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Suicide prevention topic 6:
What are the characteristics of repeating vs.
non-repeating suicidal presenters to
Emergency services?

A critical appraisal of the literature

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LIST OF ABBREVIATIONS

BDI	–	Beck Depression Inventory
BHS	–	Beck's Hopelessness Scale
c.f.	–	compared with
CI	–	confidence intervals
CPN	–	community psychiatric nurse
DSH	–	deliberate self harm
Dx	–	diagnosis
EMHS	–	Emergency Mental Health Services
EMI-B	–	Emotional Well-Being inventory
ER	–	Emergency Room
ERFUT	–	Emergency Room Follow-up team
f/u	–	follow-up
GT-S	–	Giessen Test for self-image
HASS	–	Harkavy Asnis Suicide Survey
HATS	–	Hunter Area Toxicology
I-V-E	–	Impulsiveness Questionnaire
ITT	–	intention to treat
MA	–	meta-analyses
NRs	–	Non-repeaters
Nss	–	not statistically significant
Nssd	–	not statistically significantly different
OPC	–	outpatient clinic
RCT	–	randomised controlled trial
RPTC	–	Regional Poison Treatment Centre
RR	–	risk ratio
Rs	–	Repeaters
Rx	–	treatment
SCL-90	–	Symptom Checklist (90 items)
SEIA	–	Self-Esteem Inventory for Adults
SNAP	–	Successful Negotiation/acting Positively program
SOC	–	Sense of Coherence Scale
SR	–	systematic review
U-BO	–	Social Anxiety Questionnaire
ssd	–	statistically significant difference
vs.	–	versus
WHO	–	World Health Organisation

Scope of systematic review of suicide prevention

The development of this systematic review involved consultation between the NZHTA and the Suicide Working Group.

LITERATURE SEARCH

Main search terms

Medline subject terms (MeSH terms): suicide, suicide attempted, self-injurious behavior, exp self-mutilation, recurrence, emergency service hospital, acute disease, emergency services psychiatric.

Psychinfo subject terms: attempted suicide, suicide, suicidal ideation, suicide prevention, suicide prevention centers, exp relapse disorders, emergency services, crisis intervention services.

Additional keywords: suicid*, parasuicid*, recrudesc*, repeat*, recurr*, repetition, non repeat* single episode*, ((first or second or third or multiple) adj2 attempt*), acute, first time*.

Principal sources of information

The following databases were searched using the search strategies outlined in **Appendix 1: Search strategies**.

Bibliographic databases

Medline
Embase
Cinahl
Psychinfo
Current Contents
Science/Social Science Citation Index
Index New Zealand

Review databases

Evidence-based medicine reviews
Cochrane Database of Systematic Reviews
DARE
NHS Economic Evaluation Database
Health Technology Assessment Database

The search was restricted to information from 1990 in English. Each research question required a separate literature search.

Note: hand searching of journals, or contacting of authors for unpublished research was not undertaken during the search process.

The complete search strategies are given in **Appendix 1: Search strategies**.

INCLUSION AND EXCLUSION CRITERIA

Inclusion and exclusion criteria were firstly applied to the abstracts captured by the literature searches. Those papers considered for inclusion in the literature appraisal were retrieved and this warranted the exclusion of further papers based on the availability of these in full text.

Peer reviewed studies were considered for this review if they used one of the following study designs:

- systematic review or meta-analysis
- randomised controlled trial (RCT)
- controlled clinical trial (CCT)
- cohort study
- case-control study
- quasi-experimental – e.g., before and after study
- descriptive study.

Note: the ‘grey’ literature was included, where appropriate, for New Zealand specific studies looking at special population groups: Maori, Pacific Island, Asian and the elderly.

STUDY INCLUSION CRITERIA

The following criteria was used to **include** studies for appraisal:

- study population are persons presenting following suicide attempt, expressing suicidal ideation, suicide threat
- study set in emergency department
- study set in tertiary mental health service
- study published in 1990 or later
- study written in English
- outcomes considered include:
 - repeat presentations for suicidality
 - repeat suicide attempts
 - mortality from suicide.

STUDY EXCLUSION CRITERIA

The following criteria was used to **exclude** studies from appraisal:

- study population primarily (50% or more) those with deliberate self-harm in the absence of suicide intent
- study population primarily (50% or more) those involved in assisted suicide
- study population primarily (50% or more) presentations for self-mutilation
- study population primarily (50% or more) children 12 years of age and under
- study focus is on the treatment of people with drug/substance abuse or dependence, that is treatment directed to their addiction rather than any suicide attempt
- study population are criminal offenders
- studies on suicide prevention interventions specifically for people with HIV/AIDS
- studies with small numbers of case presentations (one to five cases)
- studies concerned with suicide in homicidal people
- studies concerned with school-based suicide prevention interventions
- studies concerned with economic analyses
- citations which are letters to the editor, comments, editorials, abstract only
- studies where population is primarily a special population – e.g., with affective or underlying personality disorder (and therefore potential confounder of study results and treatments).

STUDY SELECTION

Studies were selected for appraisal using a two-stage process. Initially, the titles and abstracts (where available) identified from the search strategy were scanned and excluded as appropriate. The full text articles were retrieved for the remaining studies and these were appraised if they fulfilled the study selection criteria outlined above.

Forty-four papers were identified via the search strategy and 30 retrieved (one as background only). Currently, 12 papers have been formally reviewed and 18 papers excluded.

EVIDENCE TABLES

Summaries of appraisal results are shown in tabular form and include:

- study reference and country
- study design
- study quality grading and evidence level
- study arm description of intervention, service, treatment
- patient inclusion and exclusion criteria
- number of patients included in study sample
- study outcomes and p-values and/or 95% confidence intervals
- comments on the study and its internal validity issues arising from the study appraisal.

P-values unless otherwise stated relate to between group comparisons.

APPRAISAL METHODOLOGY

Articles were formally appraised using the checklist schedules and hierarchy of evidence coding system developed by the Scottish Intercollegiate Guidelines Network (SIGN). Validated criteria were used to appraise the studies selected for review. Key facets of the selected studies (including limitations) were documented in the text. Conclusions were drawn based on the study design and the specific problems associated with individual studies. The evidence presented in the selected studies were assessed and classified according to the SIGN grades of guideline recommendation by the suicide prevention guideline group.

The final grading code was allocated based upon the study design and study quality.

For a Systematic Review, Meta-Analysis or RCT studies the grades were (1++, 1+ or 1-). To receive a 1++ grading, the following criteria needed to be fulfilled:

- clearly defined study question
- a clear description of an adequate randomisation design and process
- absence of baseline differences in demographic variables and other potential confounding variables between intervention groups post-randomisation
- an adequate concealment method and use of single blinding in outcome assessment
- outcomes measured in a standard, valid and reliable way
- all study arms treated equally
- adequate statistical power
- an ITT analysis was presented.

Factors (four or more) that consigned studies to a 1- grading included:

- open study
- study groups were not treated equally
- ITT analysis not presented, analysis not based on randomised allocation
- baseline study differences
- outcome assessment not blinded to allocation

- inadequate method or description of randomisation and concealment
- significant omissions or errors in patient demographic information and outcome results.

All other Systematic Review, Meta-Analysis and RCT studies were graded as 1+.

For a case-control or cross-sectional study to receive a 2++ grading, the following criteria needed to be fulfilled:

- clearly defined and appropriate study question
- unbiased selection of subjects from a comparable population(s)
- (for case-control studies only) cases and controls clearly defined and differentiated; controls clearly non-cases
- good reporting of baseline variables and inclusion and exclusion criteria
- blinding of investigators to previous test results or other factors that could bias testing
- outcomes measured in a standard, valid and reliable way
- all subjects in study treated equally
- adequate statistical analysis
- an appropriate follow-up period and prospective, longitudinal analysis.

Papers that met the above criteria with the exception of including an appropriate follow-up period and prospective, longitudinal analysis were given a ranking of 2+.

Factors (four or more) that consigned studies to a 2- grading included:

- ill defined and/or inappropriate study question
- poorly described and/or biased selection process
- poorly defined and/or biased inclusion and/or exclusion criteria
- poor reporting of baseline variables and/or significant baseline study differences between groups (case-control studies)
- baseline study differences
- outcome assessment not blinded to allocation and/or blinding of investigators not described
- inadequate statistical analysis
- significant omissions or errors in patient demographic information and outcome results.

Non-analytical studies – e.g., case series and descriptive studies, are given an evidence grade of 3.

Within each grade, papers are presented in alphabetical order according to first author surname.

Study limitations

This question examines the characteristics of repeating vs. non-repeating suicidal presenters to emergency services. During the research process, a number of studies were identified that examined the characteristics of repeating vs. non-repeating suicidal presenters outwith¹ the emergency services (i.e., inpatient populations); it was decided that these studies would be assessed independently and can be found in **Table 2 (pages 11-14)**. It must, however, be remembered that the patients in these studies may differ from patients who commit DSH/DSP and are not admitted. It may be that admitted patients are younger or more serious cases than patients not admitted and as such their characteristics may differ.

Tables 1 and 2 (pages 6-14) contain all included, critically appraised papers. Appendices 1-3 contain excluded papers (and the reasons for exclusion), bibliography and search strategies. Seven descriptive studies (all graded 3) and set in ER are presented in **Table 1 (pages 6-10)**. Five descriptive studies (all graded 3) and set outwith ER are presented in **Table 2 (pages 11-14)**. Papers were excluded for several reasons: for meeting exclusion criteria (six papers), not addressing the above research question (six paper), multiple methodological shortcomings which were highly likely to give biased results (two papers), no follow-up data presented (one paper), suicide attempt/ideation data not analysed separately (one paper), information in paper dealt with in another paper (one paper), or providing level 4 (expert opinion) evidence only (one paper).

Individual study limitations are described in the comment section in **Tables 1 and 2 (pages 6-14)**.

Limitations to the review methodology that need to be considered in developing the suicide prevention guideline, include restriction to:

- articles published from 1990 onwards
- the published literature
- English language articles only
- reviewing each study by one researcher only
- study evaluation criteria did not cover aspects of statistical methodology such as the appropriateness of the data collected and the statistical tests used to analyses this.

In developing a guideline for suicide prevention, consideration will need to be given to studies published pre-1990. Important articles of interest were published in the pre-1990 time period so methods should be developed by the guidelines group to assess whether the new evidence presented in this review is sufficient to alter any recommendations included in previous evidence-based guidelines.

Restriction to the published literature is likely to lead to bias since the unpublished literature tends to consist of studies not identifying a significant result.

Restriction to English language may result in study bias, but the direction of this bias cannot be determined.

Only one of the articles appraised was set in New Zealand. Therefore, the generalisability of these studies to the New Zealand setting needs to be considered.

The studies were initially selected by examining the abstracts of these articles. Therefore, it is possible that some studies were inappropriately excluded prior to examination of the full text article.

There is a limitation on space in **Tables 1 and 2 (pages 6-14)** therefore, study details have been summarised.

This review was conducted over a limited timeframe (April 2002 – May 2002).

¹ In this context, outwith means not in the emergency room but still within a department or ward within a hospital.

Table 1. Evidence table of appraised articles conducted in ER

Title of review: What are the characteristics of repeating vs. non-repeating suicidal presenters to Emergency services?

Study; design type; evidence grading; country	Intervention/ comparison Outcome measure	Criteria for Inclusion/ Exclusion	Results/Outcome	Comments including methodological issues
(Batt et al. 1998) Descriptive study Grade 3 Country: France	Outcome measures: Characteristics of 1 st -ever parasuicide patients, 1 st -Rs and Major Rs.	Inclusion criteria: All cases admitted to A&E ward during 6 month study period (1 June 1994 – 30 Nov 1994).	Recruitment period 1 June 1994 – 30 Nov 1994 and f/u of six months. Patients all 15yrs of age or older. Two 14-year olds included as referred to A&E instead of paediatrics. 632 patients seen 534 assessed by psychiatrist and 98 were not assessed. 234/632 (37%) were male and 398 (63%) female. 59% of 1 st -evers were female c.f. 41% males (nss). 64% of 1 st -Rs were female c.f. 36% males (nss). 68% of major-Rs were female c.f. 46 males (nss). 45% 1 st -evers single c.f. 31% 1 st -Rs & 32% Major-Rs (p <.01). 38% 1 st -evers married/cohabiting c.f. 53% 1 st -Rs & 41% major-Rs (p <.01). 19% 1 st -evers lived alone c.f. 16% 1 st -Rs & 30% major-Rs (p <.01). 19% 1 st -evers unemployed c.f. 24% 1 st -Rs & 23% major-Rs (nss). 21% 1 st -evers were students c.f. 11% 1 st -Rs & 5% major-Rs (p <.001). 24% 1 st -evers chronic alcoholism c.f. 22% 1 st -Rs & 36% major-Rs (p <.01). 83% 1 st -evers psychiatric illness c.f. 83% 1 st -Rs & 82% major-Rs (nss). 5% 1 st -evers were early repeaters c.f. 12% 1 st -Rs & 22% major-Rs (p <.001).	<ul style="list-style-type: none"> ▪ 1st-evers were defined as patients attempting suicide for the 1st time, according to self-report ▪ 1st Rs were defined as patients who had a lifetime history of one previous parasuicidal episode ▪ major Rs were defined as patients whose had more than one previous parasuicidal episode ▪ an early repeater was defined as a patient whose suicidal act occurred within a f/u period of six months ▪ f/u period only six months – this makes it probable that information obtained does not portray an entirely accurate picture of repetition rates.
(Crawford et al. 1998) Descriptive study Grade 3 Country: England	Outcome measures: Characteristics of patients who repeated DSH with those that did not.	Inclusion criteria: All incidents of DSH presenting to A&E among patients registered with 16 randomly selected general practices in an inner city.	From 324 DSH patients, 16 were excluded because detailed data on their management was not available owing to missing hand-written notes in A&E. A further 14 were exclude as they were treated either by their GP or by mental health services and were never assessed in A&E. Of the 294 patients seen in A&E, 34 discharged themselves before assessment had been completed. 199 subjects were referred by A&E for psychiatric assessment and 61 were discharged after initial assessment. 54 patients repeated DSH during the 18-month follow-up period. Rs were more likely to have a history of DSH (95% CI = 2.0 - 9.0) and of substance misuse (95% CI = 1.1 - 3.7). Patients who discharged themselves from A&E before completion of initial assessment had three times the rate of repetition of DSH c.f. subjects who did complete the initial assessment.	<ul style="list-style-type: none"> ▪ study population includes DSH with or without suicidal intent. There is no breakdown of this factor mentioned ▪ methodological concerns: <ul style="list-style-type: none"> - possible bias due to patients not entered into the study only patients assessed in A&E were included in the study therefore results may not be generalisable to patients treated elsewhere - only repeaters who presented to A&E included in study therefore true repeat rates may be higher.

Table 1. Evidence table of appraised articles conducted in ER (continued)

Study; design type; evidence grading; country	Intervention/ comparison Outcome measure	Criteria for Inclusion/ Exclusion	Results/Outcome	Comments including methodological issues
<p>(Owens et al. 1994)</p> <p>Descriptive study</p> <p>Grade 3</p> <p>Country: England</p>	<p>Outcome measure: Repeat attendance at A&E with self-poisoning within one year from index case.</p>	<p>Inclusion criteria: All episodes of deliberate self-poisoning dealt with in A&E between Nov 1985 – July 1986.</p> <p>Cases were included if at arrival the clerical staff recorded present complaint as 'overdose' or 'self-poisoning'. In addition, A&E records of attendances were also examined weekly to detect those cases not identified at arrival (71 [6%] were identified in this way).</p>	<p>992 persons attended A&E on 1,096 occasions recorded between Nov 1985 – July 1986. Index cases f/u for one year to ascertain repetition.</p> <p>116 (12%) re-attended A&E due to self-poisoning within a year; of these 16 (1.5%) repeated twice and 11 (1%) more than twice.</p> <p>Study group consisted of 600 females and 392 males.</p> <p>Risk factors: More than one drug ingested (40% Rs Vs 29% NRs, 95% CI = 2 - 21). Previous self-poisoning prior to index attempt (57% Rs Vs 32% NRs, 95%CI = 14 - 35). Past psychiatric contact (59% Rs Vs 38% NRs, 95% CI 10 - 32). Past psychiatric admission (39% Rs Vs 21% NRs, 95% CI 7 - 29). Not in paid employment (81% Rs Vs 64% NRs, 95% CI 8 - 27). Express threat or left note (24% Rs Vs 36% NRs, 95% CI 2 - 22). No analysis on gender issues given.</p>	<ul style="list-style-type: none"> ▪ at the time of the study it was hospital policy for DSH patients to be dealt with first in A&E, not admitted directly to medical wards ▪ in addition to routine clinical information recorded on each patient, A&E medical staff completed a research checklist of risk factors derived from published research findings ▪ from A&E attendance records, used to check for any repetition of self-poisoning within one year from the date of each patient's inclusion in the study ▪ some information missing from the checklists was recorded in A&E case notes, but even so the valid sample size for each risk factor varies ▪ the checklist included only those items which could be collected by A&E staff; many of them are self-reported by the patients or confirmed by their relatives this could mean values are underestimates ▪ methodological disadvantages include: <ul style="list-style-type: none"> - patients admitted directly to inpatient wards were not included. These may have been more serious cases with more chance of repeating. This may have introduced a bias into the results - it may be that some cases of repetition were not detected by methods of follow-up - failure to fill in checklists was not a random event and the completion rate was lower among male patients who arrived during the night, and those who were very drowsy or unconscious therefore some systematic error seems likely although the direction of the effect is uncertain - limited to self-poisoning patients therefore results may not be generalisable to patients who use other methods of suicide attempt/ or self harm.

Table 1. Evidence table of appraised articles conducted in ER (continued)

Study; design type; evidence grading; country	Intervention/ comparison Outcome measure	Criteria for Inclusion/ Exclusion	Results/Outcome	Comments including methodological issues
<p>Peterson et al. 1990)</p> <p>Descriptive study</p> <p>Grade 3</p> <p>Country: USA</p>	<p>Comparison: A randomly drawn sample of 100/294 Rs c.f. 100/324 NRs.</p> <p>Outcome measure: Repeat presentation for suicidal ideation and behaviours (suicidal crisis) within the one year study period.</p>	<p>Inclusion criteria: A randomly selected cohort selected from all patients who presented to EMHS with suicide crisis.</p>	<p>Study period 1 July 1985 – 30 June 1986.</p> <p>52.1 % of NRs were male c.f. 52.7% of Rs nss.</p> <p>17.7% of NRs married c.f.10.2% Rs (nss).</p> <p>The mean age of NRs was 29yrs c.f. 31yrs in Rs (p = .033).</p> <p>No meaningful comparisons based on ethnicity possible, as 94% were Caucasian.</p> <p>Rs had more often made a suicide attempt prior to their first visit for the index year c.f. NRs (41 Vs 17%, p = .001).</p> <p>Rs more often had previous inpatient hospitalisations c.f. NRs (p = .001).</p> <p>66% of NRs c.f. 69% of Rs reported alcohol/drug misuse (nss).</p> <p>Alcohol/substance abuse at time of index visit was 35% for NRs c.f. 25% Rs nss.</p> <p>Rs were more likely than NRs to meet the DSM-III criteria for schizophrenia or personality disorder at time of index visit (p ≤ .001, p = .017). There was no difference between the two groups in the percentage meeting the DMS-III criteria for affective disorder.</p> <p>54% of Rs on psychotropic medication c.f. 27% NRs (p = .001).</p>	<ul style="list-style-type: none"> ▪ the NRs sample was checked against the EMHS patient registrations for 12 months f/u (1986-1987) to assure that it was truly a sample of NRs ▪ Rs defined as patients who resented more than once, in the study period, to the EMHS and presented with suicide crisis. NRs defined as those patients who only presented once during the study period with suicide crisis ▪ methodological concerns: <ul style="list-style-type: none"> - actual numbers are often missing and only diagrams and p numbers give hence no opportunity to check data - patients with a past history of DSH or DSP prior to study period were not classed as Rs hence true rates of NRs are not known - the inclusion of ideators may make the present sample clinically different from studies restricted to attempters only.

Table 1. Evidence table of appraised articles conducted in ER (continued)

Study; design type; evidence grading; country	Intervention/ Comparison Outcome measure	Criteria for Inclusion/ Exclusion	Results/Outcome	Comments including methodological issues
(Stewart et al. 2001) Descriptive study Grade 3 Country: Canada	Comparison: ER service utilisation following suicide attempt. Outcome measure: Future suicide attempts within six months following 1 st ER visit.	Inclusion criteria: All suicidal youths with first presentation to ER between April 1 st 1997 and March 31 st 1998. Exclusion criteria: Psychiatric related ER visit in previous three years.	Between 1 Apr 1997 – 31 Mar 1998 246 suicidal individuals had a first presentation to ER. Chart coding errors led to 22 exclusions, leaving 224 subjects in cohort. Age range 7-19 yrs (mean 14.6 ± 2.1), 158 (70.5%) were female. 139 (62.1%) received psychiatric consultation, 21 (9.4%) were seen by a crisis social worker, and 54 (24.1%) were admitted to hospital. There were no completed suicides in the study cohort in the six month f/u. 55 subjects' re-attempted suicide in the six month f/u, 24 required subsequent admission. 20/54 subjects initially admitted re-attempted. 5/27 non-compliant with outpatient referrals re-attempted. Significant characteristics for re-attempt were: age 15-19 (38/55, RR1.71, p = .033). past foster/group home placement (19/55, RR 1.84, p = .012). presenting with a plan (24/55, RR 2.09, p = .003). past psychiatric contact (44/55, RR 2.54, p = .001). substance intoxication at initial ER visit (9/55, RR 0.37, p = .001). substance use in general (34/55, RR 2.91, p = .001). mood symptoms (35/55, RR 2.70, p = .001).	Possible limitations: <ul style="list-style-type: none"> ▪ used charts as a data source ▪ majority of predictors determined solely from self-reporting could mean values are underestimates ▪ the cohort size precluded variable interaction analysis and statistical modelling ▪ three coders were used – the lack of inter-rater reliability ratings for chart coders was a weakness ▪ using chart data from subsequent ER presentations and future suicide attempts does not permit a comprehensive evaluation of outcomes ▪ it is likely that a great deal of morbidity and future attempts remained undetected by the methodology used (e.g., only six month f/u so short term repetition) ▪ the age range of the study population (7-19yrs) means that the results may not be generalisable to other groups of people who DSP/DSH.

Table 1. Evidence table of appraised articles conducted in ER (continued)

Study; design type; evidence grading; country	Intervention/ Comparison Outcome measure	Criteria for Inclusion/ Exclusion	Results/Outcome	Comments including methodological issues
(Suokas et al. 2001) Descriptive study Grade 3 Country: Finland	Outcome measure: Suicide risk over 14 year follow-up period after attempted suicide by DSP.	Inclusion criteria: Consecutive DSP treated in ER during 1983. Exclusion criteria: Suicide attempt by methods other than poisoning (approx. 15%).	1,018 people made 1,207 suicide attempts by DSP in 1983, 14 year f/u period. 54% of subjects less than 35 years old; 53% were women; 65% belonged to III-IV social classes. By end of follow-up period (14yrs) 68 (6.7%) people had committed suicide, 24 (4.5%) women and 44 (9.2%) men. 75% of those who committed suicide attempted suicide before the index attempt; only eight men and eight women had not done so (p = 0.001). 50% of suicides occurred during the first two years of f/u. Significant characteristics for re-attempt were: male sex (RR 2.82, p = .001). previous suicide attempt (RR 1.99, p = .044). somatic disease (RR 3.32, p = .045). wish to die' as motive for the index suicide attempt (RR 2.92, p = .001). previous psychiatric treatment (RR 2.40, p = .032).	<ul style="list-style-type: none"> ▪ methodological concerns: <ul style="list-style-type: none"> - only the suicides officially recorded as certain suicides were used in this study this means that future attempts that were unsuccessful remained undetected - the index suicide attempt was defined as first admission to ER for DSP in 1983. This may have introduced ascertainment bias which may have tended to include a greater proportion of Rs in the sample - actual numbers for each event not given so data cannot be checked - limited to self-poisoning patients therefore results may not be generalisable to patients who use other methods of suicide attempt/ or self harm.
(Taylor et al. 1998) Descriptive study Grade 3 Country: Australia	Outcome measures: Further presentation to ER with a diagnosis of DSP or DSH. Mortality status 12 months after study period.	Inclusion criteria: All records of DSP who presented alive to emergency department.	Study period 1 Jan 1993 – 31 Dec 1994 + f/u 12 months. 335 NRs and 46 Rs who made a total of 106 presentations (mean = 2.3 presentations per repeater). 225 (67.2%) NRs were female and 31 (67.4%) Rs were female nss. The largest age group of NRs was 15 – 24 (n = 132, 39.4%) nss. The largest age group of Rs was 25 - 34 (n = 19, 41.3%) nss. The Rs had a greater proportion of single drug overdoses nss. Five (10.9%) Rs c.f. 8 (2.4%) NRs cause DSH as well as DSP during the study period (RR .20, p = .007). Three (0.68%) NRs and 0 Rs died in hospital as a result of their DSP.	<ul style="list-style-type: none"> ▪ NRs defined as a patient who made a single presentation only, after DSP, during the study period ▪ Rs were defined as a patient who made two or more presentations, after DSP, during the study period ▪ methodological problems: <ul style="list-style-type: none"> - some DSP may not have sought medical care or more have been managed by other health care providers - as the study only include patients who presented alive to the ER it was not possible to determine if any known NRs or Rs died outside of hospital during or after the study period - limited to self-poisoning patients therefore results may not be generalisable to patients who use other methods of suicide attempt/ or self harm.

Table 2. Evidence table of appraised articles not conducted in ER

Study; design type; evidence grading; country	Intervention/ comparison Outcome measure	Criteria for Inclusion/ Exclusion	Results/Outcome	Comments including methodological issues
Carter et al. (1999) Descriptive study Grade 3 Country: Australia (NSW)	Outcome measure: DSP admissions within one year, within six months, and within 28 days of any other DSP admission by the same patients; demographic characteristics of the subjects.	All DSP referred to the Hunter Area Toxicology Service (HATS).	175 patients (14.1%) Repeated DSP during the study (1 Jan 1992 – 31 Dec 1995); 165 (13.3%) within the 1 st year; 56 of these 165 Rs within 28 days and 123 Rs within six months. Age range 10-89yrs When adjusted for the other variables under consideration results showed that: The male:female ratio for Rs was 1:1.9 (OR = 1.69, CI 1.17 - 2.46). 15.8% Rs were married or in de facto relationships (OR = 0.55, CI 0.31 - 0.96). Rs were more likely to be 25-34 years old (OR = 2.24, 1.17 - 4.29) or 35 - 44 (OR = 2.12, CI 1.02 - 4.39) than the 10 - 18 year-age-group. Employment status was nss.	<ul style="list-style-type: none"> ▪ a number of patients seek hospital attention for DSP without coming to the attention of HATS, and some patients may not disclose that their self-poisoning was deliberate ▪ results could have been affected by the existence of the single centralised services ▪ the cohort was defined using the 1st admission in the study period as the index admission. This may have introduced ascertainment bias, which may have tended to include a greater proportion of RSDP in the sample ▪ study limited to DSP therefore results may not be generalisable to patients who use other methods of suicide attempt or self harm ▪ some of the patients studied were under 12 yrs and as such fell into the exclusion criteria. These patients were analysed with the rest of the cohort and there was no way to exclude them. This may have affected the results however the age range was wide and as such the affect should be small.
(Evans et al. 1996) Descriptive study Grade 3 Country: England	Outcome measures: Self-completed Impulsiveness questionnaire (I-V-E) was administered prior to psychiatric interview and recording of history of previous DSH.	Inclusion criteria: Patients admitted to general wards following DSH and who were referred for psychiatric assessment.	Six month recruitment period from Oct '94' - Mar '95'. 243 subjects admitted and referred for psychiatric assessment following DSH. 185 (76%) completed the self-report I-V-E questionnaire. Eight (3%) subjects discharged themselves before psychiatric assessment, 20 (8%) patients did not wish to complete the questionnaire, and 30 (12%) cases the data was incomplete. Of the 185 subjects, 82 (44%) had presented for the first time after DSH and 103 (66%) had a history of one or more previous episodes of DSH. The mean impulsiveness scores for 1 st timers was 10.44 (SD 3.85) c.f. 12.35 (SD 4.5) (p = .002) for Rs. After normative data transformed to produce the standardised difference from that expected for given age and sex z-impulsiveness scores for 1 st timers were 0.69 (SD 1.05) c.f. 1.13 (SD 0.95) (p = .003) for Rs. Using normative data the expected impulsive scores from age and sex distribution of the 1 st timers was compared to the normal population. Using a 99% CI the results for the normal population was 6.36 - 8.88 and for 1 st timers was 9.16 - 11.72. As there is no overlap results show 1 st timers were significantly more impulsive than expected compared to members of the normal population.	<ul style="list-style-type: none"> ▪ no data given on in-patients admitted and not referred for psychiatric assessment ▪ methodological concerns: <ul style="list-style-type: none"> - predictors determined solely from self-completed questionnaires - while nss difference in age and sex was reported between the 185 subjects who did take part in the study and the 58 subjects who did not take place in the study they may have been a significant difference in impulsiveness - the impulsiveness score among 1st timers may have been increased by those individuals who go on to repeat and who are likely to be more impulsive than the rest of the 1st timers - a diversity of scales exists for measuring impulsiveness, suggesting that there is no coherent conceptual framework for understanding impulsiveness. However the impulsiveness scale used in this study has been refined over the years by empirical factor analyses, and has good test-retest reliability - it is likely that a great deal of morbidity and future attempts remained undetected by the methodology used.

Table 2. Evidence table of appraised articles not conducted in ER (continued)

Study; design type; evidence grading; country	Intervention/ comparison Outcome measure	Criteria for Inclusion/ Exclusion	Results/Outcome	Comments including methodological issues
<p>(Hjelmeland et al. 1996)</p> <p>Descriptive study</p> <p>Grade 3</p> <p>Country: Norway</p>	<p>Outcome measures: Characteristics predictive of repetition for parasuicide amongst interviewed parasuicide patients.</p>	<p>Inclusion criteria: Continuous monitoring of all medically treated parasuicides aged 15 or older occurring in the county of Sor-Trondelag, Norway for six years.</p>	<p>2,344 parasuicide episodes registered between 1 Oct 1988 – 31 Dec 1994 involving 1,711 different persons. 974 females and 737 males.</p> <p>1,220 (71%) of the 1711 patients interviewed. (732 females and 488 males) only interviewed patients entered into study. Females (75%) were more often interviewed than males (66%) (χ^2 15.95 $p < .001$) Interviewed patients were older (mean 36.9yrs, SD 14.6) c.f. non-interviewed patients (mean 34.0yrs, SD 14.3) $p < .001$.</p> <p>Retrospective analysis showed significant characteristics were: 77/571 Rs unmarried c.f. 67/586 NRs (χ^2 11.32, $p < .001$; Wald 8.46, $p < .01$). 33/571 Rs changed address in last 12 months c.f. 26/586 NRs (χ^2 6.39, $p < .05$; Wald 4.71, $p < .05$). 69/571 Rs unemployed c.f. 59/586 NRs (χ^2 11.29, $p < .001$; Wald 11.84, $p < .003$). 74/571 Rs contact health care previous month c.f. 64/586 NRs (χ^2 12.55, $p < .001$; Wald 14.86, $p < .003$). 40/571 Rs alcoholic abuse c.f. 21/586 NRs (χ^2 40.59, $p < .001$; Wald 43.02, $p < .003$). 53/571 Rs drug abuse c.f. 42/586 NRs (χ^2 11.24, $p < .001$; Wald 11.62, $p < .003$). 39/571 Rs victims of violence c.f. 26/586 NR (χ^2 19.22, $p < .001$; Wald 19.80, $p < .003$). 25/571 Rs suffered sexual abuse c.f. 11/586 NRs (χ^2 17.38, $p < .001$; Wald 16.66, $p < .003$). 25/571 Rs had criminal record c.f. 13/586 NRs (χ^2 22.53, $p < .001$; Wald 23.20, $p < .003$). 38/571 Rs self-reported main problem psychiatric c.f. 28/586 NRs (χ^2 10.40, $p < .05$; Wald 11.86, $p < .003$). 36/571 Rs parasuicide among relatives/friends c.f. 29/586 NRs (χ^2 4.69 $p < .05$; Wald 3.64, $p > .05$).</p> <p>Prospective analysis showed the following were significant characteristics of first-timers who repeated within the next 12m: 26/46 Rs lifetime history of sexual abuse c.f. 11/461 NRs (χ^2 3.40, $p < .05$ Wald 4.61, $p < .05$) and 43/46 Rs self-reported main problem: psychiatric c.f. 27/461 NRs (χ^2 3.25, nss; Wald 3.96, $p < .05$).</p> <p>Prospective analysis showed the following were significant characteristics for patients with prior history of parasuicide who repeated within 12m: 49/85 Rs abusing alcohol c.f. 37/424 NRs (χ^2 3.88 $p < .05$; Wald 5.78, $p < .05$) and 38/85 Rs reported parasuicide among relatives/friends c.f. 35/424 NRs (χ^2 0.09, nss; Wald 4.06, $p < .05$).</p> <p>Wald – adjusted for age and sex.</p>	<ul style="list-style-type: none"> ▪ part of the WHO/Euro Multicentre Study on parasuicide monitoring forms completed which contained information on socio-demographic and clinical/psychological variables ▪ interviews also conducted ▪ Basic information (i.e., age and gender) obtained from clinical files ▪ interviews conducted by experienced psychiatric nurses, psychologists, psychiatrists or medical doctors. When interview not possible basic information (i.e., age and gender) was obtained from clinical files ▪ Wald calculations are presented after sex and age have been adjusted for ▪ study limitation: the definition used for parasuicide includes actual suicide attempts and self-injury without intent ▪ methodological limitations: <ul style="list-style-type: none"> - due to high number of analyses a Bonferroni correction should have been carried out to see if results still significant - some cases of parasuicide may not have been registered - possible bias as high % not included in analysis as failed to complete an interview.

Table 2. Evidence table of appraised articles not conducted in ER (continued)

Study; design type; evidence grading; country	Intervention/ comparison Outcome measure	Criteria for Inclusion/ Exclusion	Results/Outcome	Comments including methodological issues
<p>(Morton 1993)</p> <p>Descriptive study</p> <p>Grade 3</p> <p>Country: Scotland</p>	<p>Characteristics of parasuicide Rs c.f. NRs to ascertain the variables which discriminated the two groups.</p> <p>Characteristics, which predict repetition of DSH within a calendar year of index admission, were identified.</p>	<p>All male patients admitted with parasuicide to the RPTC in 1984-86 aged between 16-64 years, economically active and resident in Edinburgh.</p>	<p>Study period 1 Jan 1984 – 31 Dec 1986.</p> <p>In 1984 there were 254 NRs c.f. 92 (28%) Rs.</p> <p>In 1985 there were 310 NRs c.f. 47 (13.2%) Rs.</p> <p>In 1986 there were 287 NRs c.f. 47 (14.1%) Rs.</p> <p>Results from the 1984 cohort showed:</p> <p>165 NRs were aged 15-34 c.f. 42 Rs and 72 NRs were aged 35-64 c.f.50 Rs (χ^2 15.31, $p < .001$).</p> <p>113 NRs social class I-III c.f. 25 Rs and 77 NRs social class IV-V c.f. 54 Rs (χ^2 16.2, $p < .001$).</p> <p>56/227 NRs depression diagnosed c.f. 10/89 Rs, and 16/227 NRs other psychiatric illness diagnosed c.f. 19/89 Rs (χ^2 20.96, $p < .001$).</p> <p>73/227 NRs had alcohol problems c.f. 44/87 Rs (χ^2 8.35, $p < .01$).</p> <p>112/220 NRs unemployed c.f. 66/90 Rs (χ^2 12.23, $p < .001$).</p> <p>75/224 NRs c.f. 36/67 Rs previous psychiatric treatment (χ^2 23.27, $p < .001$).</p> <p>Variables which predicted repetition of parasuicide in 1985:</p> <p>44/288 NRs depression diagnosed c.f. 5/55 Rs, and 23/288 NRs other psychiatric illnesses diagnosed c.f. 20/55 Rs (χ^2 9.8, $p < .05$).</p> <p>174/283 NRs unemployed c.f. 37/47 Rs (χ^2 5.2, $p < .05$).</p> <p>98/292 NRs c.f. 29/44 Rs previous psychiatric treatment (χ^2 17.02, $p < .001$).</p> <p>79/310 NR c.f.26/49 R previous parasuicide (χ^2 17.5, $p < .001$).</p> <p>Variables which predicted repetition of parasuicide in 1986:</p> <p>31/272 NRs depression diagnosed c.f. 4/44 Rs, and 25/272 NRs other psychiatric illness diagnosed c.f. 10/44 Rs (χ^2 7.1, $p < .05$).</p> <p>154/277 NRs had alcohol problems c.f. 14/45 Rs (χ^2 8.35 $p < .01$).</p> <p>171/273 NRs unemployed c.f. 35/44 Rs (χ^2 4.76, $p < .05$).</p> <p>113/272 NRs c.f. 37/52 Rs previous psychiatric treatment (χ^2 7.62, $p < .01$).</p> <p>83/287 NRs c.f. 24/47 Rs previous parasuicide (χ^2 9.1, $p < .01$).</p> <p>Repetition rates were higher in both 1985 & 1986 for men who where unemployed for more than 52 weeks Vs less than 52 weeks:</p> <p>1985 26/123 >52wks 9/78 <52wks (RR 1.8).</p> <p>1986 29/133 >52wks 6/70 <52wks (RR 2.5).</p>	<ul style="list-style-type: none"> ▪ characteristics, which were identified in 1984 cohort as predictors of repetition, were prospectively studied to see if they predicted repetition in the 1985 and 1986 cohorts ▪ methodological concerns: <ul style="list-style-type: none"> - any individual admitted more than once counted only once in that year. However, individuals could be admitted in more than one calendar year and could therefore be represented more than once in the course of the study - a major limitation is that the study is restricted to patients treated in a general hospital. This is likely to have led to an underestimate of repetition - combining some variables (e.g., social class IV and V) means possible differences are missed - the decision to use 'previous admission to the RPTC' as an indicator of previous parasuicide means that the number of repeaters in the sample will be underestimated - a major limitation was that the study was limited to men and as such is not generalisable to wider populations.

Table 2. Evidence table of appraised articles not conducted in ER (continued)

Study; design type; evidence grading; country	Intervention/ comparison Outcome measure	Criteria for Inclusion/ Exclusion	Results/Outcome	Comments including methodological issues
(Petrie et al. 1992) Descriptive study Grade 3 Country: New Zealand	Outcome measures: Re-admitted for further attempt or completed suicide in the intervening period and patient wellbeing as assessed by BHS, the Self-Esteem Inventory for Adults (SEIA) and the Sense of Coherence Scale (SOC). Each participant's hospital notes were examined for further attempts six months after their parasuicide and public records searched for mortality data.	Inclusion criteria: Consecutive parasuicide admissions identified by A&E staff.	150 hospitalised parasuicides f/u for six months (five patients approached refused to participate). Time period of study not given. 111 (74%) females and 39 males. 67 were first attempters, 40 had made two attempts and 43 had made 3+. 16 (11%) of subjects were hospitalised for another parasuicide in the six months following their index admission. Three (2%) subjects had committed suicide. Grouping the subjects by Rs Vs NRs and applying the six psychological variables - depression, hopelessness, self-esteem, and the three SOC subscales - correctly identified 58% of the Rs and 60% correctly classified the two groups overall. Similarly using only hopelessness, depression and self-esteem correctly classified 53% Rs and 55% overall. The background variables, which had the largest discriminant function coefficients, were age (.56), employment (-.52), alone (.40) and previous attempts (-.34) all significant ($p < .01$). Of the psychological predictors, comprehensibility made the largest contribution to the discriminant function (.44), followed by hopelessness (.27) and meaning (.24) all significant ($p < .01$).	<ul style="list-style-type: none"> ▪ the time period for recruitment to the study and the year the study took place are not given ▪ the study used a computerised interview initially and postal questionnaires at f/u. No information is given on who carried out the computerised interview ▪ methodological concerns: <ul style="list-style-type: none"> - it is likely that a great deal of morbidity and future attempts remained undetected by the methodology used (e.g., only six month f/u so short term repetition) - a major limitation is that the study is restricted to patients admitted to hospital - it may be that some cases of repetition were not detected by methods of follow-up. Repetition was assessed by examining the hospital notes of the original cohort for re-admission for further suicide attempts (episodes treated by A&E and then discharged or episodes treated by GP and/or no treatment sought not recorded). This is likely to have led to an underestimate of repetition.

Synopsis

This particular section of the suicide project lends itself to a synopsis of the studies appraised.

Overall, the evidence suggests that no firm conclusions can be reached on the characteristics of repeating vs. non-repeating suicidal presenters which is largely due to the limited number of trials that have taken place and to the small size of most of these trials. Different studies produced conflicting results (see **Table 3**) which add to the problem. There is some evidence to suggest that repeat suicide attempts are more common amongst people with a history of psychiatric contact/illness, psychiatric admission, a past history of DSH/DSP, people who abuse drugs/alcohol, the unemployed, the unmarried and people who expressed threat/left note/plan. More research is needed in this area.

Table 3. Number of studies identified, which examined characteristics, associated with repetition of suicide

Characteristic for repetition of suicide attempt	Number of studies which found characteristic significant	Number of studies which found characteristic not significant
Psychiatric contact/illness	5	1
Past history of DSP/DSH	5	
Alcohol abuse	4	
Drug abuse	3	
Unemployed	3	2
Unmarried	3	
Expressed threat/left note/plan	3	
Psychiatric admission	2	
Older age	2	1
Young age	1	2
Past foster home/group home	1	
Male sex	1	1
Female sex	1	
Impulsiveness trait	1	
Changed address in last 12 months	1	
Contacted health care in month before attempt	1	
Victim of violence	1	
Victim of sexual abuse	1	
Criminal record	1	
Parasuicide among family/friends	1	
Depression/hopelessness	1	
Lower social class	1	

Appendix 1: Search strategies

CINAHL

- 1 suicide, attempted/ or suicide/ or "suicide prevention (iowa nic)"/ (1848)
- 2 Self-Injurious Behavior/ or Injuries, Self-Inflicted/ (262)
- 3 suicid\$.tw. (2193)
- 4 parasuicid\$.tw. (38)
- 5 or/1-4 (3002)
- 6 Recurrence/ (1588)
- 7 recrudesc\$.tw. (12)
- 8 repeat\$.tw. (4158)
- 9 recurr\$.tw. (2765)
- 10 repetition.tw. (457)
- 11 non repeat\$.tw. (2)
- 12 first time\$.tw. (871)
- 13 single episode\$.tw. (14)
- 14 ((first or second or third or multiple) adj2 attempt\$).tw. (144)
- 15 or/6-14 (9163)
- 16 exp Emergency Service/ (3944)
- 17 Psychiatric Emergencies/ (207)
- 18 Acute Disease/ (1199)
- 19 emergenc\$.tw. (10728)
- 20 acute.tw. (13822)
- 21 or/16-20 (25651)
- 22 5 and 15 and 21 (14)
- 23 (5 and 15) not 22 (43)
- 24 22 or 23 (57)
- 25 limit 24 to (english and yr=1990-2002) (55)
- 26 from 25 keep [SELECTED REFERENCES] (4)

CURRENT CONTENTS

- 1 suicid\$.tw. (12253)
- 2 parasuicid\$.tw. (268)
- 3 1 or 2 (12316)
- 4 recurr\$.tw. (76798)
- 5 repetition.tw. (7813)
- 6 repeat\$.tw. (111594)
- 7 non repeat\$.tw. (119)
- 8 recrudesc\$.tw. (705)
- 9 first time\$.tw. (51253)
- 10 single episode\$.tw. (360)
- 11 ((first or second or third or multiple) adj2 attempt\$).tw. (3309)
- 12 or/4-11 (245118)
- 13 emergenc\$.tw. (48506)
- 14 acute.tw. (156799)
- 15 13 or 14 (199524)
- 16 3 and 12 and 15 (89)
- 17 limit 16 to english language (76)
- 18 from 17 keep [SELECTED REFERENCES] (7)

EMBASE

- 1 suicidal behavior/ or self poisoning/ or suicide/ or suicide attempt/ (12798)
- 2 Automutilation/ (1894)
- 3 suicid\$.tw. (13765)
- 4 parasuicid\$.tw. (275)
- 5 deliberate self harm.tw. (224)
- 6 or/1-5 (18745)
- 7 Recurrent Disease/ (20275)
- 8 recrudesc\$.tw. (785)
- 9 repeat\$.tw. (115176)
- 10 recurr\$.tw. (105377)
- 11 repetition.tw. (4242)
- 12 non repeat\$.tw. (94)
- 13 first time\$.tw. (24669)
- 14 single episode\$.tw. (477)
- 15 ((first or second or third or multiple) adj2 attempt\$.tw. (2357)
- 16 or/7-15 (251065)
- 17 emergency health service/ or emergency/ or emergency ward/ or emergency treatment/ (15621)
- 18 acute disease/ (3956)
- 19 emergenc\$.tw. (46578)
- 20 acute.tw. (230131)
- 21 or/17-20 (273220)
- 22 6 and 16 and 21 (175)
- 23 (6 and 7) not 22 (100)
- 24 22 or 23 (275)
- 25 limit 24 to (english language and yr=1990-2002) (205)
- 26 from 25 keep [SELECTED REFERENCES] (10)

MEDLINE

- 1 suicide/ or suicide, attempted/ (23084)
- 2 exp Self-Injurious Behavior/ (3508)
- 3 suicid\$.tw. (22615)
- 4 parasuicid\$.tw. (400)
- 5 or/1-4 (34099)
- 6 Recurrence/ (86806)
- 7 recrudesc\$.tw. (1401)
- 8 repeat\$.tw. (167394)
- 9 recurr\$.tw. (159846)
- 10 repetition.tw. (6514)
- 11 non repeat\$.tw. (131)
- 12 first time\$.tw. (32421)
- 13 single episode\$.tw. (660)
- 14 ((first or second or third or multiple) adj2 attempt\$.tw. (3284)
- 15 or/6-14 (406196)
- 16 emergency service, hospital/ (16390)
- 17 acute disease/ (117179)
- 18 Emergency Services, Psychiatric/ (1188)
- 19 emergenc\$.tw. (77751)
- 20 acute.tw. (392835)
- 21 or/16-20 (493157)
- 22 5 and 15 and 21 (231)
- 23 limit 22 to (english language and yr=1990-2002) (127)
- 24 from 23 keep 4,9-10,22,24,87,93,98,122 (9)
- 25 (5 and 6) not 22 (439)

- 26 limit 25 to (english language and yr=1990-2002) (250)
 27 from 26 keep [SELECTED REFERENCES] (26)

PSYCINFO

- 1 attempted suicide/ or suicidal ideation/ or suicide/ or suicide prevention/ or suicide prevention centers/ (13136)
 2 suicid\$.tw. (19526)
 3 parasuicid\$.tw. (504)
 4 or/1-3 (19807)
 5 exp "RELAPSE (DISORDERS)"/ (2644)
 6 recrudesc\$.tw. (44)
 7 recurr\$.tw. (7424)
 8 repeat\$.tw. (23164)
 9 repetition.tw. (5407)
 10 non repeat\$.tw. (20)
 11 repeat\$.tw. (23164)
 12 first time\$.tw. (1690)
 13 single episode\$.tw. (156)
 14 ((first or second or third or multiple) adj2 attempt\$.tw. (684)
 15 or/5-14 (38940)
 16 emergency services/ or crisis intervention services/ (2319)
 17 acute.tw. (21480)
 18 emergenc\$.tw. (12400)
 19 or/16-18 (33935)
 20 4 and 15 and 19 (110)
 21 4 and 5 (57)
 22 20 or 21 (153)
 23 limit 22 to (english language and yr=1990-2002) (93)
 24 from 23 keep [SELECTED REFERENCES] (7)

Appendix 2: Bibliography of included studies

INCLUDED, CRITICALLY APPRAISED STUDIES

Batt A., Eudier F., Le Vaou P., Breurec J., Baert A., Curtes J., Badiche A. & Chaperon J. (1998). Repetition of parasuicide: Risk factors in general hospital referred patients. *Journal of Mental Health*, 7, 285-297.

Carter G., Whyte I., Ball K., Carter N., Dawson A., Carr V. & Fryer J. (1999). Repetition of deliberate self-poisoning in the Australian hospital-treated population. *Medical Journal of Australia*, 170, 7, 307-311.

Crawford M. & Wessely S. (1998). Does initial management affect the rate of repetition of deliberate self-harm? Cohort study. *BMJ*, 317, 985.

Evans J., Platts H. Liebenau A. (1996). Impulsiveness and deliberate self-harm: a comparison of 'first-timers' and 'repeaters'. *Acta Psychiatrica Scandinavica*, 93, 378-380.

Hjelmeland H. & Polit C. (1996). Repetition of parasuicide: a predictive study. *Suicide & Life-Threatening Behavior*, 26, 395-404.

Morton MJ. (1993). Prediction of repetition of parasuicide: with special reference to unemployment. *International Journal of Social Psychiatry*, 39, 87-99.

Peterson L. & Bongar B. (1990). Repetitive suicide crisis: Characteristics of repeating versus nonrepeating suicidal visitors to a psychiatric emergency service. *Psychopathology*, 23, 136-145.

Petrie K. & Brook R. (1992). Sense of coherence, self-esteem, depression and hopelessness as correlates of reattempting suicide. *British Journal of Clinical Psychology*, 31, 293-300.

Owens D., Dennis M., Read S. & Davis N. (1994). Outcome of deliberate self-poisoning: An examination of risk factors for repetition. *British Journal of Psychiatry*, 165, 797-801.

Stewart S., Manion I., Davidson S. & Cloutier P. (2001). Suicidal children and adolescents with first emergency room presentations: predictors of six-month outcome. *Journal of American Academy of Child & Adolescent Psychiatry*, 40, 580-587.

Suokas J., Suominen K., Isometsa E., Ostamo A. & Lonnqvist J. (2001). Long-term risk factors for suicide mortality after attempted suicide - findings of a 14-year follow-up study. *Acta Psychiatrica Scandinavica*, 104, 117-121.

Taylor D., Cameron P. & Edey D. (1998). Recurrent overdose: patient characteristics, habits and outcomes. *Journal of Accident & Emergency Medicine*, 15, 257-261.

Appendix 3: Bibliography of excluded studies

EXCLUDED, RETRIEVED STUDIES

The following papers were reviewed but rejected for inclusion in the analysis:

Appleby L. & Warner R. (1993). Parasuicide: Features of repetition and the implications for intervention. *Psychological Medicine*, 23, 13-16.

Retrieved for background purposes only, no intervention tested.

Benoit M., Jaubert M., Askenazy F., Robert PH., Pringuey D. & Darcourt G. (2000). Impact of depression, impulsivity and recent life-events in first-time and repeat suicide attempts. *European Psychiatry*, 15, 275S

Study fails to address the question.

Bille-Brahe U. & Jessen G. (1994). Repeated suicidal behavior: a two-year follow-up. *Crisis*, 15, 77-82.

While the study addresses relevant material the results are given in a confused manner which makes interpretation difficult.

Bille-Brahe U., Kerkhof A., De Leo D., Schmidtke A., Crepet P. Lonnqvist J., Michel K. et al. (1996). A repetition-prediction study on European parasuicide populations. *Crisis*, 17, 22-31.

Intermediate report of a study being carried out. Data only involved a comparison of subjects at different centres. No characteristics of repeaters vs. non-repeaters covered.

Goldston D., Daniel S., Reboussin D., Kelley A., Ievers C. & Brunstetter R. (1996). First-time suicide attempters, repeat attempters, and previous attempters on an adolescent inpatient psychiatry unit. *Journal of the American Academy of Child & Adolescent Psychiatry*, 35, 631-639.

Fails to address the question.

Goldston D., Daniel S., Reboussin B., Reboussin D., Kelley A. & Frazier P. (1998). Psychiatric diagnosis of previous suicide attempters, first-time attempters, and repeat attempters on an adolescent inpatient psychiatry unit. *Journal of the American Academy of Child & Adolescent Psychiatry*, 37, 924-932.

Fails to address the question.

Hawton K., Fagg J. & Simkin S. (1996). Deliberate self-poisoning and self-injury in children and adolescents under 16 years of age in Oxford, 1976-1993. *British Journal of Psychiatry*, 169, 202-208.

While the study addresses relevant material no statistical tests had been carried out.

Hawton K., Kingsbury S., Steinhardt K., James A. & Fagg J. (1999). Repetition of deliberate self-harm by adolescents: the role of psychological factors. *Journal of Adolescence*, 22, 369-378.

Paper meets exclusion criteria as study population primarily those presenting with DSH in absence of suicide intent.

Hjelmeland H., Stiles T., Bille-Brahe U., Ostamo A., Salander-Renberg E. & Wasserman D. (1998). Parasuicide: The value of suicidal intent and various motives as predictors of future suicidal behaviour. *Archives of Suicide Research*, 4, 209-225.

Fails to address the question, characteristics of repeaters and non-repeaters not examined.

Hulten A., Jiang GX., Wasserman D., Hawton K., Hjelmeland H., De Leo D., Ostamo A. et al. (2001). Repetition of attempted suicide among teenagers in Europe: frequency, timing and risk factors. *European Child & Adolescent Psychiatry*, 10, 161-169.

Fails to address the question, characteristics of repeaters and non-repeaters not examined.

Johnsson Fridell E., Ojehagen A. & Trask-Bendz L. A 5-year follow-up study of suicide attempts. *Acta Psychiatrica Scandinavica*, 93, 151-157.

Study meets exclusion criteria as cohort subjects classified with some type of mental disorder (e.g., 68% had personality disorder).

Joiner T., Rudd D., Rouleau M. & Wagner K. (2000). Parameters of suicidal crisis vary as a function of previous suicide attempts in youth inpatients. *Journal of the American Academy of Child & Adolescent Psychiatry*, 39, 876-880.

Failed to address the question.

Nadkarni A., Parkin A., Dogra N., Stretch D. & Evans P. (2000). Characteristics of children and adolescents presenting to accident and emergency departments with deliberate self-harm. *Journal of Accident & Emergency Medicine*, 17, 98-102.

Characteristics of repeaters vs. non-repeaters not analysed. DSH not distinguished from suicide ideation.

Sakinofsky I., Roberts R., Brown Y., Cumming C. & James P. (1990). Problem resolution and repetition of parasuicide: A prospective study. *British Journal of Psychiatry*, 156, 395-399.

Cohort studied met exclusion criteria as 49.7% had personality disorder, 29.6% had affective disorder and 21% had schizophrenia. Further there was no comparison of repeaters vs. non-repeaters.

Sakinofsky I. & Roberts R. (1990). Why parasuicides repeat despite problem resolution. *British Journal of Psychiatry*, 156, 399-405.

Cohort studied met exclusion criteria as 49.2% had personality disorder and a further 4.8% had affective disorder.

Spirito A., Lewander W., Levy S., Kurkjian J. & Fritz G. (1994). Emergency department assessment of adolescent suicide attempters: Factors related to short-term follow-up outcome. *Pediatric Emergency Care*, 10, 6-12.

Limited assessment of characteristics of subjects and no analysis carried out on the data that was collected. Study more concerned with the characteristics of the particular attempt and the individuals suicide intent.

Tejedor M., Diaz A., Castillon J. & Pericay J. (1999). Attempted suicide: repetition and survival - findings of a follow-up study. *Acta Psychiatrica Scandinavica*, 100, 205-211.

Cohort studied met exclusion criteria as 24% had personality disorder, 18% had schizophrenia and 12% had affective disorder.

Vajda J. & Steinbeck K. (2000). Factors associated with repeat suicide attempts among adolescents. *Australian & New Zealand Journal of Psychiatry*, 34, 437-445.

Study met exclusion criteria as cohort studied were psychiatric in-patients with underlying mental disorders (33% had affective or underlying personality disorders), and/or drug abuse/dependence (62%).