

Evidence-based practice for young people who self harm: can it be sustained and does it improve outcomes?

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Abstract

In 1998-1999, two Area Health Services in NSW conducted a project to implement evidence-based service enhancements for the clinical management of young people who present with Deliberate Self Harm (DSH) behaviour. The present study examined what structures and procedures were required to implement and sustain evidence-based practice in different health care settings for patients with DSH behaviour. Service provision was assessed at three points during the initial project to assess the degree of change that occurred, and 9 months after the completion of the project to allow an assessment of sustainability of the service provision. We examined staff perceptions of the importance of education, management directives, policy and procedure changes, and cultural/attitudinal changes, in implementing clinical best practice. Results indicated that support from both service management and clinical staff is necessary for successful implementation of service enhancements. High levels of staff education and policy development were also associated with high levels of service performance. The best sustained enhancements were those that were developed by the services themselves.

The problem of youth suicide

Suicide is responsible for 22% of all deaths among young people in Australia. Rates among males are approximately 21 per 100 000 per year and 5 per 100 000 per year for females (ABS 1994). For every male suicide there are 30 to 50 attempted suicides and for every female suicide, between 150 to 300 attempts. The

rate of completed male suicides has tripled since the 1960s. From a clinical perspective, 10% of patients with deliberate self harm (DSH) behaviour are likely to reattempt within three months of an initial attempt (Spirito, Lewander, Levy, Kurkjian & Firtz 1994).

However, fewer than 50% of patients may be referred for follow-up treatment (Nirui 1995; Piacentini, Rotheram-Borus, Gillis, Graae, Trautman, Cantwell, Garcia-Leeds & Shaffer 1995) and of those who receive an appointment, up to 75% may not attend (Appleyby, Shaw, Amos, McDonnell, Harris, McCann, Kiernan, Davies, Bickley & Parsons 1999). A number of procedures and processes have been reported to improve the treatment of self harming patients in clinical settings. These have included the use of a 'Green Card' system of referral intended to enhance attendance at follow-up (Morgan, Tonesk & Jacobson 1993) and provision of a follow-up letter to patients who drop out of treatment or fail to attend their first follow-up appointment (Motto 1991, 1976).

The use of standardised measures in the assessment of risk and protective factors at the first contact point (Cantor 1994), and as a measure of therapeutic outcomes (Beck 1993), have been shown to provide objective, quantifiable measures of risk and treatment outcomes which are not dependent on the skill level or training of the clinician. Cognitive behavioural therapy-based problem-solving approaches have been shown to be effective in reducing suicide attempts over 12 months by providing patients with skills to better enable them to cope with stressors in their lives (Linehan, Armstrong, Hubert, Suarez, Allmon & Heard 1991). However, Hawton's (1997) meta-analysis indicated that this approach was not so successful.

Nevertheless, identification of measures likely to be effective in improving clinical outcomes is not always readily implemented in clinical services. The literature suggests that clinical practice change at an organisational level requires four factors: education, management directives, policy and procedure, and culture/attitudinal changes (Tobin, Hickie, Yeo & Chen 1998). This can be enhanced by having a clear strategy for implementation at the outset, identification of the target population relevant to the current clinical setting, involving clinicians from all disciplines in the customization of the guidelines and prioritizing targeted educational programs (Gupta & Trzepacz 1997).

It is also necessary to determine if interventions shown to be efficacious in experimental designs also improve patient outcomes in real clinical settings (Braun & Zibrat 1996). As Weisz, Donenberg and Weiss (1995) suggest, the outcomes of clinic therapy may be less positive than for laboratory-based research therapy, and this is likely to be due to differences in the severity of problems, the setting of therapy and the treatment methods used. Thus it is critical that researchers attempt to 'bridge the gap' between laboratory and clinical outcome research, both by exporting well-developed research therapy programs into the field, and by directly studying the outcome of interventions in clinical settings. Nevertheless, although the use of outcome measures to evaluate these improved outcomes may seem straightforward, the design and implementation of such systems often requires significant organisational changes to successfully adopt the new paradigms and processes (Tobin & Hickie 1997).

The present study examined the impact of a two-year project (Youth At Risk Of Deliberate Self-Harm project, "YARDS") which aimed to enhance mental health care for young people with DSH both in service performance and specific clinical treatment (Tobin, Einfeld, Dudley, Beard & Buss 1999). The project involved emergency departments and mental health services. A half-time project officer was placed at each service as well as providing a degree of material support to allow each service to implement the proposed changes. The YARDS project was finalised in December 1998 with all project support being withdrawn from each service at this point.

This project established an infrastructure for achieving organisational and clinical practice change in 10 different mental health care settings. Further, clinicians were introduced to a number of "Best Practice" procedures, including improved engagement of patients with DSH behaviour and their families, the provision of treatment as early as possible and continuity of care across different settings, and staff training in the use of various elements of clinical best practice. However, results indicated that services implemented the proposed clinical practices at different rates, and to different degrees, with some services not implementing certain procedures at all. The project was also unable to determine if these procedures improved the mental health of patients because of insufficient time being available to conduct follow-ups of patients.

Aims

This study aimed to:

1. Determine what structures and procedures were required to implement evidence-based practice in different health care settings for DSH patients. These structures and procedures were categorised as: a) educational, b) management directives, c) policy changes, and d) cultural/ attitudinal changes.
2. Determine: a) whether the evidence-based practice was maintained and b) which aspects of evidence-based practice were sustained in the longer term.
3. Determine whether the structures and procedures listed in Aim 1 above correlated with level of sustainability of best practice guidelines.
4. Correlate the application of evidence-based practice in clinical settings with improved patient outcomes.

Method

Subjects

The YARDS project was conducted in two Area Health Services, Northern Rivers Area Health Service (NRAHS) located in a rural setting and South East Health in a metropolitan area. South East Health includes inner city districts with higher numbers of homeless youth, beach cultures with high drug and alcohol abuse rates, and districts with high NESB (Non-English-Speaking Background) groups. There is a wide variation in socio-demographic indices. The NRAHS is generally socio-economically disadvantaged with many retirees and a high unemployment rate. The NRAHS area experiences an large population influx during the school holiday periods, and there are many 'migratory' residents.

The ten mental health services that participated in YARDS also participated in this study. These included child and adolescent mental health teams and adult mental health services. From these services, 111 mental health and emergency department staff, who participated in the YARDS project, were surveyed.

Thirty one people of the total of 143 patients who were identified as having presented with DSH behaviour and having received a standardised assessment package at their first mental health assessment, were available for a twelve month follow-up.

Measures

Service Activity Scale:

The Service Activity Scale (SAS) is an instrument developed for the YARDS project to assess best practice in clinical response to DSH at a service level. The scale is completed by service directors and/or service staff. The SAS was developed by the project team, incorporating recommendations from the literature, particularly from the recommendations of the American Association of Suicidology (1998). The SAS covers aspects of emergency response, specialist referral, ongoing treatment and discharge process. For each of 81 items of best practice, the respondent scores these as occurring in their service on a 5-point Likert scale, varying from "never occurs in the service" to "always occurs in the service". The scale has a high degree of internal consistency, as shown by Chronbach's $\alpha = .97$.

In order to test the validity of the SAS, patient files were audited in each service. Thirteen items identified from the SAS were comparable with file information. From the information in each file, each item was rated as yes, no or missing. An example is "Are DSH presentations re-assessed regularly by the community specialist staff?" If there was evidence in the file to indicate that this occurred for that patient, the item was scored as a "yes". Cohen's kappa was calculated for each question to examine the agreement between file information and SAS reports.

Large amounts of data were missing for two questions, which excluded these from further analysis. The agreement between SAS score and patient files for the remaining 11 items is displayed in Table 1. The Pearson correlation between the SAS scores for these 11 items, and the scores for the remaining SAS items, was $r = .80$, which indicates that these 11 items were representative of the full Service Activity Scale.

Table 1: agreement between SAS and patient files for SAS items used to check validity, grouped according to SAS section

Assessment	
"The initial assessment of DSH presentations in the community agency are conducted by specialist adolescent mental health service staff."	$\hat{I} = 1.0$
"The initial specialist assessment of client with DSH issues documents specific levels of suicide intent."	$\hat{I} = .152$
"The individual service plan is recorded following initial assessment."	$\hat{I} = -.051$
Case Reviews/External Agencies	
"For clients having presented with DSH, family/carers are present at the initial assessment (unless specifically contraindicated)"	$\hat{I} = .413$
Record Keeping	
"The initial evaluation of self harming behaviour and suicidal intent is recorded in the community file"	$\hat{I} = .310$
Assessment/Treatment	
"Irrespective of outcome of initial assessment, a clinical contact is made around 28 days following (most recent) crisis presentation"	$\hat{I} = .227$
"DSH presentations are re-assessed regularly by the community specialist staff."	$\hat{I} = .359$
"Continuity of care is extended from first contact."	$\hat{I} = .569$
"Staff makes regular pro-active contacts with client, e.g. phone calls, to improve compliance and deal with any problems pro-actively."	$\hat{I} = .302$
Discharge	
"Progress notes are completed after each session."	$\hat{I} = .657$
"Discharge summary is written by specialist staff (mental health, adolescent health, social work, psychiatrist)."	$\hat{I} = .160$

YARDS Adoption Questionnaire (YAQ):

The YAQ was developed to assess staff perceptions in implementing clinical best practice of the importance of the four elements of Aim 1. These were education, management directives, policy and procedure changes, and cultural/attitudinal changes. The YAQ consisted of twelve questions and staff members responded on a five point Likert Scale. Questionnaires were completed anonymously, but respondents were required to identify the service they worked for and whether their position was primarily managerial or clinical. Sample items addressing each of the four elements of Aim 1 are listed in Table 2 below.

Table 2: Sample YAQ items.

Education	
"How much education of Youth Suicide (inservices, meetings, written information etc) have you received in the last 2 years?"	
Management directives	
"How supportive was your management (director, team leader, supervisor) towards the YARDS project?"	
Policy and procedural changes	
"As far as you are aware, were any suicide policies implemented in your service during the YARDS project?"	
Cultural and attitudinal changes	
"In my workplace, in general, I feel encouraged to come up with new and better ways of doing things".	

Process diaries:

During the YARDS project, a comprehensive written account of the implementation process was maintained by the project officers. These "process diaries" included a detailed account of the content of all meetings. This included factors such as the mood of the meeting, expressions of support or hostility towards the project, clinical staff anecdotes about implementation issues, and the project officer's own views of the organisational factors that influenced service development. At the end of the YARDS project, the process diaries as well as all formal correspondence and steering committee minutes were collated.

In order to examine the reliability of the observations recorded in the process diaries, three raters independently rated the process diaries in terms of the four elements assessed in the YAQ. Each of the raters worked in the field of mental health research, but raters were blind to the aims of the study.

Inter-rater reliability was calculated using intraclass correlations (ICC). ICCs were calculated using the 2-way random effects ANOVA model and measured consistency rather than absolute agreement. Consistency was considered more appropriate than a measure of absolute agreement because all three raters rated all process diaries. The ICC's and 95% confidence intervals for each of the four elements are shown in Table 3.

Table 3: Intraclass Correlations and 95 % Confidence Intervals for each of the four elements examined by the YAQ.

Element	ICC	95% CI
Education	.8250	.1158 - .9805
Management directives	.9446	.7201 - .9938
Policy and procedural changes	.8796	.3918 - .9866
Cultural/attitudinal changes	.8935	.4619 - .9881

Overall, this indicates that the independent reviewers agreed in their interpretations of the content of the process diaries. However, this conclusion is less certain with respect to the education questions of the YAQ, due to the wide 95% Confidence Interval around the observed ICC.

Mental Health Assessment Measures:

The measures used in the initial mental health assessment included the Adolescent Suicide Questionnaire (Pearce & Martin, 1994), Centre for Epidemiological Studies Depression Scale (Radloff, 1977), and the Beck Hopelessness Scale (Beck, 1993). These measures were subsequently readministered to assess mental health outcome for patients.

Procedure

Aim 1: to determine what structures and procedures were required to implement evidence-based practice in different health care settings for DSH patients.

Staff members from each of the services that participated in the YARDS project were asked to complete the YAQ. Questionnaires were either mailed out to clinicians, or were completed individually during team meetings. Process diaries were used to provide more detailed information on the impact of these factors on the implementation of service enhancements.

Aim 2a: to determine whether the evidence-based practice was maintained.

The SAS was administered at three time points during the YARDS project, at the beginning of the project, at the end of the first year, and at the end of the project (24 months). This allowed for identification of high performing services and services that substantially changed. The SAS was readministered to service directors nine months after the end of the YARDS project. This allowed an estimate of the level of sustainability of the procedures implemented during YARDS.

Aim 2b: to determine which aspects of evidence-based practice were sustained in the longer term.

To answer aim 2b, two audits of patient files were conducted in each service to assess which procedures were implemented as part of the YARDS project and the percentage of patients who received each component of the service enhancements. The first audit was conducted at the end of the YARDS project, to provide a measure of what procedures had been implemented and to what extent patients received these procedures. A second audit was conducted between nine and twelve months after the YARDS project. This allowed a measure of sustainability of the procedures that were implemented.

Aim 3: to determine whether the education, management directives, policy changes and cultural/attitudinal changes correlated with level of sustainability of best practice guidelines.

YAQ scores were measured for high and low sustaining services, as measured on the SAS. This data was supplemented by information obtained from the clinical file audits and process diaries.

Aim 4: to correlate the application of evidence-based practice in clinical settings with improved patient outcomes.

During the YARDS project, patients were identified as DSH presentations by triage staff at the emergency departments or crisis mental health services. These presentations were then notified to project staff, who kept records of subsequent treatment received until they stopped attending the service. If the person was referred to a mental health service for follow-up treatment, a standardised assessment package was administered, which included the mental health assessment measures outlined above. To determine the impact of evidence-based practice on patient outcomes, attempts were made to contact these patients 12 months after their initial mental health assessment, by mail and telephone. When the person was contacted, the instruments that were used in the initial assessment were readministered.

Data analysis

A repeated measures one-way analysis of variance was performed, using SAS scores for each of the ten services, at the baseline, one year, and end points of the YARDS project. This allowed an estimate of change by the participating services.

To determine the impact of the four factors on the implementation of clinical best practice procedures, the impact of the four factors on services that showed large versus small amounts of change as measured by the SAS was investigated. SAS scores from the baseline assessment were subtracted from the score at the end of the YARDS project. Services were then ranked from largest change to smallest change and YAQ scores on each question were compared between the five largest and five smallest changing services.

To determine if the enhanced service delivery had been sustained post pilot stage and in the longer term, a t-test was used to compare SAS scores from the end of the YARDS project and the nine-month follow-up.

To determine which of the four factors outlined under Aim 1 correlated with sustainability of best practice procedures, SAS scores from the end of the YARDS project were subtracted from the scores obtained at the nine-month follow-up. T-tests were performed on YAQ scores between the five highest and five lowest sustaining services.

Information from the process diaries was collated and used to elaborate on the results obtained from the YAQ.

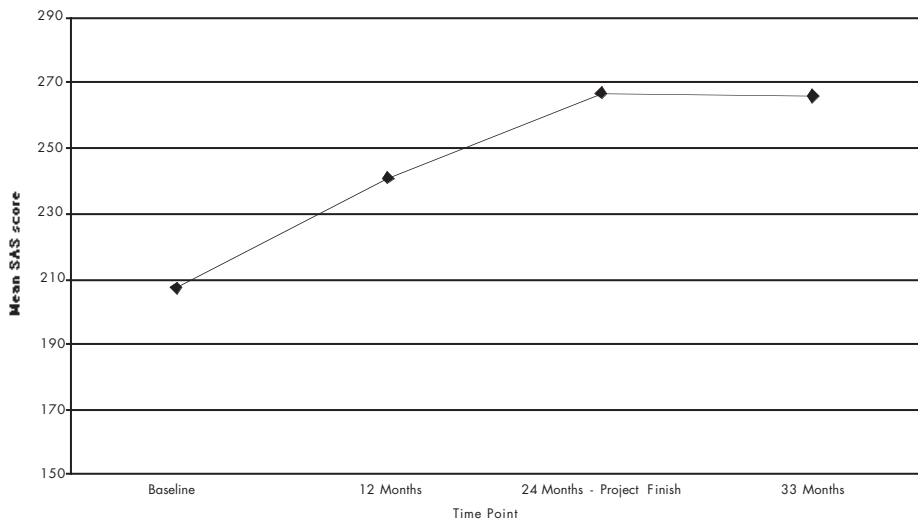
Results

Table 4 displays the SAS total scores for each service across all four time points, and Figure 1 displays the changes in SAS scores over time, averaged across all services.

Table 4: SAS scores for each service at each time point.

Service `	Time 1	Time 2	Time 3	Time 4
1	208	254	285	275
2	272	282	302	310
3	169	175	223	245
4	244	245	262	268
5	148	183	313	247
6	152	196	218	233
7	263	308	342	322
8	242	282	255	303
9	170	258	248	250
10	210	231	229	208

Figure 1: Changes in Services Activity Scale scores during the YARDS Project and at the nine-month follow-up



Aim 1: to determine what structures and procedures were required to implement evidence-based practice in different health care settings for DSH patients.

Results from the scores of the SAS indicated (Figure 1) that all services improved over the period of the YARDS project ($F(2,27) = 4.59, p < .05$). The process diaries indicated that no services commenced implementation of change prior to recruitment of the project staff and the change process stalled in two services where the project staff resigned.

The comparison of the five largest and smallest changing services indicated that large change services had more education ($t(106) = 2.151, p < .05$), implemented specific policies for the treatment of suicidal patients ($t(103) = 2.725, p < .01$), and were more aware of the NSW Department of Health policy guidelines on suicide management ($t(106) = 2.551, p < .05$).

The process diaries indicated that high changing services had more management and staff support than the low changing services. In four services, a senior member of the clinical team was supportive of the proposed enhancements and these people facilitated their implementation in these services.

Aim 2: To determine whether a) the evidence-based practice was maintained and b) which aspects of evidence-based practice were sustained post pilot stage and in the longer term.

Table 5: Mean SAS Total and subsection scores at each time period.

SAS Section	Time 1	Time 2	Time 3	Time 4
A: Response to crisis	56.5	64.1	74.3	66.3
B: Specialist mental health services	65.8	79.4	87.4	91.9
C: Ongoing treatment and rehabilitation	59	63.8	68.4	69.3
D: Quality of discharge process	26.5	34.1	37.6	38.6
Total SAS scores	207.8	241.1	267.7	266.1

Table 5 displays the mean SAS and subsection scores for each time period. In the assessment of the sustainability of the service enhancements, no significant difference was found between Total SAS scores from the end of the YARDS project and the nine-month follow-up, or on any of the subsections.

Aim 3: to determine whether the structures and procedures listed in Aim 1 above correlated with level of sustainability of best practice guidelines.

In the analysis of factors associated with the sustainability of best practice procedures, no questions on the YAQ differentiated between high and low sustaining services. From the process diaries, the highest level of sustainability was for a service enhancement which occurred where the services developed their own project. The use of standardised measures was the least sustained enhancement. Only two of the nine services which implemented the use of these measures continued to use them. The “Green Card” facilitated referral system was adopted by all services except one during the YARDS project. The system was not officially stopped in any service nine months after the end of the YARDS project, but the use of the system was less than the level of use at the end of the YARDS project.

Aim 4: to correlate the application of evidence-based practice in clinical settings with improved patient outcomes.

To determine the effect of enhanced clinical practice on patient outcomes, attempts were made to contact 31 patients after their initial presentation to an emergency department. These were all patients who were due for follow-up in the first 4 months of the project. Only eleven people were successfully located and the standardised assessment package was readministered. Extensive attempts were made to contact the remaining subjects, with up to 6 phone calls made to each person, and letters sent to people care of their last known addresses. These attempts indicated that for seven people, the number was disconnected or no one at that number knew who the person was; one had completed suicide; four had relocated leaving no forwarding address; and no one answered the phone when attempts were made to contact eight people.

Discussion

This project found that services were able to implement a number of clinical services changes. Overall it could be demonstrated that services improved by a mean of approximately 29%, as measured on the SAS, and this was sustained at the nine-month follow-up.

The process diaries indicated that no services commenced implementation of change prior to recruitment of the project staff. In fact, in two services, for which project staff resigned, the change process stalled, and clinical staff only recommenced using the agreed evidence-based procedures when new project staff were recruited. This supports the view that implementation of change in organisational systems and clinical behaviour requires commitment of identifiable resources to facilitate and support the change process.

The literature suggests that clinical practice change at an organisational level requires four factors (Tobin et al. 1998) namely education, management directives, policy and procedure, and culture/attitudinal changes. The experience of our project was consistent with this.

Education

The results of our study indicated that those services which had greatest staff participation in YARDS related education forums also had a greater uptake of evidence-based practice. However, our results are unable to distinguish whether the level of education resulted in better service performance, or whether these services were more generally supportive of staff development which resulted in more education being provided.

Management support

Information from the process diaries indicated that management support was necessary for the implementation of change. In one service the director did not prioritise the project above other initiatives, and this resulted in a lack of support for YARDS from executive level down to clinical practice. In those services where management was most supportive of the project because it fitted with overall service priorities, the process diaries showed that implementation occurred at a faster rate.

Policy and procedure

High change services were more likely to have developed and implemented specific policies for the treatment of Patients with DSH behaviour than low performance services. By developing specific policies, lasting change is more likely to occur as the knowledge base is not restricted to staff who were part of the service during the life of a given project. When change is not incorporated into policy, the staff may leave the service and then new staff will not have access to that knowledge unless it is formalised in some way. The project coincided with the NSW Department of Health issuing Circular 98/31: "Policy guidelines for the management of patients with possible suicidal behaviour for NSW health staff and staff of private hospital facilities" (NSW Health 1998). This was first sent to services during the final six months of the YARDS project. Due to this document coming as a policy directive from the NSW Department of Health, services that showed disinterest and even hostility towards the YARDS project started implementing the changes within the document. This was especially so, as compliance with the directives of this circular could be achieved readily by adoption of the YARDS protocols and with YARDS project officer support.

Cultural and attitudinal changes

Management support, while necessary, was not sufficient to ensure implementation. In two services, agreement to implement was reached with the service directors. However, the clinical teams refused to implement the changes.

Data from the process diaries indicated that the identification of a respected clinician who was a member of the team and was supportive of the project initiatives, enhanced their implementation. This is consistent with previous research that has found that local opinion leaders can influence change in the clinical practices of health professionals (Lomas 1991). It is suggested that such people may perform a "sanctioning function" for new procedures (Greer 1988), or impact on peer attitudes and beliefs (Mittman et al. 1992).

Sustainability

In the investigation of factors associated with the sustainability of the service enhancements, the SAS indicated that there was little change in service provision between the end of the YARDS project and the nine-month follow-up. However, file audits did indicate that some of the service enhancements had decreased in use. The reason for this discrepancy was that following the introduction of the SAS, some individual services initiated service enhancements that were not described by any SAS items, and as a result, did not measure the use of these specific procedures. The fact that, at least as measured by the SAS, services did maintain their level of service provision indicated that the use of a funded pilot change project was an effective method of introducing organisational system change.

At the nine-month follow-up after the end of the YARDS project, the highest level of sustainability was for service enhancements which occurred where the services developed their own additional initiatives. These were supported by the management and clinical team members, and continued to be used.

The use of standardised measures for clinical assessments was the least implemented and achieved lowest overall sustainability. Such standardised measures were perceived as research tools by many clinicians, who stopped using them once the YARDS project was completed. Many clinicians also asserted that standardised assessment instruments interfered with the development of clinical rapport, took too long to administer, and were insensitive in the stressful situations surrounding a DSH attempt. This has important implications for the widespread uptake of evidence-based practice or health outcomes measurement, in mental health. There is a strong culture of clinical autonomy or individualism amongst mental health clinicians which is not easily modified by a single project. Substantial change in this would require attention at undergraduate training levels as well as within the current workforce (Tobin & Hickie 1997)

Patient outcomes

A small cohort of 31 clients were identified for 12 month follow-up after completion of the YARDS project. Despite rigorous efforts and large investments in time only 11 people were able to be contacted. This process highlighted a problem with assessing the long term effectiveness of enhanced clinical interventions for a specific client group. Service enhancement projects are designed to enhance service performance with the specific aim of

improving health outcomes for the target clinical group. Whilst it was not easy to measure service level changes, it proved even more complex to assess whether these enhancements had beneficial effect on the client group. A 35% contact rate achieved in this study is certainly not adequate to demonstrate impact on health outcomes. To assess adequately the effectiveness of a project on patient health status, a considerable number of patients would have to be targeted for follow-up due to possible drop out rates, and considerable resources would have to be allocated to the follow-up, which should be considered as beyond the scope of a short duration project such as this one.

One reason for being unable to follow-up the identified cohort was related to their high levels of mobility and this will need to be factored in with any future initiative.

Measurement issues

Although projects such as this attempt to introduce evidence-based clinical practice to services, an estimate of successful implementation can only be made with adequate measurement tools. We faced the dilemma of either using generic measures or developing a specific one. Generic measures of service development such as the Servqual (Parasuraman 1988) may be useful, but have often been developed for use in other industries. They also cannot assess the particular initiatives applicable to any one clinical situation. Further, if one wants to compare implementation in two or more clinical settings, each setting may commence the project at different levels of evidence-based practice. The SAS is an example of a specific measure developed for suicidal behaviour, which could be used with services at different starting points, and for which it was possible to demonstrate some validity.

A further measurement issue is the need to define a starting point against which to compare change. However, as soon as one starts to assess current practice, the change process commences due to an increased awareness of good practice.

Conclusions

This study investigated factors associated with the initial implementation and sustainability of evidence-based practice procedures for the treatment of clients with DSH behaviour. Our results indicate that a limited term project can be successful in implementing service enhancements, although support for the project initiatives must be forthcoming from both management and clinical staff. We suggest that investment in appropriate staff education and in local policy development are worthwhile. This is particularly so when there is a convergence between state level directives, project initiatives and local adaptation of protocols.

Measures of sustainability indicated that service performance was generally maintained after the initial project was completed, but no further enhancements occurred. The best sustained enhancements were those that were developed by the services themselves. This indicated that optimal service enhancement is likely to be achieved by the use of a limited term funded project that supports a service to develop their own procedures, supported by policy requirements.

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