DON'T FORGET

Contributions to the assessment and management of suicide attempters in the general hospital

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Aan mijn vrouw
Aan mijn ouders

TABLE OF CONTENTS

Chapter 1 – Introduction

Most people try to stay away from harmful situations. Therefore, persons who deliberately harm themselves, usually called suicide attempters, create a stir in the people around them. Frequently, such an act elicits compassion and support from others, but often also anger and disappointment. In an unknown proportion of cases, no professional help is sought. In many cases, however, the general practitioner is consulted or the patient is brought to hospital. Assessment and treatment of suicide attempters put high demands upon the professionals dealing with the psychological and somatic sequelae of the attempt. Patients themselves may also have ambivalent feelings about what happened and whether they will accept treatment. Although the situation offers an opportunity to try to understand and help these patients, the mixture of feelings in patients and professionals may complicate their assessment and treatment.

In this thesis, several aspects of hospital care for suicide attempters are discussed. Before reviewing those aspects in detail, some general remarks on suicide attempts will be made.

TERMS AND DEFINITION

In the preceding paragraph, the terms 'suicide attempt' and 'deliberate self-harm' were used. Other terms, like 'failed suicide' and 'parasuicide', can also be found in literature. Sometimes researchers and professionals define these terms differently, but they are mostly used as synonyms. As in most studies, the term 'suicide attempt' in this thesis is defined as 'an act with non-fatal outcome in which an individual deliberately initiates a non-habitual behaviour that without intervention from others will cause self-harm, or ingests a substance in excess of the prescribed or generally recognized dosage, and which is aimed at realizing changes that the person desires via the actual or expected physical consequences' (Platt et al., 1992).

EPIDEMIOLOGY OF SUICIDE ATTEMPTS

In the Netherlands, the incidence of attempted suicides, including attempts that remain unnoticed by professionals, is unknown. In Europe, by the WHO/EURO Multicentre Study on Parasuicide epidemiologic data for the period 1989-1992 were registered in 16 catchment areas (Schmidtke et al., 1996). The average suicide attempt rate per 100,000 individuals of 15 years and older for all centres combined was 193 for females, and 140 for males. The most recent

international data, to our knowledge, come from the American Epidemiologic Catchment Area-study. In this study, the annual incidence estimate of suicide attempts in adults in the general population is 148.8 per 100,000 person-years (Kuo, Gallo, & Tien, 2001). The older National Comorbidity Survey study showed a life time prevalence of suicide attempts of 4.6% (Kessler, Borges, & Walters, 1999). In the Netherlands, only the incidence of suicide attempts in people who sought professional help is known. In the period 1999-2003, an annual average of 14,000 persons who deliberately harmed themselves were presented to an emergency department (Nationaal Kompas Volksgezondheid, data from RIVM, 16-03-2006), which is a rate of 87.5 per 100,000. In a study on the epidemiology of 793 known medically treated suicide attempters in a defined catchment area of the city of Leiden, The Netherlands, it was found that 85.7% of suicide attempters were treated in the general hospital and 14.3% by a general practitioner (Arensman, 1997).

COMORBIDITY

Suicide attempts are often accompanied by serious mental health and social problems. The standard mortality rate by suicide of persons with psychiatric disorders is high (Harris & Barraclough, 1997) and the presence of psychiatric disorders among completed suicides has been estimated up to 95%. Therefore, comorbid psychiatric disorders among suicide attempters can be expected to be high. However, exact data are sparse. In a case-control study, 302 subjects making medically serious suicide attempts were compared with 1028 randomly selected subjects (Beautrais et al., 1996). Ninety percent had a psychiatric disorder at the time of the attempt. However, this study was conducted in a selected population of suicide attempters; namely, those who made 'medically serious' attempts. Forty-four to fifty-six percent of suicide attempters were determined to have psychiatric disorders in studies with non-selected suicide attempters (Hawton, Houston, Haw, Townsend, & Harriss, 2003; Olfson, Gameroff, Marcus, Greenberg, & Shaffer, 2005). Another study found that among first-evers, the prevalence of psychiatric disorders was rather low, whereas among repeaters psychiatric comorbidity was common (Arensman & Kerkhof, 1996).

The social and demographic characteristics of suicide attempters were studied in the WHO/EURO Multicentre Study on Parasuicide. Single and divorced people, those with low education levels, and the unemployed or disabled were over-represented in suicide attempters compared with the general population (Schmidtke et al., 1996). Suicide attempts can also jeopardize somatic health,

although complications depend on the method used for the attempt (Muhlberg, Becher, Heppner, Wicklein, & Sieber, 2005).

In patients presenting to the hospital, suicide attempts are followed by new attempts in 23% of the cases and 3-5% will commit suicide within 5-10 years (Owens & House, 1994; Owens, Horrocks, & House, 2002; Zahl & Hawton, 2004; Harris et al., 1997; Hawton, Zahl, & Weatherall, 2003). Suicide risk among self-harm patients is higher than in the general population, although the rates differ in the literature (Owens et al., 2002).

ASSESSMENT OF SUICIDE ATTEMPTERS

It is generally accepted that proper assessment of suicide attempters in the general hospital should involve a somatic as well as a psychiatric evaluation, although this practice is not well founded by scientific evidence. Somatic evaluation is necessary because of the possible complications of the methods used to attempt suicide. According to the World Health Organization (2000), somatic care should always be followed by a psychiatric assessment, because this might create possibilities to intervene. Unfortunately, hardly any interventions have proven to be effective in preventing repetition (Hawton et al., 1998; van der Sande, Buskens, Allart, van der Graaf, & van Engeland, 1997). However, patients who were not psychiatrically assessed after a suicide attempt were at higher risk of repetition and completed suicide (Hickey, Hawton, Fagg, & Weitzel, 2001; Kapur et al., 2004).

Performing a psychiatric evaluation of patients admitted to the emergency department is easier said than done. The stress of general hospital admittance, the busy, noisy wards, and the (sometimes forced) somatic treatments interrupting psychiatric examination, as well as the great time pressure, may make the psychiatric consultation very difficult. Therefore, it is possible that many important aspects relevant to the assessment and further management of the patient are left unidentified which might not have been missed in a quieter environment.

Taking this into account, it is no wonder that Kerkhof in his thesis on mental health care for suicide attempters (Kerkhof, 1985) reported that many patients could not remember having had a psychiatric examination while in hospital. Although he considered this to be indicative of an imperfection in psychiatric care, other factors, such as those discussed above, may also play a role. In the heat of the situation, the patients may simply have forgotten that they had spoken to a psychiatric consultant. Indeed, a recent study on patients' evaluation of their psychiatric consultation after a suicide attempt found that

at least 30% of patients had an indifferent prior attitude towards psychiatric consultation and 58% said the timing of the consultation was inappropriate (Suominen, Isometsa, Henriksson, Ostamo, & Lonnqvist, 2004). Hence, many factors may explain why patients forget aspects of their care during their stay in hospital. However, data in this thesis will demonstrate that an additional factor has been forgotten.

GUIDELINES FOR THE ASSESSMENT OF SUICIDE ATTEMPTERS

Because of possible complications, suicide attempters deserve serious attention when presented to the hospital. The assessment of these patients should involve somatic as well as psychiatric and social investigations. Furthermore, they need proper treatment. Moreover, the mixed feelings experienced by the patient and the professionals should not interfere with the assessment process.

In 1991, guidelines were developed in the Netherlands in an attempt to bring order to the complicated and multidisciplinary assessment of suicide attempters (Medical Scientific Council of the National Organization for Quality Assurance in Hospitals). These guidelines focused on the proper management and assessment of these patients and described specific tasks for the professionals involved: psychiatrists, nurses and others (Centraal Begeleidingsinstituut voor de Intercollegiale Toetsing, 1991). More than ten years later, guidelines were also proposed in other countries (Barr, Leitner, & Thomas, 2005; Goldberg, 1987; Isacsson & Rich, 2001; Packman, Marlitt, Bongar, & Pennuto, 2004; Simon, 2002). In 2003 and 2004, official guidelines were issued by the American Psychiatric Association and the Royal College of Psychiatrists, respectively (American Psychiatric Association, 2003; Royal College of Psychiatrists, 2004), providing summaries of the available knowledge in this field that led to recommendations for care.

BEYOND GUIDELINES

The existence of guidelines does not guarantee optimal care. Although guidelines can be a valuable tool to improve quality of care, their development does not ensure their use in practice (Feder, Eccles, Grol, Griffiths, & Grimshaw, 1999; Grol, 1997). In fact, beside developing and implementing guidelines, other approaches are also necessary to improve the quality of care in daily practice (Grol & Grimshaw, 2003). When guidelines are developed, they should be widely available and, if necessary, adapted to local situations to

make their implementation possible. Their content and quality should be sufficient. Moreover, gaps in our knowledge that hamper proper care should be filled; this is especially true for guidelines to assess and manage suicide attempters. It is the aim of the first part of this thesis to evaluate the existing guidelines. The second part aims to fill some of the gaps in our knowledge that hamper proper care.

OUTLINE OF THE THESIS

Part I – Guidelines for the assessment of suicide attempters

Chapter 2 includes a study on certain guidelines for suicide attempters in general hospitals in the Netherlands in 1991. The observance of the recommendations described in the guidelines was examined using data from the more extensive 'European Consultation Liaison Workgroup (ECLW) Collaborative Study'.

In Chapter 3 we report on a study on the availability, content, and quality of guidelines for the assessment of suicide attempters in university and general hospitals in the Netherlands. This study was extended to all mental health institutions in the Netherlands and these results are included in Chapter 4. A comparison was also made between the hospitals and mental health institutions with regard to the availability, content, and quality of their guidelines.

Part II – Studies on the appropriate assessment and management of suicide attempters

Chapter 5 reports on our investigation into whether suicide attempters admitted to the hospital demonstrated anterograde amnesia after taking a benzodiazepine overdose.

In Chapter 6 we report results aimed at investigating whether anterograde amnesia in suicide attempters was related to blood levels of benzodiazepines, which were taken in overdose, and their active metabolites.

Because amnesia in suicide attempters could also be enhanced by stress due to hospitalization, we studied whether cognitive impairment occurred in another group of admitted patients. In Chapter 7 we report on a study of cardiac patients who had to undergo heart catheterization to gain more insight into admittance as a possible confounding factor in memory impairment in patients.

In Chapter 8 we report our study of patients assessed during their stay in a general hospital because of a suicide attempt, who were reassessed at home shortly after discharge. The major goal of this study was to compare both

assessments and to find out whether they would differ. At both times, the intention and motives of the suicide attempt, the symptoms of psychopathology, worrying, and the degree of self-esteem were assessed. Furthermore, patients were asked about their need for help, as well as their remembrance of the aftercare arrangements that had been made.

American Psychiatric Association (2003). Practice guideline for the assessment and treatment of patients with suicidal behaviors. *American Journal of Psychiatry, 160,* 1-60.

Arensman, E. (1997). *Attempting suicide: epidemiology and classification*. Dissertation.

Arensman, E. & Kerkhof, J.F. (1996). Classification of attempted suicide: a review of empirical studies, 1963-1993. *Suicide and Life Threatening Behavior, 26,* 46-67.

Barr, W., Leitner, M., & Thomas, J. (2005). Psychosocial assessment of patients who attend an accident and emergency department with self-harm. *Journal of Psychiatric and Mental Health Nursing, 12,* 130-138.

Beautrais, A.L., Joyce, P.R., Mulder, R.T., Fergusson, D.M., Deavoll, B.J., & Nightingale, S.K. (1996). Prevalence and comorbidity of mental disorders in persons making serious suicide attempts: a case-control study. *American Journal of Psychiatry, 153,* 1009-1014.

Centraal Begeleidingsinstituut voor de Intercollegiale Toetsing (1991). *Opvang van suicidepogers in algemene ziekenhuizen*. Utrecht.

Feder, G., Eccles, M., Grol, R., Griffiths, C., & Grimshaw, J. (1999). Clinical guidelines: using clinical guidelines. *British Medical Journal, 318,* 728-730.

Goldberg, R.J. (1987). The assessment of suicide risk in the general hospital. *General Hospital Psychiatry, 9,* 446-452.

Grol, R. (1997). Personal paper. Beliefs and evidence in changing clinical practice. *British Medical Journal, 315,* 418-421.

Grol, R. & Grimshaw, J. (2003). From best evidence to best practice: effective implementation of change in patients' care. *Lancet, 362,* 1225-1230.

Harris, E.C. & Barraclough, B. (1997). Suicide as an outcome for mental disorders. A meta-analysis. *British Journal of Psychiatry, 170,* 205-228.

Hawton, K., Arensman, E., Townsend, E., Bremner, S., Feldman, E., Goldney, R. et al. (1998). Deliberate self-harm: systematic review of efficacy of psychosocial and pharmacological treatments in preventing repetition. *British Medical Journal, 317,* 441-447.

Hawton, K., Houston, K., Haw, C., Townsend, E., & Harriss, L. (2003). Comorbidity of axis I and axis II disorders in patients who attempted suicide. *American Journal of Psychiatry, 160,* 1494-1500.

Hawton, K., Zahl, D., & Weatherall, R. (2003). Suicide following deliberate self-harm: long-term follow-up of patients who presented to a general hospital. *British Journal of Psychiatry, 182,* 537-542.

Hickey, L., Hawton, K., Fagg, J., & Weitzel, H. (2001). Deliberate self-harm patients who leave the accident and emergency department without a psychiatric assessment: a neglected population at risk of suicide. *Journal of Psychosomatic Research, 50,* 87-93.

Isacsson, G. & Rich, C. L. (2001). Management of patients who deliberately harm themselves. *British Medical Journal, 322,* 213-215.

Kapur, N., Cooper, J., Hiroeh, U., May, C., Appleby, L., & House, A. (2004). Emergency department management and outcome for self-poisoning: a cohort study. *General Hospital Psychiatry, 26,* 36-41.

Kerkhof, A.J.F.M. (1985). *Suicide en de geestelijke gezondheidszorg.* Dissertation. Lisse: Swets & Zeitlinger.

Kessler, R.C., Borges, G., & Walters, E.E. (1999). Prevalence of and risk factors for lifetime suicide attempts in the National Comorbidity Survey. *Archives of General Psychiatry, 56,* 617-626.

Kuo, W.H., Gallo, J.J., & Tien, A.Y. (2001). Incidence of suicide ideation and attempts in adults: the 13-year follow-up of a community sample in Baltimore, Maryland. *Psychological Medicine, 31,* 1181-1191.

Muhlberg, W., Becher, K., Heppner, H. J., Wicklein, S., & Sieber, C. (2005). Acute poisoning in old and very old patients: a longitudinal retrospective study of 5883 patients in a toxicological intensive care unit. *Zeitschrift für Gerontologie und Geriatrie, 38,* 182-189.

Olfson, M., Gameroff, M. J., Marcus, S. C., Greenberg, T., & Shaffer, D. (2005). Emergency treatment of young people following deliberate self-harm. *Archives of General Psychiatry, 62,* 1122-1128.

Owens, D., Horrocks, J., & House, A. (2002). Fatal and non-fatal repetition of self-harm. Systematic review. *British Journal of Psychiatry, 181,* 193-199.

Owens, D. & House, A. (1994). General hospital services for deliberate self-harm. Haphazard clinical provision, little research, no central strategy. *Journal of the Royal College of Physicians of London, 28,* 370-371.

Packman, W. L., Marlitt, R. E., Bongar, B., & Pennuto, T. O. (2004). A comprehensive and concise assessment of suicide risk. *Behavioral Science & the Law, 22,* 667-680.

Platt, S., Bille-Brahe, U., Kerkhof, A., Schmidtke, A., Bjerke, T., Crepet, P. et al. (1992). Parasuicide in Europe: the WHO/EURO multicentre study on parasuicide. I. Introduction and preliminary analysis for 1989. *Acta Psychiatrica Scandinavica, 85,* 97-104.

Royal College of Psychiatrists (2004). *Assessment following self-harm in adults* (Rep. No. Council Report CR122). London: Royal College of Psychiatrists.

Schmidtke, A., Bille-Brahe, U., DeLeo, D., Kerkhof, A., Bjerke, T., Crepet, P. et al. (1996). Attempted suicide in Europe: rates, trends and sociodemographic characteristics of suicide attempters during the period 1989-1992. Results of the WHO/EURO Multicentre Study on Parasuicide. *Acta Psychiatrica Scandinavica, 93,* 327-338.

Simon, R. I. (2002). Suicide risk assessment: what is the standard of care? *Journal of the American Academy of Psychiatry and the Law, 30,* 340-344.

Suominen, K., Isometsa, E., Henriksson, M., Ostamo, A., & Lonnqvist, J. (2004). Patients' evaluation of their psychiatric consultation after attempted suicide. *Nordic Journal of Psychiatry, 58,* 55-59.

Van der Sande, R., Buskens, E., Allart, E., van der Graaf, Y., & van Engeland, H. (1997). Psychosocial intervention following suicide attempt: a systematic review of treatment interventions. *Acta Psychiatrica Scandinavica, 96,* 43-50.

Zahl, D. L. & Hawton, K. (2004). Repetition of deliberate self-harm and subsequent suicide risk: long-term follow-up study of 11,583 patients. *British Journal of Psychiatry, 185,* 70-75.

PART I – GUIDELINES FOR THE ASSESSMENT OF SUICIDE ATTEMPTERS

Chapter 2 – Guidelines and their observance in the psychiatric care of suicide attempters in general hospitals

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ABSTRACT

Objective

To gain insight into guidelines established for the care of suicide attempters in general hospitals, and into the degree to which these guidelines are observed in practice.

Design

Descriptive, retrospective.

Method

An inventory of recommendations for the care of suicide attempters was made by interviewing psychiatrists on the staff of seven general hospitals. The inventory was limited to recommendations concerning access (interval between admission and referral/consultation), and coordination of the care (i.e. adjustment to the patients' condition, transfer of information). Subsequently, using data from a more extensive European study that included all cases of suicide attempters admitted to the seven hospitals in 1991, it was studied how these recommendations were observed in practice.

Results

In all seven hospitals there appeared to be regulations for management and assessment of suicide attempters. Recommendations concerning accessibility of care were fairly similar in the various hospitals. Regarding the coordination of care, more local variants were found to exist. The accessibility of care was found to be mostly in accordance with the recommendations. There were more deviations from the recommendations concerning the coordination of care; in addition, there were substantial differences between hospitals in the degree to which deviation from the guidelines occurred.

Conclusion

Guidelines for the care of suicide attempters admitted to general hospitals were not similar in all respects; the observance differed markedly, especially regarding the coordination of care.

INTRODUCTION

About 30% of patients who attempt suicide are being admitted to a general hospital (Kerkhof, 1985). The reason for admittance is usually the somatic condition of the patient. Not only are observation and taking care of patients' safety necessary, but a psychiatric assessment needs to be done as well. In order to ensure quality, guidelines for the assessment of suicide attempters have been developed (Centraal Begeleidingsinstituut voor de Intercollegiale Toetsing, 1991).

Patients have to be admitted to a ward where they can get the somatic care they need. The psychiatrist should be involved as soon as possible in the care needed for suicide attempters, and must be able to provide the needed care quickly, even outside office hours. Suicide attempters who are not alert during their first consultation with the psychiatrist should be reassessed at a later time (Laan & Verwey, 1992). A hetero-anamnesis as well as information from (former) care givers is often needed, especially with patients who are intoxicated, in order to make an accurate assessment. Gaining information about the cause of the attempted suicide, and preparing for care after admission may be reasons to talk not only to the patient but also to others. In order to increase the chance of the suicide attempter receiving adequate aftercare it is, of course, important to have contact with the aftercare provider.

In the study presented here an attempt has been made to gain insight into the quality of care given in general hospitals to suicide attempters. The research focused especially on aspects of quality of accessibility and coordination of care (Harteloh & Casparie, 1991). The following key questions were asked:

- Which guidelines concerning accessibility and coordination of care do hospitals use for the management of suicide attempters?
- To what extent is the provided care in accordance with the guidelines used?

PATIENTS AND METHODS

This study was carried out in 2 academic and 5 general hospitals in the Netherlands. Selection of hospitals was based on participation in a more extensive European study: the 'European Consultation Liaison Workgroup (ECLW) Collaborative Study'. Described elsewhere is how this research was developed and which method was used (Huyse, 1991; Huyse, Herzog, Malt, & Lobo, 1996; Lobo, Huyse, Herzog, Malt, & Opmeer, 1996; Malt, Huyse, Herzog, Lobo, & Rijssenbeek, 1996). In this study data were collected of patients admitted to

general hospitals in 1991 who had been referred to the psychiatric consultation liaison service. For the present study, an inventory was made as to which guidelines were used in the different hospitals. Patients were then selected from the ECLW study who had been referred because of a suicide attempt (n = 348). Patients who were only assessed in an Emergency Department were excluded.

To determine if guidelines existed for the management of suicide attempters, interviews were held with the psychiatrists of the hospitals that are included in this study. In 5 of the hospitals there were written guidelines in 2 there were verbally agreed upon guidelines. Especially those recommendations were investigated that had to do with the degree to which care was available (accessibility) and the degree to which care was adapted to the patient (coordination: is the care given at the right place and at the right moment and how does transfer of information take place?).

For the statistical analysis, differences between hospitals were tested using the $\chi 2$-test.

RESULTS

Hospital and service characteristics. The psychiatric consultation services of the 7 hospitals differed with regard to the availability of staff: the largest service had a personnel capacity of 0.38 so-called fulltime equivalent (fte) for 1000 admissions and the smallest service one of 0.07 fte for 1000 admissions. Most of the services had about 0,2 fte for 1000 admissions. The percentage of suicide attempters as a part of the total number of psychiatric consults varied from 9.8 to 41.1 with an average of 17.9.

Patient characteristics. Women were somewhat more represented and almost half of the referrals were young adults. The majority of the patients (70%) were single, divorced or widowed. Almost 35% lived alone (Table 1).

A large number had a psychiatric history: almost 35% had been admitted to a psychiatric hospital one or more times in the previous 5 years. Around 35% was already receiving treatment from an outpatient facility for mental health care (GGZ) (Table 2).

Guidelines. The various recommendations used in the different hospitals for the management of suicide attempters are noted below. Also noted is whether the ECLW study contained criteria to determine the observance of the recommendation.

– Psychiatric consultation should be requested within 24 hours after admittance. All hospitals required this recommendation. Date of admission and date of request for consultation were registered in the ECLW study.

Table 1 Demographic characteristics of 348 patients who were admitted to a general hospital because of a suicide attempt in 1991

	N	(%)
Sex		
Male	160	(46.0)
Female	187	(53.7)
Unknown	1	(0.3)
Age in years		
< 18	4	(1.1)
18-34	167	(48.0)
35-50	109	(31.3)
51-64	25	(7.2)
65-74	14	(4.0)
≥ 75	16	(4.6)
Unknown	13	(3.7)
Marital status		
Unmarried	178	(51.1)
Married	97	(27.9)
Divorced	52	(14.9)
Widowed	14	(4.0)
Unknown	7	(2.0)
Living situation		
Alone	121	(34.8)
With others	222	(63.8)
Unknown	5	(1.4)

Table 2 Psychiatric history of 348 patients who were admitted to a general hospital because of a suicide attempt in 1991

	N	(%)
Psychiatric care (previous 5 years)		
None	113	(32.5)
General practitioner	17	(4.9)
Outpatient	89	(25.6)
1 or 2 admissions	76	(21.8)
3 or more admissions	45	(12.9)
Unknown	8	(2.3)
Somatic care (previous 5 years)		
None	122	(35.1)
General practitioner	70	(20.1)
Outpatient	41	(11.8)
1 or 2 admissions	60	(17.2)
3 or more admission	20	(5.7)
Unknown	35	(10.1)
Actual outpatient treatment		
None	161	(46.3)
Social worker	9	(2.6)
General practitioner	35	(10.1)
Outpatient psychiatric	123	(35.3)
Own consultation-liaison service	12	(3.4)
Unknown	8	(2.3)
Psychiatric diagnosis (ICD-10)		
None or	61	(17.5)
F0 – organic syndrome	16	(4.6)
F1 – use of psychoactive substances	58	(16.7)
F2 – schizophrenia	58	(16.7)
F3 – mood disorders	38	(10.9)
F4 – other	117	(33.6)

ICD = International Classification of Diseases, 10th version

– The consultation should be carried out on the same day as the request. Date of request and date of first consultation were registered in the ECLW study.
– The psychiatric consultation service is available during as well as outside office hours, but consultation requests should be made as much as possible during office hours. This applied to all hospitals.
– Patient is assessed when alert (6 hospitals) or immediately (1 hospital). To determine patients' alertness at the moment of first consultation the 'Reaction level scale –85' was used. This scale distinguishes 8 degrees ('alert', 'drowsy or confused', 'very drowsy or confused', etcetera), depending on how patients react to stimuli (being talked to, touched, yelled at, shaken or having pain administered) (Starmark, Stalhammar, & Holmgren, 1988).
– Patients who were not alert during the first consultation should be given a follow-up consultation. How often a patient was given a follow-up consultation was registered.
– Information from general practitioner, mental health care provider and significant others (family) should always be collected (5 hospitals) or only after indication (2 hospitals). It was registered whether information was collected from medical sources, social sources, mental health service institutions, family and others as well as other sources.
– Family is, if possible, always present during the consultation (5 hospitals) or only if the psychiatrist thinks this is necessary (2 hospitals). It was registered to whom the psychiatric treatment or behavioural approach was directed: patient, family or staff.
– Communication with the aftercare provider should always be carried out by telephone and in writing (4 hospitals), always by telephone (2 hospitals) or always in writing (1 hospital). It was registered whether the aftercare provider was informed and, if so, how: by telephone, in writing, by both telephone and in writing.

Performance of the recommendations. A statistically significant difference was found among hospitals concerning the performance of the recommendation that a consult should be requested within 24h after admittance (Table 3). In 33% of all cases in one hospital a consult request was made on the day of admittance while in another hospital that applied to 68% of the cases.

There was also a significant statistical difference among hospitals in performing the recommendation that consultation occur on the same day as the request. For the two hospitals that were below the average, 62% and 75% respectively of suicide attempters were assessed on day of admittance, according to the recommentation.

Also, a statistically significant difference was found in the percentage of

Table 3 Performance of recommendations in 348 patients who were admitted to a general hospital in 1991*

	Hospital								
	1 (n = 59)	2 (n = 45)	3 (n = 47)	4 (n = 26)	5 (n = 40)	6 (n = 85)	7 (n = 46)	Total (n = 348)	*P***
Request for consult < 24 h	47	60	68	58	48	53	33	52	< 0.05
Consultation on day of admission	86	87	94	62	75	87	85	84	0.000
Consultation within office hours	63	69	66	85	93	82	76	76	0.008
Patient alert at first consultation	63	87	75	75	83	72	89	77	0.02
Reassessment of non-alert patients	90	75	67	100	29	95	80	81	≥ 0.05
Collection of information	86	49	81	100	38	71	85	72	
Family participation	50	18	14	47	14	38	30	31	< 0.01

* percentages are given for observance of recommendations

** the value *P* represents the difference among hospitals in the observance of recommendations (χ2-test)

consultations for suicide attempters occurring outside office hours. In 3 hospitals almost one third of consultations were performed outside office hours.

An average of 77% of the patients was alert during the first consultation, 17% was drowsy and 5% very drowsy or unconscious. The hospitals differed statistically significantly concerning the percentage of patients being assessed when alert. At hospital 3, where the recommendation existed to perform consultation immediately for all patients, the percentage of non-alert patients was not the highest, while in one of the hospitals that recommended consulting alert patients only, almost 40% of the patients was not alert.

Often (81% on average), patients who were not alert were seen for a follow-up consult. In 1 hospital this percentage was considerably lower (29%). These numbers were too small to interpret statistically.

In an average of 72% of the cases information was collected from one or more external sources. The degree to which information was collected from external sources differed among hospitals, but evaluation of the differences was not useful because 2 different recommendations were being used. One of the 2 hospitals (2 and 7) with the recommendation that only information be collected on indication was found to have collected information for more than the average (85% of the cases). In hospital 5, where the recommendation prescribed collection of information, it only happened in 38% of the cases.

When only patients who lived with others were examined, in a small number of cases the family was involved during consultation (mean 31%; range 14-

50). Hospitals differed significantly on this point. In hospitals (1,3,4,5,6) that recommended family involvement, it was found that this occurred in 2 hospitals in only 14% of the cases.

Communication with an aftercare provider took place in an average of 86% of the cases. Only written communication took place in just 22% of the cases, only by telephone in 32% of the cases, and by telephone and in writing in 46% of the cases. Because 3 different recommendations were used, analysis was not useful. One hospital communicated with aftercare providers in 100% of the cases, while in another hospital no form of communication whatsoever was carried out in 33% of the cases. The hospitals that followed the recommendation to communicate in writing as well as by telephone proved not to communicate on a regular basis in writing (one hospital failed to do this in more than 15% of the cases). The hospital that claimed to prefer written communication achieved the highest score: in 87% of the cases the aftercare provider was informed in writing. The hospitals that preferred to communicate by telephone did not show better results on this point (see Table 3).

DISCUSSION

In all hospitals agreed-upon rules existed for the assessment and management of suicide attempters. The recommendations concerning accessibility of care showed a greater similarity than those concerning coordination of care. With regard to the carrying out of the recommendations, there was a substantial discrepancy with the norm that they had created themselves.

The validity of the developed criteria can be criticized, because the data were collected from a study with a more extensive goal. Criteria that directly evaluated the recommendations that were used proved more sound than others. A criterion of measuring the time in days between date of admittance and date of consultation is very much reliable for studying the observance of the recommendation that a suicide attempter must be assessed within 24 hours after admittance. This is much less the case for the criterion where one tests whether the family participated in the consult.

All of this implies that the sometimes large discrepancies that were found cannot be labeled as inadequate care. Nevertheless, the results do show a certain pattern for which we think we can offer some tentative conclusions.

Concerning the accessibility of care it was found that clinical practice was, to a fair if not high degree, in accordance with the recommendations. In general, there was a prompt response to requests for consultation, especially in case of emergency, while at the same time, most consultations were performed dur-

ing office hours. However, in many cases consultation was not requested within the time period that was recommended in the guideline.

Concerning the coordination of care, the recommendations themselves showed not only a large diversity, but the degree to which they were carried out also varied. All but 1 of the hospitals had recommended that patients should be alert when assessed, but the results show that in practice this was not followed in almost a quarter of the cases. The recommendation of participation of family during consultation that was prescribed by 5 of the 7 hospitals appeared to be difficult to achieve by all. Communication with aftercare providers that was prescribed by all hospitals as necessary was performed well by some of them, but in one hospital this did not occur in about a third of the cases.

Especially those recommendations in which several parties were involved seemed rather fragile. Recommendations for which only the consultation service was responsible, as in the case of response time on requests and also in reassessing non-alert patients, were carried out well by the majority of the services.

Perhaps suicide attempters receive primarily 'first aid' care with other care being given less precisely (meaning: according to the guidelines). Because the care that follows 'first aid' care is very intensive, there might be a relationship here with available manpower. Taking into account the small number of hospitals participating in this study, it is not possible, within the boundaries of this study, to prove this. However, ECLW study data showed that total time spent on a case was in 76% of the cases no more than 120 minutes (and in 41% of the cases a maximum of 60 minutes). If patients must be assessed in that amount of time and relevant information must be collected from others (family, general practitioner) and communicated, this seems too little time for this.

Centraal Begeleidingsinstituut voor de Intercollegiale Toetsing (1991). *Opvang van suicidepogers in algemene ziekenhuizen*. Utrecht.

Harteloh, P. P. M. & Casparie, A. F. (1991). *Kwaliteit van Zorg, van een zorginhoudelijke benadering naar een bedrijfskundige aanpak.* Den Haag: Vuga/De Tijdstroom.

Huyse, F. J. (1991). Consultation-liaison psychiatry. Does it help to get organized? The European Consultation-Liaison Workgroup. *General Hospital Psychiatry, 13,* 183-187.

Huyse, F. J., Herzog, T., Malt, U. F., & Lobo, A. (1996). The European Consultation-Liaison Workgroup (ECLW) Collaborative Study. I. General outline. *General Hospital Psychiatry, 18,* 44-55.

Kerkhof, A. J. F. M. (1985). *Suicide en de geestelijke gezondheidszorg.* Lisse: Swets & Zeitlinger.

Laan, W. J. D. M. & Verwey, B. (1992). Een zinvol gesprek op de juiste tijd. *Nederlands Tijdschrift voor Geneeskunde, 136,* 353-355.

Lobo, A., Huyse, F. J., Herzog, T., Malt, U., & Opmeer, B. C. (1996). The ECLW Collaborative study II: patient registration form (PRF) instrument, training and reliability. European Consultation/Liaison Work group. *Journal of Psychosomatic Research, 40,* 143-156.

Malt, U. F., Huyse, F. J., Herzog, T., Lobo, A., & Rijssenbeek, A. J. (1996). The ECLW Collaborative Study: III. Training and reliability of ICD-10 psychiatric diagnoses in the general hospital setting – an investigation of 220 consultants from 14 European countries. European Consultation Liaison Workgroup. *Journal of Psychosomatic Research, 41,* 451-463.

Starmark, J. E., Stalhammar, D., & Holmgren, E. (1988). The Reaction Level Scale (RLS85). Manual and guidelines. *Acta Neurochirurgica (Wien.), 91,* 12-20.

Chapter 3 – Availability, content, and quality of local guidelines for the assessment of suicide attempters in university and general hospitals in the Netherlands

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ABSTRACT

Objective

This study was performed to investigate the availability, content, and quality of local guidelines for the assessment of suicide attempters in the Netherlands.

Method

All university and general hospitals in the Netherlands were asked to provide their local guidelines. Published national guidelines and the AGREE instrument were used to evaluate the content and quality of the local guidelines.

Results

Eighty-eight hospitals (90.7%) responded; 34 (38.6%) reported that they used local guidelines. Twenty-seven guidelines were submitted for evaluation. Most of the guidelines were more than five years old and had not been updated recently. The contents of the guidelines differed. Criteria addressing patient safety, staff attitude toward patients, re-assessment of non-alert patients, relevant stressors, involvement of significant others, and aftercare were found in less than 50% of the guidelines. Although psychiatric consultation was incorporated in almost 80%, the psychiatrist's tasks were specified infrequently. The guidelines seldom required monitoring of staff compliance. Only in the AGREE domain 'clarity and presentation' the mean score was above 60% of the maximum. According to the instructions for the AGREE instrument, 10 (37.0%) of the 27 guidelines were recommended (with provisos or alterations) and one was strongly recommended for use in practice.

Conclusions

In the Netherlands, a minority of hospitals reported use of local guidelines for the assessment of suicide attempters. When available, the guidelines were mostly not based on international standards, their contents varied greatly, and their quality was unsatisfactory.

INTRODUCTION

The World Health Organization has estimated that in the year 2000 approximately one million people worldwide died from suicide, and ten to twenty times more made a suicide attempt (World Health Organization, 2000). Of those who try, at least 2% repeat the attempt and succeed within ten years, mostly within the first two years (de Moore & Robertson, 1996; Hawton et al., 1998; Hawton, Zahl, & Weatherall, 2003; Owens, Horrocks, & House, 2002; Zahl & Hawton, 2004). A significant number of suicide attempters present for treatment to emergency departments of university and general hospitals. Assessment and treatment of these patients is often complicated. Many patients are not only in a disordered psychic state, but they are often in an acute life-threatening somatic condition as well. Therefore, treatment requires a subtle interplay between psychiatrists, other medical specialists, and nurses. Unfortunately, this interplay is frequently made more complex by a negative or ambivalent attitude by emergency department staff that leads to stigmatization and lack of empathy for the patient (Roose, 2001). Nevertheless, a thorough assessment and treatment are important to prevent somatic complications, further deliberate self-harming, and completed suicide (Hickey, Hawton, Fagg, & Weitzel, 2001; Suokas & Lonnqvist, 1991). Thus, it is critical for a hospital to provide services of high quality to these patients (Hawton & Heeringen, 2000). In general, clinical practice guidelines are a potentially valuable tool to improve quality of care (Grol, 1997), and therefore it can be argued that hospitals should adopt local guidelines for the assessment and treatment of people who attempt suicide.

In the Netherlands in 1991, the Medical Scientific Council of the National Organization for Quality Assurance in Hospitals issued national clinical guidelines for the assessment of suicide attempters in general hospitals (Centraal Begeleidingsinstituut voor de Intercollegiale Toetsing, 1991). National guidelines for the management and assessment of suicide attempters have been developed in other countries as well (American Psychiatric Association, 2003; Boyce P., Carter G., Penrose-Wall J., Wilhelm K., & Goldney R., 2003; Goldberg, 1987; Hirschfeld & Russell, 1997; Isacsson & Rich, 2001; Lonnqvist & Suokas, 1992; Packman, Marlitt, Bongar, & Pennuto, 2004; Royal College of Psychiatrists, 2004; Simon, 2002). In the few studies evaluating the application of such national guidelines in hospitals, great differences have been observed in the care provided (Barr, Leitner, & Thomas, 2005; Hawton & James, 1995; Owens & House, 1994; Slinn, King, & Evans, 2001). For example, although a national guideline for assessment of suicide attempters was established in England, only 60% of hospitals implemented a policy document addressing

this issue (Slinn et al., 2001). Recently, the APA published an elaborate set of guidelines representing 'a synthesis of current scientific knowledge and rational clinical practice on the assessment'. To evaluate the Dutch situation, we performed this descriptive study to gain insight in the availability, content, and quality of local guidelines for assessing suicide attempters in university and general hospitals.

METHODS

In 2005, we sent a short questionnaire with a self-addressed envelope to the responsible psychiatrist in all university (n = 8) and general (n = 89) hospitals in the Netherlands. Addresses of general hospitals were obtained from the Dutch Society of Hospitals (NVZ) with which all hospitals are affiliated. Four questions were asked: [1] 'Does your hospital use a guideline for the assessment of suicide attempters?' [2] 'If so, since what year?' [3] 'From what year dates the most recent update?' [4] 'Has the observance of the guideline been tested?' (yes, once/yes, regularly/no) The psychiatrist was asked to return the questionnaire together with any available guidelines. After four weeks, all non-responders were reminded of the request by telephone.

MEASUREMENTS

A. *Contents of local guidelines*

The criteria to evaluate the contents of local guidelines were adopted from the guidelines of the American Psychiatric Association (American Psychiatric Association, 2003), the Royal College of Psychiatrists (Royal College of Psychiatrists, 2004), and the Dutch National Organization for Quality Assurance in Hospitals (Centraal Begeleidingsinstituut voor de Intercollegiale Toetsing, 1991). From these sources, criteria were included only if they were discussed in all three guidelines as major topics for the assessment. Topics only occurring in one of the guidelines, for example 'training and supervision of staff' and 'providing education to the patient and family', were not selected. Specifically, we assessed whether the guidelines provided instructions to:

1 address patient safety during the assessment process
2 establish and maintain a therapeutic alliance between the clinician and the patient

3 promptly assess the physical condition of the patient, including the patient's level of consciousness
4 perform a psychiatric consultation for all patients, specifically to:
   4.1 assess suicidality
   4.2 perform a psychiatric examination to detect mental illness, alcohol abuse, and/or drug problems in all patients
   4.3 identify patient factors associated with increased risk for suicide or suicide attempt
   4.4 assess stressors for the patient that may have caused the attempt
5 handle patients who were not cooperative or refused to be assessed
6 re-assess patients who were not alert at the time of the initial evaluation
7 assess other people significant to the patient
8 provide treatment and aftercare
9 provide information to aftercare therapists

Each criterion was scored positive if the guideline gave any instructions relevant to the specific issue.

B. *Quality of local guidelines*

To evaluate the methodological quality of the local guidelines, the Appraisal of Guidelines for Research and Education (AGREE) instrument was used (2001). This validated instrument has been developed by an international group of guideline experts and consists of 23 key items organized in six domains. For most domains, Cronbachs' α varied between 0.64 and 0.88 (2003). It has been used in studies to evaluate the quality of clinical practice guidelines for lung cancer diagnosis and treatment (Harpole et al., 2003), guidelines for the management of major depressive disorder in the general hospital (Voellinger et al., 2003), as well as European psychiatric treatment guidelines (Stiegler, Rummel, Wahlbeck, Kissling, & Leucht, 2005). Domains and items are as follows:

1 Scope and purpose (3 items). This domain scores the presence of specific descriptions of the overall objectives, the clinical questions covered, and the patients for whom the guideline is meant to apply.
2 Stakeholder involvement (4 items). This domain scores whether all relevant professionals participated in developing the guideline, whether the patient's views and preferences were sought after, whether the target users were defined, and whether the guideline was pilot tested among users.
3 Rigor of development (7 items). This domain scores whether systematic methods were used to search for evidence; whether the criteria for selecting the evidence and the methods used to formulate the recommendations were

clearly described; whether an explicit link was made between the recommendations and the supporting evidence; whether benefits, side effects, and risks were considered when formulating the recommendations; whether the guideline was externally reviewed by experts prior to publication; and whether a procedure was provided for updating the guideline.

4 Clarity and presentation (4 items). This domain scored whether the recommendations were specific and unambiguous, whether the different management options were clearly presented, whether key recommendations were easily identifiable, and whether the guideline was supported with tools for application.

5 Applicability (3 items). Issues pertinent to guideline implementation were evaluated in this domain. Specific factors included organizational barriers, cost implications, and monitoring criteria.

6 Editorial independence (2 items). This domain scored whether conflicts of interest were recorded and whether the guideline was editorially independent. This domain was not used in this study because it was considered irrelevant considering the subject. Some guidelines stated that the hospital administration or the medical staff had mandated that a group of cooperating professionals such as psychiatrists, nursing personnel, and managers develop the guideline.

The scores for each domain were obtained by summing up all the scores on an individual item in a domain and then standardizing them as follows:

$$\frac{\text{obtained score} - \text{minimum possible score}}{\text{maximum possible score} - \text{minimum possible score}} \times 100\%$$

The maximum possible score for each domain was the number of questions multiplied by the number of reviewers multiplied by four (i.e., the score for 'strongly agree'). The minimum possible score for a domain was the number of questions multiplied by the number of reviewers multiplied by one (i.e., the score for 'strongly disagree').

The final component of the AGREE instrument involves making a recommendation regarding the use of the guidelines in practice. The four categories are strongly recommended, recommended (with provisos or alterations), would not recommend, or unsure.

Three reviewers (B.V., J.v.W., and G.G.) independently scored the AGREE instrument to evaluate the quality of the local guidelines. κ statistics were calculated for the agreement on recommendations of the guidelines, and the

intraclass correlation coefficients were calculated for absolute agreement on the five domain scores. We used a mixed-effects model, because the only raters of interest were the three that participated in the study.

As in the Netherlands university hospitals in general are more committed to the development of guidelines, a distinction between university and general hospitals was made.

RESULTS

The overall response rate to the questionnaire was 90.7%. All eight university hospitals and 80 of the 89 general hospitals responded.

Availability of local guidelines, dates, updating, and evaluation of observance

Five out of eight university hospitals reported they used local guidelines, but only four guidelines (50%) were submitted for examination. One guideline was more than ten years old; the three others were not older than five years. Two had never been updated. Two had been updated within the previous five years. One university hospital reported that they regularly evaluated staff compliance with their guideline.

Twenty-nine of the 80 (36.3%) responding general hospitals reported using local guidelines; 23 (28.8%) submitted them for evaluation. Seventeen (73.9%) guidelines were more than five years old. Eight (34.8%) had been updated within the previous five years. Nine general hospitals (39.1%) stated they regularly evaluated staff compliance with their local guidelines.

Significant differences between the university and general hospitals were found only for the criterion 're-assessing non-alert patient' ($\chi 2$ test: means 50% and 4.3%, respectively; $P = 0.01$) and the AGREE domain 'clarity and presentation' (t-test: means 50.7% and 67.4%, respectively; $P = 0.05$). However, the small number of university hospitals that submitted guidelines and the marginal differences observed between the two types of hospitals prevent meaningful comparisons. Therefore, we present the sum of the results. In total, 34 out of 88 (38.6%) hospitals reported using guidelines, and 27 of the guidelines were available for this study.

Criteria related to the content of the local guidelines (Table 4)

In 13 out of 27 (48.1%) guidelines, recommendations were made to guarantee the patient's safety. In almost half of the local guidelines, instructions were given on how to respond to the patient. In 15 out of 27 (55.6%) guidelines, the

Table 4 Criteria for the assessment of suicide attempters in Dutch university and general hospitals

Criterion	University hospital n = 4	General hospital n = 23	All n = 27
	n (%)	n (%)	n (%)
Addressing safety	3 (75)	10 (43.5)	13 (48.1)
Response to patient	3 (75)	10 (43.5)	13 (48.1)
Somatic consultation	3 (75)	13 (56.5)	16 (59.3)
Psychiatric consultation	3 (75)	18 (78.3)	21 (77.8)
Assessment of suicidality	2 (50)	10 (43.5)	12 (44.4)
Diagnosing psychiatric disorder	2 (50)	8 (34.8)	10 (37.0)
Detecting risk factors	2 (50)	9 (39.1)	11 (40.7)
Detecting stressors	2 (50)	8 (34.8)	10 (37.0)
Handling refusing patient	2 (50)	15 (65.2)	17 (63.0)
Assessing significant others	2 (50)	13 (56.5)	15 (55.6)
Re-assessment non-alert patient *	2 (50)	1 (4.3)	3 (11.1)
Regulations for aftercare	2 (50)	11 (47.8)	13 (48.1)
Reportage	2 (50)	14 (60.9)	16 (59.3)

* $p = 0.01$ (χ^2–*test*)(Difference between university and general hospitals)

recommendation was provided that all patients should be examined by a somatic specialist, and psychiatric consultation was instructed in 21 out of 27 (77.8%). The necessity of assessing current suicidality was published in 12 out of 27 (44.4%) guidelines. In 10 out of 27 (37.0%), a psychiatric examination was recommended to detect mental illness, alcohol abuse, and drug problems. The need to detect factors associated with increased risk for suicide or suicide attempt was mentioned in 11 out of 27 (40.7%) guidelines. Identifying stressors for the patient that gave rise to the suicide attempt was called for in 10 out of 27 (37.0%).

Instructions how to manage uncooperative or refusing patients were provided in 17 out of 27 (63.0%) guidelines. The instruction to re-assess patients who were not alert at first consultation was found in 3 out of 27 (11.1%) guidelines. Assessing significant others was instructed in 15 out of 27 (55.6%). In 13 out of 27 (48.1%) guidelines, recommendations were given for quick referral to aftercare providers. In 16 out of 27 (59.3%), procedures for handing information over to these providers were given.

Table 5 Intraclass correlation coefficients of the raters

Domain	ICC	LB	UB
Scope and purpose	0.73	0.56	0.86
Stakeholder involvement	0.52	0.29	0.72
Methodology	0.66	0.46	0.81
Clarity and presentation	0.36	0.11	0.60
Applicability	0.32	0.09	0.56

ICC = intraclass correlation coefficient

LB = lower bound; UB = upper bound

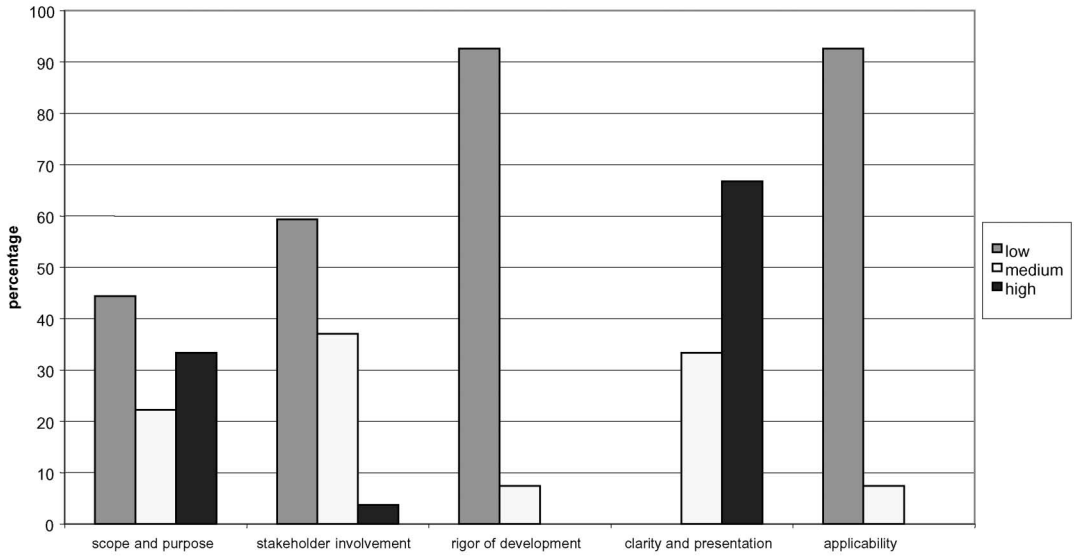

Figure 1 Percentage of guidelines for the assessment of suicide attempters scoring low (0-30%), medium (30-60%) and high (60-100%) in five out of six domains of the AGREE instrument

Ratings in five of six domains of the AGREE instrument (Figure 1).
For the AGREE domain 'scope and purpose', the mean score was 43.3 (SD 29.2) with 9 out of 27 local guidelines scoring > 60%. The mean score for the domain 'stakeholder involvement' was 22.4 (SD 17.5) with only one guideline scoring > 60%. None of the guidelines was pilot-tested among users. The mean score for 'rigor of development' was 11.8 (SD 11.0) with two guidelines scoring between 30% and 60%. None of the guidelines indicated that a systematic literature study had been out of performed during its development. The mean score for the domain 'clarity and presentation' was 64.9 (SD 16.0) with 18 out of 27 guidelines scoring > 60%. For the domain 'applicability' the mean score was 14.9 (SD 12.3) with only two guidelines scoring > 30% and none more than 60%.

Table 5 shows the intraclass correlation coefficients of the three raters (two psychiatrists, B.V. and J.v.W., and a quality assurance officer, G.G.). The best agreement was for 'scope and purpose'. A reasonable agreement was also present for 'rigor of development' and for 'stakeholder involvement'. Agreement was poor on 'clarity and presentation' and on 'applicability'. There was better agreement between the psychiatrists for the domains 'scope and purpose', 'rigor of development', and 'stakeholder involvement' than between either psychiatrist and the quality assurance officer. For these three items, the correlation coefficient was over 0.85 between the psychiatrists. However, the agreement was poor among all three for the domains 'clarity and presentation' and 'applicability', with correlations between two raters ranging from 0.30 to 0.43 for 'applicability' and from 0.38 to 0.58 for 'clarity and presentation'.

Overall assessment
The reviewers agreed that 10 local guidelines (37.0%) should be recommended with provisos or alterations (one university and ten general hospital guidelines) and one should be strongly recommended. The agreement of the overall assessment was substantial ($\kappa = 0.72$).

DISCUSSION

This report describes the first systematic study on the availability, content, and quality of guidelines for the assessment of suicide attempters in university and general hospitals in the Netherlands. The response to a written request was remarkably high. Only a minority (38.6%) of the hospitals reported using local guidelines for the assessment of suicide attempters. This result is remarkable because a national guideline was published in the Netherlands in 1991. Only one hospital reported using this national guideline, and some others men-

tioned using it to develop their own. These results are even lower than the 60% of trusts in England that had a clear policy document for dealing with deliberate self-harm (Slinn et al., 2001). We are not aware of studies in the USA addressing this subject.

Considering that half of all guidelines are outdated after 5.8 years (Shekelle et al., 2001), many of the examined local guidelines were antiquated. Moreover, most were not updated and staff compliance was seldom evaluated.

Local guidelines varied widely in their primary objectives, general length, narrative form and readability. Some addressed mainly patient safety and physician responsibilities, while others focused more on suicidality assessment. Remarkably, the necessity for psychiatric consultation for every suicide attempter, as directed by major professional groups (American Psychiatric Association, 2003; Centraal Begeleidingsinstituut voor de Intercollegiale Toetsing, 1991; Royal College of Psychiatrists, 2004), was not recommended in all local guidelines. The specific tasks of the psychiatrist were described in less than 50% of the guidelines. Other criteria for assessment, as defined in this study, were found in half of the guidelines or less than half, perhaps because most guidelines were outdated and our evaluation criteria were developed from the recent literature. On the other hand, most of the defined criteria used in this study were already in the Dutch national guideline from 1991. So most of the guidelines were incomplete even according to the 1991 national criteria. Based on analysis of the AGREE scores, the reviewers agreed to recommend (with provisos or alterations) eleven local guidelines. Taking into account the very low scores in three out of five domains ('stakeholder involvement', 'rigor of development', and 'applicability'), this is a remarkable result. Presumably the higher scores in the domains 'scope and purpose' and 'clarity and presentation' resulted in an overall mild conclusion. The very low scores in the domain 'rigor of development' are the result of the fact thathardly any guideline referenced published international guidelines or other literature. If references were given, no description of the search and selection process was included. Descriptions of the methods used to formulate the guidelines were not found, and the possible effects of the guideline were seldom assessed. The low scores for the domain 'stakeholder involvement' probably mirror the poor presentation of the guidelines, rather than the real absence of professionals in the process of guideline development. Patient views were not mentioned in any of the guidelines.

To establish our results, we compared them with prior studies on quality of guidelines using the AGREE instrument. In a study reviewing 51 clinical practice guidelines for lung cancer diagnosis and treatment (Harpole et al., 2003), only 19 (37%) were recommended, which is comparable with the per-

centage of guidelines for assessment of suicide attempters that were recommended in our study. However, in the lung cancer guidelines the mean scores in 4 out of 5 domains were substantially higher. In a study on 61 European psychiatric treatment guidelines (Stiegler et al., 2005), using the AGREE instrument, mean scores in 4 out of 5 domains were also substantially higher. The sum of the mean scores of the domains in the lung cancer guidelines and the European psychiatric treatment guidelines were respectively 16 and 10% higher.

Many of the local guidelines failed to address issues of implementation and monitoring. Addressing such issues is necessary to take the guidelines into practice successfully. For example, an intervention study showed that teaching emergency department staff how to handle suicide attempters led to improvements in the quality of the assessment of these patients (Crawford, Turnbull, & Wessely, 1998).

The intraclass correlation coefficients between raters were very poor for some domains, which may be due to differences in interpretation of several items where the instructions were broad. Some items were relatively straightforward, as in 'rigor of development' and the intraclass correlation coefficient was substantial at that point (0.66). The raters agreed substantially that one guideline should be strongly recommended, and ten guidelines should be recommended (with provisos and alterations) ($\kappa = 0.72$). According to the instructions for the AGREE instrument, the overall assessment of guidelines can be the result of personal judgment or by calculating the scores in the domains. When in the majority of the domains the scores are above 60%, a guideline can be strongly recommended, and when scores are between 30-60% a guideline can be recommended (with provisos and alterations). Using this method, none of the evaluated guidelines could be strongly recommended and twelve could be recommended (with provisos and alterations). The same eight local guidelines were recommended using both methods.

In the AGREE domain 'clarity and presentation', among other elements 'the precise and concrete description of which management is appropriate in what situation and in what patient group', and 'the different possible options for screening, prevention, diagnosing and treatment' are appraised; in this study a mean score of 64.9% was found. However, content of guidelines was also evaluated by defined criteria and most of them were found in less than 50% of the guidelines. So only appraising content with the scores in the AGREE domain 'clarity and presentation' in this study had given a very positive result.

Although the majority of these Dutch hospitals did not have local guidelines, we cannot conclude from this descriptive study that physicians working in hospitals without guidelines are not capable of assessing suicide attempters

properly. And although guidelines can be a valuable tool to improve quality of care, their development does not ensure their use in practice (Feder, Eccles, Grol, Griffiths, & Grimshaw, 1999). In fact, in addition to developing and implementing guidelines, other approaches are necessary as well in order to achieve improvement of quality of care in daily practice (Grol & Grimshaw, 2003). Even in the presence of national guidelines, the small number of local guidelines found in this study, as well as the incomplete content and unsatisfactory quality of these guidelines, underline that the development and implementation of guidelines for the assessment and treatment of suicide attempters requires much more attention from professionals and local and national health care organizations. In the UK only 60% of the hospitals have implemented local guidelines (Slinn et al., 2001) and in the US this is not studied yet. The recommendations for the assessment of suicide attempters directed in the published guidelines of the Netherlands, UK and US are comparable. Therefore, the findings of this Dutch study lead to questions on the availability, content and quality of local guidelines in the UK and the US.

In conclusion, local guidelines are available in a minority of the university and general hospitals in the Netherlands. If available, their content and quality are mostly unsatisfactory. Taking into account the severity of the health-care problem of suicide attempt and suicide, the development and implementation of local guidelines, even given the availability of national guidelines, should be urgently pursued.

The AGREE Collaboration. Appraisal of Guidelines For Research & Evaluation (AGREE) instrument (2001). www.agreecollaboration.org [On-line].

Development and validation of an international appraisal instrument for assessing the quality of clinical practice guidelines: the AGREE project (2003). *Quality and Safety in Health Care, 12,* 18-23.

American Psychiatric Association (2003). Practice guideline for the assessment and treatment of patients with suicidal behaviors. *American Journal of Psychiatry, 160,* 1-60.

Barr, W., Leitner, M., & Thomas, J. (2005). Psychosocial assessment of patients who attend an accident and emergency department with self-harm. *Journal of Psychiatric and Mental Health Nursing, 12,* 130-138.

Boyce, P., Carter, G., Penrose-Wall, J., Wilhelm, K., & Goldney, R. (2003). Summary Australian and New Zealand clinical practice guideline for the management of adult deliberate self-harm (2003) . *Australasian Psychiatry, 11,* 150-155.

Centraal Begeleidingsinstituut voor de Intercollegiale Toetsing (1991). *Opvang van suicidepogers in algemene ziekenhuizen*. Utrecht.

Crawford, M. J., Turnbull, G., & Wessely, S. (1998). Deliberate self harm assessment by accident and emergency staff–an intervention study. *Journal of Accident and Emergency Medicine, 15,* 18-22.

de Moore, G. M. & Robertson, A. R. (1996). Suicide in the 18 years after deliberate self-harm: a prospective study. *British Journal of Psychiatry, 169,* 489-494.

Feder, G., Eccles, M., Grol, R., Griffiths, C., & Grimshaw, J. (1999). Clinical guidelines: using clinical guidelines. *British Medical Journal, 318,* 728-730.

Goldberg, R. J. (1987). The assessment of suicide risk in the general hospital. *General Hospital Psychiatry, 9,* 446-452.

Grol, R. (1997). Personal paper. Beliefs and evidence in changing clinical practice. *British Medical Journal, 315,* 418-421.

Grol, R. & Grimshaw, J. (2003). From best evidence to best practice: effective implementation of change in patients' care. *Lancet, 362,* 1225-1230.

Harpole, L. H., Kelley, M. J., Schreiber, G., Toloza, E. M., Kolimaga, J., & McCrory, D. C. (2003). Assessment of the scope and quality of clinical practice guidelines in lung cancer. *Chest, 123,* 7S-20S.

Hawton, K., Arensman, E., Townsend, E., Bremner, S., Feldman, E., Goldney, R. et al. (1998). Deliberate self harm: systematic review of efficacy of psychosocial and pharmacological treatments in preventing repetition. *British Medical Journal, 317,* 441-447.

Hawton, K. & Heeringen, K. v. (2000). *The international handbook of suicide and attempted suicide*. John Wiley & Sons,Ltd.

Hawton, K. & James, R. (1995). General hospital services for attempted suicide patients: a survey in one region. *Health Trends, 27,* 18-21.

Hawton, K., Zahl, D., & Weatherall, R. (2003). Suicide following deliberate self-harm: long-term follow-up of patients who presented to a general hospital. *British Journal of Psychiatry, 182,* 537-542.

Hickey, L., Hawton, K., Fagg, J., & Weitzel, H. (2001). Deliberate self-harm patients who leave the accident and emergency department without a psychiatric assessment: a neglected population at risk of suicide. *Journal of Psychosomatic Research, 50,* 87-93.

Hirschfeld, R. M. & Russell, J. M. (1997). Assessment and treatment of suicidal patients. *New England Journal of Medicine, 337,* 910-915.

Isacsson, G. & Rich, C. L. (2001). Management of patients who deliberately harm themselves. *British Medical Journal, 322,* 213-215.

Lonnqvist, J. & Suokas, J. (1992). Attempted suicides: how should they be managed and suicide prevented? [editorial]. *Annals of Medicine, 24,* 7-8.

Owens, D., Horrocks, J., & House, A. (2002). Fatal and non-fatal repetition of self-harm. Systematic review. *British Journal of Psychiatry, 181,* 193-199.

Owens, D. & House, A. (1994). General hospital services for deliberate self-harm. Haphazard clinical provision, little research, no central strategy. *Journal of the Royal College of Physicians of London, 28,* 370-371.

Packman, W.L., Marlitt, R.E., Bongar, B., & Pennuto, T.O. (2004). A comprehensive and concise assessment of suicide risk. *Behaviour Science and the Law, 22,* 667-680.

Roose, S.P. (2001). Suicide: what is in the clinician's mind? *Annals of the New York Academy of Science, 932,* 151-157.

Royal College of Psychiatrists (2004). *Assessment following self-harm in adults* (Rep. No. Council Report CR122). London: Royal College of Psychiatrists.

Shekelle, P.G., Ortiz, E., Rhodes, S., Morton, S.C., Eccles, M.P., Grimshaw, J.M. et al. (2001). Validity of the Agency for Healthcare Research and Quality clinical practice guidelines: how quickly do guidelines become outdated? *JAMA, 286,* 1461-1467.

Simon, R.I. (2002). Suicide risk assessment: what is the standard of care? *Journal of the American Academy of Psychiatry and the Law, 30,* 340-344.

Slinn, R., King, A., & Evans, J. (2001). A national survey of the hospital services for the management of adult deliberately self-harm. *Psychiatric Bulletin, 25,* 53-55.

Stiegler, M., Rummel, C., Wahlbeck, K., Kissling, W., & Leucht, S. (2005). European psychiatric treatment guidelines: is the glass half full or half empty? *European Psychiatry, 20,* 554-558.

Suokas, J. & Lonnqvist, J. (1991). Outcome of attempted suicide and psychiatric consultation: risk factors and suicide mortality during a five-year follow-up. *Acta Psychiatrica Scandinavica, 84,* 545-549.

Voellinger, R., Berney, A., Baumann, P., Annoni, J.M., Bryois, C., Buclin, T. et al. (2003). Major depressive disorder in the general hospital: adaptation of clinical practice guidelines. *General Hospital Psychiatry, 25,* 185-193.

World Health Organization (2000). *Preventing suicide. A resource for primary health care workers.* (Rep. No. WHO/MNH/MB/DO.04). Geneva: Department of Mental Health, World Health Organization.

Zahl, D.L. & Hawton, K. (2004). Repetition of deliberate self-harm and subsequent suicide risk: long-term follow-up study of 11,583 patients. *British Journal of Psychiatry, 185,* 70-75.

Chapter 4 – Guidelines for the assessment of suicide attempters in institutions for mental health in the Netherlands: investigation into availability, content, and quality

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ABSTRACT

Background

Suicide attempts are frequent occurrences, also in Mental Health Institutions (MHI). Various countries have published guidelines for assessing suicide attempters and in 1991, the initiative was taken to produce a Dutch version. The World Health Organization (WHO) makes the case for developing and implementing such guidelines in MHI.

Aim

To establish the availability, content and quality of guidelines for assessing suicide attempters in MHI in the Netherlands and to compare these with similar guidelines used by university and general hospitals.

Method

All MHI were asked in writing whether they had a set of guidelines, when these had been drawn up, whether they were regularly revised and whether compliance with the guidelines was tested. Criteria for assessing the content of available guidelines were derived from the literature. In addition, the guidelines were assessed using the AGREE, a tool developed to evaluate guideline quality.

Results

Thirty-eight of 48 (79.2%) MHI responded and access was given to a total of 12 sets of guidelines. Two of these were more than 5 years old and virtually none had been revised. In a third of the guidelines monitoring with staff compliance was required. Instructions for adressing staff attitude towards patients were described least, and those for somatic assessment, patients' safety and coping with non-cooperative patients appeared in fewer than two-thirds of the guidelines. Instructions for carrying out a psychiatric consultation and the accompanying tasks were often described extensively. Instructions for involving 'significant others' in the assessment were found most frequently.

In the AGREE domains 'Clarity and Presentation' and 'Scope and Purpose' an average of more than 60% of the maximum score was found; the scores in the other domains were less than 30%. Ten guidelines were designated 'to be recommended (with provisos or alterations)'. A comparison of the content and quality of such guidelines of MHI with those of university and general hospitals revealed several differences, with the guidelines of the MHI scoring, on the whole, better.

Conclusion

Guidelines are only available in a minority of MHI, and the same is true for university and general hospitals. Although the content of the guidelines could be considered to be adequate, certainly if compared with the guidelines of hospitals, some important criteria were lacking. The quality of MHI guidelines, as measured with the AGREE, was low but better than that of the guidelines of the hospitals.

INTRODUCTION

Between 1997 and 2002, some 1500 people in the Netherlands committed suicide (CBS, 2004), about 9 per 100.000 residents. Annually there are about 15.000 suicide attempts. Some 23% of the suicide attempters try more than once (Bille-Brahe et al., 1997; Owens, Horrocks, & House, 2002) and a long-term follow-up study established that at least 1% succeeded in killing themselves within one year and at least 2% within 10 years (Hawton & Fagg, 1988; Hawton, Zahl, & Weatherall, 2003; Suokas, Suominen, Isometsa, Ostamo, & Lonnqvist, 2001). Longer term follow-up revealed even higher percentages (Suominen et al., 2004). The World Health Organisation (WHO) argues for prevention programs which address different areas of health care (WHO, 2000). Mental Health Institutions (MHI) are advised to draw up and implement guidelines for assessing suicide attempters. Approximately 15 years ago, the development of such guidelines was initiated in the Netherlands by the National Organization for Quality Assurance (Centraal Begeleidingsinstituut voor de Intercollegiale Toetsing, 1991). At that time, a workgroup of professionals produced 'a first draft for a protocol for assessing suicide attempters' in the general hospital. This was meant to assist carers 'in the integral care of suicide attempters', and, as far as we know has not undergone further development or testing.

During the past few years, professional groups in the USA, the UK and Australia have produced proposals for the assessment of suicide attempters and developed and published official guidelines (American Psychiatric Association, 2003; Boyce P., Carter G., Penrose-Wall J., Wilhelm K., & Goldney R., 2003; Goldberg, 1987; Hirschfeld & Russell, 1997; Isacsson & Rich, 2001; Lonnqvist & Suokas, 1992; Royal College of Psychiatrists, 2004; Simon, 2002; Packman, Marlitt, Bongar, & Pennuto, 2004).

Investigations into compliance with such guidelines are limited. It has been demonstrated that a psychiatric assessment has the effect of reducing the risk of a repeated attempt or even of suicide itself (Hickey, Hawton, Fagg, & Weitzel, 2001; Suokas & Lonnqvist, 1991). It is apparent from the few studies on the implementation and execution of guidelines or recommendations for assessing suicide attempters, that these leave a lot to be desired. (Barr, Leitner, & Thomas, 2005; Hawton & James, 1995; Hengeveld, Kerkhof, & van der Wal, 1988; Hulten et al., 2000; Owens & House, 1994). In the Netherlands, a study on guideline quality in seven hospitals established that there could be considerable differences in content and compliance, in particular with regard to the coordination of care for suicide attempters (Verwey, Koopmans, Opmeer, Zitman, & Huyse, 1997).

Recently, whether a study was carried out into Dutch university and general hospitals have their own set of guidelines for assessing suicide attempters and those available were studied for content and quality (Verwey et al., 2006). Because suicide attempters are also encountered within MHI (as out-patients, by the emergency service, in the institution), the hospital study was followed by an investigation into the availability, content and quality of such guidelines in MHI; the results are described in this article. Where possible, a comparison is made between the results of this study in MHI and those in university and general hospitals.

METHOD

In 2005 a short questionnaire with reply envelope was sent to the senior clinicians of all MHI (n = 48). Addresses were obtained from GGZ-Nederland, the organisation to which all MHI in the Netherlands are affiliated. All members running an integrated MHI or a RIAGG were included in the investigation. Four questions were asked: 'Does your institution use a guideline for the assessment of suicide attempters?' (yes/no); 'If so, since what year?' (year); 'From what year dates the most recent update?' (year); and 'If available, has the observance of the guideline been tested?' (yes, once; yes, regularly; no). The clinicians were asked to return their answers together with a copy of the guidelines if available. After a period of 4 weeks all those who had not yet responded were telephoned and again asked to cooperate with the investigation.

MEASUREMENTS

A. *Content of the guidelines*

Criteria to evaluate the content of local guidelines for assessing suicide attempters were adopted from the guidelines of the American Psychiatric Association (American Psychiatric Association, 2003), those of the College of Psychiatrists (Royal College of Psychiatrists, 2004) and those of the CBO (Centraal Begeleidingsinstituut voor de Intercollegiale Toetsing, 1991). Topics described in all three sets of guidelines as being important for assessment were considered to be a criterion. Specifically, we assessed whether the guidelines provided instructions to:

1 the 24-hour availability of a relevant expert (psychiatrist or other psychiatric carer) for the suicide attempter

2 address safety of the patient during the assessment process
3 promptly assess the physical condition of the suicide attempter (e.g. checking vital functions, referring to a physician, etc.), including the patient's level of consciousness
4 perform a psychiatric consultation for all patients, specifically to:
  4.1 perform a psychiatric examination
  4.2 assess suicidality
  4.3 identify patient factors associated with increased risk for suicide or repeated attempt
  4.4 assess stressors for the patient that may have caused the attempt
5 establish and maintain a therapeutic alliance between the professional and the patient
6 handle patients who were not cooperative or refused to be assessed
7 obtain information from others (heteroanamnesis)
8 assess significant others (partner, family, concerned parties)
9 organize treatment and/or aftercare
10 regional arrangements with institutions regarding the aftercare of suicide attempters

B. *Guideline Quality*

To evaluate the methodological quality of the local guidelines, we used the scale 'Appraisal of Guidelines for Research and Education' (AGREE) instrument (www.agreecollaboration.org) (2001). This validated tool has been developed by an international group of guideline experts and consists of 23 items organized in six domains. For most domains, Cronbach's α varied between 0.64 and 0.88 (2003). The tool is used in the evaluation of quality of guidelines for diagnosis and treatment of lung cancer (Harpole et al., 2003), guidelines for the treatment of depression in general hospitals (Voellinger et al., 2003) and guidelines for psychiatric treatments in Europe (Stiegler, Rummel, Wahlbeck, Kissling, & Leucht, 2005). Domains and items are as follows:

1 'Scope and purpose' (items 1-3). This domain scores the presence of specific descriptions of the overall objectives, the clinical questions covered, and the patients to whom the guideline is meant to apply.
2 'Stakeholder involvement' (items 4-7). This domain scores whether all relevant professionals participated in developing the guideline, whether the patient's view and preferences were sought after, whether the target users were defined and whether the guideline was pilot tested among users.
3 'Methodology' (items 8-14). This domain scores whether systematic methods were searched for evidence; whether the criteria for selecting the evi-

dence and the methods used to formulate the recommendations were clearly described; whether an explicit link was made between the recommendations and the supporting evidence; whether benefits, side-effects, and risks were considered when formulating the recommendations; whether the guideline was externally reviewed by experts prior to publication; and whether a procedure was provided for updating the guideline.

4 'Clarity and presentation' (items 15-18). This domain scored whether the recommendations were specific and unambiguous, whether the different management options were clearly presented, whether key recommendations were easily identifiable, and whether the guideline was supported with tools for application.

5 'Applicability' (items 19-21). Issues pertinent to guideline implementation were evaluated in this domain. Specific factors included organizational barriers, cost implications, and monitoring criteria.

6 'Editorial independence' (items 22-23). This domain scored whether conflicts of interest were recorded and whether the guideline was editorially independent. This domain was not used in this study because it was considered irrelevant to the subject. Some guidelines stated that the hospital administration or the medical staff had mandated that a group of cooperating professionals such as psychiatrists, nursing personnel, and managers develop the guideline.

The scores for each domain were obtained by summing up all the scores on an individual item in a domain and then standardizing them as follows:

$$\frac{\text{obtained score} - \text{minimum possible score}}{\text{maximum possible score} - \text{minimum possible score}} \times 100\%$$

The maximum possible score for each domain was the number of questions multiplied by the number of reviewers multiplied by four (i.e., the score for 'strongly agree'). The minimum possible score for a domain was the number of questions multiplied by the number of reviewers multiplied by one (i.e., the score for 'strongly disagree'). To understand the standardised scores see Table 6.

The final component of the AGREE instrument involves making a recommendation regarding the use of the guidelines in practice. The four categories are strongly recommended, recommended (with provisos or alterations), would not recommend, or unsure.

Three reviewers (B.V., J.v.W., and G.G.) independently scored the AGREE

instrument to evaluate the quality of the local guidelines. κ statistics were calculated for the agreement on recommendations of the guidelines, and the intra-class correlation coefficients were calculated for absolute agreement on the five domain scores. We used a mixed-effects model, because the only raters of interest were the three that participated in the study.

RESULTS

Response, availability of guidelines, date, revision and testing (Table 7)
Thirty-eight of the 48 MHI (79.2%) responded. Thirteen of the 38 (34.2%) MHI reported that they used local guidelines and 12 of these made them available for further scrutiny. Ten (83.3%) guidelines had been drawn up within the last 5 years. Two (16.7%) institutions stated that the guidelines were regularly brought up to date and that they had been revised within the past 2 years. Four (33.3%) reported that they regularly evaluated staff compliance with their guideline; the rest had not. Comparison with the guidelines of hospitals showed that with regard to response, availability and updating there were few differences. Hospital guidelines were significantly more frequently more than 5 years old, but were revised more often.

Criteria related to the content of the local guidelines (Table 8)
In 8 of the 12 guidelines (66.7%) it was indicated that a suicide attempter had the option of being assessed by a relevant expert 24 hours per day. Seven of the 12 (58.3%) gave instructions for guaranteeing the safety of the patient after the attempt. In 6 of the 12 (50.0%) guidelines, the first medical assessment was set out. Instructions for performing a psychiatric consultation by a psychiatrist (or other appointed psychiatric carer) after the attempt could be found in 10 (83.3%) of the local guidelines. Nine of these (75%) stated that psychiatric diagnosis should be carried out, 10 (83.3%) included a command to gauge suicidality, 9 (75%) included the establishment of stress factors in the patients leading to the attempt, and 9 (75%) guidelines described the need to perform an inventory of the risk factors. These last four criteria were mentioned significantly more often in the MHI guidelines than in those of the university and general hospitals.

Five of the 12 (41.7%) guidelines gave instructions on how to respond to the patient. Instructions on how to manage uncooperative patients or those who refuse to be assessed were provided in 6 of the 12 (50.0%). The importance of acquiring information from others was mentioned in 8 (66.7%) of the guidelines, and in 11 (91.7%) the importance of involving significant others in the

Table 6 Instructions for the overall assessment of guidelines using the 'Appraisal of Guidelines for Research & Evaluation' (AGREE)

Options:	Scores:	Practical consequence:
Strongly recommended	high (3 or 4) on the majority of items, and most of domain-scores > 60%	Guideline of high quality, that can be recommended for use in practice
Recommended (with provisos or alterations)	high (3 or 4) or low (1 or 2) on same number of items, and most domain-scores are > 30% and < 60%	Guideline of moderate quality by insuffficient or lack of information in some items. When adjusted, the guideline can be appropriate to use in practice, particularly if no other guidelines are available
Not recommended	low (1 or 2) on majority of items, and most domain-scores < 30%	Guideline of low quality with severe shortcomings, that should not be used in practice

Table 7 Response to a questionnaire, and answers concerning availability, dating, updating and evaluation of staff compliance of guidelines for the assessment of suicide attempters of Mental Health Institutions, compared to those of university and general hospitals (Verwey et al., 2006)

	Mental Institutions N (%)	Hospitals N (%)	P*
Questionnaires sent	48	97	
Response	38 (79.2)	88 (90.7)	0.05
Local guideline available	13 (34.2)	34 (38.5)	0.64
Local guidelines submitted	12 (31.6)	27 (30.7)	0.92
Dated < 5 year	10 (83.3)	9 (33.3)	0.004
Updating	2 (16.7)	10 (37.0)	0.20
Evaluation of staff compliance	4 (33.3)	10 (37.0)	0.82

* Chi-square test

assessment was found. This criterion appeared significantly more often in the MHI guidelines than in those of the university and general hospitals. Description of the organization of aftercare appeared in 8 of 12 (66.7%) guidelines and 9 (75%) reported regional agreements on this point.

Scores in five of the six domains of the AGREE instrument (Table 9)
In the domain 'Scope and purpose' the average score was 63.6 (standard deviation SD 19.8), with 8 guidelines scoring > 60%. The average score for 'Stakeholder involvement' was 26.9 (SD 13.6), with none of the guidelines achieving > 60% and 6 even < 30%. No guideline was tested for implementation within the target group. The average score for the domain 'Methodology' was 16.3 (SD 13.0) and in 11 (91.7%) the result was < 30%. In none of the sets examined was a systematic literature search described as the basis for developing the guidelines. The domain 'Clarity and presentation' scored an average of 72.0 (SD 9.9), with 11 guidelines achieving > 60%. The domain 'Applicability' scored on average 20.1 (SD 8.7), with 11 guidelines scoring between 30 and 60%, and none of them > 60%. The average score of the MHI guidelines in the domain 'Scope and purpose' was significantly higher than that of the university and general hospitals. Although the average scores of the MHI guidelines were also higher in other domains, they were not significantly higher.

General assessment
The majority of the three assessors agreed that 1 of the local guidelines was 'strongly recommended' for use, that 10 were 'recommended (with provisos or alterations)' and 1 was 'not recommended' ($\kappa = 0.23$). The number of recommended MHI guidelines was significantly higher than was the case in the university and general hospitals.

DISCUSSION

The present study was the first to investigate the availability, content and quality of guidelines for the assessment of suicide attempters in MHI. It was an investigation of written agreements regarding the assessment of suicide attempters and not the established policy following a successful suicide during treatment of a patient or out-patient.

The collected data were compared to the results of a study carried out in all Dutch university and general hospitals (Verwey et al., 2006). The response to the written request to take part in this study was high (79.2%). A large minority of the MHI (34.2%) reported they had local guidelines for assessing suicide

Table 8 Criteria to evaluate the content of local guidelines for the assessment of suide attempters of Mental Health Institutions (n = 12), compared to local guidelines of university ans general hospitals (n = 27), (Verwey et al., 2006), in the Netherlands

Instructions to:	Number of MHI guidelines with instruction (%)	Number of guidelines of hospitals with instruction (%)	*P*
24 h availability of expert	8 (66.7%)	20 (74.1%)	0.71*
Address safety	7 (58.3%)	13 (48.1%)	0.56**
Prompt assessment of physical condition	6 (50.0%)	15 (55.6%)	0.75**
Perform psychiatric consultation	10 (83.3%)	19 (70.4%)	0.69*
Perform psychiatric examination	9 (75.0%)	10 (37.0%)	0.03**
Assess suicidality	10 (83.3%)	12 (44.4%)	0.02**
Identify risk factors	9 (75.0%)	11 (40.7%)	0.05**
Assess stressors	9 (75.0%)	10 (37.0%)	0.03**
Establish and maintain therapeutic alliance	5 (41.7%)	13 (48.1%)	0.71**
Handle non-cooperative or refusing patients	6 (50.0%)	17 (63.0%)	0.50*
Obtain information from others	8 (66.7%)	15 (55.6%)	0.73*
Assess significant others	11 (91.7%)	15 (55.6%)	0.03*
Organize aftercare	8 (66.7%)	16 (59.3%)	0.73*
Agreement with aftercare providers	9 (75.0%)	13 (48.1%)	0.12**

* Fisher Exact Test

** Chi-square Test

attempters, comparable to the situation in the hospitals. Considering that half of the guidelines is out of date after a period of 5.8 years (Shekelle et al., 2001), most MHI (83.3%) could be considered to have a recent one. This probably also explains why only a limited number of MHI guidelines has since been revised. Hospitals had significantly less recent guidelines. Maybe this can be explained by the fact that the CBO instigated the development of guidelines in general hospitals as early as 1991, while guideline development in MHI was only initiated a short time ago. After all, publication of guidelines by the Dutch Society for Psychiatry began in 1998. Also, from the point of view of practical application, it is important that staff compliance with the guidelines was only evaluated in one-third of the cases. In fact, the hospitals did not score much better in this respect (33.3% vs. 37.0%).

In the available institution guidelines, important matters such as the prompt assessment of the physical condition following a suicide attempt, safe-

Table 9 Domain-scores and overall assessment of the 'Appraisal of Guidelines for Research and Education' (AGREE) instrument of guidelines for the assessment of suicide attempters in Mental Health Institutions (n = 12), compared to guidelines of university and general hospitals (n = 27), (Verwey et al., 2006), in the Netherlands

AGREE domain	Mean score (%) of guidelines of MHI (SD)	Mean score (%) of guidelines of hospitals (SD)	*P**
Scope and purpose (items 1-3)	63.3 (19.8)	43.3 (29.2)	0.05
Stakeholder involvement (items 4-7)	26.9 (13.6)	22.4 (17.5)	0.31
Methodology (items 8-14)	16.3 (13.0)	11.8 (11.0)	0.31
Clarity and presentation (items 15-18)	72.0 (9.9)	64.9 (16.0)	0.23
Applicability (items 19-21)	20.1 (8.7)	14.81 (12.4)	0.10
Overall assessment			*P***
Not recommended by >1 appraiser (%)	1 (8.3)	16 (59.3)	
Recommended (with provisos and alterations) by >1 appraiser (%)	10 (83.4)	10 (37.0)	
Strongly recommended by >1 appraiser (%)	1 (8.3)	1 (3.7)	0.03

* Mann-Whitney U test

** Chi-square test

ty instructions and managing uncooperative patients were described in less than two-thirds of the cases. In the guidelines of the university and general hospitals, these were mentioned even less frequently. The need for a psychiatric consultation following a suicide attempt was described in the majority of MHI guidelines (83%), as well as the various duties of the psychiatrist or appointed psychiatric health carer. Indeed, general and university hospital guidelines also described psychiatric consultation as being necessary, but description of the various tasks was found significantly less often. It is in any case surprising that the first medical assessment and the psychiatric consultation following a suicide attempt were not described in all the guidelines.

Of all criteria investigated in MHI guidelines, those on how to respond to the patient following a suicide attempt appeared least often (41.7%). Perhaps those instructions are more appropriate in guidelines for hospitals, where so many different employees – not only those working in psychiatric institutions – are

involved in the assessment of the suicide attempter. In contrast to this, it is known that suicide attempters can elicit transference reactions (Roose, 2001), which actually argues for the inclusion in guidelines of instructions on how to establish and maintain a therapeutic alliance between the professional and the patient. Instructions to assess significant others were provided significantly more often by MHI guidelines than by those of university and general hospitals. A possible explanation is that MHI guidelines are usually devised from a social-psychiatric viewpoint and those of hospitals on the basis of a biomedical model.

The assessment of the quality of the guidelines of MHI using the AGREE tool produced a higher average score in each domain compared to hospital guidelines, but this was only significant in the domain 'Scope and purpose'. In both MHI and hospital guidelines, however, these scores remained under 60% in the majority of domains. Although AGREE does not describe a cut-off point between 'good' and 'bad' guidelines, this result points to a quality limitation. Nevertheless, the raters 'recommended (with improvements and provisos)' most guidelines from MHI and significantly more often than those from hospitals. A possible explanation for this difference in quality could be that more hospital guidelines are developed by carers on the work floor, while MHI guidelines are more likely to be devised by specially trained and appointed personnel. The domains in which improvement of the scores by trained personnel would be expected ('Methodology' and 'Applicability') did, however, have the lowest score. Another explanation is that many MHI have merged, meaning that employees from different organizations have had to cooperate, giving rise to the need for an adequate written working agreement or set of guidelines. No doubt this occurred less often in hospitals.

One must still mention inter-rater reliability. The kappa value is low but this is a consequence of the expected very high agreement due to the small variability in scores.

Considering the number of available international guidelines for assessing suicide attempters, few MHI made use of these data for drawing up their local guidelines. None of them mentioned a systematic literature search to support their assumptions and advice; nor did those of university and general hospitals.

Although only a limited number of MHI have guidelines for the assessment of suicide attempters, this does not mean that these patients are not properly assessed in these institutions. This study only addresses the availability of written guidelines and not, for example, current verbal agreements. Development and implementation of guidelines are a few of the various approaches to improving the quality of care, even though the effects are difficult to demon-

strate (Grol, 2001). To assess suicide attempters, not only further improvement in the content and quality of existing guidelines in psychiatric institutions and hospitals is necessary, but also investigation into compliance with such guidelines and the effect on patient care.

CONCLUSION

About one-third of the Dutch MHI have a written local guideline for assessing suicide attempters. Considering the size of the clinical problem posed by suicide attempts, this number is small. If there is already a guideline in the MHI, the quality of content can be considered good, but important topics may be lacking from a number of guidelines. Methodological quality, measured using AGREE, is limited. However, compared with such guidelines in university and general hospitals in the Netherlands, the MHI guidelines do score better. Further development and implementation of guidelines for the assessment of suicide attempters in all MHI is certainly necessary, as well as evaluation of staff compliance.

The AGREE Collaboration. Appraisal of Guidelines For Research & Evaluation (AGREE) instrument (2001). www.agreecollaboration.org [On-line].

Development and validation of an international appraisal instrument for assessing the quality of clinical practice guidelines: the AGREE project (2003). *Quality & Safety in Health Care, 12,* 18-23.

American Psychiatric Association (2003). Practice guideline for the assessment and treatment of patients with suicidal behaviors. *American Journal of Psychiatry, 160,* 1-60.

Barr, W., Leitner, M., & Thomas, J. (2005). Psychosocial assessment of patients who attend an accident and emergency department with self-harm. *Journal of Psychiatric and Mental Health Nursing, 12,* 130-138.

Bille-Brahe, U., Kerkhof, A., De Leo, D., Schmidtke, A., Crepet, P., Lonnqvist, J. et al. (1997). A repetition-prediction study of European parasuicide populations: a summary of the first report from part II of the WHO/EURO Multicentre Study on Parasuicide in co-operation with the EC concerted action on attempted suicide. *Acta Psychiatrica Scandinavica, 95,* 81-86.

Boyce, P., Carter, G., Penrose-Wall, J., Wilhelm, K., & Goldney, R. (2003). Summary Australian and New Zealand clinical practice guideline for the management of adult deliberate self-harm (2003) . *Australasian Psychiatry, 11,* 150-155.

Centraal Begeleidingsinstituut voor de Intercollegiale Toetsing (1991). *Opvang van suicidepogers in algemene ziekenhuizen.* Utrecht.

Goldberg, R. J. (1987). The assessment of suicide risk in the general hospital. *General Hospital Psychiatry, 9,* 446-452.

Grol, R. (2001). Improving the quality of medical care: building bridges among professional pride, payer profit, and patient satisfaction. *JAMA, 286,* 2578-2585.

Harpole, L.H., Kelley, M.J., Schreiber, G., Toloza, E.M., Kolimaga, J., & McCrory, D.C. (2003). Assessment of the scope and quality of clinical practice guidelines in lung cancer. *Chest, 123,* 7S-20S.

Hawton, K. & Fagg, J. (1988). Suicide, and other causes of death, following attempted suicide. *British Journal of Psychiatry, 152,* 359-366.

Hawton, K. & James, R. (1995). General hospital services for attempted suicide patients: a survey in one region. *Health Trends, 27,* 18-21.

Hawton, K., Zahl, D., & Weatherall, R. (2003). Suicide following deliberate self-harm: long-term follow-up of patients who presented to a general hospital. *British Journal of Psychiatry, 182,* 537-542.

Hengeveld, M.W., Kerkhof, A.J., & van der Wal, J. (1988). Evaluation of psychiatric consultations with suicide attempters. *Acta Psychiatrica Scandinavica, 77,* 283-289.

Hickey, L., Hawton, K., Fagg, J., & Weitzel, H. (2001). Deliberate self-harm patients who leave the accident and emergency department without a psychiatric assessment: a neglected population at risk of suicide. *Journal of Psychosomatic Research, 50,* 87-93.

Hirschfeld, R.M. & Russell, J.M. (1997). Assessment and treatment of suicidal patients. *New England Journal of Medicine, 337,* 910-915.

Hoogenboezem, J., van den Berg, W. Recente ontwikkelingen rond zelfdoding in Nederland. In: *Bevolkingstrends (1e kwartaal 2004)*. Statistisch Kwartaalblad over de demografie van Nederland, 52, 40-48. Centraal Bureau voor de Statistiek, Heerlen/Voorburg 2004.

Hulten, A., Wasserman, D., Hawton, K., Jiang, G.X., Salander-Renberg, E., Schmidtke, A. et al. (2000). Recommended care for young people (15-19 years) after suicide attempts in certain European countries. *European Child and Adolescent Psychiatry, 9,* 100-108.

Isacsson, G. & Rich, C.L. (2001). Management of patients who deliberately harm themselves. *British Medical Journal, 322,* 213-215.

Lonnqvist, J. & Suokas, J. (1992). Attempted suicides: how should they be managed and suicide prevented? [editorial]. *Annals of Medicine, 24,* 7-8.

Owens, D., Horrocks, J., & House, A. (2002). Fatal and non-fatal repetition of self-harm. Systematic review. *British Journal of Psychiatry, 181,* 193-199.

Owens, D. & House, A. (1994). General hospital services for deliberate self-harm. Haphazard clinical provision, little research, no central strategy. *Journal of the Royal College of Physicians of London, 28,* 370-371.

Packman, W.L., Marlitt, R.E., Bongar, B., & Pennuto, T.O. (2004). A comprehensive and concise assessment of suicide risk. *Behavioral Science and the Law, 22,* 667-680.

Royal College of Psychiatrists (2004). *Assessment following self-harm in adults* (Rep. No. Council Report CR122). London: Royal College of Psychiatrists.

Roose, S.P. (2001). Suicide: what is in the clinician's mind? *Annals of the New York Academy of Science, 932,* 151-157.

Shekelle, P.G., Ortiz, E., Rhodes, S., Morton, S.C., Eccles, M.P., Grimshaw, J. M. et al. (2001). Validity of the Agency for Healthcare Research and Quality clinical practice guidelines: how quickly do guidelines become outdated? *JAMA, 286,* 1461-1467.

Simon, R.I. (2002). Suicide risk assessment: what is the standard of care? *Journal of the American Academy of Psychiatry and the Law, 30,* 340-344.

Stiegler, M., Rummel, C., Wahlbeck, K., Kissling, W., & Leucht, S. (2005). European psychiatric treatment guidelines: is the glass half full or half empty? *European Psychiatry, 20,* 554-558.

Suokas, J. & Lonnqvist, J. (1991). Outcome of attempted suicide and psychiatric consultation: risk factors and suicide mortality during a five-year follow-up. *Acta Psychiatrica Scandinavica, 84,* 545-549.

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.

Verwey, B., Koopmans, G.T., Opmeer, B.C., Zitman, F.G., & Huyse, F.J. (1997). Richtlijnen en de naleving daarvan bij de psychiatrische opvang van suicidepogers in algemene ziekenhuizen. *Nederlands Tijdschrift voor Geneeskunde, 141,* 1338-1342.

Verwey, B., Waarde, J.A. van, Rooij, I.A.L.M. van, Gerritsen, G., Zitman, F.G. (2006). Availability, content and quality of local guidelines for the assessment of suicide attempters in university and general hospitals in the Netherlands. *General Hospital Psychiatry*, 28, 336-342.

Voellinger, R., Berney, A., Baumann, P., Annoni, J.M., Bryois, C., Buclin, T. et al. (2003). Major depressive disorder in the general hospital: adaptation of clinical practice guidelines. *General Hospital Psychiatry, 25,* 185-193.

World Health Organization (2000). *Preventing suicide. A resource for primary health care workers.* (Rep. No. WHO/MNH/MB/D0.04). Geneva: Department of Mental Health, World Health Organization.

PART II – STUDIES ON THE APPROPIATE ASSESSMENT AND MANAGEMENT OF SUICIDE ATTEMPTERS

Chapter 5 – Memory impairment in those who attempt suicide by benzodiazepine overdose

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ABSTRACT

Background

A prospective study was carried out to investigate the presence of anterograde amnesia in suicide attempters who took benzodiazepines (BZ) and to study the correlation with sedation.

Method

In 43 patients, who attempted suicide by taking benzodiazepines, memory performance was tested on a 15-word memory recall task. The immediate and delayed recall on the first day after admission (day 1) and 24 hours later (day 2) were rated. Each patient and the interviewer scored the patient's degree of sedation on a visual analogue scale (VAS). Patients also had to try to recognize, from photographs, the psychiatrist to whom they had spoken the day before.

Results

The ratings of immediate and delayed recall were significantly lower on day 1 than on day 2. Subjective ratings of sedation of the patients were not significantly higher than the ratings of the observer. Less than half of the patients recognized the psychiatrist and knew that he was the one they had spoken to the day before.

Conclusion

Anterograde amnesia is present in suicide attempters who take benzodiazepines. The implications of this finding for the assessment of suicide attempters in the acute phase are discussed.

INTRODUCTION

It has been demonstrated in many studies that benzodiazepines (BZ) can induce memory impairment (Barbee, 1993; Curran, 1986). A common finding is anterograde amnesia, the phenomenon whereby information is poorly remembered when presented after BZ has been taken (Patat, Klein, & Hucher, 1987; Soldatos, Kales, & Bixler, 1985). Severity and duration of the amnesia are dependent on the particular BZ used, the dosage, the route of administration, the time (post-drug) at which information is presented and retrieval is required, and characteristics of the subject population tested (Curran, 1991; Ghoneim, Hinrichs, & Mewaldt, 1984; Preston et al., 1988). The memory task used is also of importance. For instance, recall tasks are more sensitive than recognition tasks and verbal tasks are more sensitive than visual tasks (Curran, 1986). In longitudinal studies it was found that only partial tolerance develops into amnesic effects: in verbal recall tests tolerance was found to the effects of BZ on immediate, but not on delayed (15-20 min) recall in normal volunteers (Ghoneim, Mewaldt, Berie, & Hinrichs, 1981) as well as in patients with generalized anxiety disorder (Morton & Lader, 1990). Impaired delayed recall was also found in chronic BZ users after acute administration of their medication (Lucki & Rickels, 1986).

Anaesthetists welcome the amnesic effects as they cause patients to forget unpleasant operative procedures. However, in other situations they are a reason for concern. In the large group of people who are using BZ on a daily basis, anterograde amnesia may interfere with the ability to function optimally and in patients using BZ who are also being treated with psychotherapy, anterograde amnesia may impair remembrance of what happened during a therapy session (Curran et al., 1994).

In a case report it has been suggested that anterograde amnesia also interferes with the efficacy of psychiatric consultation in patients admitted to hospital after a suicide attempt with benzodiazepines (Laan & Verwey, 1992). As BZ are involved in almost half of the suicide attempts (Michel, Waeber, Valach, Arestegui, & Spuhler, 1994), we decided to further explore possible memory impairment following a BZ overdose. We examined systematically whether anterograde amnesia occurs in a group of patients consecutively admitted to hospital following a suicide attempt involving BZ. We investigated verbal recall with the 15-words test, because such a test has been applied frequently in the evaluation of BZ induced anterograde amnesia. This test is thought to be highly sensitive to the presence of anterograde amnesia induced by BZ (Ghoneim & Mewaldt, 1990). Scores on a highly standardized verbal recall test do not necessarily reflect clinically significant memory impairment.

Therefore we added a visual recognition task with a more immediately obvious relevance to clinical practice: a photo recognition test to investigate whether patients were able to recognize the face of the psychiatric resident who had examined them. In clinical practice it is often assumed that the degree of anterograde amnesia can be predicted from the degree of sedation as estimated by the psychiatrist. However, the results of laboratory studies are equivocal (Curran, 1991). In this study therefore, we also assessed the degree of sedation as estimated by the patient and the psychiatric resident who examined the patient, and related these estimations to the degree of memory impairment.

METHOD

Material and procedure

From September 1st, 1994 until November 25th, 1996 all patients admitted to the general hospital 'Rijnstate' in Arnhem, The Netherlands following attempted suicide by taking benzodiazepines were prospectively studied. The medical ethics committee of the hospital approved the study.

Subjects

All patients with BZ in their blood were included. Additional use of other drugs or non-drug methods in the suicide attempt was not an exclusion criterion but all patients that had alcohol in their blood were excluded.

Patients with the following criteria were also excluded: younger than 18 (because the tests used were not developed for younger people); a diagnosis of dementia or amnesic disorder before admission (cognitive dysfunction may interfere with the drug effects); alcohol dependence or abuse (cognitive dysfunction and impaired liver function may interfere with the drug effects); delirium, according to DSM IV criteria; inability to read or understand test instructions and items on the verbal recall test.

Assessments

1 *The '15-woorden test'* (15-words test) is the Dutch equivalent of the Rey Auditory Verbal Learning test, a verbal recall test often used in research on anterograde amnesia caused by BZ (Lezak, 1983). We adapted the procedure slightly by administering the list of words only once on day 1 and once on day 2. On both days the research assistant instructed the patient in the use of a computerized version of the test. The patient was asked to remember words that were presented successively on the computer screen for a period of 2 seconds each. Immediately after the presentation of 15 unrelated words

the patient was asked to recall as many words as possible (immediate recall). After 15 minutes the patient was asked again to recall as many words as possible (delayed recall). The test was assessed on day 1 and day 2. To prevent learning, patients were presented different but equivalent lists on these days.

2 *A photo recognition test* was used as a visual recognition test. The patient was presented with a series of 6 photographs of faces with a variety in features such as hair, spectacles, etc., one of which showed the resident in psychiatry who had examined the patient. This procedure is used in formal police investigations in the Netherlands. The patient had to answer three questions: [1] do you recognize anyone; [2] who do you recognize; [3] how do you know this person? This test was administered on day 2 only. Patients who were known to the resident, possibly because of earlier suicide attempts, were excluded from this test.
3 *Degree of sedation* was rated on a 10 cm Visual Analogue Scale (VAS). On day 1 the patient as well as the resident in psychiatry filled in this scale. A low score indicates a high level of sedation.
4 *Blood alcohol concentration* was measured with gas liquid chromatography.
5 *Presence of benzodiazepines in blood* was ascertained by the immunochemical method TDxFLx (Abbott Laboratories, USA).

PROCEDURE

In 'Rijnstate' hospital all patients admitted following a suicide attempt are seen by a psychiatric resident for a routine clinical interview at least 12 hours after admittance, provided the patient is sufficiently alert for psychiatric consultation. For this study, at the end of the interview, the psychiatric resident informed patients who had used BZ in the suicide attempt about the study and asked them to participate. When informed consent had been obtained, a research assistant (an experienced consultation-liaison nurse) immediately started assessments on what we refer to as day 1. Twenty-four hours later the research assistant again performed assessments on what we refer to as day 2.

STATISTICAL ANALYSIS

Data were analyzed using the paired t-test; the level of significance was $p <= 0.05$. Relationships between memory variables and subjective sedation ratings were assessed using the Pearson correlation coefficients.

RESULTS

Forty-seven patients were eligible for the study. Three refused to cooperate and one had to be excluded because of insufficient cooperation. In this paper data on the remaining 43 patients (9 male and 34 female; mean age was 39.1 years; SD 12.4) are presented. The following BZ had been used: oxazepam (in 16 patients), temazepam (11), diazepam (10), clorazepate (4), alprazolam (6), flurazepam (4), lormetazepam (3), lorazepam (1), clobazam (1), flunitrazepam (2) and zopiclon (1). Eleven patients had used more than one BZ. Six patients had also used an antidepressant agent. Three others had taken a neuroleptic. One of them had used 3 neuroleptics.

Verbal recall tested with the 15-words test

Immediate recall on day 1 was significantly lower than on day 2 (means respectively 4.91 ± 1.76 and 6.0 ± 1.93, p = 0.002). Delayed recall was also significantly lower on day 1 than on day 2 (means respectively 3.02 ± 1.82 and 4.26 ± 1.77, p = 0.000). The results are presented in Table 10.

Visual recall with the photo recognition test

Less than half of the patients recognized the psychiatric resident from the photograph and knew that he was the one formally spoken to the day before (Table 11). Scores of the recognizers on the verbal recall test were not significantly different from the scores of the non-recognizers. Likewise, the subjective ratings of sedation of the recognizers were not significantly different from the ratings of the non-recognizers.

Sedation

On day 1, patients rated themselves more sedated than the residents rated them but the difference was not significant (means respectively 5.09 ± 2.22 and 5.80 ± 2.15, p = 0.142). There was a low correlation between subjective ratings of the patients and immediate or delayed recall on day 1 (Pearson correlation coefficients 0.12, p = 0.463 and 0.08, p = 0.576). There was a higher correlation between ratings of the resident and immediate and delayed recall on day 1 (Pearson correlation coefficients 0.5 , p = 0.00 and 0.47 , p = 0.00).

When the 9 patients who had also used antidepressants or neuroleptics were excluded, the results did not differ from those of the whole group.

Table 10 Recall ratings on the 15-word test (N = 43)

	Day 1 Mean (SD)	Day 2 Mean (SD)	P Value (Paired t-test)
Immediate	4.91 (1.76)	6.0 (1.93)	0.002
Delayed	3.02 (1.82)	4.26 (1.77)	0.000

Table 11 Results of interviewer recognition from photograph (N = 35)*

	yes/correct	no/incorrect
Do you recognize anybody?	22	13
Who do you recognize?	20	2
How do you know this person?	12	8

* Some patients had previously received treatment from the resident psychiatrist and therefore did not participate in the photograph recognition test.

DISCUSSION

This is the first study that demonstrates memory impairment in patients who made a suicide attempt by taking BZ. First of all, in a verbal recall test, patients performed more poorly on the first day of admittance to the hospital than on the second day with respect to both immediate and delayed recall. These results are in agreement with the existing wide body of literature in which verbal recall test results demonstrate memory impairment after the intake of BZ in a laboratory setting (Curran, 1991). Secondly, impairment was found in a photo recognition task. This result is surprising because a number of factors make memory loss in this task less probable. Patients were confronted much longer with the psychiatric resident than with the words of the verbal recall

test, given that psychiatric examination of these patients takes 45 minutes on average (Verwey, Koopmans, Opmeer, Zitman, & Huyse, 1997). Moreover, a psychiatric interview immediately after a suicide attempt is often a very emotional experience for the patient, implying that the interview and the interviewer are more meaningful and thus more likely to be remembered than the words of the verbal recall test. In addition, in laboratory studies visual tasks are much less sensitive than verbal tasks and recognition tasks less sensitive than recall tasks (Patat et al., 1987) .The results of our study also show that anterograde amnesia is not necessarily accompanied by a decreasing of consciousness.

Because 9 patients had used psychopharmacological agents in addition to BZ, we also studied those who had only taken BZ. The results described above were also found in this subgroup of patients who made a suicide attempt with BZ only, which makes it more probable that BZ are the main factor in the memory disturbances. The fact that the type of memory loss is typical for BZ also implies that the role of BZ is an important factor. However, these arguments do not exclude the possibility that the impairment of memory results from the turmoil caused by the acute admittance to hospital and the diagnostic and treatment procedures on the emergency ward. On the other hand, stress can also induce ameliorating of memory. Only a comparison between patients having made a suicide attempt with BZ and patients having made an attempt without BZ can provide a definitive answer. At least in our hospital, such a control group is difficult to obtain because most suicide attempters use BZ, and patients who do not use it almost always leave the hospital within a few hours after arrival without having been seen by a psychiatrist.

Notwithstanding these shortcomings, the results support the hypothesis that the efficacy of psychiatric consultation in patients who made a suicide attempt with BZ can be compromised by memory impairment, even in patients who do not seem to be sedated. With many patients who made a suicide attempt, arrangements for follow-up care and rules of life have to be negotiated. It is, of course, very important that the patients remember these arrangements later on. In accordance with case reports, our study lends support to the notion that patients who made a suicide attempt with BZ are likely to forget arrangements. This is even true if during the interview the patient does not look sedated and seems to be cooperative with and responsive to the psychiatrist. Therefore it is preferable to make arrangements later. This is not always doable in clinical practice. We recommend providing essential information in writing as well and, whenever possible, drawing significant others into the discussions about the arrangements that have to be made.

REFERENCES

Barbee, J.G. (1993). Memory, benzodiazepines, and anxiety: integration of theoretical and clinical perspectives. *Journal of Clinical Psychiatry, 54,* 86-97.

Curran, H.V. (1986). Tranquillising memories: a review of the effects of benzodiazepines on human memory. *Biological Psychology, 23,* 179-213.

Curran, H.V. (1991). Benzodiazepines, memory and mood: a review. *Psychopharmacology, 105,* 1-8.

Curran, H.V., Bond, A., O'Sullivan, G., Bruce, M., Marks, I., Lelliot, P. et al. (1994). Memory functions, alprazolam and exposure therapy: a controlled longitudinal study of agorafobia with panic disorder. *Psychological Medicine, 24,* 969-976.

Ghoneim, M.M., Hinrichs, J.V., & Mewaldt, S.P. (1984). Dose-response analysis of the behavioral effects of diazepam: 1. Learning and memory. *Psychopharmacology, 82,* 291-295.

Ghoneim, M.M. & Mewaldt, S.P. (1990). Benzodiazepines and human memory: a review. *Anesthesiology, 72,* 926-938.

Ghoneim, M.M., Mewaldt, S.P., Berie, J.L., & Hinrichs, J.V. (1981). Memory and performance effects of single and 3-week administration of diazepam. *Psychopharmacology (Berl.), 73,* 147-151.

Laan, W.J.D.M. & Verwey, B. (1992). Een zinvol gesprek op de juiste tijd. *Nederlands Tijdschrift voor Geneeskunde, 136,* 353-355.

Lezak, M.D. (1983). *Neuropsychological Assessment.* (2nd ed.) New York: Oxford University Press.

Lucki, I. & Rickels, K. (1986). The behavioral effects of benzodiazepines following long-term use. *Psychopharmacology Bulletin, 22,* 424-433.

Michel, K., Waeber, V., Valach, L., Arestegui, G., & Spuhler, T. (1994). A comparison of the drugs taken in fatal and nonfatal self-poisoning. *Acta Psychiatrica Scandinavica, 90,* 184-189.

Morton, S. & Lader, M. (1990). Studies with alpidem in normal volunteers and anxious patients. *Pharmacopsychiatry, 23,* Suppl-123.

Patat, A., Klein, M.J., & Hucher, M. (1987). Effects of single oral doses of clobazam, diazepam and lorazepam on performance tasks and memory. *Journal of Clinical Pharmacology, 32,* 461-466.

Preston, G.C., Broks, P., Traub, M., Ward, C., Poppleton, P., & Stahl, S.M. (1988). Effects of lorazepam on memory, attention and sedation in man. *Psychopharmacology, 95,* 208-215.

Soldatos, C.R., Kales, A., & Bixler, E.O. (1985). Behavioral side-effects of benzodiazepine hypnotics. *Clinical Neuropharmacology, 8,* S112-S117.

Verwey, B., Koopmans, G.T., Opmeer, B.C., Zitman, F.G., & Huyse, F.J. (1997). Richtlijnen en de naleving daarvan bij de psychiatrische opvang van suicidepogers in algemene ziekenhuizen. *Nederlands Tijdschrift voor Geneeskunde, 141,* 1338-1342.

Chapter 6 – Clinically relevant anterograde amnesia and its relationship with blood levels of benzodiazepines in suicide attempters who took an overdose

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ABSTRACT

The relationship between anterograde amnesia, sedation and plasma levels of benzodiazepines was studied prospectively in a group of 24 patients who took an overdose of benzodiazepines. Patients were tested on two consecutive days after having taken an overdose. Anterograde amnesia was tested by using a verbal recall test and a photo recognition test. Sedation was scored on a visual analogue scale (VAS) by the patient and the interviewer. The concentration of benzodiazepines in plasma was measured by using a radioreceptor assay that adds benzodiazepines and their active metabolites. The cumulative amount of benzodiazepines was expressed as diazepam equivalents (DZE). Diazepam equivalents determined by this radioreceptor assay were significantly higher on the first day than on the second day. Ratings on the verbal recall test were significantly lower on the first day than on the second day. There was a significant relation between decrease of diazepam equivalents and increase of verbal recall: more than 30% of increase of verbal recall was explained by decrease of diazepam equivalents. There was not a strong relation between decrease of diazepam equivalents and reduction of level of sedation as scored by the patients. There was almost no relation between decrease of diazepam equivalents and reduction of level of sedation as scored by the interviewer. No relation was found between verbal recall, sedation and diazepam equivalents. There was no relation between diazepam equivalents and photo recognition. It was concluded that anterograde amnesia was strongly associated with benzodiazepines in patients who take benzodiazepines in an overdose. Sedation does not predict the degree of anterograde amnesia.

INTRODUCTION

Anterograde amnesia is a well known side effect of benzodiazepines (Curran, 1991), albeit desirable in situations like perioperative surgical periods and during procedures like endoscopies. In volunteers who took one or more standard doses of benzodiazepines the degree of anterograde amnesia correlated with dosage of benzodiazepines (Ghoneim et al., 1984). In a previously published, prospective study anterograde amnesia was investigated in a group of 43 suicide attempters who had taken an overdose of benzodiazepines (Verwey et al., 2000) by assessing them on two sequential days. The results of a verbal recall test were analyzed, as well as the degree of sedation and the result of a photo recognition test. Anterograde amnesia was demonstrated, that is to say the scores of the immediate and delayed recall on twoconsecutive days differed significantly: patients forgot more words on the first than on the second day after benzodiazepine overdose. There was a low correlation between ratings of recall and patient's ratings of sedation. On the second day, only half of the patients were able to recognize, from photographs, the resident in psychiatry with whom they had spoken the day before. So anterograde amnesia was found in this group of suicide attempters, but whether the benzodiazepines are the causative factor of this memory impairment was not established. The stressful circumstances of these patients recently admitted to a hospital could also have deteriorating effects on memory functions. The role of benzodiazepines as a causative factor would be more probable if a dose-response relationship could be demonstrated in this patient group. However, suicide attempters are often unable to give reliable information about the dosage they have taken and considerable interindividual differences in metabolism of benzodiazepines exist, which makes it necessary to investigate the relationship between the degree of amnesia and the dosage taken via drug plasma levels. Therefore we decided to study this relationship in the group of patients who took an overdose by using the blood samples we had taken. These blood samples had already been taken to check whether the patients had used benzodiazepines and to exclude those who had alcohol in their blood.

A problem in the study of the effects of overdoses of benzodiazepines is that suicide attempters differ in the types of benzodiazepines they use. Many use more than one benzodiazepine. Moreover, many benzodiazepines are metabolised in compounds that act as benzodiazepines themselves. With high-performance liquid chromatography (HPLC), it is possible to determine, in plasma samples, different benzodiazepines and their active metabolites. However, all these benzodiazepines and metabolites have their own affinity to the receptor, making it impossible to study the relationship of the overall benzodi-

azepine level on the one hand and amnesia and sedation on the other simply by adding up the levels of all benzodiazepines and metabolites involved. Using a radio receptor assay solves this problem because the total amount of benzodiazepines and metabolites can be measured and expressed in equivalents of a standard benzodiazepine. Using this method, we studied the relationships between anterograde amnesia, sedation and the amount of benzodiazepines at the receptor site.

Our first hypothesis was that in this group of patients the change in anterograde amnesia is related to the change in the amount of benzodiazepines.

In most studies amnesia could not be related to the sedative effect of benzodiazepines. Even when patients are not sedated, amnesia can clearly be established (Hennessy et al., 1991; Veselis et al., 2001). Higher concentrations of benzodiazepines might be needed to cause sedation than to produce memory impairment as has been established in one study comparing different plasma levels of flunitrazepam (Bareggi et al., 1998). We expected to find high levels of benzodiazepines in the group of suicide attempters even more than 24 hours after having taken the overdose.

Our second hypothesis was that, in patients who took an overdose, change in anterograde amnesia is more related to change in levels of benzodiazepines than to change in sedation.

METHOD

Material and procedure

We used data from our previously published study including 24 suicide attempters with blood samples available, to investigate the relations between changes in anterograde amnesia, sedation and changes in benzodiazepine plasma concentrations. Below follows a description of the study methods.

Subjects

All patients with benzodiazepines in their blood were included. The additional use of other drugs (except alcohol) or non-drug methods in the suicide attempt was not a reason for exclusion.

Patients with the following criteria were excluded: younger than 18 (because the tests used were not developed for younger people); a DSM IV (American Psychiatric Association, 1994) diagnosis of dementia or amnesic disorder before admission (cognitive dysfunction may interfere with the drug effects); alcohol dependence or abuse (cognitive dysfunction and impaired liver function may interfere with the drug effects); a positive screening on alcohol; delir-

ium, according to DSM IV criteria; inability to read or understand test instructions and items on the verbal recall test. Patients that used benzodiazepines during their stay in the hospital were also excluded.

The medical ethics committee of the hospital approved the study and written informed consent was obtained from all patients.

Assessments

1 The '15-woorden test' (15-words test) is the Dutch equivalent of the Rey Auditory Verbal Learning test, a verbal recall test often used in research on anterograde amnesia caused by benzodiazepines (Lezak, 1983). Free recall is considered the most taxing of memory tests (Buffett-Jerrott and Stewart, 2002). We adapted the procedure slightly by administering the list of words only once on day 1 and once on day 2. On both days, the research assistant instructed the patient in the use of a computerized version of the test. The patient was asked to remember words that were presented successively on the computer screen for a period of 2 s each. Immediately after the presentation of 15 unrelated words, the patient was asked to recall as many words as possible (immediate recall). After 15 minutes the patient was asked again to recall as many words as possible (delayed recall). The patient was assessed on day 1 and day 2. To prevent learning (Ryan & Geisser, 1986), patients were presented different but equivalent lists on these days.
2 A photo recognition test was used as a visual recognition test. The patient was presented with a series of 6 photographs of faces with a variety in features such as hair, spectacles, etc., one of which showed the resident in psychiatry who had examined the patient. This procedure is used in formal police investigations in the Netherlands. The patient had to answer three questions: [1] Do you recognize anyone? [2] Who do you recognize? [3] How do you know this person? This test was administered on day 2 only. Patients who were known to the resident, possibly because of earlier suicide attempts, were excluded from this test.
3 Degree of sedation was rated on a 10-cm Visual Analogue Scale (VAS). On day 1, the patient as well as the resident in psychiatry filled in this scale. A low score indicates a high level of sedation.
4 Blood alcohol concentration was measured with gas liquid chromatography.
5 Determination of benzodiazepines was measured by a radio receptor assay (Hunt et al., 1979). Radio receptor assays are based upon competition between an analyte and a radioactive labeled ligand for binding to a certain receptor. In the absence of competing analytes, the radioactive labeled ligand is bound to the receptor. When another benzodiazepine is added, this

compound will replace a portion of the receptor-bound radioactive-labeled ligand. The concentration of benzodiazepine from a sample is indirectly measured by determination of the receptor radioactive-labeled ligand. Since in most samples mixtures of benzodiazepines and active metabolites are present, calibration will be based on a single compound, diazepam. Cumulative concentrations will therefore be expressed as diazepam equivalents (DZE). The radio receptor assay was developed by MERSKA, Research and Consultancy Centre of the University of Groningen. The method to measure the amount of benzodiazepines used in this study, has been compared with measuring the benzodiazepine concentrations by high performance liquid chromatography and is described elsewhere (De Jong et al., 2004).

PROCEDURE

All patients admitted after a suicide attempt were seen by a psychiatric resident for a routine clinical interview at least 12 hours after admittance, provided the patient was sufficiently alert for psychiatric consultation. At the end of the interview, the psychiatric resident informed patients who had used benzodiazepines in the suicide attempt about the study and asked them to participate. When written informed consent was obtained, a research assistant (an experienced psychiatric consultation-liaison nurse) immediately started assessments (day 1). Twenty-four hours later, the research assistant repeated the assessments. Blood samples were collected from patients on both days directly after the assessments.

STATISTICAL ANALYSIS

Cumulative amount of diazepam equivalents on day 1 and day 2 were analysed using the paired *t* test; the level of significance was $p \leq 0.05$ The same was done to analyse ratings on the verbal recall test and ratings of sedation. Linear regression analysis was used to investigate relationships between changes in verbal recall, sedation and cumulative amount of diazepam equivalents. This method was chosen to exclude the influence of patient characteristics. Logistic regression was used to study relations between photograph recognition and cumulative amount of diazepam equivalents.

RESULTS

There were 70 blood samples from 43 patients. From the first 16 patients, blood was taken only on day 1, but during the study, we decided to take blood on days 1 and 2. Originally, we planned only to check blood on day 1 to be sure patients used benzodiazepines and to exclude patients who had alcohol in their blood, but later we realized that blood taken on both days could be used to investigate changes across patients. For the present analyses, we decided to use only samples of patients who were tested twice. Three samples could not be used because there was not enough sample material or it was of insufficient condition to analyse. This resulted in 48 blood samples of 24 patients that could be analysed.

Cumulative amount of diazepam equivalents determined by radioreceptor assay

The diazepam equivalents (DZE) determined with the radioreceptor assay on day 1 were significantly higher than those collected on day 2 (mean ± SD DZE = 938.96 ± 808.23 and 701.42 ± 837.07, respectively; $p = 0.02$).

Verbal recall with the 15-word test

Immediate recall on day 1 was significantly lower than on day 2 (means respectively 4.96 ± 1.57 and 6.50 ± 2.02, $p = 0.003$). Delayed recall was also significantly lower on day 1 than on day 2 (means respectively 3.21 ± 1.74 and 4.54 ± 2.11, $p = 0.001$).

Regression analysis showed a significant association between change of scores in immediate recall on day 1 and day 2 and the change in diazepam equivalents determined by radioreceptor assay on day 1 and day 2 (immediate recall change = −0.83 −0.30 x DZE change; *R-square* = 0.37). (Fig. 2). This means that an average decrease of 100 ng/ml diazepam equivalents leads to an average increase of immediate recall rating of 1.13. The change in DZE explained 37% of the variance in change in immediate recall.

There was also a significant relation between change in scores of delayed recall and change in diazepam equivalents determined by radioreceptor assay on day 1 and day 2 (delayed recall change = −0.82 −0.22 x DZE change; *R-square* = 0.34) (Fig. 3). This means that an average decrease of 100 ng/ml diazepam equivalents leads to an average increase in delayed recall rating of 1.04. The change in DZE explained 34% of the variance in change of delayed recall.

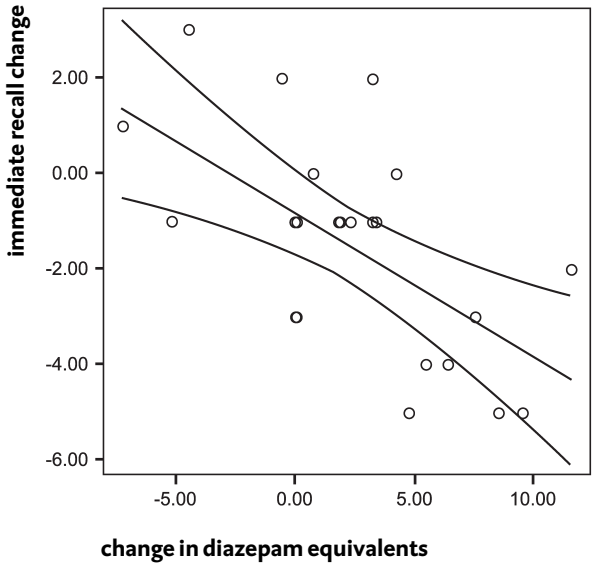

Figure 2 Relation between change in immediate recall and change in diazepam equivalents

immediate recall change =
−0.83 −0.30 x diazepam change
R square = 0.37

1 'diazepam change' means a change of 100 ng/ml diazepam equivalents

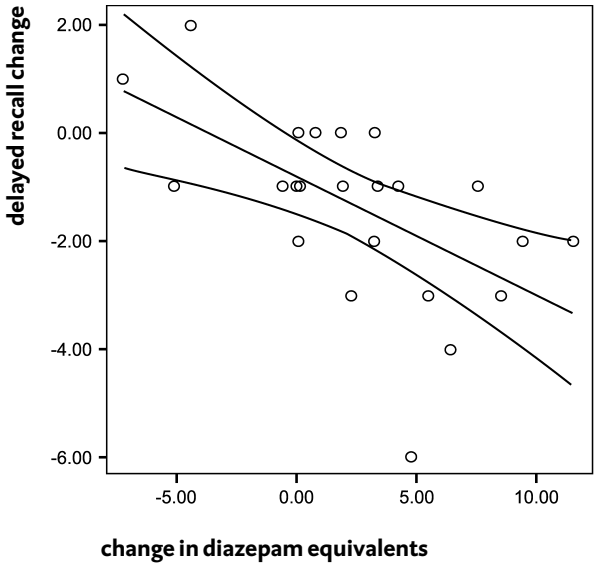

Figure 3 Relation between change in delayed recall and change in diazepam equivalents

delayed recall change =
−0.82 −0.22 x diazepam change
R square = 0.34

1 'diazepam change' means a change of 100 ng/ml diazepam equivalents

Visual recall with the photograph recognition test

Less than half of the patients recognized the psychiatric resident from the photograph and knew that he was the one formally spoken to the day before.

On day 1 the diazepam equivalents of patients who were not able to recognize the psychiatric resident were higher than those of patients who were able to do so, but the difference was not significant (mean ± SD DZE = 897.23 ± 754.82 and 512.45 ± 622.01, respectively; $p = 0.08$). Furthermore, the logistic regression showed that levels of diazepam equivalents on day 1 did not predict recognition.

Sedation

VAS scores of patients on day 1 were significantly lower than on day 2 (means respectively 6.27 ± 1.66 and 8.68 ± 1.03, $p = 0.000$). VAS scores of patients rated by the interviewer were also significantly lower on day 1 than on day 2 (means respectively 5.19 ± 2.02 and 7.27 ± 2.44, $p = 0.001$).

Regression analysis showed a low correlation between change in scores of the patients on the VAS and change in diazepam equivalents determined by radio receptor assay on day 1 and day 2 (patient VAS change = – 1.66 – 0.18 x DZE change; *R-square* = 0.11; Fig. 4) There was also almost no relation between change in VAS scores of the interviewer and change in diazepam equivalents determined by radio receptor assay on day 1 and day 2 (interviewer VAS change = – 2.30 – 0.05 x DZE change; *R-square* = 0.01; Fig. 5). There was not a statistically significant relation between change in verbal recall scores and VAS scores of the patients (immediate recall change = –0.53 + 0.28 patient VAS change; *R-square* = 0.09) (delayed recall change = – 0.95 + 0.14 patient VAS change; R-square = 0.04; Figs. 6 and 7).

DISCUSSION

Change in Anterograde amnesia and change in diazepam equivalents

The main finding of this study is that the change in anterograde amnesia is strongly related to change in cumulative amount of diazepam equivalents: 37% of increase of immediate recall and 34% of increase of delayed recall across patients was explained by decrease of diazepam equivalents. This implies that our hypothesis on the effects of benzodiazepines on memory was confirmed. Our analysis suggests that the benzodiazepines play a major role in the presence of anterograde amnesia in suicide attempters who took an overdose of these agents.

Of course, the stressful circumstances of the patient related to the admis-

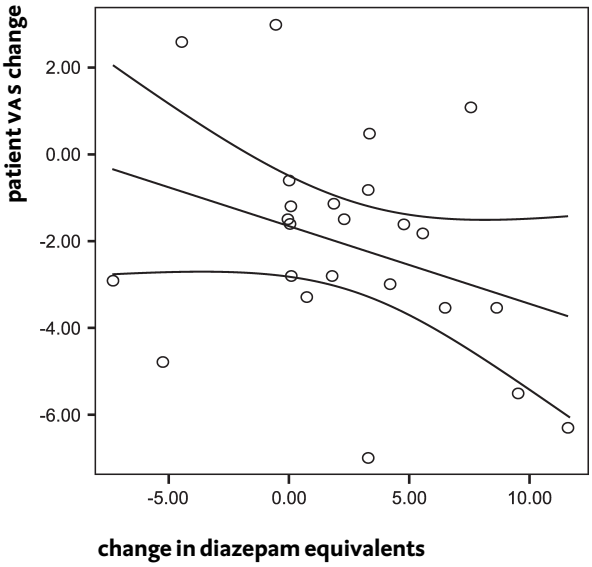

Figure 4 Relation between change in scores of visual analogue scale rated by the patients and change in diazepam equivalents

patient VAS change =
–1.66 –0.18 x diazepam change
R square = 0.11

1 'diazepam change' means a change of 100 ng/ml diazepam equivalents

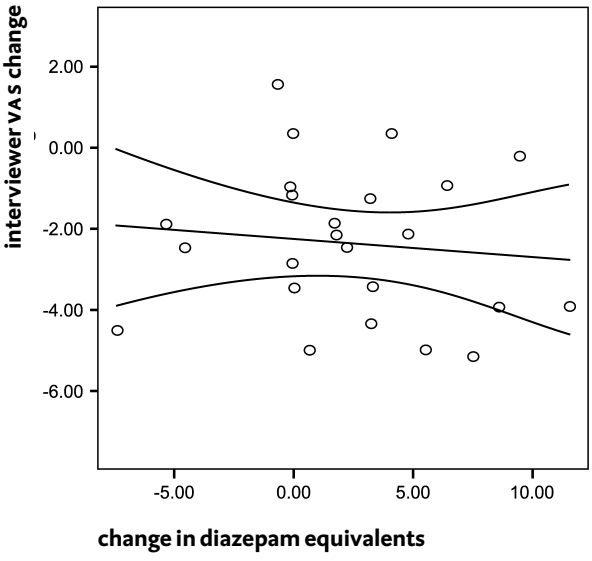

Figure 5 Relation between change in scores of visual analogue scale rated by the interviewer and change in diazepam equivalents

interviewer VAS change =
–2.30 –0.05 x diazepam change
R square = 0.01

1 'diazepam change' means a change of 100 ng/ml diazepam equivalents

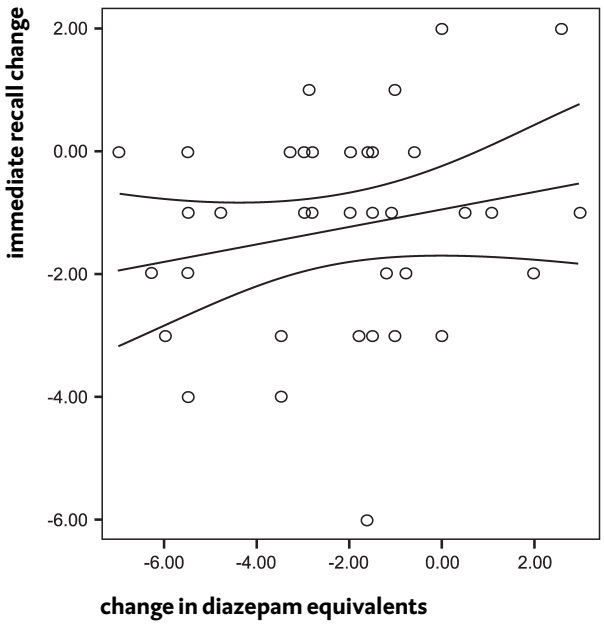

Figure 6 Relation between change in immediate recall and change in scores of visual analogue scale rated by the patients

immediate recall change =
−0.53 +0.28 x patient VAS change
R square = 0.09

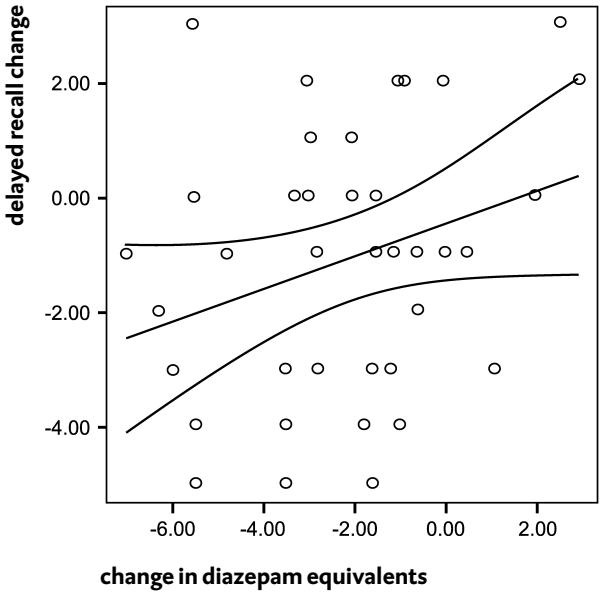

Figure 7 Relation between change in delayed recall and change in scores of visual analogue scale rated by the patients

delayed recall change =
−0.95 +0.14 x patient VAS change
R square = 0.04

sion to hospital might have added to the amnesia as well as the influence of other drugs not investigated by us. However, it is improbable that these are major factors since on the second day, in much more quiet conditions and with lower levels of other drugs, significant anterograde amnesia was still present. It could also be argued that the increase in scores of the verbal recall test was due to a practice effect. This is not likely because on day 1, patients were presented different but equivalent wordlists than on day 2.

Analysis of the results on the other memory task, the visual recall test, showed that recognition of the resident from photographs was not predicted by levels of diazepam on day 1. It should be mentioned that the interview with the patients was not always done by the same resident. We did not study whether some were more easily recognizable than others, and so, we cannot rule out that this could have influenced the results. What also has to be mentioned is the fact that visual recognition is a more implicit memory task while verbal recall is a typically explicit memory task. Benzodiazepines do impair explicit memory, and the influence on implicit memory is doubtful. It seems, however, that implicit memory is impaired by benzodiazepines when levels of benzodiazepines are close to peak plasma concentrations (Buffett-Jerrott et al., 1998). Perhaps this explains why the diazepam equivalents on day 1 of patients who where not able to recognize the psychiatric resident on day 2 were higher than those of patients who were able to do so, although the difference was not statistically significant.

In this study the results on tests of every patient on day 1 were compared with those on day 2. To rule out the possibility of stress or use of psychoactive drugs that could have influenced the results, we would recommend a study with a control group of suicide attempters that did not use benzodiazepines or other psychoactive drugs.

Change in sedation and change in diazepam equivalents

Our second hypothesis was also confirmed in this patient group: although the ratings of sedation were higher on the first day, there was almost no relation between change in diazepam equivalents and change in scores of sedation by the interviewer. The relation between change in diazepam equivalents and change in scores of sedation by the patient was somewhat stronger, although not statistically significant. Linear regression showed no relevant relation between verbal recall, sedation and amount of diazepam equivalents. It is likely that a dose-response relationship exists between benzodiazepines and the presence of amnesia and sedation, but our analyses suggest that anterograde amnesia and sedation are not strongly related. An explanation could be that amnesia occurs already at lower levels of benzodiazepines than does sedation.

The very low ratings on the verbal recall tests on day 2, i.e., more than 24 hours after intake of benzodiazepines, are remarkable and suggest that amnesia is already present at low levels of benzodiazepines.

Clinically relevance

This study is the first to examine in a clinical situation the relationship between plasma levels of benzodiazepines and memory impairment in patients who attempted suicide. In addition, our study is unique in using an assessment method that allows for a summation of the concentrations of benzodiazepines and their metabolites, corrected for their binding potentials. We believe this technique will facilitate studies on the relationship between clinical effects and levels of benzodiazepines in other groups and other circumstances.

This study underlines again that patients who have taken an overdose of benzodiazepines are likely to forget information offered to them after the suicide attempt, even if they are interviewed as late as 12 hours after admittance to the hospital. Even with low plasma levels of benzodiazepines anterograde amnesia is likely to occur. In our study, patients who took an overdose without having used benzodiazepines before, as well as chronic users were included, and both showed anterograde amnesia. Therefore it is improbable that oral agreements made during an interview within 24 hours after the suicide attempt with benzodiazepines will be remembered by the patient. If necessary, flumazenil might be useful to circumvent the amnesia (Bishop and Curran, 1995; Nagelhout et al., 1999; The Flumazenil in Intravenous Conscious Sedation with Diazepam Multicenter Study Group 1, 1992), although the potential is limited because of its short duration of action and precipitation of acute withdrawal effects. In any case, in routine daily practice it is reasonable to adjust the interview and arrangements for care of suicide attempters because of the possible presence of anterograde amnesia. For instance, the patient can be interviewed again at another time, significant others (relatives, partners, etc.) can be present during the interview and the patient can be provided with written information about arrangements for aftercare.

CONCLUSIONS

Patients who attempt suicide by taking an overdose of benzodiazepines are likely to have memory impairment, i.e., anterograde amnesia. In this group of patients, a strong relation was established between change in cumulative amount of benzodiazepines and change in scores on a verbal recall test. The relation between change in cumulative amount of benzodiazepines and change in sedation was less impressive. Therefore it can be concluded that assessment of suicide attempters in clinical practice should take into account the forgetfulness of these patients, even if they do not seem to be sedated.

American Psychiatric Association (1994). Diagnostic and Statistical Manual of Mental Disorders. American Psychiatric Association, Washington DC.

Bareggi, S.R., Ferini-Strambi, L., Pirola, R., Smirne, S. (1998). Impairment of memory and plasma flunitrazepam levels. *Psychopharmacology (Berl)*, *140*, 157-163.

Bishop, K.I., Curran, H.V. (1995). Psychopharmacological analysis of implicit and explicit memory: a study with lorazepam and the benzodiazepine antagonist flumazenil. *Psychopharmacology (Berl.)*, *121*, 267-278.

Buffett-Jerrott, S.E., Stewart, S.H. (2002). Cognitive and sedative effects of benzodiazepine use. *Current Pharmaceutical Design*, *8*, 45-58.

Buffett-Jerrott, S.E., Stewart, S.H., Bird, S., Teehan, M.D. (1998). An examination of differences in the time course of oxazepam's effects on implicit vs explicit memory. *Journal of Psychopharmacology*, *12*, 338-347.

Curran, H.V, (1991). Benzodiazepines, memory and mood: a review. *Psychopharmacology (Berl)*, *105*, 1-8.

De Jong, L., Verwey, B., Essink, G., Muntendam, A., Zitman, F.G., Ensing, K. (2004). Determination of the Benzodiazepine Plasma Concentrations in Suicidal Patients using a Radioreceptor Assay. *Journal of Analytical Toxicology*, *28*, 587-592.

Ghoneim, M.M., Hinrichs, J.V., Mewaldt, S.P, (1984). Dose-response analysis of the behavioral effects of diazepam: 1. Learning and memory. *Psychopharmacology (Berl)*, *82*, 291-295.

Hennessy, M.J., Kirkby, K.C., Montgomery, I.M. (1991). Comparison of the amnesic effects of midazolam and diazepam. *Psychopharmacology (Berl.)*, *103*, 545-550.

Hunt, P., Husson, J.M., Raynaud, J.P. (1979). A radioreceptor assay for benzodiazepines. *Journal of Pharmacy and Pharmacology*, *31*, 448-451.

Lezak, M.D. (1983). Neuropsychological Assessment. Oxford University Press, New York.

Nagelhout, J., Gerbasi, F., Zaglaniczny, K.L., Fryzel, S., Hourrigan, J., Motz, J., Wakefield, F., Wigton, T., Masserant, J. (1999). The effect of flumazenil on patient recovery and discharge following ambulatory surgery. *AANA Journal*, *67*, 229-236.

Ryan, J.J., Geisser, M.E. (1986). Validity and diagnostic accuracy of an alternate form of the Rey Auditory Verbal Learning Test. *Archives of Clinical Neuropsychology*, *1*, 209-217.

The Flumazenil in Intravenous Conscious Sedation with Diazepam Multicenter Study Group 1 (1992). Reversal of central benzodiazepine effects by flumazenil after conscious sedation produced by intravenous diazepam. *Clinical Therapeutics*, *14*, 895-909.

Verwey, B., Eling, P., Wientjes, H., Zitman, F.G. (2000). Memory impairment in those who attempted suicide by benzodiazepine overdose. *Journal of Clinical Psychiatry*, *61*, 456-459.

Veselis, R.A., Reinsel, R.A., Feshchenko, V.A. (2001). Drug-induced amnesia is a separate phenomenon from sedation: electrophysiologic evidence. *Anesthesiology*, *95*, 896-907.

Chapter 7 – Recall of neutral words and face recognition in patients undergoing cardiac catheterization

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Submitted

ABSTRACT

Objective

To investigate the influence of stressful circumstances on the recall of neutral information in a clinical setting, a prospective study was done on patients who were admitted to hospital to undergo cardiac catheterization.

Method

During their stay in hospital, cardiac patients were tested for verbal recall before cardiac catheterization and 24 hours afterwards. Cortisol levels in plasma were also determined. After catheterization, recognition of faces seen before catheterization was assessed.

Results

Patients' scores on the verbal recall test were within normal limits for the age group on both assessments, but were significantly higher before undergoing the procedure than 24 hours afterwards. Face recognition was excellent. Blood levels of cortisol before and after the procedure did not differ significantly, and no significant relationship was found between change of cortisol levels and the change in scores on the verbal recall test.

Conclusions

The results suggest that the stress of hospital admission and cardiac catheterization does not impair recall of neutral information. Whenever necessary, information is best provided before the catheterization.

INTRODUCTION

The effects of stress on verbal recall in healthy subjects are contradictory. Psychosocial stress was associated with poor verbal recall in two studies (Kirschbaum et al., 1995; Kirschbaum, Wolf, May, Wippich, & Hellhammer, 1996), with no effect in two other studies (Wolf, Schommer, Hellhammer, McEwen, & Kirschbaum, 2001; Wolf, Schommer, Hellhammer, Reischies, & Kirschbaum, 2002) and with enhanced verbal recall in a fifth study (on exam stress) (Vedhara, Hyde, Gilchrist, Tytherleigh, & Plummer, 2000). The latter three studies also assessed cortisol levels, one showing an inverse relationship between cortisol level and verbal recall (Wolf et al., 2001), the second showing no relation between cortisol levels and verbal recall under stress although cortisol levels were increased (Wolf et al., 2002) and the third demonstrating a positive relationship between verbal recall and cortisol levels (Vedhara et al., 2000).

The effects of stress on verbal recall in patients undergoing major medical examinations or treatments has not been studied extensively. The only study we know of, investigated the ability to recall neutral words in patients admitted to hospital after attempting suicide with a benzodiazepine overdose (Verwey, Eling, Wientjes, & Zitman, 2000). Their patients' ability to recall neutral words was impaired. As the degree of impairment correlated positively with benzodiazepine blood levels (Verwey et al., 2005), these drugs probably played a major role. However, as a control group of non drug-using suicide attempters was absent (and could not be included because those patients are very rare) it remains unknown whether stress itself diminishes or enhances memory in clinical situations.

Nevertheless, better knowledge about what is remembered of neutral information, i.e. information not directly related to the stressful event, provided under stressful circumstances in the hospital, is important for two reasons. Firstly, it may help clinicians to decide when it is the best time to provide information to the patient. And secondly, it may help to better understand how the memory functions under stress. Therefore a prospective study was done on some aspects of memory, namely the immediate and delayed recall of neutral words and face recognition, in patients admitted to the hospital to undergo cardiac catheterization.

METHOD

Subjects

All patients admitted to the Rijnstate General Hospital (city of Arnhem, The Netherlands) for cardiac catheterization were eligible for the study. Exclusion criteria were: patients younger than 18 (because the tests used were not developed for younger people); a clinical diagnosis of delirium, dementia or amnesic disorder; alcohol dependence or abuse; and inability to read or to understand the verbal recall test. Patients were also excluded when benzodiazepines or alcohol were present in blood plasma.

Procedure

This prospective study was carried out between 2002 and 2004. The medical ethics committee of the hospital approved the study. Patients scheduled to undergo cardiac catheterization received a letter with information about the study before they were admitted to the hospital. After admittance and immediately prior to the catheterization, those who wanted to participate in the study were seen by a research physician who examined the patient with regard to the inclusion criteria, explained the procedure of the study, and asked informed consent. When written informed consent was obtained, a research assistant immediately started assessments (referred to as day 1). Twenty-four hours after the cardiac catheterization (day 2), the research assistant performed the same assessments.

ASSESSMENTS

1 The *'15-woorden test'* (15-word test) is the Dutch equivalent to the Rey Auditory Verbal Learning Test (Lezak, 1983). The procedure was slightly adapted by administering the list of words only once on day 1 and once on day 2. To prevent learning, patients were presented parallel versions of the test on each day. On both days the research assistant instructed the patient to use a computerized version of the test. The patient was asked to remember words that were presented successively on the computer screen for a period of 2 seconds each. Immediately after the presentation of 15 unrelated words the patient was asked to recall as many words as possible ('immediate recall'). After 15 minutes the patient was again asked to recall as many words as possible ('delayed recall').
2 Also a *face recognition test,* used in formal police investigations in the Netherlands, was done. On day 2 the patient was presented with a series of

6 photographs of faces with a variety of features such as hair, glasses, et cetera. One of the photographs showed the research physician who had examined the patient the day before. The patient had to answer three questions: [1] Do you recognize anyone? [2] Who do you recognize? and [3] How do you know this person? This test was done to find out whether the cardiac patients were able to remember the faces of clinical personnel. In the study with the patients who had attempted suicide, half of the patients did not recognize the face of the physician they had spoken to for at least 45 minutes on the previous day (Verwey et al., 2000). The cardiac patients spoke to the research physician for only 10 minutes or less.

3 There is extensive literature relating stress with cortisol levels in blood and with memory performance. Therefore, in this study, *cortisol levels* in blood were measured at the same time in each subject on both days using a competitive immunoassay (Roche Diagnostica BV, Almere, The Netherlands).

4 To exclude confounding factors that could have influenced the verbal recall and face recognition tests, the following measurements were obtained:

4.1 The *degree of sedation* was rated by the patient and by the research assistant on a 10 cm Visual Analogue Scale (VAS) on day 1 and day 2. A low score indicates a high level of sedation.

4.2 *Blood alcohol concentration* was measured with gas liquid chromatography. Presence of benzodiazepines in the blood was determined by the immunochemical method TDxFLx (Abbott Laboratories, USA).

STATISTICAL ANALYSIS

Differences in verbal recall, face recognition and cortisol levels between day 1 and 2 were tested using the paired t-test; the level of significance was $p <= 0.05$. Linear regression analysis was used to investigate the relationship between changes in the scores of verbal recall and changes in cortisol levels in blood.

RESULTS

Fifty patients were eligible for the study. Two refused to cooperate and nine patients dropped out during the follow-up on day 2. Of the remaining 39 patients (29 male and 10 female; mean age 60.5 years; SD 10.2), no patients had to be excluded due to a measurable blood alcohol or benzodiazepine concentration. The patients were not sedated on either day 1 or day 2, as was shown by the ratings of the patients themselves (around 8.5 on the VAS) and the ratings by the

research assistant (around 9.7 on the VAS). Blood levels of cortisol on day 1 and day 2 did not differ significantly ($p = 0.51$). The results are presented in Table 12.

Verbal Recall with the 15-word Test

Immediate recall on day 1 was significantly higher than on day 2 (the respective means were 6.87 ± 1.73 and 5.79 ± 1.79, $p \leq 0.001$). Delayed recall was also significantly higher on day 1 than on day 2 (the respective means were 5.46 ± 2.01 and 4.56 ± 1.82, $p = 0.004$). These findings were comparable to scores of immediate and delayed recall on this test in healthy subjects of the same age group (Savage & Gouvier, 1992). Regression analysis showed no statistically

Table 12 Recall ratings on the 15-word test, scores of sedation on visual analogue scale, and blood levels of cortisol (N = 39)

	Day 1	Day 2	
	Mean (SD)	Mean (SD)	*p*
IMM	6.87 (1.73)	5.79 (1.79)	≤ 0.001
DEL	5.46 (2.01)	4.56 (1.82)	0.004
IVAS	9.7 (0.58)	9.73 (0.65)	0.71
PVAS	8.63 (1.35)	8.47 (1.65)	0.45
Cortisol	0.38 (0.15)	0.39 (0.13)	0.51

IMM: immediate recall (range from 0 to 15)
DEL: delayed recall (range from 0 to 15)
IVAS: score of interviewer on visual analogue scale of sedation (range from 1 to 10)
PVAS: score of patient on visual analogue scale of sedation (range from 1 to 10)
Cortisol: blood levels (umol/l)
SD: standard deviation
p: significance (Paired T-test)

significant relationship between the change in verbal recall and cortisol levels (immediate recall = – 1.08 + 0.03 x cortisol change; $p = 0.98$; $R^2 = 0.00$) (delayed recall = – 0.86 – 2.09 x cortisol change; $p = 0.20$; $R^2 = 0.04$).

Face Recognition Test

All patients could recognize the research physician from the photograph and knew that he was the one with whom they had formally spoken the day before.

DISCUSSION

The scores of verbal recall before and after heart catheterization were within the normal range for the age group to which the subjects belonged. Face recognition on day 2 was excellent, although patients had spoken with the research physician for only a short time on day 1.

Remarkably, the verbal recall scores on day 1 were significantly higher than scores on day 2 and this needs an explanation. For clinical practice these findings imply that the stress of a heart catheterization does not necessarily influence remembrance of neutral information given to the patient and that, whenever possible, information should be given before the procedure.

Is the better performance on day 1 due to stress? It is noteworthy that one of the patients, who did not score as well on the second day, spontaneously commented, 'The stress is over'. However, the perception of experienced stress by the patients was not measured, so it is hard to draw conclusions. The finding that blood levels of cortisol before and after the catheterization were within normal limits and did not differ significantly, as well as the finding that there was no relationship between change in verbal recall and change of cortisol levels in blood, do not support the hypothesis that stress had a major influence. Furthermore, the lower scores on day 2 could be attributed to a change in mood due to exertion after the procedure, some degree of sedation or a change in motivation. However, the degree of sedation determined either by the patients or the research assistant did not differ significantly between day 1 and day 2.

Some limitations of this study should be mentioned. Firstly, a control group is lacking in this study. Therefore it was not possible to establish the natural history of scores without the intervening procedure. An appropriate control group would have consisted of patients admitted to hospital without having been exposed to any form of stress and this is not likely to occur in clinical practice. Moreover, the verbal recall test has been tested for its validity by test-retest procedures (Benedict & Zgaljardic, 1998) and it can be argued that a control group is not necessary in this respect. Secondly, as almost three times more

men than women participated in the study, the results cannot be generalised to both sexes. However, stratifying the data on sex did not lead to different results (data not shown). Thirdly, although the cortisol samples were taken at the same time on both days, the method of taking single blood samples may have been too inaccurate to detect change in cortisol levels. A series of (preferably saliva) samples on both days might have shown a difference between the two measurements. However, for practical reasons saliva assessments were not available in this study. Finally, the subjective level of stress perceived by the patients before and after the cardiac catheterization was not determined, so this factor could not be correlated with the verbal recall and face recognition test.

In conclusion, in this study, elderly patients admitted to hospital to undergo cardiac catheterization performed within normal limits on a verbal recall test before the procedure and 24 hours afterwards. All patients could recognize from photographs the research physician they had spoken to before the , so no impairment of recall of neutral information was found. As patients scored significantly better before the catheterization, whenever necessary information is best provided at that time. Whether these results can be generalized to patients in other stressful situations requires further study.

Benedict, R.H. & Zgaljardic, D.J. (1998). Practice effects during repeated administrations of memory tests with and without alternate forms. *Journal of Clinical and Experimental Neuropsychology, 20,* 339-352.

Kirschbaum, C., Prussner, J.C., Stone, A.A., Federenko, I., Gaab, J., Lintz, D. et al. (1995). Persistent high cortisol responses to repeated psychological stress in a subpopulation of healthy men. *Psychosomatic Medicine, 57,* 468-474.

Kirschbaum, C., Wolf, O.T., May, M., Wippich, W., & Hellhammer, D.H. (1996). Stress- and treatment-induced elevations of cortisol levels associated with impaired declarative memory in healthy adults. *Life Sciences, 58,* 1475-1483.

Lezak, M.D. (1983). *Neuropsychological Assessment.* (2nd ed.) New York: Oxford University Press.

Savage, R.M. & Gouvier, W.D. (1992). Rey Auditory-Verbal Learning Test: the effects of age and gender, and norms for delayed recall and story recognition trials. *Archives of Clinical Neuropsychology, 7,* 407-414.

Vedhara, K., Hyde, J., Gilchrist, I.D., Tytherleigh, M., & Plummer, S. (2000). Acute stress, memory, attention and cortisol. *Psychoneuroendocrinology, 25,* 535-549.

Verwey, B., Eling, P., Wientjes, H., & Zitman, F. G. (2000). Memory impairment in those who attempted suicide by benzodiazepine overdose. *Journal of Clinical Psychiatry, 61,* 456-459.

Verwey, B., Muntendam, A., Ensing, K., Essink, G., Pasker-de Jong, P.C., Willekens, F.L. et al. (2005). Clinically relevant anterograde amnesia and its relationship with blood levels of benzodiazepines in suicide attempters who took an overdose. *Progress of Neuropsychopharmacology & Biological Psychiatry, 29,* 47-53.

Wolf, O.T., Schommer, N.C., Hellhammer, D.H., McEwen, B. S., & Kirschbaum, C. (2001). The relationship between stress induced cortisol levels and memory differs between men and women. *Psychoneuroendocrinology, 26,* 711-720.

Wolf, O.T., Schommer, N.C., Hellhammer, D.H., Reischies, F. M., & Kirschbaum, C. (2002). Moderate psychosocial stress appears not to impair recall of words learned 4 weeks prior to stress exposure. *Stress, 5,* 59-64.

Chapter 8 – Reassessment of suicide attempters at home, shortly after admittance to a general hospital

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Submitted

ABSTRACT

Objective

To compare a systematic assessment of suicide attempters in the general hospital with a reassessment at home, shortly after discharge.

Method

Similar instruments were used to assess patients in hospital and at home. Additionally, patients were questioned about their aftercare arrangements.

Results

Fifty-two patients were included in the study. Reassessments at home did not differ significantly from the initial assessment. However, patients' motives for the suicide attempt changed to less impulsive and more suicidal, worrying was significantly higher, and self-esteem was significantly lower. A third of the patients had forgotten their aftercare arrangements. Most patients who had initially felt no need for help changed their minds at reassessment.

Conclusion

Although assessments in the hospital and at home were comparable, the patients' condition at home was somewhat worse than in the hospital, and few patients remembered their aftercare information, suggesting that additional strategies for the hospital assessment of suicide attempters should be developed.

INTRODUCTION

At least 23% of suicide attempters presented to a general hospital repeat their suicide attempt and 3-5% will commit suicide within 5-10 years (Hawton, Zahl, & Weatherall, 2003; Zahl & Hawton, 2004). Up to now, no evidence-based prevention strategies are available (Hawton et al., 1998). However, there is some evidence that psychiatric assessment after the attempt decreases the risk of further attempts and completed suicide (Hickey, Hawton, Fagg, & Weitzel, 2001). This is remarkable, as it is often difficult to assess suicide attempters adequately during their stay in the general hospital (Hengeveld, Kerkhof, & van der Wal, 1988). Several reasons for this assessment problem can be mentioned.

Firstly, it is questionable whether patients are able to appraise their situation and their need for care properly. Their power of judgment may be compromised by emotions, cognitive impairment as well as by drug and alcohol intoxication (Dieserud, Roysamb, Ekeberg, & Kraft, 2001; Evans, Williams, O'Loughlin, & Howells, 1992; Verwey, Eling, Wientjes, & Zitman, 2000). Secondly, psychiatric assessment is also hampered by the hassle in which it has to take place: an unquiet room, disturbances because of somatic investigations and time pressure, as suicide attempters are often only allowed to stay for as long as somatic care is needed. If these impediments of proper psychiatric assessment could be overcome, the preventive effect of the assessment might be larger as it may have more impact on the patient and lead to more appropriate treatments. A way to accomplish this is to reassess patients when the emotions of acute admission are eased, intoxications are less probable and the hassles of the emergency room are left behind.

We aimed to compare the results of a reassessment at their own homes of a group of suicide attempters after discharge from the hospital with the initial assessment in the hospital. When discrepancies indeed are large enough, this would warrant further investigation.

Additionally, at home it was examined whether patients expressed other needs for help than when interviewed at the hospital. Furthermore, the recollection of the arrangements for aftercare made in the hospital was investigated at home, as well as the patients' hindsight opinion about their appraisal of competency at the initial assessment.

MATERIAL AND METHODS

Sample

All patients present to the Rijnstate Hospital (a large general teaching hospital in the Netherlands with a catchment area of 300,000 people) after a suicide attempt were included if they were cooperative and could read Dutch. Patients with the following criteria were excluded; age under 18 years (because the instruments used were not developed for younger people), a lack of capacity due to a somatic disorder, or a diagnosis of delirium, dementia, or amnesic disorder according to DSM IV criteria (American Psychiatric Association, 1994). Patients with a treatment plan in accordance with their mental health care provider in which it was anticipated how to handle cases of suicide attempts, and those who had to be admitted to a psychiatric hospital were also excluded. The Medical Ethical Review Committee of the hospital approved the study.

Procedure

All suicide attempters were assessed according to the hospitals' guidelines. First, the psychiatric consultant investigated whether the patient was alert, capable, and willing to be interviewed. If so, the patients were asked to participate in both an assessment in the hospital, and a second assessment to take place at home after discharge. After written informed consent was obtained, a research nurse administered the self-reported questionnaires (T1). A research nurse made an appointment for the follow-up assessment at home within 7 days after discharge. Before discharge, the arrangements for follow-up care were communicated to the patient both verbally and also on paper. For example, arrangements were made for support from significant others, use of medication, how to handle recurrent suicidality, and a referral for mental health care.

At home (T2), the research nurse again administered the questionnaires and the patients were asked whether they knew if arrangements had been made for their aftercare, and by whom. In case of emergency, the hospital psychiatrist could be consulted.

Measurements

1 *Suicide Intent Scale (SIS)* (Beck, Schuyler, & Herman, 2006). This self-report questionnaire assesses suicide intent with 15 items, each scored 0,1 or 2, yielding a possible range of sum scores from 0 to 30. To further analyse the intentions, the objective (items 1 to 8) and subjective (items 9 to 15) subscales were used.

2 *Motives for Parasuicide Questionnaire (MPQ)* (Bancroft et al., 1979). This self-report questionnaire explores the motives people may have for engaging in suicidal behaviour. Each item is scored according to the relevance the patient gives as to why he or she carried out the suicide attempt. For this study the original 3-point scale was changed to a 7-point version to better determine minor changes, ranging from −3 ('strongly disagree') to +3 ('strongly agree'). For further analysis, the factor composition used as a part of the WHO/EURO Parasuicide Study (Hjelmeland et al., 2002) was adopted, resulting in four subscales: 'Care Seeking' (4 items), 'Influencing Others' (3 items), 'Temporary Escape' (2 items), and 'Final Exit' (4 items), and a separate item 'Loss of control'.
3 *Brief Symptom Inventory (BSI)* (Derogatis, 1975), (De Beurs & Zitman, 2006). This self-report questionnaire consists of 9 scales to determine dimensions of psychopathology (depression, anxiety, somatization, obsessive compulsive symptoms, hostility, paranoid ideation, interpersonal sensitivity, phobic anxiety, and psychoticism). It measures the level or depth of distress currently being experienced by the individual. The Global Severity Index (GSI) is the total score of the instrument, and measures overall psychological distress level using the Positive Symptom Distress Index (PSDI) to assess the intensity of symptoms, and the Positive Symptom Total (PST) to report the number of self-reported symptoms.
4 *Penn State Worry Questionnaire (PSWQ)* (Meyer, Miller, Metzger, & Borkovec, 1990; Van Rijsoort, Emmelkamp, & Vervaeke, 1999). This self-report questionnaire measures a general trait-like tendency to worry, including pathological worry. The 16 items are scored from 0 ('does not matter at all') to 4 ('does matter a lot'). Positively keyed items represent a 'general worry' factor (11 items), while negatively keyed items represent a 'not worry' factor (5 items) (Van Rijsoort et al., 1999).
5 *Self-Esteem Scale (SES)(Rosenberg, 1965)* assesses self-esteem on a 10-item questionnaire scored by the patient on a 4 point-scale from 'strongly agree' to 'strongly disagree'. The scale comprises two factors; 5 positively stated items representing self-confidence and 5 negatively stated items representing self-depreciation.
6 To list the *need for support or treatment,* a questionnaire was developed by the authors. Patients were asked 'Do you need help' and had to choose 'yes' or 'no'. Subsequently, they could choose from a list with possibilities for help or treatment according to Hosman (Hosman, 2006). In case of a 'no' response, patients could choose 'I want to solve my problems myself', 'I don't want to think about anything', 'Eventually, I will consult my family, friends, or significant other(s)'. In case of a 'yes' response, patients could choose 'I

want help from a general practitioner', 'social worker', 'psychologist or psychiatrist', 'medication', 'admittance', 'other'.

7 To assess the *patients' capability of appraising their situation*, patients were asked to answer the question 'I think I am capable of appraising my situation' on a seven-point Likert scale from 'strongly agree' to 'strongly disagree'. At home, they were also asked to score whether they found themselves more capable at home than in the hospital.
8 During the second interview at home, the research nurse asked the patient what he or she recalled about the arrangements for aftercare made in the hospital, and listed the answers.
9 Additionally, the research nurse noted if changes in the arrangements for aftercare had been made and for what reasons.

Statistical power

A power analysis (alfa = 0.05; power = 0.90) showed that 50 patients would yield sufficient statistical power to answer the research questions regarding the comparison of assessments from T1 to T2.

STATISTICAL ANALYSES

Scores on the SIS, MPQ, BSI, PSWQ, and the SES were summed up and expressed as the mean, and standard deviations were calculated. The mean scores were calculated both for the total questionnaire scores, and for the various factors. Differences between these scores at T1 and T2 were compared using the paired T-Test.

Pearsons' correlation coefficients were calculated for all factors between T1 and T2 to examine the extent of the relationship between both assessments. In order to find consistency in the data between the different questionnaires, Pearsons' correlation coefficients were estimated between the total score of the SIS at T1 and T2 with the various factors of the MPQ; with consistent data, a high total SIS score should be positively correlated with the factor 'Final exit' and negatively with the other factors of the MPQ.

RESULTS

Patients

From September, 2004 to August, 2005, 195 suicide attempters were seen by the psychiatric consultants. Of these, 113 were excluded (Figure 8) and 23 did

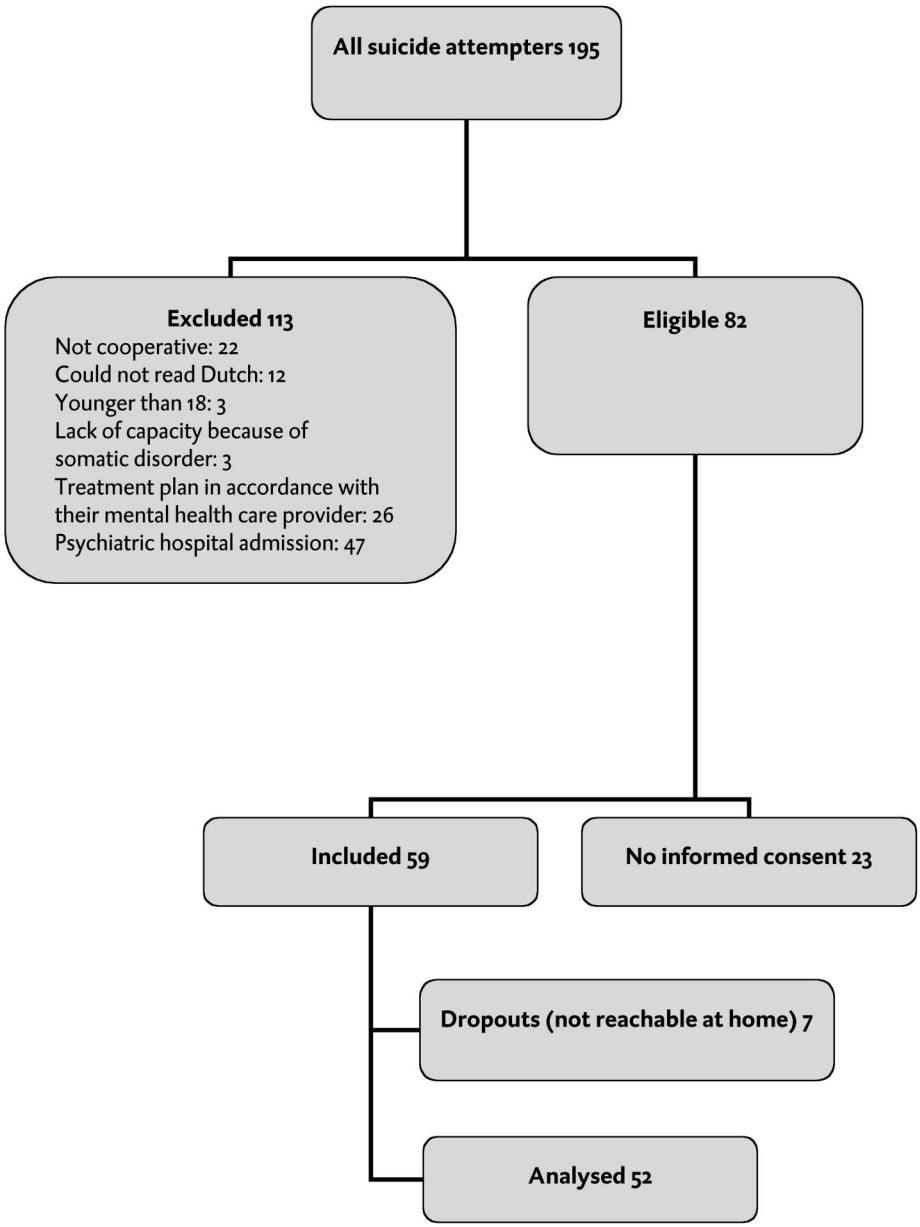

Figure 8 Flow diagram showing the patient selection process

not give informed consent, resulting in 59 eligible patients. The patients were first assessed in the hospital (referred to as T1) and again at home (T2) within 7 days after discharge (mean was 5.0 days, SD 1.6). Of the enrolled patients, 7 dropped out because they were not at home when the research nurse visited for the second assessment. Data from the remaining 52 patients were used in the analysis. The evaluable patients' characteristics are summarized in Table 13. No suicide or additional suicide attempts occurred between T1 and T2.

Table 13 Patient characteristics (N = 52)

Sex, male, n (%)	14	(26.9)
Age in years, mean (SD)	43.4	(11.6)
Use of alcohol, n (%)	33	(64)*
Psychotropic drug overdose, n (%)	38	(79)
First-evers, n (%)	25	(49)
Patients in psychiatric treatment, n (%)	20	(38.5)

SD – standard deviation

* 2/3 used on average 5.7 U/day

Measurements

Table 14 summarizes the results from the measurements at T1 and T2. The most striking results are described below.

Suicide Intent Scale (SIS) and Motives of Parasuicide Questionnaire (MPQ)

Scores on the SIS and MPQ at T1 and T2 did not differ significantly. However, scores on the single item 'It seemed that I lost control of myself, and I do not know why I did it' (measuring 'Loss of control') were significantly lower at T2 than at T1 ($p = 0.03$).

Brief Symptom Inventory (BSI)

There were no significant differences in the scores on the Global Severity Index, Positive Symptom Distress Index, and Positive Symptom Total when comparing T1 to T2.

Table 14 Scores on the different self-reported questionnaires of suicide attempters in the hospital right after their attempt (T1) and a few days later at home (T2), and the correlations between T1 and T2. N = 52

		T1	T2		Correlation T1-T2	
		Mean (SD)	Mean (SD)	*P**(T2-T1)	r	*P***
SIS	Total score	11.6 (6.1)	11.5 (5.4)	0.81	0.81	<0.001
	Objective part	5.1 (3.2)	5.1 (2.6)	0.76	0.71	<0.001
	Subjective part	6.5 (3.8)	6.5 (3.8)	0.96	0.76	<0.001
MPQ	Total score	2.5 (15.4)	3.8 (14.7)	0.41	0.70	<0.001
	Care seeking	–2.4 (8.0)	–2.0 (7.8)	0.64	0.75	<0.001
	Influencing others	–5.0 (5.8)	–5.0 (5.7)	0.90	0.69	<0.001
	Temporary escape	3.7 (2.7)	4.2 (2.3)	0.27	0.32	0.02
	Final exit	4.6 (6.1)	5.8 (4.5)	0.07	0.60	<0.001
	Loss of control	1.6 (2.1)	0.8 (2.4)	0.03	0.40	0.003
BSI	GSI	1.8 (0.8)	1.8 (0.9)	0.87	0.81	<0.001
	PSDI	2.5 (0.7)	2.5 (0.7)	0.72	0.81	<0.001
	PST	36.3 (10.5)	36.0 (10.7)	0.97	0.79	<0.001
	Somatization	1.5 (1.0)	1.5 (1.1)	0.42	0.73	<0.001
	Obsessive compulsive	1.9 (1.1)	1.9 (1.1)	0.56	0.83	<0.001
	Interpersonal sensitivity	2.0 (1.2)	2.1 (1.3)	0.46	0.80	<0.001
	Depression	2.5 (1.1)	2.4 (1.0)	0.42	0.61	<0.001
	Anxiety	2.1 (1.1)	2.0 (1.0)	0.73	0.70	<0.001
	Hostility	1.3 (1.0)	1.4 (1.1)	0.56	0.70	<0.001
	Fobic anxiety	1.4 (1.0)	1.6 (1.1)	0.10	0.73	<0.001
	Paranoid ideation	1.6 (1.2)	1.7 (1.2)	0.85	0.75	<0.001
	Psychoticism	1.8 (1.0)	1.7 (1.0)	0.67	0.70	<0.001
PSWQ	Total score	58.5 (12.9)	61.7 (11.5)	0.07	0.72	<0.001
	General worry	38.3 (12.0)	42.3 (10.8)	0.002	0.75	<0.001
	Not worry	20.1 (3.5)	19.4 (4.3)	0.39	0.20	0.159
SES	Total score	26.3 (6.2)	27.7 (6.3)	0.03	0.76	<0.001
	Positive score	12.4 (3.4)	13.3 (3.3)	0.03	0.78	<0.001
	Negative score	13.8 (3.3)	14.4 (3.3)	0.09	0.67	<0.001

SIS: Suicide Intent Scale
Objective part: items 1-8
Subjective part: items 9-15
MPQ: Motives of Parasuicide Scale Questionnaire
BSI: Brief Symptom Inventory
GSI: Global Severity Index
PSDI: Positive Symptom Distress Index
PST: Positive Symptom Total
PSWQ: Penn State Worry Questionnaire
SES: Self Esteem Scale
*P**: *P*-value paired t-Test
r: correlation coefficient
*P***: *P*-value Pearson correlation
SD: standard deviation

Penn State Worry Questionnaire (PSWQ)

The mean general worry score at home was significantly higher than in the hospital, indicating that patients worried more when they were measured at home a few days after their attempt (p = 0.002).

Self-Esteem Scale (SES)

At home, the mean total score (p = 0.03) and the mean positive score (p = 0.03) were significantly higher than in the hospital, indicating that patients' self-esteem measured at home was lower.

Patients' capability of appraising their situation

Sixty-nine percent of patients in the hospital and 71% at home scored that they believed that they could appraise their situation well. Nevertheless, 71% found themselves more capable of doing so at home.

Need for support or treatment

Although patients were more inclined to indicate that they wanted help at home than in the hospital, this difference was not significant. However, 6 of the 7 patients who felt no need for support or treatment in the hospital changed their mind and asked for help at home.

Recollection of arrangements made for aftercare

At home, 18 (35%) patients did not remember whether arrangements for aftercare had been made during their stay in the hospital. Of these, 8 (15%) patients thought that no arrangements ever had been made, and 10 (19%) could not remember the specifics of the arrangements. Seven (13.5%) patients remembered the arrangements, but did not remember that the psychiatric consultant discussed these with them.

Evaluation of follow-up visit

The arrangements for aftercare were changed for 13 (25%) patients after having been reassessed at home. The main reasons given were persistent suicidal intentions (n = 5) and the patients' need for help other than what had been previously arranged (n = 4). Six (12%) patients stated that they still had suicidal ideation or that ideas about repeating the attempt returned.

DISCUSSION

The main finding of this study is that compared with the assessment in the hospital, suicide attempters had not changed their opinions about their intentions and most of their motives for the attempt a few days later, after going home. The patients had similarly high scores on symptoms of psychopathology on both occasions. Correlation coefficients of the total scores of the psychometric instruments used were between 0.70 and 0.81 which indicates that the assessment in the hospital correlated to a large extent with the reassessment at home.

Other findings of the study were that at the reassessment patients worried significantly more and had a lower self-esteem. Possibly, realizing the consequences of what had happened, patients became more demoralised when they were at home again. On the other hand, it could be argued that patients gave a more positive opinion about worrying and self-esteem in the hospital, for example due to their state of intoxication, the support of carers and significant others, or their ambivalence to accept help. A consequence of these findings might be to detect and study those patients who worry more and have lower self-esteem after a suicide attempt. It is worthwhile to know whether these patients are at higher risk for repetition of a suicide attempt or to complete a suicide.

Looking more in detail at the data, some additional comments can be made. At home, patients scored significantly lower on the motive item 'Loss of control', meaning that they considered their attempt as less impulsive than they did in the hospital. Also, there was a trend ($p = 0.07$) towards higher mean scores at home on the motive factor 'Final Exit'. This factor refers to the motives for wanting to die by the suicidal act, contrasting other motives like a cry for help or manipulating others (Hjelmeland et al., 2002). The correlation between the measurements of this motive factor at home and in the hospital was moderate ($r = 0.60$) and therefore it might be concluded that there was at least a subgroup of patients who later changed their opinion about this motive factor. Considering that in other studies, motives and intentions to die have been found to predict later suicide (Suominen, Isometsa, Ostamo, & Lonnqvist, 2004; Harriss, Hawton, & Zahl, 2005), this result might be clinically relevant. In this respect, it is worthwhile to realize that at home patients said they felt more capable of appraising their situation. These findings require further investigation as they could mean that suicidal motives might be underestimated at the initial assessment in the hospital.

Some other findings at the reassessment might also be relevant for clinical practice. Seventy-one percent of the patients said they felt more capable of appraising their situation when evaluated at home than in the hospital setting.

However, the question was formulated 'I do consider myself better capable to appraise my situation than in the hospital'. It cannot be denied that there is some bias in this question, and therefore the answers are disputable. The more relevant finding might be that a substantial number of patients did not remember anything about the arrangements for aftercare made in the hospital, even though all patients had been given these arrangements in writing as well as verbally. Another meaningful finding was that 6 of the 7 patients who refused support or treatment when it was offered in the hospital, had changed their minds about this issue after returning home. It would be interesting to study how these findings might relate to specific subgroups of patients, such as intoxicated patients and repeaters. In this study, subgroups tended to differ (data not shown), and although their numbers were too small to perform proper statistical analyses the data might be used to generate new hypotheses.

As the patients were systematically assessed with instruments that are used in other studies on suicide attempters, some comparisons can be made. Total scores of the SIS and the MPQ resembled those found in other studies on suicide attempters (Hjelmeland et al., 2000), (Hjelmeland et al., 2002). Also in accordance with the literature, there were more female suicide attempters than male, most attempters (79%) took an overdose of psychotropic drugs, and most commonly used alcohol (Michel et al., 2000).

From the 195 suicide attempters that presented during one year at this general hospital, only 59 were eligible for the study. Therefore, it should be kept in mind that the results are only applicable to a small segment of suicide attempters. Considering the excluded patients, it is quite likely that they may have formed a more severe subgroup. Often they were not cooperative, refused to participate, or were directly referred to the psychiatric ward. This selection may have influenced the results, since more differences between T1 and T2 might have been found if all suicide attempters had been included.

In general, the systematic assessment of suicide attempters in the hospital environment was comparable to a reassessment at home a few days later. At home, patients worried more and had lower self-esteem. Furthermore, at home only a few patients remembered the information given concerning aftercare, most patients felt more capable of appraising their situation, and some patients changed their minds about accepting help. Considering these findings, additional strategies to assess suicide attempters in the general hospital should be developed.

American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders.* (4th ed.) Washington DC: American Psychiatric Association.

Bancroft, J., Hawton, K., Simkin, S., Kingston, B., Cumming, C., & Whitwell, D. (1979). The reasons people give for taking overdoses: a further inquiry. *British Journal of Medical Psychology, 52,* 353-365.

Beck, A.T., Schuyler, D., & Herman, I. (2006). Development of suicidal intent scales. In A.T. Beck, H.L.P. Resnick, & D.J. Lettieri (Eds.), *The prediction of suicide* (pp. 45-56). Bowie, Maryland: Charles Press.

De Beurs, E. & Zitman, F.G. (2006). De Brief Symptom Inventory (BSI): De betrouwbaarheid en validiteit van een handzaam alternatief voor de SCL-90. *Maandblad Geestelijke Volksgezondheid, 61,* 120-141.

Derogatis, L.R. (1975). *The Brief Symptom Inventory*. Baltimore (MD): Clinical Psychometric Research.

Dieserud, G., Roysamb, E., Ekeberg, O., & Kraft, P. (2001). Toward an integrative model of suicide attempt: a cognitive psychological approach. *Suicide & Life Threatening Behavior, 31,* 153-168.

Evans, J., Williams, J.M., O'Loughlin, S., & Howells, K. (1992). Autobiographical memory and problem-solving strategies of parasuicide patients. *Psychological Medicine, 22,* 399-405.

Harriss, L., Hawton, K., & Zahl, D. (2005). Value of measuring suicidal intent in the assessment of people attending hospital following self-poisoning or self-injury. *British Journal of Psychiatry, 186,* 60-66.

Hawton, K., Arensman, E., Townsend, E., Bremner, S., Feldman, E., Goldney, R. et al. (1998). Deliberate self harm: systematic review of efficacy of psychosocial and pharmacological treatments in preventing repetition. *British Medical Journal, 317,* 441-447.

Hawton, K., Zahl, D., & Weatherall, R. (2003). Suicide following deliberate self-harm: long-term follow-up of patients who presented to a general hospital. *British Journal of Psychiatry, 182,* 537-542.

Hengeveld, M.W., Kerkhof, A.J., & van der Wal, J. (1988). Evaluation of psychiatric consultations with suicide attempters. *Acta Psychiatrica Scandinavica, 77,* 283-289.

Hickey, L., Hawton, K., Fagg, J., & Weitzel, H. (2001). Deliberate self-harm patients who leave the accident and emergency department without a psychiatric assessment: a neglected population at risk of suicide. *Journal of Psychosomatic Research, 50,* 87-93.

Hjelmeland, H., Hawton, K., Nordvik, H., Bille-Brahe, U., De Leo, D., Fekete, S. et al. (2002). Why people engage in parasuicide: a cross-cultural study of intentions. *Suicide & Life Threatening Behavior, 32,* 380-393.

Hjelmeland, H., Nordvik, H., Bille-Brahe, U., De Leo, D., Kerkhof, J.F., Lonnqvist, J. et al. (2000). A cross-cultural study of suicide intent in parasuicide patients. *Suicide & Life Threatening Behavior, 30,* 295-303.

Hosman, C.M.H. (2006). *Psychosociale problematiek en hulpzoeken*. Lisse.

Meyer, T.J., Miller, M.L., Metzger, R.L., & Borkovec, T.D. (1990). Development and validation of the Penn State Worry Questionnaire. *Behaviour Research and Therapy, 28,* 487-495.

Michel, K., Ballinari, P., Bille-Brahe, U., Bjerke, T., Crepet, P., De Leo, D. et al. (2000). Methods used for parasuicide: results of the WHO/EURO Multicentre Study on Parasuicide. *Social Psychiatry and Psychiatric Epidemiology, 35,* 156-163.

Rosenberg, M. (1965). *Society and the Adolescent Self-Image*. Princeton, New Yersey: Princeton University Press.

Suominen, K., Isometsa, E., Ostamo, A., & Lonnqvist, J. (2004). Level of suicidal intent predicts overall mortality and suicide after attempted suicide: a 12-year follow-up study. *BMC. Psychiatry, 4,* 11.

Van Rijsoort, S., Emmelkamp, P., & Vervaeke, G. (1999). The Penn State Worry Questionnaire and the Worry Domains Questionnaire: structure, reliability and validity. *Clinical Psychology & Psychotherapy, 6,* 297-307.

Verwey, B., Eling, P., Wientjes, H., & Zitman, F.G. (2000). Memory impairment in those who attempted suicide by benzodiazepine overdose. *Journal of Clinical Psychiatry, 61,* 456-459.

Zahl, D.L. & Hawton, K. (2004). Repetition of deliberate self-harm and subsequent suicide risk: long-term follow-up study of 11,583 patients. *British Journal of Psychiatry, 185,* 70-75.

Chapter 9 – General discussion

The assessment and management of suicide attempters is an important part of daily life for psychiatrists working in a general hospital. Yet, much of what should be done to provide optimal care is unknown. The goal of this thesis was to contribute to better care for this group of patients by studying several aspects of their assessment and management. In the first part of this thesis, the role of guidelines was studied resulting in suggestions for improvement. The second part assesses the role of factors that, as experience in clinical practice suggests, might hamper proper assessment and management. Each part will be discussed separately, below.

PART I GUIDELINES FOR THE ASSESSMENT AND MANAGEMENT OF SUICIDE ATTEMPTERS

As discussed in the first chapter of this thesis, the multidisciplinary assessment and management of suicide attempters is a complicated and multidisciplinary task. As early as 1991, guidelines to bring order in this process were developed in the Netherlands by the Medical Scientific Council of the National Organization for Quality Assurance in Hospitals. Other countries followed suit more than 10 years later (Chapter 1). In other realms of psychiatry and other branches of medicine, it has become increasingly clear that the development of guidelines per se does not guarantee their application. Many guidelines are not or only partly implemented, and frequently implementation is hampered by inadequacies in the guidelines themselves (Burgers, Cluzeau, Hanna, Hunt, & Grol, 2003). With respect to guidelines for the assessment and management of suicide attempters, to our knowledge an evaluation of whether or not they are implemented and whether they are of sufficient quality to make implementation possible has not been conducted. Therefore, in the first part of this thesis we investigated whether the recommendations in the guidelines are observed and examined the quality of the guidelines used in hospitals.

As guidelines are textual documents, protocols are decision-support tools, derived from the recommendations formulated in the guidelines. Because we were going to investigate all kinds of available recommendations concerning the care for suicide attempters, for our first study we used a broad definition for guideline, including protocols.

In order to determine if guidelines are observed, we made use of data from the European CLW Collaborative Study (Huyse, Herzog, Malt, & Lobo, 1996). This study was originally developed to compare very different Consultation-Liaison psychiatric services in hospitals. Fortunately, the data also allowed an evaluation of aspects for implementation. The results, described in Chapter 2,

essentially demonstrate that the findings in the assessment and management of suicide attempters do not differ very much from those in other realms of medicine. Although guidelines were available in all seven Dutch hospitals involved in the study, the execution of recommendations in practice was not in concordance with the guidelines, especially concerning the coordination of care. For example, most guidelines recommend obtaining information about the patient from the general practitioner, mental health care provider, and family in every case, but in practice this was never done.

The European CLW Collaborative Study was performed between 1991-1993. Do changes in the care for suicide attempters not preclude generalisation to present-day practice? Although the data were collected before publication of the 1991 guidelines, all seven participating Dutch hospitals had guidelines that largely resembled the official guidelines. Thus, comparable guidelines were in force at the time of the study described in Chapter 2 and in the present-day situation. The fact that the participating hospitals were not randomly selected from Dutch general hospitals, but participated because of their special interest in the topic, diminishes the generalisability of the results. Their interest implies that the participating hospitals made more use of the guidelines compared with other institutions, and suggests that the implementation of the guidelines in general was worse at that time, and perhaps presently as well. Furthermore, two of the seven hospitals used verbally agreed upon guidelines and we assume this reflects also that in those years implementation was modest. It can be concluded that the available data hint at a deficient use of guidelines for the assessment and management of suicide attempters. The reasons for not following guidelines can be manifold, but it is essential that the guidelines are available to the potential users and that the content and the quality are sufficient. In a second study we addressed these questions (Chapters 3 and 4). All hospitals and mental health institutions in the Netherlands were asked to provide their local guidelines to investigate the content and quality. The primary result was that guidelines were available in only 38.6% of the hospitals and 34.2% of the mental health institutions. The guidelines varied widely in their primary objectives, narrative length, and readability. Remarkably, not all local guidelines recommended psychiatric consultation for every suicide attempter. Moreover, instructions for determining the degree of suicidality, performing the psychiatric examination, detecting risk factors and psychosocial stressors were only provided in 45% or less.

Application of the quality AGREE-instrument indicated that only a minority (37%) of guidelines used in the university and general hospitals could be recommended. As measured with the AGREE, the quality of guidelines in mental health institutions was low, but higher than the guidelines in the hospitals,

although 83.4% could be recommended (with provisos and alterations). The results of the guidelines in hospitals are alarming, but again comparable to other branches of medicine. For example, reviewing 51 guidelines for diagnosis and treatment of lung cancer resulted in the recommendation of 37% (Harpole et al., 2003).

In the AGREE-domain 'Rigor of Development' the quality of guidelines was very low and this influenced the overall assessment of recommendation of the guidelines. While some guidelines were no more than a checklist or protocol, mainly incomplete, this might have negatively influenced the score. However, the documents presented rather as guidelines did not score better on the seven items of this domain. It can be argued that in this study it was also not defined what was considered to be a guideline. The hospitals and mental health institutions were asked to send in their guidelines. Because the documents differed a lot, it can be concluded that in practice there are divergent opinions on what is considered to be a guideline.

Appraisal of the quality of the guidelines was done by three raters using the AGREE-instrument. While one of them was an expert in quality research, the others were psychiatrists. The intraclass correlation coefficients between raters varied greatly for the domains, which might be the result of the different interpretations of instructions of the items. It is also possible that this was the result of the fact that the psychiatrists were less trained in using the instrument. However, the raters agreed substantially on which guidelines could be recommended ($\kappa = 0.72$).

Some hospitals and mental health institutions stated that they followed the Dutch guideline from 1991 (Centraal Begeleidingsinstituut voor de Intercollegiale Toetsing, 1991) or that they had used this document in developing their own local one. An overview of the results of our studies raises the question of why not all hospitals and mental health institutions used the national guideline or at least why they did not use it as a basis for a local protocol.

From the studies in part 1 it can be concluded that the available evidence suggests that guidelines for the assessment and management of suicide attempters differ to a large extent with respect to their content, that only a minority can be recommended based on an evaluation of their quality according to the AGREE instrument, and that they are probably not implemented properly. While the necessity of a systematic assessment and treatment of suicide attempters has been advocated in the literature, our studies show that in practice it is very difficult to achieve this goal. Guidelines are a helpful tool for this and the guidelines from the American Psychiatric Association (APA, 2003), The Royal College of Psychiatrists (RCP, 2004), and The National Institute of Clinical Excellence (NICE, 2004) that have been developed recently, can

be strongly recommended. The APA guideline is based on an extensive literature search on the subject and gives levels for evidence. The RCP report identifies consensus standards for assessment following self-harm. The NICE guideline gives a grading scheme for evidence of the recommendations, sets standards, adds criteria and audit methods, and provides clinical practice algorithms. The APA and NICE guidelines have quick reference guides that can be used in practice and for implementation at different settings.

The Dutch guideline from 1991 is a consensus document of experts and does not contain literature references, does not describe assessment and treatment in different settings and lacks a quick reference guide. This guideline should be updated based on the APA and RCP guidelines. Besides, the development of guidelines and their implementation, other approaches, such as training of professionals, planning of personnel, and involvement of stakeholders, are necessary to improve the quality of care for suicide attempters. These approaches might be discussed in the national guideline. A national guideline should be a starting point for developing local guidelines, and recommendations for both are given in the Appendix.

PART 2 STUDIES ON THE APPROPRIATE ASSESSMENT AND MANAGEMENT OF SUICIDE ATTEMPTERS

Proper assessment and management of suicide attempters is not only hampered by inadequate and insufficiently applied guidelines, but also by a lack of knowledge about factors that influence both assessment and management. In the second part of this thesis, we studied two factors in more detail because experience in clinical practice suggested that these might play a role; they are the amnesic effects of benzodiazepines, and the changes in patients' psychopathology and attitude between admission and discharge.

Amnesic effects of benzodiazepines. Suicide attempters often take benzodiazepines in an overdose. In clinical practice suicide attempters also often forget what they discussed in the hospital. Because benzodiazepines cause anterograde amnesia, a study was carried out to investigate whether in practice a relationship could be established between the amnesia in suicide attempters and the benzodiazepines that were taken in overdose. In the study described in Chapter 5, we found that patients who took an overdose of benzodiazepines indeed have memory impairment, even if they did not seem to be sedated. However, the study had a within-group design in which the subjects were compared shortly after admission to the hospital and 24 hours later with respect to memory impairment and sedation. Therefore the study could not discrimi-

nate between specific benzodiazepine effects and effects of the stressful situation which the patients were in. To overcome this shortcoming, in the original study design, a control group of subjects who attempted suicide by other means was included; more specifically, by an overdose of analgesics. However, during the two years the study was running, only seven subjects could be included. Therefore circumstantial evidence was sought from two additional studies: 1) a study on the strength of the relationship between amnesia and the blood levels of benzodiazepines and its active metabolites (Chapter 6), and 2) a study on the effects of the stress of admittance on memory in benzodiazepine-free cardiac patients undergoing heart catheterization (Chapter 7).

In the first study a significant inverse relationship between diazepam equivalents in blood and verbal recall was found. In a comparison between the assessments immediately after admittance and the next day assessments, a more than 30% increase in verbal recall was explained by decreases in diazepam equivalents.

In the second study a within-group design was also used. Significantly higher scores on a verbal recall test were found before heart catheterization than 24 hours afterwards, although on both occasions scores were within normal limits. It was concluded that the stress of admission to the hospital for catheterization is not accompanied by memory impairment. Of course, admission for heart catheterization cannot be put on the same par as an admission due to a suicide attempt, but the results show at the least that, admission stress does not always induce memory impairment.

Changes in psychopathology and attitude. Chapter 8 includes a study describing suicide attempters assessed with questionnaires during their stay in the hospital and a few days later at home. The aim was to investigate how reliable a systematic assessment of suicide attempters in the hospital was compared with a later reassessment at home. Secondary aims were to explore to what extent patients remembered the arrangements for aftercare made in the hospital, and whether their need for help or support changed with time.

With respect to the patients' opinions about their intention and motives to attempt suicide, no statistically significant differences were found. However, at home patients stated that the motive for the suicide attempt had been less impulsive than when assessed in the hospital. Also, scores on a questionnaire measuring psychopathology did not differ significantly. The higher scores on worrying and the lower scores on self-esteem at home might suggest that these patients were in a worse condition than they were in the hospital some days before. Moreover, a high proportion of the patients forgot their arrangements for aftercare, although they had received a written form in hospital. Suicide attempters often show poor compliance with treatment, which may be partly

explained by many patients forgetting their arrangements for help. We found that most patients participating in the study and rejecting help in hospital, changed their minds about accepting aftercare a few days later, which is hopeful. The results suggest that it is beneficial to approach them at home after discharge. However, it is questionable from an ethical point of view whether or not to contact people who refused further help.

It should be kept in mind that the generalisability of the study is limited. Because only 59 of the 195 suicide attempters met the inclusion criteria for this study, the results are only applicable to a subset of suicide attempters. As patients admitted immediately to the psychiatric ward were excluded, subjects with more severe psychopathology probably were excluded from the study. Additionally, many patients who were eligible for the study refused to participate. They too may be characterized by a more severe psychopathology. They also may have rejected aftercare more often than the patients included in the study, and may be less inclined to change their mind on this subject after discharge. This possibility should be kept in mind in the discussion regarding the contact of patients who rejected aftercare while still in the hospital. On the other hand, the results are relevant for patients who are cooperative, are discharged from the hospital, and do not have a treatment plan in accordance with their mental health care provider.

The effectiveness of strategies to enhance attendance to aftercare were explored in some studies. A telephone contact (Cedereke, Monti, & Ojehagen, 2002), intensive follow-up including one home visit (Allard, Marshall, & Plante, 1992), and an active outreaching strategy in which a nurse visited suicide attempters at home during the first year after the attempt (Heeringen et al., 1995) increased attendance to aftercare, but the repetition of suicide attempts did not significantly decrease.

DON'T FORGET

A substantial number of suicide attempts occur annually with a major risk of repetition or suicide (Cooper et al., 2005). The number of suicide attempts does not decrease, notwithstanding the increasing attention to psychiatric disorders and their treatment. In the Netherlands, an average of 14.000 suicide attempters present to general hospitals (Nationaal Kompas Volksgezondheid, data from RIVM, 16-03-2006). The assessment, management, and treatment of the widely divergent problems these patients have, place high demands on professionals of various disciplines. However, there is a paucity of evidence regarding the proper care for these patients. Factors associated with an in-

creased risk of repetition or suicide are known, but not the interventions or treatments that can prevent them. Psychiatrists do treat patients who express suicidal ideation, who attempt suicide, and who commit suicide. Our community, and especially our hospitals and mental health institutions, are confronted with a major health problem. However, psychiatrists, researchers, and policy makers seem to forget to give high priority to the development of evidence-based methods for the prevention of suicide.

Attempting suicide is sometimes seen as an expression of community problems that cannot be solved by psychiatrists. Is it not true that common socio-demographic characteristics of suicide attempters, such as living alone and being unemployed, aresignificant and generally difficult to influence? Such opinions make it more likely to forget suicide attempters. However, too many suicide attempters also suffer from treatable psychiatric disorders, and therefore psychiatric assessment should be a conditio sine qua non.

The tendency to forget suicide attempters may have something to do with the emotional reactions that suicide attempters may provoke. Some suicide attempters ask for help, others express sadness, hopelessness, anger, or the wish to die. Sometimes rational motives are lacking; for example, as a result of thought deterioration in psychosis. While some suicide attempters cause concern for the professional or induce sympathy, others provoke reactions of rejection or neglect. Patient factors (acting out, projective identification) as well as professional factors (fantasies to save the patient, frustration, feelings of impotence) can play a role. We tend to forget that skilled psychiatrists and other professionals trained in assessment and management of this group of patients are needed. In many hospitals, suicide attempters are assessed by psychiatric residents or other mental health caregivers. The few studies that investigated the quality of assessment by these professionals indicate that training is urgently needed (Crawford, Turnbull, & Wessely, 1998).

Furthermore, our studies have shown that not only psychiatrists and other professionals tend to forget, patients do so as well, although in another way: many suicide attempters have memory impairment, in which taking an overdose of benzodiazepines plays an important role. They even forget the arrangements made for treatment after their discharge from hospital. The tendency to forget is therefore a central theme in this thesis, and may also be central to the care of suicide attempters.

Allard, R., Marshall, M., & Plante, M.C. (1992). Intensive follow-up does not decrease the risk of repeat suicide attempts. *Suicide & Life Threatening Behavior, 22,* 303-314.

American Psychiatric Association (2003). Practice guideline for the assessment and treatment of patients with suicidal behaviors. *American Journal of Psychiatry, 160,* 1-60.

Burgers, J.S., Cluzeau, F. A., Hanna, S.E., Hunt, C., & Grol, R. (2003). Characteristics of high-quality guidelines: evaluation of 86 clinical guidelines developed in ten European countries and Canada. *International Journal of Technology Assessment in Health Care, 19,* 148-157.

Cedereke, M., Monti, K., & Ojehagen, A. (2002). Telephone contact with patients in the year after a suicide attempt: does it affect treatment attendance and outcome? A randomised controlled study. *European Psychiatry, 17,* 82-91.

Centraal Begeleidingsinstituut voor de Intercollegiale Toetsing (1991). *Opvang van suicidepogers in algemene ziekenhuizen*. Utrecht.

Cooper, J., Kapur, N., Webb, R., Lawlor, M., Guthrie, E., Mackway-Jones, K. et al. (2005). Suicide after deliberate self-harm: a 4-year cohort study. *American Journal of Psychiatry, 162,* 297-303.

Crawford, M. J., Turnbull, G., & Wessely, S. (1998). Deliberate self harm assessment by accident and emergency staff–an intervention study. *Journal of Accident and Emergency Medicine, 15,* 18-22.

Harpole, L.H., Kelley, M.J., Schreiber, G., Toloza, E.M., Kolimaga, J., & McCrory, D.C. (2003). Assessment of the scope and quality of clinical practice guidelines in lung cancer. *Chest, 123,* 7S-20S.

Heeringen, C. v., Jannes, S., Buylaert, W., Henderick, H., Bacquer, D. d., & Remoortel, J. v. (1995). The management of non-compliance with referral to out-patient after-care among attempted suicide patients: a controlled intervention study. *Psychological Medicine, 25,* 963-970.

Huyse, F.J., Herzog, T., Malt, U.F., & Lobo, A. (1996). The European Consultation-Liaison Workgroup (ECLW) Collaborative Study. I. General outline. *General Hospital Psychiatry, 18,* 44-55.

National Institute of Clinical Excellence (2004). *Self-harm. The short-term physical and psychological management and secondary prevention of self-harm in primary and secondary care.* Clinical Guideline 16; developed by the National Collaborating Centre for Mental Health. London: National Institute of Clinical excellence.

Royal College of Psychiatrists (2004). *Assessment following self-harm in adults* (Rep. No. Council Report CR122). London: Royal College of Psychiatrists.

Appendix

RECOMMENDATIONS CONCERNING GUIDELINES FOR THE ASSESSMENT AND MANAGEMENT OF SUICIDE ATTEMPTERS IN THE GENERAL HOSPITAL

As an appendix to this thesis, recommendations for guidelines are given based on the results of this thesis and those in the literature. Firstly, recommendations are proposed for a new national guideline. In addition to an updated Dutch national guideline, local guidelines or protocols should be developed (or updated) in each Dutch general and university hospital (together with their collaborating mental health institutions) to implement the national guidelines in the local setting. This is desirable, as there are large differences between regions with respect to the professional help available.

Secondly, recommendations are given for the implementation of the guideline in the hospital setting.

UPDATING THE DUTCH NATIONAL GUIDELINE

We recommend updating the Dutch national CBO-guideline from 1991 (Centraal Begeleidingsinstituut voor de Intercollegiale Toetsing, 1991). Based on the results of our studies on availability, content, and quality of guidelines for the assessment of suicide attempters and on the literature, the further recommendations can be made as follows:

- Update and develop the guideline by using a quality evaluation instrument, such as the AGREE instrument (www.agreecollaboration.org) (2001). This instrument might help to avoid the writing of a document that has no practical consequences.
- The guideline should contain paragraphs on the assessment, management, and treatment of suicide attempters.
- Base the guideline on existing international guidelines, primarily on the APA guideline, and expert opinions. Beside the former Dutch CBO-guideline, the Council Report 'Assessment following self-harm in adults' of the Royal College of Psychiatrists can be used as a starting point because of its concise descriptions of several aspects of the assessment of self-harm (Royal College of Psychiatrists, 2004). It identifies the competencies expected of both general and specialist staff, describes standards for organization and planning of self-harm services, for procedures and facilities, and for training and supervision. These are specifically described for the emergency department, the general hospital, the community setting, and the psychi-

atric in-patient unit. Furthermore, detailed advice is given regarding particular patient groups: the intoxicated patient, the 'repeater', and the patient who is reluctant or appears to refuse intervention.
– Discuss how to test the guideline on intentions and use for further validation prior to publication and implementation. Patients should also participate in the development process; for example, they can provide information on their experiences and expectations for care after a suicide attempt. An implementation process should be developed, and observance should be enhanced by monitoring the use of the guideline by the professionals. This is necessary to guarantee the best quality of care.
– Plan when and how evaluation of the guideline will be conducted.

RECOMMENDATIONS CONCERNING THE CONTENT OF THE DUTCH GUIDELINE

– In the national guideline an organizational protocol should be proposed with agreed-upon rules about care for suicide attempters provided by the existing regional hospital(s) and institution(s) for mental health care, general practitioners, ambulance service(s), police, municipalities, and general practitioners. This should include rules on emergency care and aftercare. All should be sensible about their role in the process of the managing and assessing suicide attempters.
– Separate but coherent guidelines describing the tasks of each professional involved need to be part of the guideline. Nurses, security guards, and somatic and psychiatric specialists should develop their own recommendations and these should be evaluated by the other disciplines and finally, integrated with each other.
– Recommendations should be developed to handle problems that frequently hamper adequate management and assessment. At minimum, the following subjects should be discussed: how to guarantee the safety of the patient and staff; staff attitude towards the patient; how to handle difficult patients; legal issues; and rules for who is responsible for the patient at each moment during admission.
– Providing patients with a written form containing the aftercare arrangements made with them in the hospital is recommended (see Figure 9).[1]
– In order to make implementation of the guideline easier, a chronologically arranged checklist of the necessary actions that should not be forgotten

1 This form was used for the last study of this thesis.

by the mental health care provider should be summarized on one page (see Figure 10). This checklist can also be used for educational purposes.
– A short-term follow-up (by telephone or possibly at home) after discharge should be considered, especially for patients who used psychopharmacological drugs, (especially benzodiazepines); who repeated their suicide attempt; who do not have an adequate supportive network; whose relevant problems and needs for help are not clear; who will need support until aftercare is organized; and who reject help, but for whom involuntary admission is not required.

RECOMMENDATIONS FOR DEVELOPING A LOCAL GUIDELINE OR POLICY DOCUMENT FOR THE ASSESSMENT AND MANAGEMENT OF SUICIDE ATTEMPTERS

– The initiator should ask or propose instructions of the hospitals' management and medical staff to develop an infrastructure for the assessment of suicide attempters in the general hospital. Define one or more goals of these guidelines. Without pretending to be complete, some of the goals might be to organize the assessment of suicide attempters presenting to the emergency department, determine who is responsible for the suicide attempter during the different phases of management and assessment in the emergency department, or ensure the safety of the suicide attempter when staying in the somatic ward or emergency department.
– Organize a hospital commission that will develop the recommendations formulated in the national guideline as well as the recommendations for the local setting that follow from them. Be sure that esteemed representatives of the professional groups involved in the care for suicide attempters participate in this commission. This implies participation of at least the consulting internist, surgeon, a representative of the emergency room-staff, the management of the emergency room, consulting psychiatrists, consulting psychiatric nurses, and the final responsible manager.
– Preferably, representatives from local mental health institutions and organizations of patients are invited to collaborate.

Most suicide attempts present to the hospital in the afternoon or evening. This should be taken into account by planning for professionals to work in the emergency room during these hours. For larger hospitals, a self-harm service can be developed that consists of trained professionals such as a psychiatrist, a resident, a nurse, a psychologist, and a social worker. In smaller hospitals, a

specialised consultation-liaison professional (consultation-liaison nurse, nurse practitioner, social worker or psychologist) should be available. Access to these professionals by emergency room staff should be easily available at all times (24 x 7), and can help standardize assessment and management directly as soon as the patient arrives. If necessary, somatic first aid is given, this professional can start obtaining information from the patient and others (significant others, general practitioner, or health care worker). Information from and about the patient will thus be available sooner, and can be used for further planning their management and treatment. This procedure might facilitate the coordination of care for the patient that in practice has been found to be difficult to realize.

Of course, the professional in charge should have the option to involve a psychiatrist 24 hours a day. In all cases, assessment by a psychiatrist should always be performed, preferably when the patient is alert.

STRATEGIES TO ENHANCE USE OF LOCAL GUIDELINES OR PROTOCOLS

It has been proven that the development of guidelines does not guarantee their use (Feder, Eccles, Grol, Griffiths, & Grimshaw, 1999) (Grol & Grimshaw, 2003). Approaches on different levels (doctors, team practice, hospital, wider environment) tailored to specific settings and target groups are necessary to change medical practice. In the management and assessment of suicide attempters, the following strategies might be helpful:

- Nominate an administrator who calls together the hospital or regional commission that developed the guidelines on a regular basis, for example once every year.
- Nominate one or more persons to develop a training program for the disciplines involved with the management and assessment of suicide attempters.
- Nominate one person who is assigned to monitor the literature on new perspectives regarding the several guidelines.
- Nominate one person who is responsible for evaluating the guidelines annually.
- Choose at least one recommendation per guideline to evaluate within a particular time period and provide feedback to the users as soon as possible after the evaluation is done.
- Developing critical quality characteristics and indicators of quality can be chosen to guarantee quality of care.

REFERENCES

The AGREE Collaboration. Appraisal of Guidelines For Research & Evaluation (AGREE) instrument (2001). www.agreecollaboration.org [On-line].

Centraal Begeleidingsinstituut voor de Intercollegiale Toetsing (1991). *Opvang van suicidepogers in algemene ziekenhuizen*. Utrecht.

Feder, G., Eccles, M., Grol, R., Griffiths, C., & Grimshaw, J. (1999). Clinical guidelines: using clinical guidelines. *BMJ, 318,* 728-730.

Grol, R. & Grimshaw, J. (2003). From best evidence to best practice: effective implementation of change in patients' care. *Lancet, 362,* 1225-1230.

Royal College of Psychiatrists (2004). *Assessment following self-harm in adults* (Rep. No. Council Report CR122). London: Royal College of Psychiatrists.

Arrangements for (name)

Alysis ZORGGROEP

The first days after discharge you will stay at

The person(s) who is (are) willing to support you after discharge

---

The following medication(s) that are advised for you to use is (are)

In case of (renewed) suicidality you can

call (name of significant other)

do (other interventions)

The professional(s) who is(are) available or reachable for help, advice, and aftercare

(name and telephone number)

The mental health care provider will inform your GP and your aftercare provider on the next working day

(name)

An appointment for you has been made

at (institution)

with (name)

on (date and time)

You have discussed with a professional whether you will be/not be reassessed

at home or (place)

on (date and time)

by (name of professional)

Other arrangements

Figure 9 Information for patient about arrangements for short-term aftercare

Don't forget

Alysis ZORGGROEP

☐ To appraise capacity, alertness, cooperation

☐ To check the somatic assessment and possibly treatment (are vital signs known, has evaluation of risk in the short and long term been done?)

☐ To assess suicidality (intentions, motives, actual suicidal ideation or plans)

☐ To determine psychiatric disorders (also substance disorders)

☐ To detect risk factors for repetition

Note! When in doubt about alertness of the patient, a reassessment should be made later

☐ To assess psychosocial factors related to suicide attempt

☐ To gather information about significant others *

☐ To gather information about health care providers (GP, social worker, psychologist/ psychiatrist)*

☐ To communicate decisions regarding discharge or admission to patient and significant others

Note! Arrangements for aftercare have been made

☐ To discuss where the patient will stay during the first few days after discharge

☐ To discuss who is (are) willing to support the patient after discharge

☐ To discuss if (and what) medication(s) eventually will be used by the patient

☐ To discuss what to do in case of (renewed) suicidality

☐ To discuss which professional(s) is(are) available or reachable for help, advice, and aftercare

☐ To provide a written form with aftercare arrangements and information to the patient

☐ To inform GP and aftercare provider the next working day

☐ To consider reassessment at home

* if available

Figure 10 Checklist for the assessment of suicide attempters

Summary

The aim of this thesis was to contribute to better care for suicide attempters by studying several aspects of their assessment and management. In the first part of the thesis, the role of guidelines was studied resulting in suggestions for improvement. In the second part, the role of factors is studied that, as experience in clinical practice suggests, may hamper proper assessment and management.

In our first study, the availability of guidelines for the assessments of suicide attempters in hospitals and their observance were examined. Although guidelines were available in the seven hospitals studied, the execution of the recommendations in practice was not in concordance with these guidelines, especially concerning the coordination of care (Chapter 2). For example, most of the guidelines instructed that information about the patient should always be obtained from the general practitioner, mental health care provider, and family, but in practice this was not done.

Additionally, the availability, content, and quality of guidelines presently available for the assessment of suicide attempters were studied in university hospitals, general hospitals, and institutions for mental health care (Chapters 3 and 4). Only a minority of hospitals and institutions had local guidelines. Hence, their content and quality was not satisfactory. Remarkably, not all local guidelines described instructions for the provision of psychiatric consultation to every suicide attempter. Moreover, instructions for determining suicidality, performing psychiatric examinations, detecting risk factors, and psychosocial stressors were noted in 45% or less of the hospitals. Application of the quality AGREE-instrument indicated that the majority of guidelines in the university and general hospitals could not be recommended. The mental health institutions also appeared to have guidelines in a minority of cases. Although their content and quality was modest, significantly more guidelines from these institutions could be recommended than those from the hospitals.

Next, we studied two factors that influence proper assessment and management of suicide attempters; the amnesic effects of benzodiazepines and changes in the psychopathology and attitude of patients between admission and five days after discharge. It was found that suicide attempters who took a benzodiazepine overdose had worse memory function at the first assessment

than they did 24 hours later, comparable to the anterograde amnesia reported from benzodiazepines, even in subjects who, according to their own and the clinician's opinion, were not sedated (Chapter 5). The poorer outcome of the first memory assessment in suicide attempters could also be caused by other factors such as the stress of the attempt and subsequent admittance to the hospital. Therefore, we studied the strength of the relationship between the anterograde amnesia and the blood levels of benzodiazepines and its active metabolites. A significant inverse relationship between diazepam equivalents in blood and verbal recall was found. Comparing the assessments immediately after admittance to the assessments made the next day, more than 30% of the increase in verbal recall could be explained by a decrease in diazepam equivalents (Chapter 6).

In order to obtain information about the contribution of the stress of admission to memory impairment, we evaluated a group of subjects who had to undergo heart catheterization using the same parameters as in the benzodiazepine overdose study. Before heart catheterization, significantly higher scores on a verbal recall test were found than 24 hours later (Chapter 7), although, on both occasions, scores were within normal limits. It was concluded that admission to the hospital itself was not an important factor causing memory impairment in these cardiac patients. The same may be true in suicide attempters, strengthening the role of the benzodiazepines.

The assumption that the assessment of suicide attempters during their stay in the hospital is hampered by the unfavourable circumstances in the emergency room or somatic ward and the patients' condition, led to a study in which suicide attempters were reassessed at home shortly after discharge (Chapter 8). Patient's opinions about intention and motives to attempt suicide proved not to be significantly different on both occasions. Also, scores on a questionnaire measuring psychopathology did not differ significantly. However, at home patients stated that the motive for the suicide attempt had been less impulsive than they had reported in the hospital. The higher scores on worrying and the lower scores on self-esteem at home might suggest that these patients were in a worse condition than in the hospital some days before. Moreover, an alarming number of patients forgot what arrangements for aftercare had been made, although they were provided with a summary in written form in the hospital. Maybe the modest degree of compliance of suicide attempters with treatment is due to many patients forgetting their arrangements for help anyway. The finding of our study that most patients who rejected help in the hospital changed their minds about accepting aftercare a few days later, is hopeful. So, a reassessment after discharge in patients who rejected help might be worthwhile.

In the General Discussion the studies were critically reviewed and the consequences were described. From the studies in part 1, it was concluded that the available evidence suggests that guidelines for the assessment and management of suicide attempters differ to a large extent with respect to their content, that only a minority can be recommended based on an evaluation of their quality according to the AGREE instrument, and that they are probably not implemented properly. This leads to a plea to update the Dutch guideline, made 15 years ago, and to develop procedures that may promote implementation. From the studies of part 2, it was concluded that professionals should be alert on patients forgetting relevant aspects of the assessment. Furthermore, although a systematic assessment in the hospital is comparable to a reassessment at home, for a subgroup of patients there is concern about there condition after discharge, and their tendency to forget the arrangements made for treatment after discharge from the hospital. So, additional strategies to the assessment in the hospital should be developed.

In the Appendix, recommendations are given regarding development and implementation of guidelines for assessment and management of suicide attempters.

Samenvatting

Het doel van deze dissertatie was een bijdrage te leveren aan betere zorg voor suïcidepogers door verschillende aspecten van de opvang te bestuderen. In het eerste deel werd de rol van richtlijnen voor de opvang van deze patiënten onderzocht, resulterend in voorstellen voor verbetering. In het tweede deel werden factoren onderzocht die, zoals in de praktijk gebleken is, een adequate beoordeling en opvang van suïcidepogers belemmeren.

In het eerste onderzoek werden de beschikbaarheid en de naleving van richtlijnen voor opvang van suïcidepogers in ziekenhuizen bestudeerd. Richtlijnen waren beschikbaar in de zeven onderzochte ziekenhuizen, maar de naleving van de aanbevelingen van deze richtlijnen in de praktijk was daarmee niet in overeenstemming. Dit betrof vooral aanbevelingen betreffende de coördinatie van zorg (hoofdstuk 2). Bijvoorbeeld, in de meeste richtlijnen werd voorgeschreven dat altijd informatie van de huisarts, behandelaar en familie over de patiënt verkregen moest worden, maar dat bleek in de praktijk niet het geval. Aansluitend werd de beschikbaarheid, inhoud en kwaliteit van richtlijnen voor de opvang van suïcidepogers in academische en algemene ziekenhuizen en die van GGZ-instellingen in Nederland onderzocht (hoofdstukken 3 en 4). Slechts een minderheid van ziekenhuizen en GGZ-instellingen bleek over richtlijnen te beschikken. De inhoud en kwaliteit lieten daarbij te wensen over. Opmerkelijk genoeg werd niet in alle locale richtlijnen voorgeschreven dat psychiatrische consultatie bij alle suïcidepogers nodig was. Bovendien werden instructies betreffende het vaststellen van de mate van suïcidaliteit, het uitvoeren van een psychiatrisch onderzoek, het opsporen van risicofactoren voor herhaling of suïcide en het opsporen van psychosociale stressoren gevonden in 45% of minder van de richtlijnen van de ziekenhuizen. Met het AGREE-instrument, gebruikt om kwaliteit van richtlijnen te bepalen, bleek de meerderheid van de richtlijnen van de academische en algemene ziekenhuizen niet aan te bevelen. Hoewel de kwaliteit van de richtlijnen van GGZ-instellingen ook bescheiden genoemd mag worden, waren toch significant meer het aanbevelen waard dan die van de ziekenhuizen.

Vervolgens werden twee factoren bestudeerd die een adequate beoordeling en opvang van suïcidepogers belemmeren: de amnesische effecten van benzodiazepines, die vaak in overdoses worden geslikt bij een poging, en verande-

ringen in psychopathologie en houding van patiënten die kunnen optreden tussen opname en enkele dagen later, na ontslag. Het bleek dat suïcidepogers die benzodiazepines in een overdosis geslikt hadden een slechtere geheugenprestatie leverden ten tijde van de eerste beoordeling dan 24 uur later, vergelijkbaar met de anterograde amnesie die is vastgesteld ten gevolge van benzodiazepines. Dit kwam zelfs voor bij patiënten, die volgens henzelf en naar het oordeel van de beoordelend clinicus, niet gesedeerd waren (hoofdstuk 5). Uiteraard zou de slechtere prestatie bij de eerste beoordeling ook veroorzaakt kunnen zijn door andere factoren, zoals de stress van de poging en de daaropvolgende opname in het ziekenhuis. Dit werd aanleiding te onderzoeken in hoeverre er verband bestond tussen de anterograde amnesie en bloedspiegels van benzodiazepines en hun actieve metabolieten. Een significant omgekeerde relatie tussen diazepam-equivalenten in bloed en verbal recall werd gevonden: bij een vergelijking tussen de beoordeling direct na de opname en de volgende dag bleek dat meer dan 30 % van de verbetering van de verbal recall werd verklaard door daling van diazepam-equivalenten (hoofdstuk 6).

Om meer informatie te krijgen over de invloed van de stress van de opname op het geheugen werd hetzelfde onderzoek verricht bij een andere groep patiënten. Bij patiënten opgenomen voor een hartcatheterisatie werden, voordat zij catheterisatie ondergingen, significant hogere scores op een verbal recall test gevonden dan 24 uur later (hoofdstuk 7), zij het dat beide keren de scores binnen normale grenzen lagen. Hieruit werd geconcludeerd dat de opname in het ziekenhuis geen belangrijke rol speelde bij het eventueel veroorzaken van geheugenvermindering bij deze patiënten. Indien dit ook voor de suïcidepogers geldt, dan maakt het de rol van benzodiazepines nog belangrijker.

De veronderstelling dat de beoordeling van suïcidepogers tijdens hun opname in het ziekenhuis belemmerd wordt door ongunstige omstandigheden op de Spoedeisende Hulp of afdeling en de conditie van de patiënt leidde tot een onderzoek waarbij suïcidepogers nog eens thuis, enkele dagen na ontslag, werden herbeoordeeld (hoofdstuk 8). De mening van patiënten over de intentie en motieven van hun suïcidepoging bleek op de twee meetmomenten niet significant te verschillen. Ook de scores op een vragenlijst waarbij psychopathologie werd gemeten verschilden niet significant. Echter, thuis scoorden patiënten dat de suïcidepoging minder impulsief was geweest dan wat zij in het ziekenhuis hadden aangegeven. Thuis bleken patiënten ook significant meer te piekeren en een lagere zelfwaardering te hebben, wat suggereert dat hun toestand enkele dagen na opname slechter is geworden. Bovendien is er een alarmerend aantal patiënten dat vergeet welke afspraken er voor nazorg zijn gemaakt, alhoewel alle suïcidepogers een geschreven formulier, waarop deze afspraken stonden genoteerd, meegekregen hadden. Wellicht is de mate

van compliance van suïcidepogers met behandeling zo bescheiden omdat zij dus simpelweg de afspraken vergeten. Het feit dat de meeste patiënten die in het ziekenhuis nazorg afwezen, deze enkele dagen later thuis wel accepteerden is hoopvol. Mogelijk is voor deze groep een herbeoordeling thuis zinvol.

In hoofdstuk 9, General Discussion, worden de onderzoeken kritisch besproken en de gevolgen beschreven. Uit de onderzoeken van deel 1 wordt geconcludeerd dat de beschikbare evidentie laat zien dat richtlijnen voor de opvang van suïcidepogers behoorlijk verschillen met betrekking tot de inhoud, dat slechts een minderheid kan worden aanbevolen gezien de kwaliteit zoals gemeten met het AGREE-instrument en dat zij waarschijnlijk niet adequaat worden geïmplementeerd. Dit leidt tot een pleidooi om de Nederlandse richtlijn van 15 jaar geleden te herzien en procedures te ontwikkelen om de implementatie ervan te bevorderen. Uit de onderzoeken van deel 2 wordt geconcludeerd dat professionals zich bewust dienen te zijn dat patiënten relevante aspecten van de opvang vergeten. Voorts dat, alhoewel een systematische beoordeling in het ziekenhuis vergelijkbaar is met een beoordeling thuis, de conditie van een subgroep van de patiënten na ontslag zorgelijk is, evenals hun neiging afspraken voor nazorg te vergeten. Vandaar de aanbeveling aanvullende strategieën te ontwikkelen voor de beoordeling en opvang van suïcidepogers in het ziekenhuis.

In de Appendix worden aanbevelingen gedaan met betrekking tot de ontwikkeling en implementatie van richtlijnen voor de beoordeling en opvang van suïcidepogers.

Dankwoord (acknowledgements)

De opvang van suïcidepogers vraagt veel van velen. In een ziekenhuis zijn deze patiënten niet goed op hun plaats. Opgenomen worden tussen lichamelijk zieke mensen, die tot iedere prijs willen blijven leven, en zelf, lichamelijk gezond, vrijwillig, het leven willen beëindigen, dat is vragen om problemen. Patiënten vinden dat, maar al diegenen die bij de opvang van suïcidepogers betrokken zijn vinden dat ook. Onderzoek doen bij deze patiënten onder deze omstandigheden valt al helemaal niet mee. Dat het is gelukt is te danken aan velen. In de eerste plaats wil ik de patiënten bedanken voor hun bereidheid aan het onderzoek mee te werken. Het gaf ons de kans te leren dat we de opvang van suïcidepogers moeten verbeteren. Daarnaast wil ik alle medewerkers, met name de verpleegkundigen en assistenten van de verschillende afdelingen van Ziekenhuis Rijnstate, die ik niet met naam noem, bedanken. Zij immers hebben geholpen voorwaarden te scheppen om het onderzoek te doen. Ik ben trots op wat al deze toegewijde mensen doen voor suïcidepogers tijdens hun verblijf in het ziekenhuis.

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Curriculum vitae

Bas Verwey werd geboren op 24 augustus 1949 in Leeuwarden. Na het behalen van het HBS-B diploma in 1968 ging hij geneeskunde studeren aan de Universiteit van Amsterdam. Hij behaalde het artsexamen op 12 april 1978, waarna hij als agnio werkte op de afdeling interne geneeskunde van het Slotervaartziekenhuis (hoofd: Prof. dr. L.W. Statius van Eps) in Amsterdam. Hij volgde de opleiding psychiatrie in Leiden (opleider: Prof. dr. J. Bastiaans). In dat kader werd het somatisch jaar gedaan op de afdeling neurologie van het Slotervaartziekenhuis (opleider: Dr. D. Moffie) en het keuzejaar op de polikliniek kinderpsychiatrie van het Wilhelmina Gasthuis (opleider: Prof. dr. D.J. de Levita) in Amsterdam. Hij werd ingeschreven in het specialistenregister op 1 oktober 1983.

Na twee maanden te hebben waargenomen begon hij op 1 januari 1984 als opvolger van dr. Th.B. Kraft als psychiater in het Gemeenteziekenhuis en het Diaconessenhuis in Arnhem, de ziekenhuizen die later fuseerden tot Ziekenhuis Rijnstate, thans onderdeel van de Alysis Zorggroep. Hij is zelfstandig gevestigd en werkt in een maatschap met dhr. M.E.T.M. Muller, dhr. J.A. van Waarde en dr. J. Tuerlings.

Van 1990 tot 1995 was hij lid van het bestuur van de Sector GGZ van het Gelders Instituut voor Welzijn en Gezondheid (GIWG). Hij participeerde van 1991 tot 1997 in de PAOG commissie psychiatrie van de Koninklijke Universiteit Nijmegen. In 1994 was hij lid van de Taakgroep Profielschets Psychiater Generalist van de Nederlandse Vereniging voor Psychiatrie en tevens lid van de Commissie van Advies inzake de functie ziekenhuispsychiatrie.

Hij is sinds 1990 bestuurslid van de Sectie Ziekenhuispsychiatrie van de Nederlandse Vereniging voor Psychiatrie, waarvan hij 6 jaar voorzitter is geweest. Van 1994 tot 1998 was hij lid van het bestuur van de Nederlandse Federatie voor Ziekenhuispsychiatrie (NFZP).

In 1994 richtte hij samen met dr. W.W. van den Broek de Werkgroep Elektroconvulsietherapie Nederland op, waarvan hij thans nog voorzitter is. In 2005 was hij mede-oprichter van de Nederlandse Werkgroep ter bevordering van de ontwikkeling van Psychiatrisch Medische Units. Sinds 2004 is hij partieel opleider.

List of publications

Bemelmans, K. J., Verwey, B., Van Brussel, J. L., Van Kempen, G. M. J., Goekoop J. G. (1983). Major Depression and visuospatial judgment. In: *Proceedings of the 24th Dutch Federation Meeting*, Leiden 7-8 April. The Dutch Foundation Federation of Medical Scientific Societies.

Kraft, Th. B., Verwey, B. (1985). Opnamebevordering, een vergeten aspect van het psychiatrisch werk. *Maandblad Geestelijke Volksgezondheid*, 630-3.

Nicolai, J.-P. A., Verwey, B. (1990). De hand aan eigen pols geslagen. *Nederlands Tijdschrift voor Geneeskunde*, *134*, 153-5.

Genderteam Arnhem (1991). Patiënten met genderdysforie, een multidisciplinaire benadering. *Medisch Contact*, *46*, 541-4.

Verwey, B. (1991). Elektroconvulsietherapie in een perifeer ziekenhuis. *Nederlands Tijdschrift voor Geneeskunde*, *135*, 1694-7.

Laan, W. J. D. M., Verwey, B. (1992). Een zinvol gesprek op de juiste tijd? *Nederlands Tijdschrift voor Geneeskunde*, *136*, 353-5.

Verwey, B., Nicolai, J.-P. A., Verschoor L., Blokzijl E. (1992). Multidisciplinary treatment of patients with gender dysphoria. In: Hinderer, U. T., editor (1992). *Plastic Surgery*. Vol. 11. Elsevier Science Publishers BV, 891-894

Nicolai, J.-P. A., Blokzijl, E, Soudijn, E. R., Verschoor, L., Verwey, B. (1992). Surgical treatment of patients with gender dysphoria. In: Hinderer, U. T., editor. (1992). *Plastic Surgery*. Vol. 1. Elsevier Science Publishers BV, 335.

Huyse, F. J., Laarhoven, J. van, Opdenvelde, W., Pronk, J., Schoemacker, J. N., Snoei, H., Verwey, B., Zaane, J. van, Rijssenbeek, A., en de leden van de European Consultation/Liaison Workgroup for General Hospital Psychiatry and Psychosomatics (ECLW) (1992). Consultatieve psychiatrie in Nederland: eerste resultaten van een multi-centered internationale studie. *Tijdschrift voor Psychiatrie*, *34*, 216.

Verwey, B. (1992) Europese elektroshock. Verslag van het 'First European symposium on ECT. Critical history-future trends', georganiseerd door de Oostenrijkse ECT-research Society, van 26 t/m 28 maart 1992 te Graz, Oostenrijk. *Maandblad Geestelijke Volksgezondheid*, *47*, 1126-1129.

Huyse, F. J., Verwey, B., Op den Velde, W., Mast, R. C. (1993). van der. Ziekenhuispsychiatrie: naar een integratie van de consultatieve psychiatrie en de afdeling psychiatrie van het algemeen ziekenhuis. *Tijdschrift voor Psychiatrie*, *35*, 132-142.

Genderen, W.E. van, Verwey, B., Rijk, A. de, Oss, G.E.C.J.M. van (1993). Anesthesie bij elektroconvulsietherapie. *Nederlands Tijdschrift voor Anesthesiologie*, *6*, 21-26.

Verwey, B., Nicolai, J.-P.A., Verschoor, L., Blokzijl, E. (1993). Multidisciplinary treatment of patients with gender dysphoria. *European Journal of Plastic Surgery*, *16*, 63-66.

Verwiel, J.M.M., Verwey, B., Heinis, C., Thies, J.E., Bosch, F.H. (1994). Succesvolle elektroconvulsietherapie bij een zwangere vrouw met het maligne neuroleptica-syndroom. *Nederlands Tijdschrift voor Geneeskunde*, *138*, 196-199.

Verwey, B., Goekoop, J.G. (1994). Een gecompliceerde behandeling van letale katatonie. *Tijdschrift voor Psychiatrie*, *36*, 485-494.

Taakgroep Profielschets Psychiater (Davids, A., Knol, J., Kölling, P., Laport, R.B., Louwerens, J.W., Meijs, A.M.A., Sierink, H.D., Tilburg, W. van, Verwey, B., Westerouen van Meeteren, F.J.W.) (1994). *Profielschets Psychiater*. Rapport van de Nederlandse Vereniging voor Psychiatrie, november.

Janssens, P.M.W., Bosch, F.H., Verwey, B. (1995). In de rubriek Ingezonden: Enige ervaringen met de bepaling van koolhydraat-deficiënt transferrine in serum. *Nederlands Tijdschrift voor Klinische Chemie*, *20*, 321-322.

Verwey, B. (1996). In de rubriek Ingezonden: Elektroconvulsietherapie bij therapieresistente depressie. *Nederlands Tijdschrift voor Geneeskunde*, *140*, 1042.

Verwey, B., Koopmans, G.T., Opmeer, B.C., Zitman, F.G., Huyse, F.J. (1997). Richtlijnen en naleving daarvan bij de psychiatrische opvang van suïcidepogers in algemene ziekenhuizen. *Nederlands Tijdschrift voor Geneeskunde*, *141*, 1338-1342.

Stek, M.L., Beekman, A.T.F., Verwey, B. (1997). Elektroconvulsietherapie in de behandeling van depressie bij ouderen. *Tijdschrift voor Gerontologie en Geriatrie*, *28*, 106-112.

Verwey, B., Broek, W.W. van den, Müller, M.E.T.M. (1998). ECT: vaak te laat geindiceerd? *COBO-bulletin*, *31*, 2, 30-33.

Janssens, P.M.W., Jonge, N.I.S. de, Bosch, F.H., Verwey, B. (1998). Ervaringen met CDT-bepaling in een algemeen ziekenhuis, voorwaarden voor optimaal gebruik. Acta Neuropsychiatrica, *10*, 100-103.

Van den Broek, W.W., Leentjens, A.F.G., Verwey, B. (1999). *Elektroconvulsietherapie*. Bohn Stafleu van Loghum, Houten/Diegem.

Verwey B., Leentjens A.F.G. (1999). Indicaties. In: W.W. van den Broek, A.F.G. Leentjens, B. Verwey *Elektroconvulsietherapie*. Bohn Stafleu van Loghum, Houten/Diegem.

Verwey B., Broek, W.W. van den (1999). Bijwerkingen. In: W.W. van den Broek,

A.F.G. Leentjens, B. Verwey *Elektroconvulsietherapie*. Bohn Stafleu van Loghum, Houten/Diegem.

Birkenhäger, T.K., Verwey, B. (1999). ECT en psychofarmaca. In: W.W. van den Broek, A.F.G. Leentjens, A.F.G., B. Verwey, *Elektroconvulsietherapie*. Bohn Stafleu van Loghum, Houten/Diegem.

Jabaaij, L., Verwey, B., Hutschemaekers G. (1999). De PAAZ op woelige baren. *Medisch Contact*, *47*, 1623-1625.

Verwey, B., Kerkhof, A.J.F.M. (2000). De opvang van suïcidepogers in het algemeen ziekenhuis. In: Heeringen C. van, Kerkhof A.J.F.M. *Behandelingsstrategieën bij suïcidaliteit*. Bohn Stafleu Van Loghum, Houten/Diegem.

Verwey, B, Eling, P, Wientjes, H., Zitman, F.G. (2000). Memory impairment in those who attempted suicide by benzodiazepine overdose. *Journal of Clinical Psychiatry*, *61*, 456-459.

Broek, W.W. van den, Huyser, J., Koster, A.M., Leentjens, A.F.G., Stek, M, Thewissen, M.L., Verwey, B., Vleugels, C.M.M., Vliet, I. van, Wijkstra, J. (2000). *Richtlijn Elektroconvulsietherapie*. Uitgeverij Boom, Amsterdam, december.

Verwey, B., Koers, H. (2001). Ingezonden brief als reactie op 'Multidisciplinair verpleegd'. *Medisch Contact*, *56*, 198.

Verwey, B., Müller, M.E.T.M., Waal, J. de, Peters M., Timmer, F., Huyse, F.J. (2001). Patiënten met comorbiditeit beter behandeld. Medisch Contact, *56*, 891-894.

Verwey, B., Waarde J.A. van, Müller, M.E.T.M. (2003). Depressie: stoppen of doorgaan met ECT? *COBO-bulletin*, *36 (2)*, 37-40.

Waarde, J.A. van, Richter, C., Müller, M.E.T.M., Verwey, B. (2004). De medisch-psychiatrische unit: meerwaarde voor patiënten, artsen en ziekenhuizen. Nederlands Tijdschrift voor Geneeskunde, *5*, 209-211.

Verwey, B. (2004). Ziekte en zieke mens in *Een moderne Antonius*. Vestdijkkroniek, *130*, 3-14.

Tuerlings, J.H.A.M., Waarde, J.A. van, Verwey, B. (2004). Recidiverende suïcidepogers: hulp blijven aanbieden. *Nederlands Tijdschrift voor Geneeskunde*, *31*, 1521-1523.

Jong, L.A.A. de, Verwey, B., Essink, G., Muntendam, A., Zitman, F.G. and Ensing, K. (2004). Determination of the Benzodiazepine Plasma Concentrations in Suicidal Patients using a Radioreceptor assay. Journal of Analytical Toxicology, *28*, 587-592

Verwey, B., Muntendam, A., Ensing, K., Essink, G., Pasker-de Jong, P.C.M., Willekens, F.L.A. and Zitman, F.G. (2005). Clinically relevant anterograde amnesia and its relationship with blood levels of benzodiazepines in suicide attempters who took an overdose. *Progress in Neuro-Psychopharmacology & Biological Psychiatry*, *29*, 47-53.

Broek, W.W van den., Leentjens, A.F.G., van Vliet, I.M., Verwey, B. (redactie) (2005). *Handboek Elektroconvulsietherapie*. Koninklijke Van Gorcum BV, Assen.

Verwey, B., Sienaert, P. (2005). Geschiedenis. In: W.W. van den Broek, A.F.G. Leentjens, I.M. van Vliet, B. Verwey (redactie). *Handboek Elektroconvulsietherapie*, Koninklijke Van Gorcum BV, Assen.

Waarde J.A. van, Zandbergen E.G.J., Verwey B. (2005). Neuroleptisch maligne syndroom: een complexe diagnose en behandeling. *Tijdschrift voor Psychiatrie*, *47*, 1-7.

Verwey, B., Waarde, J.A., Rooij, I.A.L.M. van, Gerritsen, G., Zitman, F.G. (2006). Availability, content and quality of local guidelines for the assessment of suicide attempters in university and general hospitals in the Netherlands. *General Hospital Psychiatry 2006*, *28*, 336-342.

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