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Published in:
European Psychiatry

DOI:
[10.1016/j.eurpsy.2004.09.008](https://doi.org/10.1016/j.eurpsy.2004.09.008)

2005

[Link to publication](#)

Citation for published version (APA):
Cedereke, M., & Öjehagen, A. (2005). Prediction of repeated parasuicide after 1-12 months. *European Psychiatry*, 20(2), 101-109. <https://doi.org/10.1016/j.eurpsy.2004.09.008>

Total number of authors:
2

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The following pages constitute the final, accepted and revised manuscript of the article:

Cedereke M, Ojehagen A.
"Prediction of repeated parasuicide after 1-12 months."

Eur Psychiatry. 2005 Mar;20(2):101-9.

Publisher: Elsevier.

Use of alternative location to go to the published version of
the article requires journal subscription.

Alternative location:

<http://dx.doi.org/10.1016/j.eurpsy.2004.09.008>

Original article

Prediction of repeated parasuicide after 1 - 12 months

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Summary To investigate predictors for repetition of suicide attempts 1 - 12 months after a suicide attempt. **Subjects and methods** 216 patients who had made a suicide attempt were investigated after one month, and 178 were followed up again after 12 months. **Results** During 1 - 12 months after the suicide attempt, 30 patients reattempted suicide (repeaters). During 0 - 1 month 13 patients had reattempted suicide (early repeaters), and nine of them also repeated between one and 12 months. Repeaters had more often made 3 or more attempts before index attempt, they more often were in treatment at the index attempt and at one month they had lower global functioning and higher suicide ideation. In a Cox Regression analysis two predictors for repetition between 1 - 12 months remained significant; early repetition (OR 6.7, 95 % CI, 3.0 - 14.9) and having GAF-scores below 49 (median cut-off) (OR 3.4 (95 % CI, 1.5 - 7.5)). **Conclusion** Our findings suggest that repetitive behaviour in itself is a strong predictor of future attempts. Strategies focusing on the repetitive behaviour are warranted.

prospective studies / follow-up studies / prediction / suicide attempt / repetition

INTRODUCTION

Individuals who have made a suicide attempt often reattempt suicide [1, 2, 3, 4, 5]. Repetition has also been found to be a predictor for completed suicide [6, 7]. Repetition of suicide attempt is especially common during the first year after a suicide attempt [3, 5, 8, 9]. In follow-up studies and randomised controlled treatment studies the repetition rate within one year varies between 9 % and 32 % [9, 10, 11, 12, 13, 14, 15]. Many attempts occur already within 6 months, and the rate vary between 10 % and 37 % [11, 13, 16, 17, 18, 19]. Reports on data on early repetition are sparse. Only one study has been found, reporting 4.5 % of repetition within one month [11].

Due to the high risk for repetition of suicidal behaviour prospective risk factors for repetition have been studied. Most studies use data collected at the index attempt. The following predictors for repetition within one year after index attempt have been identified; age 24 - 54, single/divorced/ living alone, unemployed, lower social class, social isolation, female gender, criminal record, experience of physical violence, previous suicide attempt, cutting as method for index attempt, suicidal ideation, suicidal behaviour among relatives, depression and hopelessness, personality disorder, alcohol/ substance abuse, previous psychiatric treatment, referral to psychiatric treatment, use of psychotropic drugs, organic brain disorder, chronic somatic complaints [10, 11, 12, 13, 20, 21, 22]. Similar predictors have been found for repetition within 6 months [11, 16, 23]. The predictive value of early repetition is scarcely studied.

The present paper is a further analysis of a randomised controlled study aimed at investigating the effect of telephone interventions during the first year after a suicide attempt. The study started one month after an index attempt. The randomised groups did not differ in repetition rate or when suicide attempts occurred during 1 - 12 months [24].

The primary aim in this study is to identify predictors for repetition of suicide attempt 1 - 12 months after an index attempt. We had the possibility to include three sets of data; from an investigation at the index attempt, repetition rate between index and one month and measurements collected at one month. As a secondary analysis we compared improvement during follow-up in repeaters as compared to non-repeaters.

SUBJECTS AND METHODS

Design of the study

Patients, who were treated after a suicide attempt, i.e. index attempt at the Medical Emergency Inpatient Unit (MEIU) at the University Hospital in Lund, were followed up after one month by a psychiatric nurse or a social counsellor to ensure their need of professional help. The patients were then offered to take part in a randomised study aimed at investigating the effect of two telephone interventions in addition to treatment as usual during the year after their attempt.

The psychiatric nurse or the social counsellor performed the telephone interventions in half of the patients at 4 and 8 months, i.e. the intervention group and the results have been presented in a previous paper [24]. At one month a semi-structured interview and certain measurements were performed. After 12 months all patients who consented to take part in the study were followed up again with the same measurements as at the one-month interview, see text below and figure 1 [24].

*Figure 1. Patient flow and design **to be indserted about here***

We used the definition of suicide attempt as Kreitman defines parasuicide: “Parasuicide is a non-fatal act in which the individual deliberately causes self-injury or ingests a substance in excess of any prescribed or generally recognised therapeutic dosage” [33]. In this paper the term suicide attempt is used.

Subjects

Patient flow is presented in figure 1. All patients admitted to MEIU after a suicide attempt from February 1995 to April 1997 were assessed by a psychiatrist and a social counsellor. The first suicide attempt, assessed at the MEIU during the study period, is in this paper referred to as the index suicide attempt. The present sample consists of 246 patients out of 281 consecutive MEIU patients who could be reached one month after their index attempt. Within one month three patients had died; two had committed suicide and one patient had died in sequela to the index attempt. Differences between those 35 patients who could not be reached and the others are presented in table 1. They were in comparison to the others more often men, younger, more often unemployed, less often on long-term sick-leave or having a disability pension. Further, they more often had an adjustment disorder, and less often a mood

disorder. There were no differences concerning previous suicide attempts, ongoing treatment or severity of the attempt.

Table 1 *to be inserted about here*

All patients who took part in the follow-up examination at one month were invited to attend the randomised study, and 216 (88 %) of all eligible consented. Thirty patients (12 %) did not take part in the randomised study; 27 patients did not want to participate and three patients offered communication problems, i.e., they were too ill or had language problems.

Comparisons between participants and those who did not want to participate are presented in table 1. Those who did not want to participate had lower scores on the Suicidal Intent Scale and they had less often been referred to inpatient treatment at MEIU. They did not differ in any other aspect from those who participated.

Among those who consented to participate ($n = 216$) two patients had committed suicide after 12 months. Another 12 patients had moved out of the region, 18 could not be reached, 6 wanted to discontinue, and 178 (83 %) could be investigated (figure 1). Those 38 patients (18 %) who did not take part in the 12-months interview were younger than the others (34 ± 14 years vs. 42 ± 18 years, $P < 0.01$), but they did not differ in other characteristics at the MEIU investigation or at the one-month interview.

Initial characteristics of the sample ($n = 178$) at the MEIU investigation and the one-month interview are presented in table 2.

Table 2 *to be inserted about here*

Suicide rate 1 - 12 months

Within one month, i.e. before the study started, three patients died (two committed suicide). Among those who attended the study ($N = 216$), two patients (0.93 %) committed suicide as compared to two patients (including one uncertain suicide) (6.67 %) among those who did not

participate ($n = 30$) ($P = 0.074$). All four suicides (two females and two males) occurred between one and four months after the index suicide attempt (figure 1).

Assessments and interviews

Psychiatric assessment at the MEIU

The assessment included psychiatric diagnosis according to DSM-III R, axis I [25]. The diagnoses were then grouped into three categories; mood disorders (major depression, dysthymia and depression unspecified), adjustment disorder and “other diagnoses” (anxiety disorder, alcohol abuse, psychosis, eating disorder). The assessment of suicide risk included use of the Suicidal Intent Scale (SIS) [26]. Different psychiatrists performed the investigation at the MEIU and no inter-rater tests have been performed between them as concerns the diagnoses and the ratings of suicidal intent. However, all diagnoses were scrutinized by the psychiatrist who performed the main part of the assessments at the MEIU. Further, socio-demographic data and the clinical characteristics were collected in a semi-structured interview covering previous suicidal behaviour, previous and ongoing psychiatric treatment. Civil status and employment status were categorised in three groups, see table 1.

Interviews and assessments at one and 12 months

The psychiatric nurse or the social counsellor performed the one- and the 12 month interviews. The interviewers asked about suicidal thoughts and ideation, social situation, acute problems, mental health, repetition of suicide attempt and need of professional help. The same measurements were used at both the one-month and the 12-month interviews.

The interviewers estimated Global Assessment of Functioning DSM-III R, axis V (GAF) [25]. The GAF is an overall estimation of the patients’ psychological, social and work-related degree of functioning due to their psychological condition ranging on a continuum from 0-90, with 90 representing the highest possible functioning. The functioning during the last week was assessed. Two self-rating scales were used. Symptom Check List –90 (SCL-90) is a self-rating questionnaire with 90 items of psychological symptoms on a 5-point scale of distress (from 0 = “not at all” to 4 = “extremely”) during the last 14 days [27]. The questions are scored and interpreted in terms of nine primary symptom dimensions. Three global indices of distress are submitted; in this study the Global Severity Index (GSI) is presented. Scale of

Suicide Ideation (SSI) is a self-rating scale with 19 statements of suicidal ideation during the last week on a 3-point level of agreement, ranging from 0 to 2 [28]. Camberwell Assessment of Need (CAN) is a tool for comprehensive assessment of needs of patients with serious psychiatric illnesses [29, 30, 31]. The CAN is a semi-structured interview and estimates the need for professional services during the last month within 22 identified need areas on a three-point scale (from 0 = “no need”, 1 = “met need”, to 2 = “unmet need”). The 22 need areas have been clustered into five subdomains covering; basic needs, health aspects, social needs, daily functioning and services according to Slade and co-workers [31]. When the study started we found not other instrument but CAN covering the need of help in every-day-living that we intended to investigate. The instrument is designed for patients with serious psychiatric illnesses and has, as far as we know, not been used among suicide attempters before. However, we found the instrument to be applicable to this group of patients since several suicide attempters have recurrent psychiatric disorders and long-lasting problems, probably comparable to patients with severe psychiatric illnesses. The needs, evaluated by CAN in this sample have been further analysed in a separate paper [32].

The nurse and the social counsellor co-rated the initial 25 interviews to ensure similar estimations, but no inter-rater tests were carried out.

All individuals did not complete all ratings at both one and 12 months. The prediction analyses are based on all ratings completed at one month, i.e. 177 individuals for GAF, 124 for GSI, 121 for the SSI and 162 individuals for CAN. The follow-up calculations on improvement between 1 - 12 months were based on those individuals who completed the ratings at both one and 12 months, i.e. 168 for GAF, 101 for GSI, 90 for SSI and 140 individuals for CAN. There were no differences between those who rated SSI, GAF GSI and CAN, both at one month and 12 months and those who did not in initial characteristics or in repeated suicidal behaviour 1 - 12 months after the index suicide attempt.

Information on repeated suicide attempts

Information on repeated suicide attempts and when during the year they had been performed was collected in the interviews at one and 12 months and checked against patient- and admission charts. Information on repeated suicide attempts for patients not followed up at 12 months was checked against patient charts. The exact date when the repeated suicide attempt occurred was missing in one patient who repeated in the period 5 – 8 months.

Among those patients ($n = 36$) who were not followed up at 12 months, information on repeated suicide attempts between 1 - 12 months could be obtained for 35 patients. The repetition rate was 20 %. However, 12 of these patients had moved out of the region during the follow-up. Hence information on these patients does not cover the whole period.

The Research Ethics Committee of the Lund University approved the study.

Statistics

The software used for statistical analyses was SPSS 10.0 for Windows [34]. The chi-square test was used to analyse differences in proportions. Comparisons of age were tested with Student's T-test and comparisons of SIS, GAF, GSI, SSI and CAN scores were carried out with non-parametric tests; Mann Whitney U-test.

In order to identify riskfactors for repetition of suicide attempt 1-12 months a survival analysis was carried out. Three out of five variables reaching statistical significance in bivariate analyses were entered in a Cox Regression analysis (Forward Conditional) to investigate the interdependence of the variables, i.e. whether or not they were independent riskfactors. The selection of the variables for inclusion in the Cox analysis is described in "Results".

Wilcoxon matched pairs test was used to investigate changes in repeated measures. Standard residual change scores were calculated and used as measures of changes in GAF, GSI and SSI in comparisons between repeaters and non-repeaters in order to control for the influence of baseline scores on follow-up scores. These change scores were derived from regression analyses using the baseline scores as independent variable and the follow-up score as dependent variable [35].

Univariate variance analyses of changes in GAF, GSI and SSI between repeaters and non-repeaters were performed and the number of attempts before index and repetition between index and one month were used as covariates.

RESULTS

Prediction of repetition of suicide attempt between 1 - 12 months

Between one and 12 months after the index suicide attempt 30 patients (17 %) made one or more suicide attempts, and they will further on be labelled "repeaters". Nineteen patients

made 1 attempt, five made 2 attempts, three made 3 attempts, one made 4, one 5 and one 7 attempts. In all, 54 suicide attempts were performed.

Between index and one month 13 patients (7 %) reattempted suicide, in this paper referred to as "early repeaters" .

At the time for their index suicide attempt, repeaters more often had made 3 or more previous attempts, and they more often were in psychiatric treatment. Further, repeaters more often had repeated also during the period between the index suicide attempt and the one month interview, i.e., nine out of 13 patients repeated between index and one month. At the one month interview, repeaters had a lower global functioning (GAF) and higher suicide ideation (SSI) (table 2).

A Cox Regression analysis was performed to gain more understanding of the associations between repetition of suicide attempts between 1 - 12 months and independent significant variables; number of repetitions before index attempt (0, 1 - 2, ≥ 3), early repetition (index - one month) and GAF-scores at one month. Two significant variables were excluded from the analysis; "psychiatric treatment", which was considered as a system variable, i.e. descriptive of the health care system rather than the patient, and "SSI-scores", since these are influenced by the recent suicide attempt. Irrespective of time to first attempt 1 – 12 months, "early repetition" and having GAF-scores below 49 (median cut-off) remained significant variables. The odds ratio for repetition is 6.7 (95 % CI, 3.0 - 14.9) for early repetition, $P = 0.000$, and the reference category is to have made no early repetition. To have GAF-scores < 49 the odds ratio for reattempts is 3.4 (95 % CI, 1.5 - 7.5), $P = 0.002$, with GAF-scores 50 - 90 as the reference category. These results are presented in figure 2 a) and 2 b) as cumulative risk curves.

Figure 2 a Cumulative risk for repetition between 1-12 months in early repeaters and non-early repeaters. *to be inserted about here*

Figure 2 b Cumulative risk for repetition between 1-12 months for patients with GAF-scores below median (0-49 p) at 1 month and over median (50-90 p). *to be inserted about here*

Of those 26 patients who had made 3 or more suicide attempts before index, five made 5 attempts between 1 – 4 months, five made 6 attempts between 5 – 8 months and six made 6 attempts between 9 – 12 months. The corresponding figures of repeaters and repetitions of

those 13 patients who made an early repetition are as follows; four patients made 4 attempts between 1 – 4 months, two made 2 attempts between 5 – 8 months and seven made 7 attempts between 9 – 12 months.

As concerns needs at one month, the number of needs and unmet needs (see table 2) and subdomains of needs did not differ between repeaters and non-repeaters. Repeaters had more needs than non-repeaters in 2/22 need areas; sexual expression (27 % vs. 12 %, $P < 0.05$) and in money problem (33 % vs. 9 %, $P < 0.01$) and more unmet needs in one need area; money problem (15 % vs. 1.5 %, $P < 0.01$) (not in table). Since there were only three differences between repeaters and non-repeaters out of 44 possible areas of needs and unmet needs, we chose to exclude these differences in the multivariate analysis due to risk of type I error.

Improvement during 1 - 12 months in repeaters and non-repeaters (table 3)

Both repeaters and non-repeaters improved significantly in global functioning (GAF). Non-repeaters improved also in psychological symptoms (GSI) and suicide ideation (SSI). The improvement rate was higher in non-repeaters than repeaters in all three measures; GAF ($P < 0.01$), GSI ($P < 0.01$) and SSI ($P < 0.05$) with previous suicide attempt before index and repeated suicide attempt between index and one month as covariates. Concerning the 9 primary symptom dimensions of SCL-90, non-repeaters improved more than repeaters in 6 dimensions; obsession-compulsiveness ($P < 0.05$), depression ($P < 0.01$), anxiety ($P < 0.05$), psychoticism ($P < 0.05$), hostility ($P < 0.05$) and additional ($P < 0.01$) (not presented in table 3). At 12 months repeaters still had lower GAF, and they had more psychological symptoms (GSI) and higher SSI than non-repeaters.

As concerns CAN, non-repeaters reduced both number of needs and unmet needs ($P < 0.001$, respectively) during follow-up, while repeaters reduced number of unmet needs ($P < 0.01$). The reduction of needs was higher in non-repeaters than in repeaters ($P < 0.05$). Concerning the five subdomains, social needs ($P < 0.05$) increased in repeaters as compared to non-repeaters (not presented in table 2). At follow-up, repeaters had more needs ($P < 0.001$) and unmet needs ($P < 0.01$). As concerns different need areas, repeaters had significantly more needs in 9 areas, more unmet needs in 4 areas and more needs in 3/5 subdomains.

At 12 months repeaters significantly more often had disability pension or were on long-term sick leave (40 % vs. 16 %, $P < 0.01$) than non-repeaters. The former more often had had psychiatric in-patient treatment during the follow-up period (77 % vs. 16 %, $P < 0.001$), and

they more often had ongoing treatment within mental health service than non-repeaters (83 % vs. 42 %, $P < 0.001$).

Table 3 *to be inserted about here*

DISCUSSION

In this study predictors of repetition of suicide attempts concerned the period of the intervention study, i.e., between one month and 12 months after index attempt. The strength of the present study is that we analysed three kinds of predictors; data collected at the time of the index suicide attempt, suicidal behaviour within one month and measurements performed at one month.

Our main finding is that early repetition was the main predictor for repetition through the year, followed by low global functioning at one month. The prediction of early repetition on further repetition has as far as we know, not been reported earlier. We found that thirteen patients (7 %) reattempted suicide within one month. Two earlier studies report on early repetition of suicide attempt, i.e. within one week to be 5.1 % and 10 % respectively [36, 37]. To have made several previous suicide attempts has been found to be a predictor for repetition of suicide attempt after a suicide attempt [21], and it was the strongest predictor for repeating suicide attempt within one year in a WHO Multicentre study of teenagers [7]. Other factors associated with repetition in our study (except for several previous suicide attempts before index and early repetition) were psychiatric treatment at the index attempt, and having high suicide ideation and low global functioning at one month. Other studies have found that being in psychiatric treatment is associated with repetition of suicide attempt [10, 12, 13, 20].

Somewhat surprising we found that at one month only two out of 22 need areas at one month differed between repeaters and non-repeaters.

Most studies on repetition of suicide attempts deal with the frequency of repetition during one year after the suicide attempt. Studies taking time to repetition into account are rare. **3.** Using a Cox regression analysis we found that the high risk for repetition remained through the year for both early repetition and low global functioning.

Between one and 12 months 17 % of the patients reattempted suicide, and when calculating repetition including the first month, i.e., between index and 12 months 19 % (34/178) reattempted, as compared to 9 % to 32 % in other studies measuring repetition between index and 12 months [9, 10, 11, 12, 14, 15]. In an earlier one-year follow-up of suicide attempters assessed at the MEIU at our unit, 27 % reattempted between index and 12 months. In that study future reattempters were associated with the following index characteristics; diagnoses of alcohol addiction or dysthymia and a less serious index attempt according to the Suicidal Intent Scale (SIS) [13]. In both the studies from our unit repeaters more often were in psychiatric treatment at the index suicide attempt, and they more frequently had made previous suicide attempts. The repetition rate in the present study is 8 % lower during the first year. Maybe the one-month follow-up in this study have had an effect on repetition among some individuals.

In this study repeaters did not differ in psychiatric diagnosis at MEIU. No axis II-diagnoses were set at the assessment at the MEIU, and personality disorder probably is an important variable related to repetitive suicidal behaviour. In our opinion, it was difficult in the emergency situation to properly assess whether an axis II disorder was present. Therefore assessment of personality disorder is not included at the MEIU assessment. We cannot exclude the possibility of higher frequencies of personality disorders among repeaters.

Repeaters had improved less in all measurements used at the follow-up at 12 months. The differences in the nine primary dimensions of SCL-90 might be interpreted with caution because of multiple testing. The remaining need of help among repeaters might reflect that repetitive behaviour is associated with deficient functioning of daily life and a need of long-lasting support, i.e. at least during one year.

Repeaters more often had had psychiatric in-patient treatment between 1 – 12 months, and they more often had ongoing treatment within mental health service at 12 months, probably due to the repetitive behaviour. Further evaluation of treatment strategies focusing on suicidal behaviour seems warranted. One treatment strategy, Dialectical Behaviour Therapy, has been found to significantly reduce the number of suicidal acts within one year in 18 - 45 years old females with previous parasuicide incidents [38]. Since repetition often occurs soon after the attempt, i.e., within 4 weeks [11] or 12 weeks [37, 39, 40, 41], risky behaviour such as early repetition ought to be considered. At a suicide attempt special attention should be put to those with several previous attempts to prevent further repetitive behaviour. It seems important to

further investigate characteristics of those individuals with repetitive behaviour to find appropriate treatment methods.

The sample in the present study had similar characteristics as the sample in a previous one year follow-up of suicide attempters at our unit, but we do not know whether this sample is representative to other samples of suicide attempters. The attrition rate, 17 % is acceptable. Those patients who did not take part in the 12-month interview were younger than the others but they did not differ in any other aspect. Further, the repetition rate among those not followed up was about the same as among those followed up. Those who did not participate in the study tended to commit suicide more often than participants. However, no safe conclusions on the representativity of the study sample can be drawn from this result. Since predictors can differ in different samples any generalisation to other groups of suicide attempters is difficult [42].

Conclusion

Our findings of predictors for repetition of suicide attempt add new knowledge to the predictive power of early repetition. It is important to further investigate characteristics of those individuals with repetitive behaviour. Strategies focusing on the repetitive behaviour with special attention to those who repeat soon after a suicide attempt are warranted.

Acknowledgments

This study was supported by grants from the Vardal Foundation (V97 341) and The Ax:son Johnson Foundation. Karin Monti performed half of the interviews. Ulla Persson gave valuable comments on the work.

REFERENCES

1. Rygnestad T. A 15-year follow-up study after deliberate self-poisoning. *Tidsskr Nor Laegeforen* 1997b ; 117: 3065-9.
2. Foster T, Gillespie K, McClelland R. Mental disorders and suicide in Northern Ireland. *Br J Psychiatry* 1997 ; 170 : 447-52.
3. Kerkhof J, Arensman E, Bille-Brahe U, Crepet P, De Leo D, Hjelmeland H, Lönnqvist J, Michael K, Platt S, Salander-Renberg E, Schmidtke A, Wasserman D. Repetition of attempted suicide: results from the WHO/EU Multicentre Study on Parasuicide, repetition-prediction part. 7th European Symposium on Suicide and Suicidal Behaviour, Gent: University Press; 1998.
4. Schmidtke A, Bille-Brahe U, DeLeo D, Kerkhof A, Bjerke T, Crepet P, Haring C, Hawton K, Lönnqvist J, Michel K, Pommereau X, Querejeta I, Phillippe I, Salander-Renberg E, Temesvary B, Wasserman D, Fricke S, Weinacker B, Sampaio-Faria J G. Attempted suicide in Europe: rates, trends and sociodemographic characteristics of suicide attempters during the period 1989-1992. Results of the WHO/EURO Multicentre Study on Parasuicide. *Acta Psychiatr Scand* 1996 ; 93 : 327-38.
5. Hawton K, McKeown S, Day A, Martin P, O'Connor M, Yule J. Evaluation of out-patient counselling compared with general practitioner care following overdoses. *Psychol Med* 1987 ; 17 : 751-61.
6. Hawton K. Chap. 29 General Hospital Management of Suicidal Behaviour. In: *The international Handbook of Suicide and attempted suicide*, edited by K HK v H. Chichester: John Wiley & Sons Ltd, 2000.
7. Hultén A, Jiang G, Wasserman D, Hawton K, Hjelmeland H, De Leo D, Ostamo A, Salander-Renberg E, Schmidtke A. Repetition of attempted suicide among teenagers in Europe: frequency, timing and risk factors. *Eur Child Adolesc Psychiatry* 2001 ; 10 : 161-9.
8. Nielsen B, Wang A, Bille-Brahe U. Attempted suicide in Denmark. IV. A five-year follow-up. *Acta Psychiatr Scand* 1990 ; 81 : 250-4.
9. Rygnestad T. A prospective 5-year follow-up study of self-poisoned patients. *Acta Psychiatr Scand* 1988 ; 77 : 328-31.
10. Owens D, Dennis M, Read S, Davis N. Outcome of deliberate self-poisoning. An examination of risk factors for repetition. *Br J Psychiatry* 1994 ; 165 : 797-801.
11. Carter G, Whyte I, Ball K, Carter T, Dawson H, Carr J, Fryer J. Repetition of deliberate self-poisoning in an Australian hospital-treated population. *Med J Aust* 1999; 170: 307-11.

12. Wang A, Nielsen B, Bille-Brahe U, Hansen W, Kolmos L. Attempted suicide in Denmark. III. Assessment of repeated suicidal behaviour. *Acta Psychiatr Scand* 1985 ; 72 : 389-94.
13. Öjehagen A, Danielsson M, Träskman-Bendz L. Deliberate self-poisoning: treatment follow-up of repeaters and nonrepeaters. *Acta Psychiatr Scand* 1992 ; 85 : 370-5.
14. Möller J. Efficiency of different strategies in after-care for patients who have attempted suicide. *Journal of the Royal society of Medicine* 1989 ; 82 : 643-7.
15. Allard R, Marshall M, Plante C. Intensive follow-up does not decrease the risk of repeat suicide attempts. *Suicide Life Threat Behav* 1992 ; 22 : 303-14.
16. Bancroft J, Skrimshire A, Reynolds F, Simkin S, Smith J. Self-poisoning and self-injury in the Oxford area. Epidemiological aspects 1969-73. *Br J Prev Soc Med* 1975 ; 29 : 170-7.
17. Bancroft J, Marsack P. The repetitiveness of self-poisoning and self-injury. *Br J Psychiatry* 1977 ; 131 : 394-9.
18. Hawton K. Assessment of suicide risk. *Br J Psychiatry* 1987 ; 150 : 145-53.
19. Concoran P, Kelleher M, Keeley H, Byrne S, Burke U, Williamson E. A statistical model for identifying repeaters of parasuicide. *Archives of Suicide Research* 1997 : 65-74.
20. Morgan H, Barton J, Pottle S, Pocock H, Burns-Cox C. Deliberate self-harm: a follow-up study of 279 patients. *Br J Psychiatry* 1976 ; 128 : 361-8.
21. Sakinofsky I. Chap. 21 Repetition of Suicidal Behaviour. In: *The international Handbook of Suicide and attempted suicide*, edited by Hawton K, van Heeringen K. Chichester: John Wiley & Sons Ltd, 2000.
22. Hassanyeh F, O'Brien G, Holton A, Hurren K, Watt L. Repeat self-harm: an 18-month follow-up. *Acta Psychiatr Scand* 1989 ; 79 : 265-7.
23. Scott J, House R, Yates M, Harrington J. Individual risk factors for early repetition of deliberate self-harm. *Br J Med Psychol* 1997 ; 70 : 387-393.
24. Cedereke M, Monti K, Öjehagen A. Telephone contact with patients in the year after a suicide attempt: does it affect treatment attendance and outcome? A randomised controlled study. *Eur Psychiatry* 2002a ; 17 : 82-91.
25. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. 3rd ed, revised. Washington: DC: APA Press; 1987.
26. Beck A, Herman I, Schuyler D. Development of suicidal intent scales. In: Beck A, Resnik H, Lettieri D., ed. *The prediction of suicide*. Bowie MD: Charles Press; 1974 : 45-6.
27. Derogatis L. *SCL-90: Administration, scoring and procedure manual for the revised version of the SCL-90*. Baltimore: The Hohn Hopkins University School of Medicines; 1979.

28. Beck A, Kovacs M, Weissman A. The Scale for Suicide Ideation. *Journal Consult Clinical Psychology* 1979 ; 47 : 343-52.
29. Phelan M, Slade M, Dunn G, Holloway F, Strathdee G, Thornicroft G, Wykes T. *Camberwell Assessment of Need*. London: London Institute of Psychiatry (PRiSM); 1993.
30. Wiersma D, Nienhuis F, Giel R, Slooff C. Stability and change in needs of patients with schizophrenic disorders: a 15- and 17-year follow-up from first onset of psychosis, and a comparison between 'objective' and 'subjective' assessments of needs for care. *Soc Psychiatry Psychiatr Epidemiol* 1998 ; 33 : 49-56.
31. Slade M, Phelan M, Thornicroft G. A comparison of needs assessed by staff and by an epidemiologically representative sample of patients with psychosis. *Psychol Med* 1998 ; 28 : 543-50.
32. Cedereke M, Ojehagen A. Patients' needs during the year after a suicide attempt. A secondary analysis of a randomised controlled intervention study. *Soc Psychiatry Psychiatr Epidemiol* 2002b ; 37 : 357-63.
33. Kreitman N, Philip A. Reflections on the management of parasuicide. *British Journal of Psychiatry* 1979 ; 115 : 746-7.
34. Norusis M. *SPSS for Windows 10.0*. Chicago: Spss Inc.; 1999.
35. Lambert M, Hill C. Assessing psychotherapy outcomes and processes. In: *Handbook of psychotherapy and behavior change*, edited by Bergin E, Garfield S . New York: John Wiley & Sons, Inc.; 1994 : 72 - 113.
36. Waterhouse J, Platt S. General hospital admission in the management of parasuicide. A randomised controlled trial. *Br J Psychiatry* 1990 ; 156 : 236-42.
37. Gilbody S, House A, Owens D. The early repetition of deliberate self harm. *J R Coll Physicians Lond* 1997 ; 31 : 171-2.
38. Linehan M, Armstrong H, Suarez A, Allmon D, Heard H. Cognitive-behavioral treatment of chronically parasuicidal borderline patients. *Arch Gen Psychiatry* 1991 ; 48 : 1060-4.
39. Sakinofsky I, Roberts R, Brown Y, Cumming C, James P. Problem resolution and repetition of parasuicide. A prospective study. *Br J Psychiatry* 1990 ; 156 : 395-9.
40. Spirito A, Plummer B, Gispert M, Levy S, Kurkjian J, Lewander W, Hagberg S, Devost L. Adolescent suicide attempts: outcomes at follow-up. *Am J Orthopsychiatry* 1992 ; 62 : 464-8.
41. Appleby L, Shaw J, Amos T, McDonnell R, Harris C, McCann K, Kiernan K, Davies S, Bickley H, Parsons R. Suicide within 12 months of contact with mental health services: national clinical survey. *Br Med J* 1999 ; 318 : 1235-9.

42. Hawton K, Arensman E, Townsend E, Bremner S, Feldman E, Goldney R, Gunnell D, Hazell P, van Heeringen K, House A, Owens D, Sakinofsky I, Träskman-Bendz L. Deliberate self harm: systematic review of efficacy of psychosocial and pharmacological treatments in preventing repetition. *Br Med J* 1998 ; 317 : 441-7.

Table 1 Comparison of psychosocial and clinical characteristics at the MEIU-investigation between patients who could be reached and those who not could be reached after one month, and between patients who accepted and those who did not accept to participate in the randomised study. (At one month three patients could not be asked about participation.)

MEIU investigation	Patients reached at one month (N = 281)		Accepted randomised study (N = 243)	
	No n = 35	Yes n = 246	No n = 27	Yes n = 216
male/ female	21/ 14	83/ 163 **	8 / 19	73/ 143
age, M ± SD (range)	34 ± 9 (19 - 50)	41 ± 18 **** ²⁾ (17 - 86)	42 ± 16 (19 - 76)	41 ± 18 (17 - 86)
Civil status				
- married/cohabiting	34 %	38 %	46 %	37 %
- divorced/widowed	34 %	30 %	27 %	30 %
- never married/single	31 %	33 %	27 %	33 %
Employment status		¹⁾		
- working/studying	51 %	57 %	74 %	54 %
- unemployed	46 %	23 % *	11 %	24 %
- disability pension/long-term sickleave	3 %	20 % *	15 %	21 %
Diagnosis DSM III R axis I		¹⁾		
- mood disorder	20 %	41 % *	33 %	42 %
- adjustment disorder	54 %	30 % *	37 %	29 %
- other diagnoses	26 %	30 %	30 %	29 %
Previous suicide attempt(s)	35 %	51 %	37 %	53 %
Ongoing psychiatric treatment	40 %	51 %	41 %	52 %
Suicidal intent (SIS), M ± SD	11.9 ± 5.6	12.9 ± 7.6	10.2 ± 7.9	13.2 ± 7.5 * ³⁾
Referral to aftercare	89 %	96 %	93 %	96 %
- referral to inpatient care	46 %	36 %	27 %	62 % ****

Chi-square test: **** $P < 0.001$, ** $P < 0.01$, ¹⁾ (2 df) * $P < 0.05$

²⁾ Student's T-test: **** $P < 0.001$

³⁾ Mann Whitney U-test: * $P < 0.05$

Table 2 Psychosocial and clinical characteristics at the MEIU investigation and at one month in all patients ($N = 178$), and in repeaters and non-repeaters during 1 – 12 months.

	All patients $N=178$	Non-repeaters $n=148$	Repeaters $n=30$
<i>MEIU investigation</i>			
- male/ female	60/118	50/98	10/20
- age, $M \pm SD$ (range 17-86)	42 ± 18	43 ± 19	40 ± 15
Civil status			
- married/cohabiting	41 %	41 %	39 %
- divorced/widowed	30 %	31 %	25 %
- never married/single	29 %	28 %	36 %
Employment status			
- working/studying	39 %	41 %	27 %
- unemployed	15 %	22 %	23 %
- disability pension/long-term sick-leave	47 %	37 %	50 %
Diagnosis DSM III R axis I			
- mood disorder	45 %	43 %	57 %
- adjustment disorder	25 %	27 %	17 %
- other diagnoses	30 %	30 %	26 %
Suicidal Ideation Scale (SIS) Beck, max 30p	13.4 ± 7.8	13.0 ± 7.8	15.5 ± 7.5
Previous suicidal behaviour			
- no prev. suicide attempt	48 %	51 %	33 %
- 1-2 prev. suicide attempts	37 %	38 %	33 %
- 3 or more prev. suicide attempts	15 %	11 %	33 % **
Treatment at MEIU			
- psychiatric treatment	52 %	48 %	73 % *
- other treatment than psychiatric	22 %	24 %	13 %
- no treatment	26 %	28 %	13 %
Referral to inpatient treatment after MEIU	61 %	59 %	72 %
Referral to outpatient treatment after MEIU	34 %	35 %	24 %
<i>One month interview</i>			
Suicide attempt 0-1 month, $n = 13$	7 %	3 %	30 % ***
Global functioning (GAF), DSM-III R, Axis V ($M \pm SD$), $n = 177$	50.4 ± 20.6	52.9 ± 20.5	$38.1 \pm 16.2^{** 2)}$
Psychological symptoms (GSI), (SCL-90) ($M \pm SD$), $n = 124$	1.0 ± 0.8	1.0 ± 0.8	1.2 ± 0.7
Suicide ideation (SSI) ($M \pm SD$), $n = 121$	6.6 ± 7.9	5.6 ± 6.6	$12.4 \pm 11.6^{* 2)}$
Camberwell Assessment of Need (CAN) ($M \pm SD$), $n=161$			
- All needs	5.1 ± 2.4	4.9 ± 2.3	6.0 ± 3.0
- Unmet needs	2.4 ± 1.5	2.2 ± 1.3	3.1 ± 2.3

¹⁾ Chi-square test: *** $P < 0.001$, ¹⁾ (2 df) * $P < 0.05$, ** $P < 0.01$,

²⁾ Mann Whitney U-test: ** $P < 0.01$, * $P < 0.05$

Table 3 Measurements at 1 and 12 months in repeaters and non-repeaters. Differences calculated within groups and between groups.

	Repeaters (<i>n</i> =30)		Non-repeaters (<i>n</i> =148)	
	1 month	12 months	1 month	12 months
Global functioning (GAF) (M ± SD), <i>n</i> =168	37.4 ± 16.0 c)	45.3 ± 18.8 * b)	53.3 ± 20.2 c)	63.3 ± 19.0 *** b)
Psychological symptom scale (GSI), (SCL-90), (M ± SD), <i>n</i> =101	1.2 ± 0.7	1.3 ± 0.8 a)	1.0 ± 0.8	0.8 ± 0.7 *** a)
Scale of Suicide Ideation (SSI) (M ± SD), <i>n</i> =90	11.4 ± 11.0	12.1 ± 9.9 b)	5.6 ± 6.8	3.6 ± 5.5 ** b)
Camberwell Assessment of Need (CAN) (M ± SD), <i>n</i> =140				
- All needs	6.0 ± 3.0	5.3 ± 2.6 c)	4.9 ± 2.3	3.0 ± 2.6 *** c)
- Unmet needs	3.1 ± 2.3	1.5 ± 1.7 ** b)	2.2 ± 1.3	0.5 ± 0.9 *** b)

Within group differences Wilcoxon rank test: * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.
Mann-Whitney: a) $P < 0.05$, b) $P < 0.01$, c) $P < 0.001$.

Assessment at the MEIU after the index suicide attempt
n = 281

Not possible to follow-up at one month;
- dead *n* = 3 (2 suicides),
- could not be reached *n* = 32.
Total *n* = 35

Possible to follow-up at one month
n = 246

Not assessed at one month;
- refused to participate *n* = 27,
- other reasons *n* = 3.
Total *n* = 30

Assessed and randomised to

intervention, prediction analysis
 $n = 216$

Non-participants $n = 30$
At 12 months;
Dead $n = 2$
(1 suicide, 1 uncertain
suicide)

Lost to follow-up at 12 months;
- dead $n = 2$ (suicide),
- moved out of the region $n = 12$,
- could not be reached $n = 18$,
- wished to discontinue $n = 6$.
Total $n = 38$

Followed up at 12 months
 $n = 178$

