44.9)	47 (29.7)	<.001
Anxiety disorder	436 (48.7)	27 (32.1)	.004	397 (48.4)	66 (41.8)	.13
Alcohol or drugs	155 (17.4)	18 (21.4)	.35	144 (17.6)	29 (18.3)	.82
Eating disorder	41 (4.6)	6 (7.1)	.28	38 (4.6)	9 (5.7)	.56

<sup>a</sup>Values are expressed as n (%) unless otherwise indicated.

Abbreviations: MDD = major depressive disorder, SD = standard deviation.

The difference between groups (4.4%; 95% CI, -0.7 to 9.0%) was not significant (complete-case analysis, P = .059; after multiple imputation to adjust for loss to follow-up, P = .10, Table 2) and corresponded to a number needed to treat of 25. Regarding the global adverse events outcomes (repeat suicide attempt and loss to follow-up), we found an absolute reduction of 5.6% (95% CI, 0.4 to 10.8%; P = .034) and 7.2% (95% CI, 1.3 to 13.1%; P = .017) at 6 and 13 months, respectively (Table 2).

During the 13-month follow-up, a total of 14 deaths occurred, including 3 (0.6%) deaths by suicide in the ALGOS group and 8 (1.6%) deaths by suicide in the control group. This difference was not significant (P=.13). The intervention had no significant impact on the number of reattempts per patient or on the duration of the period that patients were free of reattempts (Figure 1).

#### Loss to Follow-Up

At the end of the 6-month follow-up, 85 patients were lost to follow-up (8.6%), rising to 158 at the end of the 13-month follow-up (16.0%). A higher rate of loss to follow-up was found in the control group, with a significant betweengroup difference at 13 months (18.4% vs 13.6% in ALGOS, P=.038). Patients lost to follow-up were more often men and younger. Patients lost to follow-up at 6 and 13 months had more mental health outcomes including major depressive disorder (396 vs 21, P<.001, at 6 months and 370 vs 47, P<.001, at 13 months) and anxiety disorders (436 vs 27, P=.004, at 6 months and 397 vs 66, P=.13, at 13 months) (Table 3). The group of patients lost to follow-up at 6 months had a lower number of previous suicide attempts.

Among the 230 patients allocated to ALGOS who had previous suicide attempts (the group who received a phone

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It is illegal to post this copyrighted PDF on any website. Table 4. Baseline Characteristics of ALGOS Telephone

Table 4. Baseline Characteristics of ALGOS Telephone Re-Contacting Subgroup<sup>a</sup>

	Contacted b		
Characteristic	No (n=75)	Yes (n = 155)	P Value
Age, mean ± SD, y	41.8±12.3	41.3±13.5	.80
Men	30 (40.0)	48 (31.0)	.18
Living alone	38 (50.7)	79 (51.3)	.93
Employed	39 (52.0)	85 (55.2)	.65
No. of previous suicide attempts			
2	42 (56.0)	100 (64.5)	.10
3	18 (24.0)	37 (23.9)	
>3	15 (20.0)	18 (11.6)	
Suicide attempt by medication overdose	69 (92.0)	149 (96.1)	.21
Suicide attempt with alcohol	43 (57.3)	69 (45.7)	.10
Treated or followed for			
MDD	36 (48.6)	83 (53.5)	.49
Anxiety disorder	34 (45.9)	85 (54.8)	.21
Alcohol or drugs	28 (37.3)	35 (22.7)	.020
Eating disorder	5 (6.7)	11 (7.2)	.88

<sup>a</sup>Values are expressed as n (%) unless otherwise indicated.

Abbreviations: ALGOS = algorithm for suicide prevention, MDD = major depressive disorder, SD = standard deviation.

call), 67.4% (n = 155) of the patients were in fact contacted by phone. Those who could not be contacted were more likely to have an alcohol disorder at baseline (37% vs 22%; P = .02). Patients lost to follow-up did not differ in age, sex, sociodemographic factors, or number of previous suicide attempts from patients who completed the follow-up (Table 4).

#### DISCUSSION

We sought to evaluate the effectiveness of the ALGOS decision-making algorithm in reducing fatal and nonfatal suicide reattempts during a 6-month period after a suicide attempt, in comparison to a control group receiving treatment as usual. The absolute reduction in the proportion of patients with a repeat suicide reattempt was not significant. We found an absolute reduction in global adverse events outcome (suicide reattempt and loss to follow-up) at 6 and 13 months. The capacity of existing BCI to reduce suicide outcomes has recently been discussed in a meta-analysis by Milner et al<sup>12</sup>; for any subsequent episode of self-harm or suicide attempt, there was a nonsignificant reduction in the overall pooled odds ratio (OR) of 0.87 (95% CI, 0.74-1.04; P = .119) for BCI compared with control. Luxton et al<sup>7</sup> showed that the response to a specific BCI (phone call, crisis card, postcard) varied significantly according to the population characteristics (first attempters, noncompliant, etc). We assumed that an individualized approach might reinforce the preventative effects of BCI. Consequently, it might be that these strategies are not translatable as they stand at an individual level in a personalized algorithm. Exploring the limitations of our methodology may help us better integrate BCIs into clinical practice and improve their efficacy in preventing suicide reattempts.

#### Limitations

To examine the effect of the ALGOS intervention, we chose to consider both fatal and nonfatal suicide attempts as the principal outcome. Most studies reporting on BCIs failed to demonstrate a significant preventative effect considering a single outcome (eg, reduction in nonfatal attempt). However, separating fatal and nonfatal suicide attempters distinguishes 2 populations that share many common clinical characteristics. As suggested by other authors,<sup>17,21</sup> suicidal intent may constitute a robust pattern of classifying suicide attempters. We postulate that considering suicidal outcomes and global adverse events (suicide reattempt or loss to follow-up) in a population who have made a suicide attempt with suicide intent may be of interest, given the specific issues of loss to follow-up in suicide prevention.<sup>22</sup>

Patients randomized to the control group were also contacted by phone at 6 and 13 months for the monitoring of the study outcomes. As a putative preventative effect of phone calls on postdischarge suicide behaviors has been described,<sup>10</sup> the assessment we performed by phone may have introduced bias in our study design. These methodological concerns were also mentioned in a recent review and meta-analysis reporting on BCIs.<sup>12</sup> However, we believe our approach is in line with international efforts to produce reliable and comparable data through RCTs in suicide prevention.<sup>21,23</sup>

We sought to evaluate the impact of the ALGOS BCI in a naturalistic setting. Thus, ALGOS was conducted in hospitals of different sizes and in a large number of people who had made a suicide attempt. However, patients under guardianship were excluded from the study, as is typically required by French ethics committees. Patients with severe mental illness were therefore rarely invited to participate, as patients with psychotic disorders or other severe mental illness are often under guardianship. This is an important limitation of our study, given the needs of those with severe psychiatric disorders in suicide prevention policies.

#### **Subgroups Analysis**

The sample size in this study prevents drawing robust conclusions from subgroups analysis; therefore, we have not reported detailed primary outcomes based on age or gender. Nevertheless, some data regarding differences in these groups may be explored. For example, our results show that those lost to follow-up at 6 and 13 months were typically younger and men; concurrently, we observed a lower rate of study participation among male patients. In most studies that assessed BCI efficacy in reducing suicidal behaviors, 2 major limitations were commonly observed: the strategies are less effective in male patients and more effective in patients with fewer suicide attempts in their medical history.<sup>24</sup> For example, the Postcards from the EDge study found an effect for women (but not men) who had self-poisoned.<sup>13</sup> These findings are in line with previous results showing important differences in efficacy between BCIs among subgroups in terms of impact on suicide behaviors and highlight the interest of adding media to the contact intervention algorithm, including recent technological advances.14

# Brief Contact Interventions for Suicide Prevention

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for emergency and mental health care services in both the short and long terms.<sup>3</sup> Thus, reducing loss to follow-up is a critical challenge in suicide prevention. In our study, a higher rate of loss to follow-up was found in the control group, with a significant between-group difference at 13 months (18.4% vs 13.6% in ALGOS, P = .038). This highlights the potential impact of a simple scheduled phone or mail contact on keeping a patient close to a suicide prevention network. Furthermore, we found that patient loss to follow-up at 6 and 13 months had more mental health outcomes including major depressive disorder and anxiety disorders. Together with recent naturalistic observations showing that suicide attempters with mental health conditions remain at risk many years after their initial attempt,<sup>1</sup> these results may encourage clinicians to maintain contact with patients over long-term BCIs, as recommended by the World Health Organization.<sup>25</sup>

Our algorithm assigned BCIs based only on patients' characteristics and phone assessment results. ALGOS is a simple intervention relying on phone calls and mail contact. From this point of view, our intervention excluded the component of a comprehensive medical decision process that included therapeutic intervention. This may partially explain the fact that most BCIs lacked a significant reduction in suicide reattempt, as they were employed in a unimodal prevention strategy. It may also encourage researchers to investigate the potential of actual communication means, such as text messages<sup>26</sup> and smartphone applications,<sup>27</sup> in suicide prevention. Thus, we are currently assessing a multimodal suicide prevention strategy that includes BCIs, medical decision-making support, and professional training (dispositifvigilans.org) implemented in a national network of 70 centers and maintained over a long-term period.

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*Editor's Note*: We encourage authors to submit papers for consideration as a part of our Focus on Suicide section. Please contact Philippe Courtet, MD, PhD, at pcourtet@psychiatrist.com.

See supplementary material for this article at PSYCHIATRIST.COM.



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**Supplementary Material** 

- Article Title: Combining Postcards, Green Cards, and Telephone Contact Into a Decision Making Algorithm to Reduce Suicide Reattempt
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# List of Supplementary Material for the article

1. Figure 1 CONSORT Study Flow Chart

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# Figure 1. CONSORT Study flow chart

