Division of Health Sciences

National Drug Research Institute

The Relationship between Non-fatal Overdose of Pharmaceutical Medications, Suicidality, and Depression

Penny Buykx (nee Heale)

This thesis is presented for the Degree of

Doctor of Philosophy

of

Curtin University of Technology

December 2007

Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Signature: …….

Date: ……...

Contents

Tables

Figures

Acknowledgements

It would not have been possible to complete this thesis without the generous assistance of a number of people. I would like to sincerely thank:

My three wise supervisors: Associate Professors Wendy Loxley, Paul Dietze and Alison Ritter for their unfailing support and guidance throughout the project.

The staff of the Emergency Department of St Vincent's Hospital Melbourne, in particular the Director, Dr Andrew Dent who was very accommodating of my request to utilise the Department for this project, and Dr Guy Samson for generously sharing his office space for the duration. Also the countless other members of staff including doctors, nurses, Psych Triage team members, and administrative officers who made me feel welcome and assisted where they could.

The thirty-one interview participants who gave generously of their time and personal experiences for this study, and without whom it would not have been possible.

Former colleagues at both Turning Point Alcohol and Drug Centre, Inc (especially Paul McElwee, Jennifer Johnston, Lynda Berends, Peter Miller and Craig Fry), and Tranx (especially Tomi Redman, Jo Marsden, and Gwenda Cannard), for their various contributions of technical expertise, relevant reference material, and collegial support.

The National Drug Research Institute, Curtin University for the scholarship which enabled me to undertake my PhD, and *beyondblue: The National Depression Initiative* for also contributing to the funding of this project.

My family – my parents for providing some very useful hardware, and my siblings and in-laws for taking an interest.

Finally my lovely husband Tim and delightful baby William. Although I have been working on this thesis for as long as Tim has known me, he has never once asked how long it was going to take or doubted that I would finish it. He has instead quietly gone about being supportive of my endeavours, a contribution for which I am truly grateful. And William, aside from the sheer joy of you, there is nothing like a new baby to put things in perspective, and to hone your time management skills.

Acronyms

ABS	Australian Bureau of Statistics
ADD	Attention Deficit Disorder
ADHD	Attention Deficit Hyperactivity Disorder
BDI	Beck Depression Inventory
BDI-FastScreen	Beck Depression Inventory FastScreen
BSS	Beck Scale for Suicide Ideation
CATT	Crisis Assessment and Treatment Team
CBT	Cognitive behavioural therapy
CL	Consultation-liaison
CNS	Central nervous system
DBT	Dialectical behaviour therapy
DOD	Drug overdose
DSM	Diagnostic and Statistical Manual of Mental Disorders
DSM-IV-TR	Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision
ECT	Electro-convulsive therapy
ED	Emergency Department
GP	General Practitioner
HPA	Hypothalmic-pituitary-adrenal
ICD	International Statistical Classification of Diseases and Related Health Problems
IPT	Interpersonal therapy
MAOI	Monoamine oxidase inhibitor
MOD	Medication overdose
NaSSA	Noradrenergic and specific serotonergic antidepressant
NCIS	National Coroner's Information System
NH&MRC	National Health and Medical Research Council
NSAID	Non-steroidal anti-inflammatory drug
OTC	Over-the-counter
PAS	Patient Administration System
REBT	Rational emotive behaviour therapy
RIMA	Reversible monoamine oxidase inhibitor
SES	Socio-economic status
SH	Self harm
SNRI	Serotonin and noradrenalin reuptake inhibitor

SSRI	Selective serotonin reuptake inhibitor
TCA	Tricyclic antidepressant
TECA	Tetracyclic antidepressant
VCFD	Victorian Coroner's Facilitation Database
VEMD	Victorian Emergency Minimum Dataset
WHO	World Health Organisation

Abstract

This thesis examines three main themes; depression, suicidality, and non-fatal overdose involving pharmaceutical and over-the-counter (OTC) medications.[1] At any given time depression affects approximately one in every twenty adults in Australia. People with depression are at elevated risk of attempted and completed suicide compared to those without. Medication overdose is a frequently chosen method of suicidal behaviour, and accounts for one in ten suicide deaths and close to nine out of ten non-fatal episodes of suicidal behaviour for which hospital treatment is sought.

The study reported here had six primary aims; (i) to quantify medication overdose presentations over a 12-month period to the Emergency Department (ED) of a major metropolitan public hospital in Melbourne, Australia, (ii) to describe the medication overdose patient group, including comparison with two other relevant types of presentation, illicit drug overdose, and actual or potential self-harm by means other than overdose, (iii) to explore the relationship between depression, suicidal ideation and medication overdose, (iv) to identify the medications typically used in overdose and their means of acquisition, (v) to explore patient experiences of emergency care following a medication overdose, and (vi) to comment on the feasibility of introducing a brief intervention within the ED with the intention of addressing the issue of medication overdose. Three data sources were employed: computerised ED records, interviews with a sub-sample of patients attending the ED following a medication overdose, and observation of ED processes in relation to these cases.

One of the most important findings of the study was the large contribution made by benzodiazepine medications to the overall medication overdose statistics. When considered in conjunction with the patient interview data, it appeared that many patients included in the study were prescribed benzodiazepines in a manner that contradicts current national prescribing guidelines. The problem of medication overdose could be partially addressed by working with doctors to ensure the appropriateness of their prescribing practices, to encourage them to more closely

[1] OTC medications are those which are available for purchase from pharmacies, supermarkets, and other outlets without prescription.

monitor the treatment progress of at-risk patients, and to increase awareness of other evidence-based forms of treatment for depression and anxiety.

1 Literature Review

There are three themes covered by this literature review; depression, suicidality, and non-fatal overdose involving pharmaceutical and OTC medications. In relation to depression, a definition is provided, co-morbidity with other mental health conditions discussed, and current knowledge regarding risk factors, prevalence, treatment options, and outcomes summarised. The review then addresses various types of suicidal behaviour, theories of such behaviour, means of actual and attempted suicide, risk factors, prevalence, and interventions. Thirdly, pharmaceutical medication overdose is considered. Included is a summary of the medications typically involved, their physiological effects in an overdose, interaction with other substances including illicit drugs and alcohol, and prevalence of overdose. A review of studies conducted in emergency medical care settings about medication overdose is presented in the final section, with a particular focus on studies that also addressed the role of depression and/or suicidality in the overdose.

1.1 Depression

1.1.1 Definition

The cluster of psychological and behavioural characteristics now popularly termed "depression" has been noted throughout recorded human history and across cultures (Beck, 1967; J. Jenkins, Kleinman, & Good, 1991; Joyce, 2004a). There are two widely recognised clinical diagnostic systems for the identification of depression in current use (Joyce, 2004a). The American Psychiatric Association produce the *Diagnostic and Statistical Manual of Mental Disorders* which provides empirically founded diagnostic criteria for a range of psychiatric conditions, and which is intended for use in clinical, research and educational settings. The current version of this manual is DSM-IV-TR (American Psychiatric Association, 2000). Alternatively, the World Health Organisation publish the *International Statistical Classification of Diseases and Related Health Problems*, of which the current edition is ICD-10 (World Health Organisation, 2004). In recent years there has been a deliberate effort to improve the compatibility of these two diagnostic systems (Gilbert, 1992). As the study reported in this thesis utilised a measure of depressive symptomatology

consistent with DSM-IV-TR criteria (Beck, Steer, & Brown, 2000), only that diagnostic system is detailed here.

Conditions involving a disturbance in mood, such as depression, are grouped together in DSM-IV-TR as "Mood Disorders". Mood disorders include Depressive Disorders, Bipolar Disorders, and Other Mood Disorders (American Psychiatric Association, 2000). It has been suggested that there is considerable overlap between the different categories of mood disorder (G. Brown, 1991).

The main focus of this thesis is Depressive Disorders, of which there are three subtypes; Major Depressive Disorder, Dysthymic Disorder, and Depressive Disorder Not Otherwise Specified. Major Depressive Disorder may be diagnosed when a person has experienced one or more Major Depressive Episodes (see below), and the episode(s) cannot be better accounted for by another disorder. The full diagnostic criteria for the disorder are included in Appendix A, page 329. A Major Depressive Episode may be diagnosed when a person has had at least five out of nine specified depressive symptoms in the last two weeks.[2] Symptoms include depressed mood, diminished interest or pleasure in activities, significant weight loss or gain, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue/loss of energy, feelings of worthlessness or guilt, difficulty concentrating, and thoughts of death or suicidal ideation. Further, to constitute a Major Depressive Episode, the symptoms should have caused distress to the person, impaired functioning, and should not have resulted from substance use or a medical condition (American Psychiatric Association, 2000). The full criteria for a Major Depressive Episode are included in Appendix B, page 330.

Dysthymic Disorder is a form of depression where the symptoms, although protracted, are not severe enough to warrant diagnosis of Major Depressive Disorder. Dysthymic Disorder may be diagnosed when a person has experienced depressed mood for two years (for most of the day, more days than not), two or more other depressive symptoms have also been present, the person has not been symptom-free for any longer than two months in the past two years, and the condition cannot better accounted for by another disorder (American Psychiatric Association, 2000). Diagnostic criteria are listed in Appendix C, page 331. Depressive Disorder Not

[2] At least one of the symptoms must be depressed mood or loss of interest.

Otherwise Specified may be diagnosed when depressive symptoms have been present, but do not meet the criteria for Major Depressive Disorder, Dysthymic Disorder, or a range of other disorders (American Psychiatric Association, 2000).

There is considerable overlap between depression and other disorders described in DSM-IV-TR, particularly Substance-Related Disorders and Anxiety Disorders.[3] The overlap will be discussed further in 'Co-morbidity', page 16. However, as substance use is of particular relevance to this thesis, DSM-IV-TR categorisation of problems related to substance use is explained here. Substance-related problems are classified in two ways: as Substance Use Disorders (i.e. Substance Abuse or Dependence), or as Substance-Induced Disorders (of which there are several, including Substance-Induced Mood Disorder) (American Psychiatric Association, 2000). It can be difficult to ascertain whether the mood symptoms experienced by a person who has used alcohol or other drugs were induced by intoxication or withdrawal, or whether they indicate a true primary mood disorder. The main distinguishing feature of Substance-Induced Mood Disorder is that the substance use is likely to be aetiologically related to the mood symptoms noted. An individual does not have to meet the criteria for substance abuse or dependence for this disorder to be diagnosed. The full criteria are included in Appendix D, page 332.

A small number of the people who participated in this study had Bipolar Disorder (characterised by symptoms such as elevated, irritable or expansive mood, inflated self-esteem or grandiosity, flight of ideas, and excessive involvement in pleasurable activities that are likely to have painful consequences), but as this disorder was not the central focus of the study it will not be described in detail here. Women who have recently given birth may experience postnatal mood disturbance, but as with Bipolar Disorders, such depression was not the focus of this study and therefore the condition is not covered in this review.

Although the criteria for Major Depressive Disorder in DSM-IV-TR are specific, the literature and research evidence to date has used a range of definitions and terms to describe the concept of depression. Given the variability of language applied to

[3] Anxiety disorders include (but are not limited to) Panic Disorder, Agoraphobia, Specific Phobia, Social Phobia, Obsessive-Compulsive Disorder, Posttraumatic Stress Disorder, Acute Stress Disorder and Generalised Anxiety Disorder (American Psychiatric Association, 2000).

depression in scientific, clinical, and everyday use, this more encompassing term (i.e. "depression") has been used when reviewing the literature and throughout the thesis. Two other commonly interchanged terms, "mood disorder" and "affective disorder" have also been used in this thesis, even though they have a broader range of meaning.

1.1.2 Prevalence

According to the World Health Organisation depression was the fourth largest contributor to the global burden of disease (as measured by disability adjusted life years, or DALYs) in 2000 (World Health Organisation, 2006a). It was further estimated that by 2020 depression will be second only to ischaemic heart disease in terms of worldwide disease burden. The apparent increase in the prevalence of depression may be partly attributable to improved recognition and recording of cases, however, Becker and Kleinman (1991) suggested that the evidence points to a real increase in the prevalence of these disorders, particularly in the developing world.

In a review of studies conducted in Australia, New Zealand, Britain, and the United States, Joyce and Mitchell (2004) suggested that the current (last month) prevalence of major depression was 3-5% of the population. Data presented in DSM-IV-TR indicated that at any one point in time the prevalence among females was 5-9%, and 2-3% among males (American Psychiatric Association, 2000).

Internationally reported lifetime prevalence figures have been found to vary widely from 4% to over 30%, with the variability most likely due to methodological differences and recall bias (Joyce & Mitchell, 2004). The reported lifetime risk of developing a Major Depressive Disorder according to DSM-IV-TR was 10-25% for females and 5-12% for males (American Psychiatric Association, 2000). It was further reported that those who had a single Major Depressive Episode were at elevated risk of having a second (60%), and among those who did, the chance of a third episode was 70%, and thereafter the chance of a repeated episode was 90% (American Psychiatric Association, 2000).

The estimates above are supported by Australian data. It has been estimated that at any one time 3-5% of the population will evidence depressive symptomatology, and

further, that 15% of the general Australian population will suffer from depression at some point during their lifetime (Mitchell, 1999). Population-based surveys have demonstrated that over 5% of the Australian population suffer from depression each year (Australian Bureau of Statistics, 1998).[4] Virtually identical rates of major depression have been found whether the ICD-10 or DSM-IV criteria were used (3.3% and 3.2% respectively within the last month, and 6.7% and 6.3% respectively within the last 12 months) (Andrews, Henderson, & Hall, 2001). Depression has been reported as the fourth most commonly seen condition by General Practitioners (GPs) in Australia, contributing to 3.6 million visits to GPs each year (Britt, Miller, Knox, Charles, Valenti, Henderson et al., 2001).

Depression can begin in childhood, and it has been estimated that in any one year, 1-2% of children up to the age of 12 have clinical depression, although the signs of depression may be somewhat different in childhood (Martin, 2004). Up to 15% of children experience at least one depressive episode by adolescence, and those who have been depressed in childhood are more likely to have depression in adolescence and adulthood. In reviewing the Australian evidence relating to depression during adolescence, Hazell (2004) reported that most people who ever suffer from major depression experienced their first depressive episode during their teenage years, with a peak age of onset from 15-19. In that review of the data, approximately 5% of those aged 13-17 met the criteria for depression. Thereafter the rates of depression increase more rapidly for girls than boys. A community-based survey conducted in Queensland of over three thousand 15-24 year olds yielded results consistent with those above. Depressive symptomatology was reported by approximately one in eight males and one in four females (Donald, Dower, Lucke, & Raphael, 2001). The rate among females was significantly higher than among males.

1.1.3 Co-morbidity

Co-morbidity refers to the presence of more than one disease, disorder, or syndrome at the same time. Co-morbidity represents a serious problem because the onset of illness is generally earlier, the course is often more severe, treatment outcomes are

[4] The survey reported here used the Composite International Diagnostic Interview (CIDI) to assess mental health. The CIDI uses the ICD-10 diagnostic criteria for depression.

generally poorer, and the individual may have lower social stability (Blanchard, 2000; Teesson, 2000).

It has been recognised that there is a high degree of co-morbidity among psychiatric disorders. In particular, depression has been shown to overlap with anxiety and substance use. The 1997 Australian National Survey of Mental Health and Wellbeing involved over 10,000 participants from the general adult population. The study found that approximately one in six people met the criteria for an affective (mood) disorder, an anxiety disorder, or a substance use disorder within the previous 12 months, and one in eleven had met the criteria within the previous month (Andrews et al., 2001).[5] Of those, approximately 25% also met the criteria for at least one of the other two groups of disorder, while 1% met the criteria for all three (Teesson, 2000). The pattern of co-morbidity differed somewhat between males and females. Males more often had a substance use disorder co-occurring with either depression or anxiety, while females tended to have comorbid anxiety and depression (Teesson, 2000). Similarly, Todd and Sellman (2004) reported that about 25-40% of those with a mood disorder also had a history of substance abuse or dependence. Conversely, approximately half those with substance use problems also had a lifetime history of co-occurring mental health disorders, predominantly anxiety and depression (Todd & Sellman, 2004).

A higher co-morbidity estimate between depression and other psychiatric conditions was reported in a U.S. review (40-65%), although it has been noted that estimates obtained via clinical research are likely to be larger than those derived from population-based research (Blanchard, 2000; Kushner, Abrams, & Borchardt, 2000). This phenomenon, called Berkson's Bias, most probably arises because those with multiple disorders are more likely to seek treatment than those with only one disorder (Swendsen & Merikangas, 2000). Depression has also been found to co-occur with other psychiatric conditions such as psychosis and personality disorders,

[5] In this study Affective Disorders included Major Depression and Dysthymia. Anxiety Disorders included Panic Disorder, Agoraphobia, Social Phobia, Generalised Anxiety Disorder, Obsessive-Compulsive Disorder and Post-Traumatic Stress Disorder. Substance Use Disorders included Alcohol Dependence, Alcohol Misuse/Harmful Use, Drug Dependence and Drug Misuse/Harmful Use.

though the prevalence of these disorders among the entire population of people with depression is comparatively low (Skinstad & Swain, 2001; Teesson, 2000).[6]

While DSM-IV-TR (American Psychiatric Association, 2000) identifies depression and anxiety as distinct disorders, it has long been noted that they share many of the same features. Indeed, instruments designed to measure one of these disorders have often shown poor discriminant validity from those intended to measure the other (Clark & Watson, 1991). Symptoms recognised as belonging to both disorders include agitation, difficulty concentrating, insomnia, and loss of energy, whereas symptoms that distinguish anxiety from depression are panic attacks and agoraphobic avoidance (Clark & Watson, 1991). Depression can be distinguished from anxiety in terms of loss of pleasure, waking early in the morning and being unable to return to sleep (Clark & Watson, 1991).

Mullaney (1989) proposed eight possible mechanisms for the inter-relationship between anxiety and depression; (1) they are interwoven and inseparable disorders, (2) they are distinct disorders, (3) they are distinct disorders although difficult to separate, (4) anxiety is part of depression, (5) the two disorders are symptomatically different but not mutually exclusive, (6) the two disorders are hierarchical with depressive symptomatology being more severe than anxious symptomatology, (7) the two disorders often occur together however depression can exist alone, and (8) the two disorders are indistinguishable and in therapeutic terms there is little to be gained from separating them. Gilbert (1992) noted that there is some evidence in support of each of these mechanisms. However, for this research it was recognised that although the two disorders are closely associated, the exact nature of the association was not central to the research question (i.e. anxiety was not measured as it was expected that the score on a standardised measure would correlate highly with depression scores in any case).

The mechanism for co-morbidity between depression and substance use disorders is also not clear. Todd and Sellman (2004) noted both mood and substance use disorders are “aetiologically complex conditions”; therefore their co-occurrence is

[6] While relatively few people with depression have co-occurring psychosis, one study found that almost half of those attending a public health service with schizophrenia as a primary diagnosis also had current or past problems with substance use (Swofford, Scheller-Gilkey, Miller, Woolwine, & Mance, 2000).

also likely to be complex. In some cases the depression may be a symptom of substance use which improves once the dependence has been addressed (i.e. substance use precedes depression) (Verheul, Kranzler, Poling, Tennen, Ball, & Rounsaville, 2000). In other cases the self-medication hypothesis may apply, whereby depression occurs first and substances are used to alleviate negative feelings (or in the case of anxiety, to overcome feelings of fear), though it has been argued that this alone is an insufficient explanation for comorbidity (Todd & Sellman, 2004). It has also been suggested that substance use, mood, and anxiety disorders have a common underlying aetiology (e.g. genetics, neurobiological, environmental risk factors, etc) (Blanchard, 2000; Hall, Lynskey, & Teeson, 2000; Kushner et al., 2000; Lynskey, 1998; Teesson, 2000; Todd & Sellman, 2004).

> *"Substance use and mood disorders are increasingly seen as arising through a complex interaction of factors acting across all levels of brain-mind organisation, including genes, neurochemicals, temperament and character, psychological, social, cultural and spiritual factors. In any one individual, various aetiological factors interact to lend vulnerability to, precipitate and maintain co-occurring substance use and mood disorders." (Todd & Sellman, 2004, p. 307)*

In a review of the epidemiological, clinical, family, and genetic studies concerning the co-morbidity of depression and various substance use disorders, Swendsen and Merikangas (2000) concluded that while all of the above-mentioned factors were probably relevant and had multiple pathways of association, in the case of alcoholism and depression, the primary pathway was probably causal. That is, alcohol was shown to cause impairment in important areas of functioning (social, occupational, health) which led to stress and ultimately depression.[7] Furthermore, alcohol could also exert a direct effect on depressive symptomatology. However, the authors were unable to clearly define the pathway of association between depression and other types of substance dependence (Swendsen & Merikangas, 2000).

[7] Although most of the studies reviewed by Swendsen and Merinkangas (2000) involved male or mixed gender populations, a series of studies reviewed by those authors found depression predicted alcoholism among female twins, suggesting the pathway of causality may be gender-related.

1.1.4 Theories of depression

Numerous theories have been proposed regarding the aetiology of depression. These can loosely be categorised as psychoanalytic, interpersonal, cognitive, and physiological. Each theory emphasizes a different aspect of depression, though possibly none provide a full account of depressive thought, behaviour and symptomatology. Nor are the theories entirely distinct; for example, some of the later cognitive theories incorporate elements of the earlier psychodynamic theories. The quality of empirical evidence to support various theories of depression has been variable. Given the enormous breadth of writing in the area, and the focus of the current research, the different theoretical perspectives on depression will not be reviewed here. Theories of depression can be found in the work of Abraham (1911, 1916 & 1924), Freud (1917), Rado (1928), Klein (1934), Bibring (1953), Bowlby (1975), Beck (1979), Ellis and Dryden (1987), Beck, Rush, Shaw and Emery (1979), and Meichenbaum (1977), summaries of which may be found in the following publications (Beck, 1967; Becker & Kleinman, 1991; Becker & Schmaling, 1991; Fremouw, Perczel, & Ellis, 1990; Gilbert, 1984, , 1992).

1.1.5 Risk factors

Regardless of the overall theoretical orientation adopted towards depression, a number of factors which contribute to the onset, maintenance, and recurrence of depression have been identified by empirical research. However, as yet there is no coherent model for how these various factors interrelate. As summarised by Gilbert (1992),

> *"…although we can make reliable diagnoses it remains uncertain how much more we can say about depression. Clearly severity stands out as the single most important aspect for treatment considerations, but how genes, psychological style, life events, and culture all interact to produce an individual's symptom profile at any point in time (and these profiles are often highly unstable) remains mysterious." (Gilbert, 1992, p. 58).*

While Donald and Dower (2002) argued that naming discrete risk factors for depression is a reductionist approach that overlooks the complexity of interrelated characteristics at the individual, family, community and cultural level, they

acknowledged that such discrete categories have a use in developing targeted prevention and intervention efforts. As the current research aims to characterise medication overdose patients on a range of variables including severity of depressive symptomatology (see Research Questions, page 103) an attempt has been made here to list the variables that previous research has found to be associated with depression. However, it should be noted that association does not imply causation, and that a discussion of directionality is beyond the scope of this review. Further, the variables presented here are loosely grouped according to subheadings, though many could be categorised in more than one way. Given the importance of substance use in depression, this risk factor was discussed in detail in the earlier section on Co-morbidity (page 16) and will not be covered again here.

Biology

Research into the biological factors contributing to depression has investigated the role of various elements including genes, neurotransmitters, and neuroendocrine function. Depression has been demonstrated to cluster in families, partly as a consequence of genetic factors which may confer either vulnerability to, or protection from, the condition (Schweitzer & Tuckwell, 2004; Sullivan, 2004). A recent meta-analysis found that immediate relatives of people with depression were almost three times more likely that those without to also suffer from major depression (although this figure was based on clinical samples, and may therefore be an overestimate due to the greater likelihood of treatment seeking in some families) (Sullivan, 2004). A genetic link has also been found in twin and adoption studies, with an estimated 37% of liability to depression being accounted for by heredity (Sullivan, 2004). Such studies have also found environment to be important, however, the effect was due to individual-specific experiences, rather than shared environmental factors that applied equally to both twins. Schweitzer (2004) further argued that biochemical changes associated with experiencing environmental stress triggers depression in genetically vulnerable persons. The specific genes involved in depression have not been identified, but it appears likely that there are multiple genes that contribute to the condition (Schweitzer & Tuckwell, 2004).

Much of the work concerning the role of neurotransmitters in depression was prompted by the coincidental observation that medications affecting the operation of

these were associated with an elevation in mood (Schweitzer & Tuckwell, 2004). It has since been clearly established that depression is associated with noradrenalin and serotonin dysregulation (Alchin & Tranby, 1995; Schweitzer & Tuckwell, 2004). Other neurotransmitters likely to be involved in depression include dopamine,[8] acetylcholine, opiates, and γ-aminobutyric acid, though these have been less extensively studied than serotonin and noradrenaline. The different classes of antidepressant medication available exert their effect by modulating the levels of neurotransmitters available in the multiple brain regions implicated in depression. The specific mechanism of action of the relevant neurotransmitters in depression has not yet been definitively established, and given its complexity, is beyond the scope of this review.

There is evidence to suggest hormonal factors may be associated with depression. Firstly, neurotransmitters, as described above, are known to influence the secretion of hormones from glands such as the pituitary and hypothalamus. Therefore, dysregulation of neurotransmitter function has a flow on effect to neuroendocrine function. Secondly, individuals suffering from an endocrine function disorder such as hyperthyroidism have been demonstrated to experience disturbance in mood, suggesting that the hormonal imbalance associated with their primary disorder can also lead to mood-related symptoms (Schweitzer & Tuckwell, 2004). While less than 1% of depressed patients have hyperthyroidism, subclinical abnormalities in the level of relevant hormones are common among depressed samples.

Hormone levels may be measured in body fluids such as blood, saliva, and urine. Given the known link between neurotransmitter and endocrine function, measurement of hormone levels may provide valuable information about neurotransmitter function, which is less easily measured directly.[9] The involvement of hormones has also been inferred from enlargement of the adrenal and pituitary glands. Most studies focusing on neuroendocrine function have examined the limbic-hypothalmic-pituitary-adrenal axis which is implicated in the body's stress response. As for neurotransmitters above, the exact role of hormones in depression is still unknown and the available evidence too complex to be covered completely here.

[8] Dopamine may be particularly relevant in bipolar disorder, as well as depression.

[9] Hormones studied include cortisol, adrenocorticotrophic hormone, corticotrophin-releasing factor, growth hormone and thyroid-stimulating hormone.

However, in reviewing the previous research evidence, Schweitzer and Tuckwell (2004) concluded that at least 50% of those with depression have a chronically overactive hypothalmic-pituitary-adrenal (HPA) axis. This system has been shown to respond to antidepressant treatment, and failure to do so has been associated with higher risk of relapse to depression. The role of the hormone oestrogen in depression has also been studied and a summary of the available evidence relating to this is presented in the section concerning gender below.

Finally, other recent developments in the area of neurobiology and depression have shown promise in furthering knowledge about the biological underpinnings of depression. These include neuroimaging to observe brain structure and function (Mali, Lagopoulos, Soares, & Vieta, 2004), molecular biology, and immune function (Schweitzer & Tuckwell, 2004). Regarding the latter, preliminary evidence demonstrated that both neurotransmitter and neuroendocrine function interact with the immune system, and further, that compromised immune-endocrine function may be a factor in the onset of depression. However, additional research is required before any conclusions about the roles of immunology, brain structure and function, and molecular biology in mood disorders can be drawn (Schweitzer & Tuckwell, 2004).

Gender

Studies of depression have consistently shown a higher rate of depression among females than males in clinical and general population settings (Andrews et al., 2001; Donald & Dower, 2002; Wilhelm, 2004). Recent community-based studies reported that females were approximately 1.6 times more likely to experience depression than males (the ratio remained constant for 1 month, 12 month, and lifetime prevalence), though the sex difference tended to reduce among older populations (i.e. increased rates of depression among older men). Sex differences were particularly evident in cases of mild to moderately severe depression and dysthymia, and during childbearing years. Females were also reported to have longer episodes and higher rates of recurrence than males (Wilhelm, 2004).

It is likely that gender differences in the rates of depression are related to both biological and social factors. Biological factors studied have included genetics and hormones (see Biology, page 21). There has been no evidence found to link

depression to the X chromosome itself. However, depression has been found to be related to "neuroticism" which has a genetic component (Wilhelm, 2004). Given that depression in women has been associated with times of hormonal change such as puberty, premenstruation, pre and postnatal, and at perimenopause, the role of female hormones in the disorder has been investigated. The evidence relating to oestrogen was equivocal with some authors suggesting that oestrogen treatment improved depression among perimenopausal women (Schweitzer & Tuckwell, 2004), and others finding no link with between oestrogen and depression (Wilhelm, 2004). In reviewing the available evidence, the latter author suggested that rather than oestrogen, oxytocin (a hormone related to child birth and lactation) may be involved.

There are a number of psychosocial factors that may contribute to the higher rates of depression seen in women, including differences in emotional recall and expression, help-seeking behaviour, learned behaviour, coping styles, and access to resources (Andrews et al., 2001; Donald & Dower, 2002; Wilhelm, 2004). For example, it has been suggested that generally speaking women may be more inclined to adopt internalised, emotion-focused coping strategies, while men tend to use externalised, action-coping techniques. It has further been argued that men are more likely than women to use alcohol to cope with negative affective states, and therefore problems may manifest themselves as substance-related, rather than affect-related (Wilhelm, 2004).

The gender difference in prevalence rates for depression may also be an artefact of current diagnostic systems. It has been argued that the DSM-IV criteria for depression are female oriented, and that if substance abuse and sociopathy were recognised as possibly symptomatic of depression, more males would be diagnosed as such (Blair-West & Mellsop, 2001).

Family factors

The role of the family of origin in the development of depression is subject to some debate, as evidence pertaining to this issue has generally relied on subjective, retrospective self-reports by individuals experiencing emotional difficulties (i.e. responses may have been influenced by recall bias or post-justification). Despite these concerns research reviews have consistently reported family of origin to be associated with depression (Donald & Dower, 2002; J. Jenkins et al., 1991), a view

supported by clinician reports of the relevance of family experience (J. Jenkins et al., 1991). For example;

> *"The clinical and research experience of numerous cross-cultural investigators has led them to assign dysfunctional family dynamics an instrumental role in the development of the disorder." (J. Jenkins et al., 1991, p. 841)*

Depression has been found to be more common among children with at least one parent with a depressive disorder than those without (J. Jenkins et al., 1991). This may be partly due to a genetic predisposition towards depression, but may also be due to learned behaviour from within the family structure. Other family factors identified have included experiencing a negative childhood, aloof, controlling and over-protective parents, parental psychiatric problems, parental discord, family conflict, and poor quality relationships within the family (Donald & Dower, 2002; J. Jenkins et al., 1991). While family connectedness has been identified as a protective factor against depression, a study of young adults found that in the presence of certain other types of risk (e.g. sexual identity conflict) high levels of family connectedness were associated with greater depressive symptomatology, suggesting that overly involved family structures may also be problematic (Donald & Dower, 2002).

In adults, conflict within a primary relationship has been associated with depression (J. Jenkins et al., 1991). Separation, divorce, and being widowed have also been noted as risk factors for affective disorders (Andrews et al., 2001).

Personality

Certain personality styles have been found to be more common among those with depression, although the direction of causality has not been established. As with depression itself, it is not clear at what point "normal" dimensions of personality actually constitute a disorder. However, even in the absence of a personality disorder, certain traits have been frequently noted in people with depression. Gilbert asserted that *"…personality styles that reflect lability in affect control systems…"* are common among depressed people (Gilbert, 1992, p. 112). This author further argued that characteristics such as emotional dependency, interpersonal sensitivity,

having a high need for approval, and either inhibited or excessive need for achievement with the goal of receiving approbation are often features of those vulnerable to depression (though not exclusively so). In contrast, an autonomous personality style may offer resilience to depression. In reviewing the literature Donald and Dower (2002) also concluded that intra-personal variables such as neuroticism, locus of control, self-esteem, self-efficacy, and problem solving abilities were related to depression (Donald & Dower, 2002). This finding was supported by a study of adolescents seeking psychiatric care which found that poor psychosocial functioning and pessimism about the future were associated with psychiatric problems (Laukkanen, Korhonen, Peiponen, Nuutinen, & Viinamaki, 2001).

The role of personality is crucial when the question of treatment arises, as it has been noted that a person with an underlying personality disorder may have a more gradual response to treatment than a person who is depressed but without this complication, and further, may require a therapist particularly skilled to help the person develop a more adaptive personality structure (Gilbert, 1992).

Socio-economic status (SES)

Lower socio-economic groups, as defined by features such as occupation, income, unemployment, homelessness, and education, have been found to have higher rates of depressive symptomatology (Andrews et al., 2001; Donald & Dower, 2002; J. Jenkins et al., 1991). An Australian study using data from the 1997 Mental Health and Wellbeing Survey found a significant linear relationship between the risk of having an affective disorder and socio-economic condition as measured by level of education and employment status, with the risk increasing as condition decreased (R. Taylor, Page, Morrell, Carter, & Harrison, 2004). This association may have reflected social causation (i.e. low status caused poor mental health), or social selection (i.e. poor mental health limited ability to gain status). The study authors leaned towards social causation as an explanatory model, and therefore concluded that mental illness should not only be responded to by individual treatment, but also by broader social and economic reform.

It has been argued that the association between depression and low SES is not only associated with financial and social standing, but the number of adverse life events experienced, with those of lower SES likely to endure more such experiences simply

because they are in a less advantaged position with fewer social supports. This closely associated risk factor is discussed below under psychosocial stress.

Psychosocial stress

There is a large literature on the link between stressful or adverse life experiences and depression (Alchin & Tranby, 1995; Becker & Kleinman, 1991; Paykel, 2004). In a review of relevant studies, Paykel (2004) identified three elements of psychosocial stress: life events, chronic stress, and social support. A life event was defined as a specific change in the external world.[10] Depressed individuals have been shown to experience a greater average number of life events prior to the onset of the condition than non-depressed people. Studies that have calculated the attributable risk (i.e. the proportion of depression that can be attributed to life events), have yielded estimates of approximately 40% (Paykel, 2004). Life events involving an element of loss were particularly significant, with interpersonal separation, bereavement, loss of self-esteem, and experiences of humiliation and entrapment all found to be associated with the onset of depression and other psychiatric disorders.

Chronic stress, defined as a persistent situation of ongoing difficulty, was found to be related to the onset of depression, both in the presence and absence of specific life events. High levels of social support (i.e. the extent to which a person had access to the emotional concern, aid, and attention of others) were found to be protective, and their absence a chronic stressor.

Although relevant in the onset, maintenance, and recurrence of depression, Paykel (2004) indicated that psychosocial stress is a difficult concept to measure. For example, in relation to life events, individual recall may be inaccurate, the number or significance of life events may be overestimated in order to explain the depression, depression may itself produce an increase in the number of life events experienced, and finally, individual differences in the perceived stressfulness of various life events may exist (Paykel, 2004). Further, it has been suggested that there is a somewhat circular relationship between life events, chronic stress, and level of social support (for example, those prone to depression may self-select into higher risk environments, be less skilled at developing social networks, and so on (Cohen, 1988; Paykel, 2004).

Many different types of adverse life experience, chronic stressors, and social circumstances could potentially contribute to the development of depression. Psychosocial stressors most frequently identified in the literature as related to depression include sexual abuse, being an immigrant or refugee (especially when associated with trauma, torture, or displacement)[11], failure at school or university, lower levels of education, social change such as rapid urbanization and industrialization, and the break up of a primary relationship (Andrews et al., 2001; Donald & Dower, 2002; J. Jenkins et al., 1991).

Sexual orientation

A US population-based study compared the rates of mood, anxiety, and substance use disorders among gay, lesbian, and bisexual mid-life adults with the rates among heterosexual adults of the same age (Cochran, Greer Sullivan, & Mays, 2003). Results showed higher rates of depression among gay and bisexual men than heterosexual men. Comorbid mental disorders were also higher among the gay, lesbian, and bisexual participants than the rest of the sample.

Another US study sought to examine whether the mental health differences noted between sexual minority groups and the heterosexual majority were due to sexual orientation per se, or other variables relating to the social environment (Safren & Heimberg, 1999). Gay, lesbian, and bisexual adolescents were compared with heterosexual adolescents regarding depression, hopelessness, and suicidality. Higher levels of distress were found in the gay, lesbian, and bisexual group, however, this difference was no longer apparent once stress, social support, and coping mechanisms were controlled for. These findings suggest that the higher rates of depression and suicidality observed among sexual minority groups may be modifiable by prevention and intervention efforts aimed to improve aspects of the social environment. Bullying during adolescence due to sexual orientation has been associated with poorer mental health in adulthood (Rivers, 2004). Sexual identity conflict has also been noted as a risk factor for depression in an Australian community-based study of adolescents (Donald & Dower, 2002).

[10] This included events such as illness, although this is an internal change.

[11] Rates of depression have been shown to improve with time after settlement, particularly if there is ongoing contact with others from the same cultural background (J. Jenkins et al., 1991)

Protective factors

In addition to identifying risk factors for depression, research has also been conducted to determine what characteristics, in the presence of such risk, appear to protect against the development of depression. Factors concerning the social environment, such as intrapersonal skills, social connectedness, and social support have all been found to act as a buffer (Donald & Dower, 2002; Paykel, 2004).

1.1.6 Depression treatment and outcomes

This section outlines treatments currently available for depression and their efficacy, as well as other treatment-related issues. The information on depression treatment is relevant to this review because the current research aimed to canvass the mental health treatment histories of medication overdose patients (see Research Questions, page 103).

Treatment uptake

Depression, particularly in its milder forms, is regarded as a treatable condition (Mitchell, 1999). However, a crucial factor in relation to the efficacy of treatment is identification; many depressed people may not consult a doctor, some of those who do so may not necessarily be identified as depressed, and even among those correctly diagnosed, only a proportion will receive appropriate and adequate treatment. It has been estimated that only about half of people seen in primary care settings with a current major depressive episode are identified as such (Joyce, 2004a). Undiagnosed mental illness such as depression has been identified as a risk factor for suicide, as has non-compliance with pharmacological treatments (Callor, Petersen, Gray, Grey, Lamoreaux, & Bennett, 2005).

Despite the prevalence rates mentioned earlier, and the number of GP consultations in Australia concerning depression, results from the Australian National Survey of Mental Health and Wellbeing indicated that service utilisation in relation to mental health problems was poor, with only 35% of those who reported having a problem within the last year actually having a consultation for it (Andrews et al., 2001). Similarly, in a U.S. study of depressed inpatients, the majority were under-treated pharmacologically, irrespective of whether or not they had previously attempted suicide (Oquendo, Malone, Ellis, Sackeim, & Mann, 1999).

Types of treatment

The treatments for depression can be split into two major categories; pharmacological treatments and psychological treatments. A number of other treatments have received less extensive clinical research. In terms of treatment selection, it has been suggested that psychological interventions alone (such as counselling) may be suitable for mild depression, but that in cases of severe depression a better response may be achieved when antidepressant medication is also used (Mitchell, 1999).

In discussing good clinical management for depression, Joyce (2004b) suggested the following elements were crucial: assessment of symptoms, evaluating the safety of the individual and significant others, providing education about the disorder, establishing a therapeutic alliance with the individual, providing support and care, providing advice and recommendations regarding the treatment options available, monitoring treatment response, enhancing treatment compliance, evaluating and managing any impairments associated with the condition, and preventing relapse.

Pharmacological treatments

Broadly, the class of drugs usually prescribed to treat depression are called antidepressants. Since their first use in the 1950s, antidepressants have become the treatment of choice for depression, with 78% of people presenting to GPs for depression in Australia being prescribed these medications (Britt et al., 2001).

Antidepressant medications available include tricyclic antidepressants (TCAs), monoamine oxidase inhibitors (MAOIs), reversible monoamine oxidase inhibitors (RIMAs), tetracyclic antidepressants (TECAs), selective serotonin reuptake inhibitors (SSRIs), serotonin and noradrenalin reuptake inhibitors (SNRIs), and noradrenergic and specific serotonergic antidepressants (NaSSAs). Within most of the groups there are chemical/generic subgroupings, and within each of those, several brands available. Each of the antidepressant medication groups has its own specific route of action, therapeutic effect on target symptoms, and side effects (Alchin & Tranby, 1995; Austin & Mitchell, 1998; BeyondBlue: The National Depression Initiative, 2002; N. Buckley, Whyte, Dawson, McManus, & Ferguson, 1995a; P. Ellis & Smith, 2002; MIMS Australia, 2002; Mitchell, 1999). Further

discussion of specific antidepressant medications can be found later in this literature review (see Antidepressants, page 78).

In reviewing the evidence as to the effectiveness of antidepressants, Norman et al. (2004) found that controlled clinical trials of antidepressant medications showed effectiveness rates (i.e. significant clinical improvement) of 70-80%, irrespective of the aetiology of the depression. Broadly speaking, the various classes of antidepressant were equally effective as one another, though on an individual level there may have been marked differences in the level of improvement, depending on the medication used. These findings contrast with a review of studies submitted to the U.S. Food and Drug Administration for antidepressant approval which concluded that while there was a significant difference between various antidepressant medications and inert placebo, this difference was very small and unlikely to be of clinical significance (Kirsch, Moore, Scoboria, & Nicholls, 2002). However, the authors also indicated that this finding assumed that the medication and placebo effects were additive. If the true medication effects were in fact greater than the difference between the apparent medication effect and the placebo response, then the clinical significance of the difference would also be greater. Kirsch et al. (2002) suggested that drug trials incorporating balanced placebo designs could be used to answer this question.

In the absence of a personal or first degree relative history of antidepressant use, it may be difficult to predict which type of antidepressant will be the most effective for an individual and therefore Norman et al. (2004) suggested that this choice be made on the basis of the potential side effects and risk profile (for example, avoid highly toxic antidepressants in those at-risk of overdose). Similarly, while there are recommended dose ranges, the specific amount to be taken needs to be titrated according to the individual response (Norman et al., 2004). Emerging work in the area of pharmacogenetics may assist in better matching individuals to medications by identifying inherited susceptibility to negative side effects and in selecting the medication most likely to have a therapeutic effect for a particular individual (Kennedy, Rogers, & Joyce, 2004).

Where an effective antidepressant has been selected, it has been suggested that the sleep and appetite disturbances associated with depression should begin to improve

within about two weeks of commencing antidepressant treatment (Norman et al., 2004). Symptoms relating to agitation, anxiety, depressed mood and hopelessness should lift next, while energy levels, concentration, libido and helplessness improve last. Some antidepressants may not achieve their full effect for up to eight weeks (Norman et al., 2004). If an antidepressant is found to work, it has been recommended that treatment be continued for at least 12 months, or the length of any previous episode, if that is longer (Norman et al., 2004). If an antidepressant does not work, it may be that the dose is too low or being taken incorrectly. Otherwise it may be appropriate to change the antidepressant prescribed, although care needs to be taken to observe any recommended washout period (Norman et al., 2004).

Psychological treatments

Despite the widespread prescription of antidepressant medication by GPs, a growing trend towards the provision of psychological counselling by the GP, or referral of patients to specialist counselling services has also been noted (Britt et al., 2001). An Austrlaian study found that counselling occurred in 41% of GP visits relating to depression, and this is increasing over time (Britt et al., 2001).

Numerous therapeutic approaches may be applied in dealing with depression, including psychodynamic therapy, interpersonal therapy (IPT) and cognitive behavioural therapy (CBT) (McKenzie, Carter, & Luty, 2004). Psychodynamic therapy is based on psychoanalytic theories (e.g. Freud, Klein, Bibring), which emphasise the importance of early experiences of loss and attachment in the development of depression. According to McKenzie (2004), therapy of this type involves an assessment phase, during which the practitioner listens, endeavours to establish a therapeutic alliance, and, along with the client, identifies the problem. The process of clarifying the problem with the client is intended to assist the individual in gaining further insight about his or her circumstances. Finally, this form of therapy utilises the relationship between the client and the therapist to recreate significant issues stemming from earlier in life with a view to resolving them in the present (i.e. transference).

Interpersonal therapy focuses on the immediate social environment of the individual, and the role of this in precipitating and maintaining depression (McKenzie et al., 2004). That is, chronic social stress is associated with the onset of depression, while

socially supportive relationships are protective against it (e.g. Meyer, Bowlby). Rather less emphasis is placed on determining early life origins of present difficulties in interpersonal therapy than in psychoanalytically oriented therapies. As with psychodynamic therapy, IPT begins with an assessment phase, although this mainly focuses on current functioning and relationships. Therapy then concentrates on improving interpersonal functioning in relation to specific problem areas, with the idea that depression will lift as functioning improves.

Cognitively oriented therapies such as CBT are based on the view that behaviour is partly determined by cognitions (e.g. Beck) (McKenzie et al., 2004). Therapeutic approaches based on a cognitive theoretical orientation assume that cognitive processes are *"accessible and modifiable"* (Fremouw et al., 1990, p. 112). The task of therapy is to encourage awareness of the link between cognition and emotion and modify those cognitions that do not contribute to the emotional wellbeing of the person via self-statements, behavioural homework, and a range of other tasks. For example, according to cognitive theory, having a negative schema is characteristic of depression, and the task of therapy is to reactivate a set of positive schemata. This reactivation is achieved through identifying the automatic thoughts and rules that reinforce the negative schema and working to alter these thoughts and rules (Gilbert, 1992). This approach has been used in relation to a range of disorders, including depression, anxiety, anger, stress, chronic pain, eating disorders, and suicidal behaviour.

Research results concerning the efficacy of different psychological treatments have been equivocal. Study limitations have included differences in the severity of depression of study participants, difficulty in distinguishing treatment types (i.e. overlap between modalities), and problems with ensuring the rigorous application of the treatment under investigation. Despite these limitations, reviews of research in the area have tended to support the efficacy of psychologically based treatments. Several studies have demonstrated psychological therapies such as CBT and IPT to be effective in the treatment of depression (Gilbert, 1992; Mitchell, 1999). A recent Cochrane review investigating the efficacy of structured psychosocial interventions delivered by GPs found there was promising evidence for problem solving training in reducing depression (Huibers, Beurskens, Bleijenberg, & van Schayck, 2003). In reporting on various meta-analytic studies of psychologically based treatments,

McKenzie (2004) concluded that there is not a great deal of difference in efficacy between psychotherapy, IPT and CBT; they are all about as effective as each other, and at least as effective as antidepressant medication.

The efficacy of psychological treatments may partly depend upon the severity of the illness. Mild to moderate depression has been shown to respond equally well to either medication or strategies such as CBT, but severe depression may not improve with counselling alone. Combining pharmacological and psychological treatment has been found to be more effective in cases of severe depression (McKenzie et al., 2004).

Regardless of therapeutic orientation, it has been found that the therapeutic alliance is of crucial importance and the competence of the practitioner a key factor in treatment outcome (McKenzie et al., 2004). As for pharmacological treatments, it may be that some individuals are better suited to some therapeutic strategies than others, though there is no clear evidence about this yet.

Length of treatment

It has been suggested that continuing treatment (whether pharmacological or psychological) for at least 4-6 months post remission of depressive symptomatology may help in reducing relapse to depression (McKenzie et al., 2004). With regard to pharmacological treatments, a review of over 40 years of research evidence concluded that continued treatment post remission was consistently superior to placebo (Mulder, 2004).

Other treatments

There are several other treatments that have been used for depression, though less commonly, and often with a less comprehensive evidence base. Jorm et al. (2002) conducted a systematic review of the literature concerning the effectiveness of complementary and self-help treatments for depression. Treatments reviewed were divided into four categories; medicines (e.g. ginko biloba, glutamine, homoeopathy, St John's wort, vitamins), physical treatments (e.g. acupuncture, light therapy, massage), lifestyle (e.g. bibliotherapy, exercise, meditation, relaxation, yoga), and dietary change (e.g. alcohol avoidance, fish oil, sugar avoidance). A full description of each of these treatment types is beyond the scope of this literature review, but in

summary, when compared with standard treatments such as antidepressant medication and CBT, there was evidence for the efficacy of some alternative treatments for mild to moderate depression. The authors concluded that interventions with the best evidence were St John's wort, exercise, bibliotherapy, and light therapy, and that interventions with some evidence included acupuncture,[12] massage, folate, and yoga. However, these treatments were not demonstrated to be as effective as conventional treatments, though the authors cautioned that the lack of evidence may have been due to insufficient large scale studies into alternative treatments, rather than the treatments not working.

Below is further information regarding two other treatments for depression, electroconvulsive therapy, and St John's wort. These are included here because they are well known treatments, both of which have been the subject of considerable research.

- **Electroconvulsive therapy (ECT)**

This treatment modality involves inducing a fit or convulsion in the patient by administering an electrical charge to the patient. It has been theorised that the anticonvulsant response triggered in the brain by inducing the convulsion assists in modifying the affective state of the individual (Tiller, 2004).

Electroconvulsive therapy is generally only considered in very severe cases of depression that do not appear to respond to other forms of treatment, or where there is a significant threat of suicide. Treatment delivery may vary on a number of dimensions, including placement of the electrodes (unilateral, bilateral, or frontal), different waveform patterns, and frequency and duration of treatment. Recent improvements have also been made in terms of the anaesthesia and muscles relaxants provided, and pre-oxygenation of patients to prevent hypoxia. The therapy is generally delivered as a series of treatments (2-3 per week for several weeks); though in some instances longer-term maintenance treatments may be deemed necessary over 6-12 months. Side effects are mainly cognitive in nature and include confusion, impairment of autobiographical memory, and difficulties with speech (particularly

[12] A recent Cochrane review (Smith & Hay, 2004) concluded that there was insufficient evidence to determine whether acupuncture was an effective or ineffective treatment modality for depression.

word finding and expression). However, it has been argued that these side effects are generally mild and transient (Tiller, 2004).

In reporting on the previous research literature, including a systematic and meta-analytic review, Tiller (2004) concluded that ECT was consistently found to be more effective than pharmacotherapeutic treatments for depression, and in most studies there was a lower rate of mortality among those treated with ECT than those not. However, it was also suggested that many patients who could potentially benefit from ECT were reluctant to receive it.

Electroconvulsive therapy is a relatively rare from of treatment. In the state of Victoria in 1998-99 there were only 44 people treated per 100,000 resident population (age adjusted rate), three quarters of these with a diagnosis of depression (Wood & Burgess, 2003). The treatment was more commonly used among women and older people.

- **St John's wort**

St John's wort (botanical name Hypericum perforatum L) is a flowering herb used to alleviate depression, anxiety, and sleeping difficulties. A recent Cochrane review of 37 studies investigating the effectiveness of St John's wort in treating depression concluded that there is some evidence for the usefulness of this plant (Linde, Mulrow, Berner, & Egger, 2005). The herb appeared to be more effective than placebo, and about as effective as antidepressants in treating mild to moderate depression. However, it was not found to be a useful treatment for severe depression. The authors cautioned that the content of St John's wort preparations may vary considerably from product to product, and therefore that the results only applied to those specifically tested. St John's wort was also found to interact with conventional antidepressants and therefore should not be taken concurrently with such medications.

Factors limiting treatment efficacy

Various factors have been found to make treatment, especially psychologically-based treatment, less effective. These factors included severity of the illness, delusions, lack of insight, lack of motivation to change, and inability to relate to others (Gilbert, 1992; McKenzie et al., 2004). In addition, life factors outside treatment, such as

stressful events and a low level of social resources have been related to relapse (Moos, 1991). It has also been argued that due to the lack of detail in diagnostic systems, treatments may not necessarily be that well targeted to specific subtypes of depression, and that some forms of treatment may be more appropriate than others for particular types of depression (Parker, 2004). For example, it has been said that mild depression may respond well to psychotherapeutic interventions alone, moderate to severe depression is better treated by medication in combination with psychotherapy, and that electro-convulsive therapy may be suitable for very severe depression (Norman et al., 2004)

Relapse

Depression may be regarded as a recurring condition. It has been found that among those in their first episode, more than half have a recurrent episode, for those in their second episode, the likelihood of a subsequent episode is over 80%, and from the third episode onwards, the odds of further episodes exceeds 90% (Joyce, 2004b). A review of long-term outcome studies involving mainly inpatient samples found that between 10-20% of participants continued to experience chronic depression without remission, although symptom severity fluctuated (Mulder, 2004). Of the remainder, 70-80% experienced at least one, and sometimes several, recurrences within 5 years. Over a 10-year period only about a fifth of those who had an episode of depression demonstrated sustained recovery (Mulder, 2004).[13] While this may seem a bleak outlook, it has been suggested that maintaining treatment and encouraging people to identify warning signs and to seek help early may assist in reducing the chance of recurrence, or at least, minimising the severity of subsequent episodes (Joyce, 2004b).

A Danish study that investigated relapse among people who had a psychiatric inpatient admission for depression found that the likelihood of relapse and re-hospitalization increased with the severity of the index episode of depression, such that those diagnosed with severe depression were at 1.7 times the risk of relapse than those with mild depression at the first episode (Kessing, 2004). Likewise, those with

[13] These figures were based on inpatient samples likely to have severe depression. The evidence relating to first-episode, outpatient samples suggested marginally better outcomes.

severe depression were also more likely to subsequently commit suicide (2%) than those with mild depression (0.5%).[14]

Treatment resistant depression

There are a very small number of people who show no symptom improvement in response to standard pharmacological or psychological treatments for depression, and a greater number who have only a partial or short-lived improvement. It has been reported that approximately 10% of patients treated for depression show no improvement within a year, and an additional 10-20% show only some improvement (Joyce, 2004b). In such instances it has been argued that good clinical management dictates a review of the initial diagnosis (including exclusion of other conditions that may explain the symptoms such as hyperthyroidism or diabetes), a review of the adequacy of the treatment (for example, antidepressant type or dose, or effectiveness of psychotherapy), a review of comorbid disorders such as anxiety, anorexia nervosa, and personality disorders with a view to addressing these, and finally, reassessment of the social environment of the individual, which may also hinder treatment progress (Joyce, 2004b). In cases where improvement does not occur even after review, it has been suggested that the focus of treatment be shifted from the idea of attaining symptom improvement in the short to medium-term, to teaching the individual strategies to cope with ongoing chronic depression. This could include strategies such as daily activity planning and mild exercise, though continued attempts with conventional treatments have also been recommended (Joyce, 2004b). Some cases of chronic, apparently treatment-resistant depression spontaneously remit after many years (Parker, Anderson, & Haddad, 2003).

Prevention

A recent Cochrane review examined the evidence base for psychological (skills based) and educational (information only) interventions intended to prevent depression among children and adolescents (Merry, McDowell, Hetrick, Bir, & Muller, 2004). The review considered universal and targeted interventions that aimed to reduce immediate depressive symptomatology or to prevent the onset of depression. The review found that studies done to date were problematic (e.g.

[14] The findings of this study were based on survival analysis rather than an equal follow-up period for each case. Therefore cases included in the study had observation periods ranging from 1 day to 6 years.

inadequate blinding to treatment condition, insufficient investigation of the effects of booster sessions), and that further research was required. However, the authors tentatively concluded that there was some evidence for the short-term efficacy of psychological interventions in reducing depression within a one year time frame, and that the potential of educational interventions warranted further investigation.

1.1.7 Summary

Depression is a mood disorder characterised by feelings of sadness and loss of pleasure or interest in normal activities. Other physical, cognitive, and emotional symptoms may be apparent such as changes in appetite and sleep patterns, reduced levels of energy, feelings of guilt, and difficulty concentrating. The condition makes a significant contribution to the global burden of disease: Australian data suggests that 15% of the population will suffer from depression at some point in their lives, and up to 5% at any one time. Depression commonly co-exists with other conditions, particularly anxiety and substance use. A number of risk factors for depression have been identified, including neurobiology, gender, familial characteristics, personality, SES, stress, substance use, and sexual orientation. Currently used treatments for depression include pharmacotherapies and psychological counselling. There is evidence to suggest such treatments are moderately effective, though depression may remit without treatment. Recurrence of depression is common.

1.2 Suicidality

1.2.1 Definition

As with depression, suicide and suicidal behaviour have been noted throughout recorded human history (Fremouw et al., 1990). Suicide and related behaviours have been variously defined in the literature and there does not appear to be any commonly agreed upon terminology in research or clinical practice (De Leo, Burgis, Bertolote, Kerkhof, & Bille-Brahe, 2006; Graham, Reser, Scuderi, Smith, Turley, & Zubrick, 1999; Maris, Berman, & Silverman, 2000; Nock & Kessler, 2006; O'Carroll, Berman, Maris, Moscicki, Tanney, & Silverman, 1997). At the broadest level it appears useful to distinguish between completed suicides, non-fatal suicidal behaviour, and suicidal ideation or thought. There is some difficulty in encapsulating the varying aspects of suicidal behaviour; for example, whether or not physical harm actually occurred, and how strong the intention was to die. The study of such behaviours is called suicidology, and as Maris and colleagues state;

> *"Suicidology includes not only completed suicide and non-fatal attempted suicide but also partial self-destruction, suicidal gestures and ideation, parasuicide…, deliberate self-harm, self-mutilation and a panorama of related self-destructive behaviours and attitudes." (Maris et al., 2000, p 4).*

In this thesis, the term "suicidality" will be used as a global term to encompass actively suicidal behaviour, suicidal behaviour with ambiguous intent, and suicidal thought of varying degrees of intensity.

Completed suicide

It has been proposed that there are three essential elements of completed suicide; (i) death from injury, poisoning or suffocation, (ii) self-infliction, and (iii) some degree of intent to kill oneself, although this intention may be somewhat ambivalent and changeable over time (O'Carroll, Berman, Maris, Moscicki, Tanney, & Silverman, 1996). It has been argued that it may be difficult to determine whether a death was actually a suicide; the first two elements are usually clear, but intention may be very hard to determine after the fact (Maris et al., 2000). A fourth element has also been added such that suicide can be indirect or passive (Maris et al., 2000).

Non-fatal suicidal behaviour

There are several terms for an apparent suicide attempt that does not result in death. The term *attempted suicide* is popularly applied to these circumstances. However, it is important to maintain a distinction between suicide-related behaviours where the actual intention is to die, and circumstances in which there is a notion or idea of self-killing, but no intention to actually do so (O'Carroll et al., 1997). The term *parasuicide* is also fairly widely used and has the advantage of not making any reference to the intent of the person and can therefore be employed in situations where a person denies intent or is unclear about their intentions. This term has also been favoured by some writers because it is regarded as non-pejorative (Fremouw et al., 1990; Graham et al., 1999). Another commonly used phrase is *deliberate self-harm.* Again, this does not assume that the person has a clear and unambiguous intent to kill themselves, however its limitation is that it does not distinguish instances of self-mutilation that do not involve any intent to die (Graham et al., 1999). A further suggestion is the term *non-fatal suicidal behaviour* (De Leo et al., 2006; O'Carroll et al., 1997). The latter two terms are used throughout this thesis.

Self-destructive behaviour may also be included under the general umbrella of suicidality, although there may be no intention to hurt one's self. Smoking, drug and/or alcohol use, risky sports, hazardous occupations, eating disorders, medical non-compliance, and an almost infinite range of other human activities may be regarded as potentially self-destructive. Most people would see such behaviours as a normal part of human experience and not necessarily related to suicide at all (Maris et al., 2000).

Suicidal ideation

Suicidal ideation is when a person entertains the thought of self-killing, but does not necessarily act upon those thoughts and may have little or no intention to die (O'Carroll et al., 1997). Many people in the general community experience a degree of suicidal ideation at some point in their lives (Lewinsohn, Rohde, & Seeley, 1996). However, ideation may vary in intensity and duration, and a positive relationship has been found between the frequency and intensity of ideation and suicide attempts (Lewinsohn et al., 1996; Mann, Waternaux, Haas, & Malone, 1999).

Relationship between suicidal ideation, non-fatal suicidal behaviour and completed suicide

Theorists differ as to whether the various behaviours described above lie on a continuum of suicidality, with completed suicide as the most extreme. There are some who argue for the continuum model (Lewinsohn et al., 1996), while others regard different suicidal behaviours as overlapping, but distinct (Hawton & Catalan, 1987; Maris et al., 2000).

It has been suggested that there are differences in the characteristics of those who think about suicide, those who attempt suicide, and those who actually kill themselves by suicide;

> *"There are many important differences between completed suicides and non-fatal suicide attempts. Some of these differences include the method used, the number of suicide attempts, sex, age, the site of the self-injury, interpersonal dynamics, leaving a suicide note, physical health and social isolation – just to mention a few. The psychodynamics, motivation and intent, for example, of fatal and non-fatal suicide attempts are often quite different"*. (Maris et al., 2000, p 5).

To determine the overlap in the different behaviours it is useful to consider the relationship between suicide attempts and completed suicide.

Many of the same factors are characteristic of both attempted suicide and completed suicide (see Other Risk Factors, page 54), but it is also of interest to know how well a history of suicidal behaviour predicts subsequent death by suicide. Despite the difficulty in ascertaining the rate of either behaviour it has been estimated that 10-15% of people who make a suicide attempt subsequently kill themselves (Maris et al., 2000). Therefore most people who make one or several suicide attempts eventually die from other causes, and about two-thirds of those who make a non-fatal suicide attempt never make another (Fremouw et al., 1990). Similarly, completed suicide is not necessarily characterised by a history of suicidal behaviour. In a review of the literature Lewinsohn (1996) indicated that between a third and a half of all people who completed suicide had previously made an attempt, that is, approximately 70% of cases of suicide died at the first attempt (Lewinsohn et al.,

1996; Maris et al., 2000). Intensity of ideation has been found to be predictive of attempts after one year (Lewinsohn et al., 1996).

Completed suicides are more likely to involve the person taking precautions against being discovered and therefore saved during the suicidal act, whereas non-fatal suicidal behaviour more often occurs in circumstances where discovery and intervention are likely (Fremouw et al., 1990). However, evidence has been found to suggest that people who had previously self-harmed are not only at increased risk of subsequent death by suicide compared to the general community, they are also at increased risk of premature mortality from other accidental and natural causes (i.e. non-suicide factors) (Carter, Reith, Whyte, & McPherson, 2005a; Reith, Whyte, Carter, McPherson, & Carter, 2004).

1.2.2 Prevalence/incidence

Issues in estimating prevalence/incidence

The prevalence of suicide and suicide-related behaviours may be estimated from a range of sources such as coronial reports, hospital admissions data, and population surveys. However, several factors have been implicated in the under-reporting of these behaviours including stigma associated with suicide, difficulty of determining the intent of a deceased person, and variable coding practices (Australian Institute for Suicide Research and Prevention, 2003; Hassan, 1995; Moscicki, 1995; Steenkamp & Harrison, 2000).

The Australian Bureau of Statistics (ABS) collates death data to provide overall death statistics for the nation and currently uses the International Classification of Diseases (ICD-10) as the basis for coding. It is likely that statistics produced by the ABS have somewhat underestimated the true number of deaths by suicide, as some cases were still before the Coroner at the time the relevant annual data were compiled, and may have therefore been classified as having accidental, ill-defined, or unspecified causes of death, though the subsequent coronial finding may have been one of suicide (Australian Bureau of Statistics, 2006b). Further, ABS statistics have related to the number of suicides registered in any given year, rather than those actually occurring in that year. Approximately 7% of cases each year are carried into

the following year (Australian Bureau of Statistics, 2006b; Steenkamp & Harrison, 2000).

Non-fatal suicidal behaviour is possibly even more difficult than completed suicide to accurately measure. Hospital admissions data have been plagued by the same coding issues as death data, especially if the degree of intent was not clear. Furthermore, not all people who engaged in non-fatal suicidal behaviour necessarily present for medical treatment (Baume & McTaggart, 1998; Graham et al., 1999; Hillman, Silburn, Green, & Zubrick, 2000). Population surveys which include questions on suicide-related thoughts and behaviour may offer more complete capture, but rely upon retrospective self-report which may be subject to change over time (Cantor & Neulinger, 2000).

Completed suicide

The World Health Organisation (WHO) estimated that 814,000 people died by self-inflicted injuries worldwide in 2000 and further, that suicide was one of the three leading causes of death in people aged 15-34 years (World Health Organisation, 2001).[15] Suicide has been found to account for 2.2% of all deaths worldwide (Australian Institute for Suicide Research and Prevention, 2003). At a global level, the age standardised rate of suicide was estimated to be 15.1 deaths per 100,000 (24.0 for males and 6.8 for females) (World Health Organisation, 2001). Australia was placed 31st out of 99 countries for which suicide statistics were available (World Health Organisation, 2006b). It has been cautioned that variable reporting practices worldwide limit the reliability of international comparison, and also that figures for all countries were most likely to be underestimates, though to differing degrees (Australian Institute for Suicide Research and Prevention, 2003).

The rate of suicide increased in Australia between the mid sixties and the mid nineties, and declined from the late nineties onwards (Australian Institute for Suicide Research and Prevention, 2003). The ABS reported that 1.6% of all deaths registered in Australia during 2004 were suicide,[16] accounting for 2,089 individuals (Australian

[15] Along with transport accidents and all cancers.

[16] Suicide was defined as a death "recognised as due to other than natural causes and established by a coronial inquiry that death results from a deliberate act of the deceased with the intention of taking his or her own life." (Australian Bureau of Statistics, 2006b, p. 15)

Bureau of Statistics, 2006b). Suicide was the most common cause of death by injury in Australia in 2002, accounting for 30% of all such deaths (Kreisfeld, Newson, & Harrison, 2004). Seventy-nine percent of suicide deaths were male. The age-standardised rate of suicide in 2004 was 16.8 per 100,000 for males and 4.3 per 100,000 for females (10.4 per 100,000 overall). These figures were consistent with those from 2002 (Kreisfeld et al., 2004). The proportion of all deaths attributed to suicide varied with age, with suicide accounting for more than 20% of deaths among people aged 20-34 (though the age bracket with the highest number of deaths for females was 45-49 at a rate of 7.1 deaths per 100,000) (Australian Bureau of Statistics, 2006b). Differences according to age and gender are discussed in further detail in the section regarding ‘Other risk factors’, page 54.

Non-fatal suicidal behaviour

Non-fatal suicidal behaviour may occur at a rate of up to twenty times that of fatal suicidal behaviour (Australian Institute for Suicide Research and Prevention, 2003). In the 2001-2002 financial year there were over 330,000 cases of hospitalisation for injury and poisoning in Australia, and 7% (22,530 cases) of these were intentionally self-inflicted (Berry & Harrison, 2006). More females than males were hospitalised in this period (13,618 cases compared to 8,911, or 140.3/100,000 compared to 92.3/100,000). An estimated 1% of all such hospitalisations in 1997/98 resulted in death, and these cases accounted for about 10% of all suicide deaths (Steenkamp & Harrison, 2000).

Data on hospitalisations necessarily underestimate the true rate of self-harm in the community because they only take into account those patients who are admitted. Many more people may be treated by ambulance officers, in an ED, or by a GP without being hospitalised, and a further unknown number may not seek any form of treatment. It is likely that the majority of suicide attempts receive no medical attention (De Leo et al., 2006). It has also been suggested that hospital separation data for self-poisonings may substantially underestimate true prevalence rates of suicidal behaviour, with more accurate estimates being obtained via clinical review of patient records (Rhodes, Links, Streiner, Dawe, Cass, & Janes, 2002), which may be a prohibitively time consuming exercise.

Another way of expressing data concerning the extent of non-fatal suicidal behaviour is the proportion of the population who report engaging in it. Data from the Australian National Survey of Mental Health and Wellbeing were analysed to estimate the cumulative incidence of suicide attempts within a 12-month time frame and over the lifetime (Pirkis, Burgess, & Dunt, 2000). Of the 10, 641 participants, 0.4% reported having made a suicide attempt in the last 12 months, and 3.6% within their lifetime. Females outnumbered males over both time periods (Pirkis et al., 2000). Retrospective reporting may have led to an underestimate of non-suicidal behaviour.

In a community-based survey of over three thousand 15-24 year olds in the state of Queensland, 7% reported ever having made a suicide attempt (9% of females and 4% of males). Approximately 1% of young people reported having made a plan to kill themselves within a four-week period (Donald et al., 2001). A survey conducted of Year 10 and 11 students on the Gold Coast found 6.2% had deliberately self-harmed in the previous year, again with females outnumbering males, and the preferred methods being cutting and medication overdose (De Leo & Heller, 2004). Only 10% of those who deliberately self-harmed reported seeking hospital treatment. Slightly lower rates of ever inflicting deliberate self-harm were obtained in a Victorian survey of Year 10 students (5.1% overall, 6.4% of females and 4% of males) with the main methods used being laceration, poisoning, and deliberate recklessness (Patton, Harris, Carlin, Hibbert, Coffey, Schwartz et al., 1997). However, the authors estimated that only 0.2% had ever made a “true” suicide attempt, as in most cases the student had not planned the behaviour and did not see the death as a likely consequence. In a US non-clinical sample of 1,986 military recruits, 4% reported a history of deliberate self-harm with no suicidal intent (Klonsky, Oltmanns, & Turkheimer 2003).

Suicidal ideation

In reviewing the evidence regarding the extent of suicidal ideation in non-clinical populations, Fremouw (1990) reported that between 24% and 80% of such populations have given suicide at least some consideration, although these estimates do not give any indication of the seriousness or intensity of those thoughts. A survey of the Australian population found a somewhat lower incidence, with 3.4% reporting

experiencing suicidal ideation in the last 12 months, and 16% over the course of their lifetime (Pirkis et al., 2000). Over both time frames more females than males reported suicidal ideation. Twelve percent of all respondents who reported suicidal ideation in the last 12 months acted on these thoughts by making an attempt (Pirkis et al., 2000). A third of the sample in a Queensland community-based survey of young people reported having had serious suicidal thoughts in their lifetime (Donald et al., 2001), while a South Australian study of 2,489 Year 8 students found 27% of females and 19% of males had ever experienced suicidal ideation (Allison, Roeger, Martin, & Keeves, 2001). It is not clear whether the higher rates of suicidal ideation found in the two studies involving young people (Allison et al., 2001; Donald et al., 2001) compared with the general Australian population sample (Pirkis et al., 2000) reflected true differences, or a recall bias, whereby the general population group were less inclined to report earlier experiences of suicidal ideation with the passage of time.

1.2.3 Theories of suicidality

This section presents a brief summary of some of the major explanatory models for suicidal behaviour.

Emile Durkheim was a French sociologist and one of the first people to study suicide scientifically. He compared rates of suicide in different social groups and developed a theory of suicide based on social typology (Durkheim, 1951 (1897)). His argument was that tendency to suicide was not only individually but socially determined. Durkheim proposed that there were four broad types of suicide; egoistic, altruistic, anomic and fatalistic, falling on two dimensions. Egoistic and altruistic suicides were regarded as opposite ends of the same pole and were characterised by social participation. Egoistic suicides were seen to occur in those social groups where there was an emphasis on individuality and a lack of social integration. In contrast, altruistic suicides were those which occurred in circumstances where there was a high sense of collectivism. Examples of altruistic suicide could include religious martyrs or Japanese kamikaze pilots. According to Durkheim, the second social dimension of suicide was that defined by the degree of social deregulation versus hyper-regulation, with anomic and fatalistic suicides falling on opposite ends of a spectrum. Those suicides occurring in the wake of a significant disruption to

normality, such as following a divorce or other stressful life event, were anomic. A suicide that occurred in circumstances of excessive regulation, such as imprisonment, was termed fatalistic (Durkheim, 1951 (1897); Hassan, 1995; Hassan; Maris et al., 2000).

In his interpretation of suicidal behaviour, Freud concluded that humans were subject to both life (eros) and death (thantos) wishes (Maris et al., 2000; J. Williams & Pollock, 2000). Freud argued that the act of suicide involved hostility or a death wish towards another person that the individual was unable to tolerate. Hostility was therefore seen to be redirected towards the self, that is, internalised and expressed as suicidal behaviour (Maris et al., 2000; J. Williams & Pollock, 2000).

Further developing this theme, Menninger (1938, in Maris et al., 2000) described suicide as "murder in the 180th degree". He proposed three aspects of suicide: hate, depression, and guilt. Suicide was therefore seen to have three functions; revenge (a wish to kill), depression/hopelessness (a wish to die), and guilt (a wish to be killed) (Maris et al., 2000; J. Williams & Pollock, 2000).

Beck's conceptualisation of suicidal behaviour shared the strong focus on cognition evident in his work on depression (G. Brown, Jeglic, Henriques, & Beck, 2006). According to Beck, cognitions about and interpretations of events had a large role in determining an individual's emotional and behavioural responses to those events (including suicidal responses). Beck's theory of hopelessness suggested that cognitive distortions led some people to view their current circumstances as untenable, to be pessimistic about the future, and to assume any effort they might make to change things for the better to be doomed to failure. Such thinking was seen to contribute to suicidality (G. Brown et al., 2006).

Schneidman argued that most suicides were caused by psychological pain, which he termed "psychache" (Jobes & Nelson, 2006; Maris et al., 2000; Schneidman, 1996). This pain was regarded as stemming from thwarted or distorted psychological needs, and the desire to stop the pain led to suicidal action. He identified five main clusters of psychological need which when thwarted or frustrated led to psychological pain: needs for love, acceptance and belonging, needs for achievement, autonomy, order and understanding (i.e. control), avoidance of assaulted self-image (shame, defeat,

humiliation, and disgrace), avoidance of disruptions to key relationships and grief, and needs for dominance, aggression, and counteraction.

Schneidman further identified ten elements common to all suicides: the purpose of suicide was to seek a solution, the goal was cessation of consciousness, the stimulus was unbearable psychological pain, the stressor was frustrated psychological needs, the emotion felt was hopelessness-helplessness, the cognitive state was one of ambivalence (individuals would be happy not to do it if they did not "have to"), the perceptual state was one of constriction where the individual saw a restricted range of options, the action was escape, the interpersonal act was communication of intent, and the pattern was consistency of lifelong styles (e.g. escape from problems) (Schneidman, 1996).

Similar to the “psychache” model proposed by Schneidman, was the “cry of pain” model articulated by J. Williams (2000, 1997). According to this model when a person felt both defeated by their situation (whether an external set of circumstances or an internal state), and did not believe there was any possibility of escape or rescue from that situation, a suicidal sequence may have been initiated. Suicidal behaviour was seen to be an attempt to re-establish a means of escape from the unbearable situation by way of protest. This model explicitly focused on the escape aspect of suicidal behaviour, which was seen to be elicited by the sense of entrapment. The behaviour was not seen to be primarily motivated by a desire to receive attention or help, although this may have been a secondary consequence (J. Williams & Pollock, 2000; M. Williams, 1997).

It has further been proposed that suicidal ideation commonly arises out of two wishes: to escape from the problems of life and to get revenge on others. These thoughts and feelings have been termed “transformation drives” and may be more to do with changing one’s current life circumstances than actually dying (Maris et al., 2000).

1.2.4 Means of suicide and non-fatal suicidal behaviour

Suicide (and suicide attempts) can employ a range of mechanisms, the most common of which have been found to be hanging, poisoning (including drug overdose), and firearms (Kreisfeld et al., 2004). The relative occurrence of different means has

varied across cultures and by sex. For example, firearms have been more often implicated in suicides in places where they are readily available, such as rural areas or countries with less restrictive gun-ownership regulations such as the US (Moscicki, 1995), and females have been found to be more likely to attempt suicide via drug overdose than males. Thus, an individual's choice of method varies according to their accessibility to and knowledge of the means. Naturally, the more lethal the means employed, the more likely that death is to occur, regardless of the level of intention (Cantor & Baume, 1998; Maris et al., 2000).

In considering suicidal behaviour it is important not to confuse the lethality of the means chosen with intent to die. A person may in fact have a high level of intent, but unwittingly choose a less lethal method, or vice versa. This may be particularly pertinent in relation to drug-related overdose where the individual may have insufficient knowledge to calculate a lethal dose (Fremouw et al., 1990).

Among completed suicides in Australia in 2004, the most common method was hanging, accounting for 48% of deaths. Poisoning by "other", including motor vehicle exhaust, was responsible for 19% of deaths, poisoning by drugs for 11%, and firearms 8%. All other methods including drowning and jumping accounted for the remaining 14% of suicide deaths (Australian Bureau of Statistics, 2006b). These figures are consistent with those from 2002 (Kreisfeld et al., 2004).

Alcohol and drug use can have a significant role in suicide, either as a precursor to suicidal behaviour, or as the agent. A recent investigation of completed suicides found that single substance suicides typically implicated alcohol and were more likely to involve males, younger people, and those currently employed using a violent means of death such as firearms, hanging, or jumping. In contrast, multiple substance suicides tended to involve prescription medications and were more typical of older people, females, those not currently in the workforce, and people who died as a consequence of poisoning (rather than any concurrent injury) (Oei, Foong, & Casey, 2006)

Much the same methods are used in non-fatal suicidal behaviour as in fatal, though the distribution differs greatly. During 2001-2002 in Australia, of the 22,530 cases of intentional self-harm resulting in hospitalisation, 85% were caused by self-poisoning and the majority of those cases involved females (Berry & Harrison, 2006). Eleven

percent of the hospitalisations resulted from self-harm using a sharp object, less than 2% from hanging, strangulation or suffocation and less than 1% from a firearm wound. Those three methods were all more common among males than females (Berry & Harrison, 2006). Among the self-poisoning cases, the most common substances ingested were psychotropic medications such as benzodiazepines, antidepressants, antipsychotics, and non-opioid analgesics. Other forms of self-poisoning were relatively rare with 2% of poisonings being attributed to gases and vapours (such as motor vehicle exhaust), and less than 1% involving the ingestion of pesticides (Berry & Harrison, 2006). A study in Oxford, England found a similar proportion (87%) of people presenting to hospital for deliberate self-harm had self-poisoned as in the Australian study (Townsend, Hawton, Harriss, Bale, & Bond, 2001).

1.2.5 The relationship between suicidality and mental health problems

One of the greatest risk factors for suicidal thought and behaviour is psychiatric illness. In particular, a considerable body of evidence has demonstrated that people with mood disorders are at elevated risk of attempted and completed suicide (Goldney, 2004; Hazell, 2004). This section examines the relationship between suicidality and some common mental health problems.

Completed suicide

Overall, psychiatric illnesses have been found to be present in 90-100% of suicide cases (Murphy, 2000). It has further been suggested that such problems are often insufficiently treated or unrecognised, thereby contributing to an untimely death (particularly depression in males) (Isacsson, Holmgren, Druid, & Bergman, 1999). Reviews of clinical studies of the mental health risk factors for suicide have varied somewhat in their estimates due to differences in the samples used, definitions employed, and study designs. However, it has been found that major depression, alcohol or other substance dependence, personality disorders, and schizophrenia are all over-represented among completed suicides relative to their prevalence in the general population (29-88%, 25-55%, 3-58%, and 2-12% respectively) (Appleby, 2000a; Linehan, Rizvi, Welch, & Page, 2000; Lonnqvist, 2000; Murphy, 2000). An Australian study found that people who used heroin were 14 times more likely than the general community to die by suicide (Darke & Ross, 2002).

Another way of looking at the relationship between mental health problems and suicide is to consider the proportion of people with a given psychiatric diagnosis who eventually commit suicide. Early studies involving hospitalised samples estimated that up to 15% of people with major depression eventually committed suicide. However, reviews of more recent studies involving less severely ill participants (i.e. community-based samples without comorbid conditions) produced far smaller estimates of 1-4% (Goldney, 2004; Hazell, 2004). Therefore, the vast majority of people who have depression will not commit suicide. Paradoxically, partial remission of depression has been associated with increased risk of suicide, as individuals become "well" enough to actually carry out a suicidal plan (Ferrier, 1999). It has been estimated that the lifetime risk of suicide for an individual with other psychiatric disorders is approximately 3% for alcoholism (Murphy, 2000), 7-8% for personality disorder (Linehan et al., 2000), and 10% for schizophrenia (De Hert & Peuskens, 2000). Pathological anxiety has also been linked to suicide and attempted suicide, most often as a comorbid condition, although it can act as an independent risk factor (Allgulander, 2000).

Non-fatal suicidal behaviour

Mental health problems are also more prevalent among people who have engaged in non-fatal deliberate self-harm than in the general population. Beautrias et al. (1996) found that mood disorders were the greatest contributing factor to serious suicide attempts. Among people who have attempted suicide, the estimated proportion who are depressed ranges from 35-79% (Goldney, 2004). Suicidal ideation in the absence of an actual attempt has also been related to depression, with about half of those depressed reporting suicidal thoughts (Goldney, 2004; Lonnqvist, 2000). A study of South Australian adolescents found a significant positive linear relationship between the severity of depression and ideation (Allison et al., 2001). There was a gender difference, with females being more likely to report suicidal ideation at only moderate levels of depression compared to males.

Regarding substance use, it has been reported that 10-24% of males and 4-17% of females who attend hospital for deliberate self-harm have alcohol-related problems. The comparative figures for other substances are 12% and 6% respectively (Murphy, 2000). A Norwegian study of people in treatment for drug dependence found 38%

had a history of suicide attempt, and 42% reported suicidal ideation in the previous month (Rossow & Lauritzen, 2001). It has been proposed that substance use may function as either a pre-disposing factor or precipitating factor to suicidal behaviour, and that intoxication may interfere with a person's ability to resist impulse (i.e. disinhibition) (Fremouw et al., 1990; Rossow, 2000). Alcohol use has often been associated with suicide attempts (Rossow, Romelsjo, & Leifman, 1999), with one research review estimating that alcohol was used during a suicide attempt in about a quarter of cases and with men having a higher rate of alcohol use in such circumstances than women (Hawton & Catalan, 1987). The same review suggested that about half of men and a third of women who had overdosed indicated alcohol use in the six hours preceding the event (Hawton & Catalan, 1987). Nevertheless, it has been argued that that the overall number of substances used may be more important in the prediction of suicidal behaviour than the specific substance, with poly-substance use being found to be associated with greater risk (Borges, Walters, & Kessler, 2000).

Studies of attempted suicide among people with a personality disorder have yielded estimates of 39-90% (Linehan et al., 2000). The personality disorder with which suicidal behaviour has been most commonly associated is borderline personality disorder; although this association is hardly surprising given that suicidal behaviour is one of the diagnostic criteria. People with a personality disorder were also found to be more likely to have recurrent suicidal behaviour than those without (Linehan et al., 2000).

An Australian population-based survey found that anxiety, affective, and substance use disorders were all associated with both suicidal ideation and suicide attempts within the last 12 months, and were more prevalent in those with such a history than among the general population (Pirkis et al., 2000). The National Co-morbidity Survey conducted in the United States also found elevated rates of psychiatric illness among those who had self-injured (Nock & Kessler, 2006). This study found that mental illness was even more likely among those who reported intent to die at the time of self-injury, than those without intent to die. Another US study using a non-clinical sample of military recruits found those with a history of deliberate self-harm (without suicidal intent) showed more symptoms of various personality disorders (borderline, schizotypal, dependent, and avoidant), anxiety, and depression than

recruits with no history of self-harm (Klonsky et al., 2003). This study used both self and peer-reported measures.

1.2.6 Other risk factors

It has been argued that while a psychiatric disorder is most usually a necessary condition for suicide and related behaviours, it is not a sufficient one (Mann et al., 1999). Reviews have been conducted of studies into the other risk factors for suicide and attempted suicide (Beautrais, 2000; Fremouw et al., 1990; Graham et al., 1999; Hawton & van Heeringen, 2000). A further series of articles reported on the Houston Case-Control Study of Nearly Lethal Suicide which compared 153 patients presenting at three hospital EDs with a random sample of 513 community controls (Ikeda, Kresnow, Mercy, Powell, Simon, Potter et al., 2001; Kresnow, Ikeda, Mercy, Powell, Potter, Simon et al., 2001; Mercy, Kresnow, O'Carroll, Lee, Powell, Potter et al., 2001; Potter, Kresnow, Powell, Simon, Mercy, Lee et al., 2001; Powell, Kresnow, Mercy, Potter, Swann, Frankowski et al., 2001; Simon, Swann, Powell, Potter, Kresnow, & O'Carroll, 2001; Swahn & Potter, 2001). Several common psychological, biological, and social factors emerged, many of which are strikingly similar to the ‘Risk factors’ for depression outlined in the previous chapter (page 20). As for depression, factors thought to increase vulnerability to suicidality have been given particular attention in this literature review due to their relevance to the current research aims.

The risk factors for completed suicide and other suicidal behaviour which does not result in death have been found to overlap considerably, although not completely. It has been suggested that self-harming behaviour extends from mild suicidal thoughts through to fatal action (van Heeringen, Hawton, & Williams, 2000). The characteristics described below may be regarded as risk factors for both completed suicide and non-fatal suicidal behaviour unless specifically noted otherwise.

Most people will experience some, if not many of the risk factors outlined below during the course of their life and will not become suicidal. Therefore, the presence of these risk factors does not imply that a person is or will become suicidal, however, they have consistently been observed as characteristic of people who are suicidal. It is also possible that some factors (e.g. recent losses) have increased salience in the aftermath of a suicide, because they help explain why a person killed him or herself,

and are therefore thought of as causal despite the fact that many people do not become suicidal in similar circumstances (Beautrais, 2000).

Biology

As for depression, research into the biological factors associated with suicidality is a complex and emerging area. This review will only briefly mention some of the relevant findings. Family history of suicidal behaviour has been found to be predictive of suicide attempts, particularly violent attempts (Roy, Nielsen, Rylander, & Sarchiapone, 2000). One study found almost half of a sample with a relevant family history had attempted suicide. It appeared that this association was not simply due to a shared environment (though this of course may have been a highly relevant factor), as monozygotic twins showed a significantly greater concordance for both completed and attempted suicide than dizygotic twins (Baldessarini & Hennen, 2004). Nor was the familial link thought to be due simply to the shared inheritance of psychiatric disorders associated with suicide, as the increased risk remained, even when psychiatric disorders were controlled for. Adoption studies have also indicated a genetic component to completed suicides (Roy et al., 2000). Molecular genetic research has provided further evidence for heritability of suicidal behaviour, with the function of an enzyme involved in the synthesis of serotonin being partly genetically determined (Roy et al., 2000).

The research literature has indicated that abnormalities in serotonin levels are more common in people who attempt or complete suicide than in the general population (Beautrais, 2000; Traskman-Bendz & Mann, 2000). Other neurotransmitters, including noradrenalin, dopamine, GABA, and glutamate have also been found to be abnormal in suicidal populations. As noted previously, low levels of serotonin have been established as characteristic of depression, however, in depression the consequences of serotonin dysfunction were apparent in a broad range of effects such as impaired concentration, lowered libido, and depressed mood. Among suicidal people, the serotonergic dysfunction was centred in the ventral prefrontal cortex. Serotonergic dysfunction in this area was associated with disinhibition and poor impulse control, a characteristic also noted in aggressive behaviours. It appeared likely that this was an inherited trait (Traskman-Bendz & Mann, 2000). Both human and animal studies have suggested that there is an interaction between cholesterol,

serotonin, and aggression, and that low cholesterol levels may be associated with suicide and other violent deaths. Evidence has also been found to suggest suicidal behaviours are associated with hyperactivity of the HPA axis (Traskman-Bendz & Mann, 2000).

Gender

Worldwide, males have been found to be more likely to commit suicide than females at a ratio of approximately 3.5 to 1 (World Health Organisation, 2001). The over-representation of men among completed suicides has held true through recorded history (M. Williams, 1997). In 2004 there were four times as many male suicides as female in Australia (Australian Bureau of Statistics, 2006b), consistent with the pattern over the entire twentieth century (Australian Institute of Health and Welfare, 2006). However, it has been established that females are over-represented among people who attempt suicide relative to males (Fremouw et al., 1990; Graham et al., 1999). It is likely that the observed gender difference was partly due to the preferred means, with males known to be more likely to select a highly lethal method of attempting suicide (e.g. gunshot wound) than females. A recent analysis of National Co-morbidity Survey data from the United States suggested that among those who had engaged in non-fatal self-injurious behaviour, males were more likely to report an intent to die, while females were more likely to report the behaviour was a means of communicating with others (Nock & Kessler, 2006). In a Danish study of relapse and suicide risk among patients hospitalized for depression, it was found that males were at 2.2 times the risk of subsequently committing suicide than females, although there was no difference between the genders in the severity of depression at the index episode (Kessing, 2004). There is debate as to whether the observed gender differences are inherent to each sex, or the consequence of differential socialisation of the sexes. A detailed sociological discussion of the relevance of gender to suicidal behaviour may be found in Hassan (1995).

Age

The rate of completed suicide varies across the lifespan, though the age distribution differs by gender. In Australia in 2004, suicide was most prevalent among males aged in their twenties and thirties (approximately 26 suicides per 100,000 deaths), and those aged over 75 (approximately 25 per 100,000) (Australian Bureau of

Statistics, 2006b). Among females, death by suicide was most prevalent for those aged 45-54 (6.4 per 100,000). There was less variation across the life span for females than for males, with the lowest rate being 3.9 per 100,000 for females aged 55-64 (Australian Bureau of Statistics, 2006b). Suicidal ideation in the last 12 months has been found to be more common among those aged less than 45 years than those who are older (Pirkis et al., 2000).

In recent years there has been growing concern about the increasing rate of youth suicide (particularly male), with a trebling of the rate among 15-24 year olds from 1964 to 1997, although this trend has since declined (Australian Institute for Suicide Research and Prevention, 2003; Australian Institute of Health and Welfare, 2006). Prior to 1964 suicide was more commonly regarded as a problem in older age groups (Hassan, 1995).

It seems likely that the changing trends in suicide rates seen in Australia may not be due to particular age-groups (e.g. 25-29 year olds) having an increased risk. Rather, it has been argued that particular birth cohorts (i.e. people born within certain five-year periods) appear to be at elevated risk and the increased suicide rate persists as the cohort ages (Steenkamp & Harrison, 2000). It has been suggested that increased unemployment, especially among young males, has contributed to increased suicide statistics (Hassan, 1995). This finding was consistent with the cohort hypothesis of suicide risk, as the consequences of prolonged unemployment (e.g. damage to self-esteem, lack of job and financial security) may persist for several years, even after improvement in the overall economic climate. Interestingly, given the concerns regarding youth suicide, the 15-24 age group had the lowest death rate for males in 2004 (13.8 per 100,000).

Family factors

Both the family of origin and current relationship status have been associated with the risk of attempted and completed suicide. In terms of the family of origin, parental separation or divorce, marital discord, poor parent-child relationships, parental psychopathology, exposure to physical and/or sexual abuse, and family history of suicide have been noted to correlate with risk (Beautrais, 2000; Fergusson, Woodward, & Horwood, 2000; Rossow & Lauritzen, 2001). The elevated rate of subsequent suicide found among relatives of people who have committed suicide

compared to the general population has been attributed to both shared genetics and also the modelling of suicidal behaviour (Fremouw et al., 1990).

With regard to current family circumstances, marital status has been demonstrated to be relevant, with those recently separated from their partner found to be at highest risk, followed by those who are divorced, widowed, or single (Fremouw et al., 1990). Marriage has been shown to have a protective effect for men, though not necessarily so for women, while having responsibility for children was found to have a protective effect for women to a greater degree than for men (Graham et al., 1999; Maris et al., 2000). At a population level, suicidal ideation and suicide attempts have been reported to be more common among people who were not currently married or in a de facto relationship than among those who were (Pirkis et al., 2000).

Cultural background

Indigenous populations have been found to be at greater risk of suicide and suicidal behaviour in Canada, USA, and Australia than non-Indigenous populations (Australian Bureau of Statistics, 2006b; Graham et al., 1999). Estimates of suicide rates among Indigenous Australians are even more inexact than among the population as a whole due to a number of issues relating to both ascertaining cause of death and identification of Indigenous status. However, from 1988-98 the rate of Indigenous suicide was found to be much higher than for non-Indigenous Australians, and was very much more prevalent in the younger age groups (Steenkamp & Harrison, 2000).

It has been noted in the United States that White-Americans have higher rates of suicide than Afro-Americans and Hispanic-Americans (Fremouw et al., 1990). Evidence has also been found to suggest that suicide may be greater among migrant communities, possibly due to the social upheaval associated with migration (Hassan, 1995). Studies reviewed by Hassan (1995) reported newly migrated populations had higher rates of suicide than the general population in both their country of origin and their new home.

Personality, cognition, and hopelessness

Studies examining the link between suicide and certain personality traits (for example, low self-esteem, impulsivity, and aggression) have to date provided

equivocal evidence for personality factors predisposing an individual towards suicide (Beautrais, 2000). Of all the personality variables studied, impulsivity has shown the strongest association with suicidal behaviour (J. Williams & Pollock, 2000). A U.S. case-control study of 153 nearly lethal suicide attempts found 24% of attempts were made with less than five minutes elapsing between the decision and the event, and that those making impulsive attempts were more likely to have a history of other impulsive behaviour and had lower levels of depression than non-impulsive attempters (Simon et al., 2001). Clinical wisdom points to the relevance of other personal characteristics in the development and maintenance of suicidal behaviour; with long-standing adjustment problems being frequently noted (Fremouw et al., 1990). Neuroticism and novelty seeking have also been associated with suicidal behaviours in adolescents (Fergusson et al., 2000).

The relationship between personality factors such as impulsivity and suicidal behaviour is thought to be mediated by maladaptive cognitive styles, such as dichotomous thinking, cognitive rigidity, poor problem solving skills, and irrational beliefs (Fremouw et al., 1990; J. Williams & Pollock, 2000). Specifically, it has been demonstrated that people with a history of suicidality differ in how they approach problem solving by being less confident, active, and systematic than control groups (Fremouw et al., 1990; J. Williams & Pollock, 2000).

A sense of hopelessness or pessimism about the future has been recognised as a risk factor for suicidal behaviour (Hawton & Catalan, 1987). Previous research found that suicidal individuals showed a lack of positive expectancies and saw no hope of change in the future. Even when possible solutions were offered, a suicidal person was more likely to focus on the potential problems and negative consequences of implementing the solution (Fremouw et al., 1990; J. Williams & Pollock, 2000). An English study of 150 patients admitted to hospital for self-harm reported that two-thirds identified at least one problem which they perceived as unable to be solved (most usually a relationship or financial problem) (Milnes, Owens, & Blenkiron, 2002). Reporting unsolvable problems was found to be correlated with both hopelessness and severity of suicidal intent.

As noted in the section concerning mental health problems above, suicidality has been found to be more common in people with a personality disorder, and suicidal

behaviour is one of the DSM-IV diagnostic criteria for borderline personality disorder (American Psychiatric Association, 2000; Lester, 2005b; Linehan et al., 2000). Other features of the disorder include poor emotional control, fear of abandonment, interpersonal problems, unstable self-image, and impulsivity.

Socio-economic status (SES)

It has been noted that being socially disadvantaged increases the risk of suicidality (Beautrais, 2000; Fergusson et al., 2000; M. Williams, 1997), as does loss of social status (Fremouw et al., 1990). Data from the Australian National Survey of Mental Health and Wellbeing revealed a linear relationship with those with the lowest level of education and current employment status at greatest risk of a suicide attempt, and those with the highest status at least risk (R. Taylor et al., 2004). A separate analysis of the same dataset found that among people who experienced suicidal ideation, being unemployed was a significant risk factor for progressing to attempted suicide within a 12-month period (which could also be considered an adverse life event as discussed below) (Pirkis et al., 2000). Evidence which linked fluctuations in the Australian suicide rates with economic cycles provided further support for a relationship between suicide and SES. That is, the suicide rate has been demonstrated to increase at times of economic downturn and high unemployment, especially among males (Hassan, 1995).

Psychosocial stress

Adverse life events such as loss of a partner (whether through separation or death), unemployment, legal issues, and incarceration have been associated with elevated risk of suicide (Beautrais, 2000; Hawton & Catalan, 1987). Loneliness and lack of social support have also been identified as a risk factor for suicidality (Hassan, 1995), as has the loss of physical function through illness or injury (Fremouw et al., 1990). Having moved residence within the last 12 months has been associated with increased risk for a suicide attempt (Potter et al., 2001). In particular, greater frequency of moving, a recent move, moving a greater distance, and having difficulty staying in touch with friends and family following a move have all been associated with higher risk.

The association seen between life events and suicide may partly be due to the fact that in the aftermath of a suicide or suicide attempt people look for factors which

help explain the behaviour, even though many other people experience similar events without becoming suicidal. Life events on their own are unlikely to precipitate suicidal thought and behaviour. It is probable that it is the interaction between the stress level associated with a negative event and poor coping abilities that crystallize into a sense of hopelessness about changing the situation that then leads to suicidality (Fremouw et al., 1990). Even among people with severe mental illness, the occurrence of crises and suicidal ideation may be independent, with it being suggested that impulsivity, agitation, and hopelessness pose a greater suicide risk than a crisis event (Links, Eynan, Ball, Barr, & Rourke, 2005).

Sexual orientation

Sexual orientation is another factor of interest, with evidence of elevated risk of suicidal ideation and suicide attempts found among gay, lesbian, and bisexual youth (Beautrais, 2000; van Heeringen & Vinke, 2000). However, this was not been found to be the case for completed suicide (Beautrais, 2000). It is not clear why sexual orientation appeared to be associated with non-fatal suicidal behaviour, but not with fatal suicidal behaviour.

A study which compared homosexual and bisexual young people with heterosexual young people found that homosexual or bisexual orientation was associated with a twofold increase in suicidal ideation, and four times the risk of a suicide attempt (van Heeringen & Vinke, 2000). Independently of sexual orientation (i.e. across the entire sample), depression was a risk factor for suicidal ideation, while low self-esteem, hopelessness, and previous suicidal behaviour in a person close to the individual were all risk factors for suicidal behaviour. An attempt was made to identify the mechanism by which homosexual and bisexual young people were at greater risk of suicidal behaviour. The most significant risk factors for homosexual and bisexual people were suicidal behaviour in someone close, unsatisfactory homosexual friendships, and being female. In contrast, the greatest risk factors for suicidal behaviour in the heterosexual group were suicidal behaviour in someone close, and hopelessness (van Heeringen & Vinke, 2000).

Physical illness

Physical illness has been demonstrated to be associated with an increased risk of both completed and attempted suicide (Stenager & Stenager, 2000; M. Williams,

1997). In particular, cancer and neurological disorders (multiple sclerosis, stroke, spinal cord lesions, and epilepsy) have been associated with elevated risk. It has been suggested that chronic severe pain may contribute to suicidality, though further research is needed (Stenager & Stenager, 2000). Survivors of nearly lethal suicide attempts (especially males) are more likely to have a serious medical condition than community controls, with the degree of risk increasing with the number of conditions reported (Ikeda et al., 2001). Chronic illness has been shown to precipitate or exacerbate depression, indirectly increasing the risk of suicide (M. Williams, 1997). Experiencing suicidal ideation within the last 12 months has also been associated with having a disability (Pirkis et al., 2000).

Previous attempts

A previous attempt is known to be a strong predictive factor for suicide (Rossow et al., 1999), and it has been estimated that between one and two-thirds of people who kill themselves have in fact made a previous attempt (Fremouw et al., 1990; Lewinsohn et al., 1996; Maris et al., 2000; Sakinofsky, 2000; van Heeringen & Vinke, 2000). While repeated suicide attempts have been found to increase the likelihood of a successful suicide occurring, the person may still have had a relatively low level of intent to die. Other reasons identified for repeating the behaviour have included the person feeling unable to cope, being overwhelmed by their own negative emotions, or hoping to secure the care and/or attention of hospital staff (Hawton & Catalan, 1987).

Both retrospective and prospective studies in various countries have investigated the rate of attempted and completed suicide following an incident of deliberate harm (Beautrais, 2003; Cooper, Kapur, Webb, Lawlor, Guthrie, Mackway-Jones et al., 2005; Crandall, Fullerton-Gleason, Aguero, & LaValley, 2006; Hawton, Zahl, & Weatherall, 2003; Owens, Horrocks, & House, 2002; Sakinofsky, 2000; Salter & Pielage, 2000). A systematic review of 90 observational and experimental studies found 14% of self-harm patients had a subsequent non-fatal occurrence of the behaviour within 12 months (Owens et al., 2002). Estimated rates of fatal repetition have ranged from 0.5% to 3.0% within 12 months (Cooper et al., 2005; Hawton et al., 2003; Owens et al., 2002; Sakinofsky, 2000), and increased over time with 1.7% to 9% of deaths within 5 years being attributed to suicide or probable suicide

(Beautrais, 2003; Harriss, Hawton, & Zahl, 2005; Hawton et al., 2003; Sakinofsky, 2000). The rate of death by suicide has been found to be significantly higher among patients who have previously sought hospital treatment for deliberate self-harm (Hawton et al., 2003) or for suicide-related complaints (i.e. self-harm, suicidal ideation, or overdose) (Crandall et al., 2006) than among the general population or other hospital patients. One study found the risk of completed suicide to be greatest within the first six months following attendance at hospital for deliberate self-harm (Cooper et al., 2005).

It is generally agreed that it is very difficult to predict which individuals with a history of suicidality will eventually commit suicide. A review of studies considering risk factors for repeated suicidal behaviour (both fatal and non-fatal) concluded that the research evidence indicates a large number of potential predictors, many of which are the same as for suicidal behaviour in general (Sakinofsky, 2000). One 20-year longitudinal study found males were at greater risk of completing suicide at a subsequent attempt than females, as were older people compared to younger (Hawton et al., 2003). The higher the level of suicidal intent associated with an incident of self-harm (i.e. self-injury or self-poisoning), the greater the risk of subsequent suicide (Harriss et al., 2005). A recent English study found avoiding discovery at the time of the index episode of self-harm, not living with a close relative, and alcohol misuse were all predictive of subsequent fatality by suicide (Cooper et al., 2005). It has also been suggested that those who make an almost lethal suicide attempt are at particular risk for subsequently completing suicide (Beautrais, 2003). An interesting finding of the five-year follow-up study by Beautrais (2003) was that while most of the index suicide attempts were by poisoning or overdoses (79%), only 7.4% of subsequent suicide fatalities used this method, with all other suicide deaths occurring by motor vehicle exhaust or hanging. This finding suggested that people may shift to more lethal means if earlier attempts are unsuccessful.

Help-seeking more generally may be an indicator of risk. In a retrospective study of Tasmanian suicides it was found that 29% had attended an ED in the year prior to death, 10% within the last month (Salter & Pielage, 2000). Most, but not all, attended for psychiatric or alcohol and drug related problems, with multiple attendances a particular risk indicator.

Environmental factors

The context in which an individual lives may also contribute to suicide risk. Clusters of suicide have sometimes occurred in a particular time and place, and increased suicide rates have been noted after media coverage (Beautrais, 2000).[17] Access to means of suicide such as firearms and sedatives has also been shown to elevate risk (Beautrais, 2000). Higher rates of completed suicide have been found in rural compared to urban areas of Australia, Great Britain, and North America (Australian Bureau of Statistics, 2006b; M. Williams, 1997).

Intoxication

Intoxication on alcohol and other substances increases the risk of both attempted and completed suicide (Dhossche, 2003; Hawton & Catalan, 1987; Powell et al., 2001; Rossow et al., 1999). A study comparing people attending hospital for a nearly-fatal suicide attempt with community controls found that being alcoholic, and consuming alcohol within the previous three hours were risk factors, even after controlling for depression (Powell et al., 2001).

1.2.7 Treatment of suicidal behaviour

Outlined in this section are the possible treatment interventions for people at risk of suicide or deliberate self-harm, or at risk of repeating such behaviour. The management of deliberate self-harm cases when attending hospital is then discussed, followed by information pertaining to the prevention of suicide.

Types of treatment

The efficacy of different treatments for people at risk of inflicting or repeating deliberate self-harm was the focus of a Cochrane review (Hawton, Townsend, Arensman, Gunnell, Hazell, House et al., 1999). Twenty-three randomised controlled trials were included using repetition of deliberate self-harm as the outcome variable. Most (but not all) of the studies involved some form of pharmacological or psychological treatment, and used standard care or placebo as the control condition.

[17] In contrast, a U.S. case-control study of nearly lethal suicide attempts found that exposure to the suicidal behaviour of a family member did not increase the risk, and that exposure to suicidal behaviour of friends and acquaintances actually exerted a marginally protective effect (Mercy et al., 2001). The authors suggested that further research was necessary to identify explanatory factors for this difference.

The authors concluded that further research using larger samples is required before definitive conclusions can be drawn. The most promising results of the review and other studies are outlined below.

Pharmacological treatments

The link between psychiatric illness and suicidal behaviour is well established. It therefore seems intuitive that effective treatment of the underlying psychiatric condition should also lead to a decrease in suicidal risk. A number of clinical and epidemiological studies have been conducted to investigate the impact of various psychotropic medications on the recurrence of deliberate self-harm. Evidence for the efficacy of pharmacological treatments, such as some atypical antipsychotic medications, antidepressants, and mood stabilisers, is promising though still equivocal (Hawton et al., 1999; Verkes & Cowen, 2000). It is possible that some of the improvement noted in the latter review was simply due to the care associated with being in treatment, but the differential effects of medications suggested that there were also real pharmacological effects (Verkes & Cowen, 2000). Despite the potential of pharmacological treatments, the review by Verkes and Cowen (2000) concluded that benzodiazepines appeared to be associated with increased suicidal behaviour in some patients and therefore should only be prescribed with extreme caution. Evidence has also emerged to suggest that some classes of antidepressant medication may be associated with increased suicidal risk (Verkes & Cowen, 2000).

Ecological studies conducted in Australia and overseas examining the relationship between antidepressant prescribing and suicide rates at a population level have suggested that such medications may have a positive effect in reducing suicide (Hall, Mant, Mitchell, Rendle, Hickie, & McManus, 2003). In Australia between 1991 and 2000 a decline in suicide mortality was noted in those groups with the greatest exposure to antidepressant medication (i.e. older adults). The change could not be explained by other variables, such as alcohol consumption, unemployment rates, or means of suicide. The authors concluded that the change was most likely due to increased prescription of antidepressants over the study period. The causal mechanism was probably either through the direct physiological effects of medication, or through the improved experience of assessment and care received. The authors also suggested that the availability of newer medications with fewer side

effects (i.e. SSRIs) may have increased the willingness of both doctors to prescribe medications, and patients to take them (Hall et al., 2003).

Psychological treatment

As defined in one review, a psychotherapeutic approach to suicidality could be "any psychosocial intervention that involves repeated face-to-face contact with a mental health professional" (Heard, 2000, p. 504). However, that review found surprisingly few interventions have been the subject of randomised controlled trials, with only cognitive-behavioural therapies (including problem solving), and outreach/intensive therapies being scrutinised by such research. Few significant results were observed, though this may be due to methodological problems such as small sample size. The best evidence to date is for highly structured problem solving in combination with enhanced treatment (such as increased intensity by offering more sessions or an outreach component). Larger, multi-site studies that include high-risk participants may yield more conclusive results (Heard, 2000). Other related therapies which examine the links between cognitions and suicidal behaviour include Rational Emotive Behaviour Therapy (REBT) (A. Ellis & Ellis, 2006) and Dialectical Behaviour Therapy (DBT) (M. Brown, 2006).

A Cochrane review also found limited evidence for the efficacy of psychotherapeutic approaches to deliberate self-harm (Hawton et al., 1999). Therapies with the best available evidence included problem solving, provision of an emergency contact card, and long-term psychological therapy (though the latter only applied to female patients with borderline personality disorder and a history of repeated self-harm). This review also concluded that larger studies may produce more promising results.

Behavioural contracting has sometimes been used with suicidal clients as a component of therapy; although evidence as to the efficacy of "no-suicide" contracts has been inconclusive. It has been argued that such agreements may be more useful if they contain contingency plans, such as for the person to contact emergency support if having a strongly suicidal impulse (Kalafat & Underwood, 2005; Range, 2005).

Further discussion of psychotherapeutic strategies used in cases of suicidality may be found in Lester (2005a) and Reinecke & Didie (2005).

Treatment integration

Pharmacological and psychological interventions are of course not mutually exclusive, and it may be that the most effective treatment response combines both approaches. Bertolote et al. (2003) contended that suicide is a complex problem, often involving co-morbidity, and a range of other psychosocial and environmental variables. The authors therefore concluded that the most effective treatment and prevention efforts were likely to be multidimensional.

It has been argued that inadequate identification and treatment of psychiatric disorders such as depression can contribute to an untimely death by suicide (Lonnqvist, 2000). Further, evidence has been found for a positive association between the severity of an initial depressive episode and subsequent suicide (Kessing, 2004). Co-morbidity has been shown to further increase the risk of suicidality compared to a single diagnosis (Goldney, 2004). The rate of co-morbidity between depression and substance use has been demonstrated to be particularly high among completed and attempted suicides, with about two thirds of alcohol-dependent people who committed suicide also being depressed (Murphy, 2000). It has been recommended that since depression treatment has a greater success rate than substance use treatment, depression should be the main focus of any intervention offered to those at risk of suicide, although substance use treatment may also be useful (Murphy, 2000).

Hospital care for non-fatal suicidal behaviour

It has been argued that as hospitalisation is a frequent outcome of non-fatal suicidal behaviour, the quality of care received may be an important element in preventing the recurrence of such behaviour (Hawton, 2000). That author further contended that elements of such care should include: emergency care, medical care, psychiatric care, and risk assessment. Ideally, initial emergency care would include not only an assessment of the immediate medical needs of the patient, but also a brief psychiatric assessment to determine whether the person was still actively suicidal or experiencing some severe psychiatric disturbance. Any possible complications of the attempt may be addressed during ongoing medical care (also see Medical response to overdose, page 83). A full psychiatric assessment may be conducted once the person is able to participate, for example, once any intoxicating effects of an overdose have

worn off. According to Hawton and van Heeringen (2000) a thorough risk assessment would include the lead up to the act, the act itself, motives, suicidal intent, ongoing risk (though prediction of this may be imprecise), and available coping resources and supports. It has been suggested that the process of assessment can be a therapeutic experience for the patient (Hawton, 2000). Some patients may refuse medical or psychiatric treatment, although if they are in a life-threatening situation it is likely that their wishes in this regard will be over-ruled and treatment instigated.

As identified above, psychosocial or psychiatric assessment is an important element of ED care. An English matched pairs study of patients attending the Oxford General Hospital for deliberate self-harm found that those not given such an assessment were more likely to have presented between 5 p.m. and 9 a.m. (i.e. outside day time hours), to have had a previous history of such harm, and to engage in “difficult” behaviour while in the department than those who were assessed (Hickey, Hawton, Fagg, & Weitzel, 2001). Almost 38% of the non-assessed group had a further episode of self-harm during the following year, compared to 18% of those who had been assessed. While these outcomes may have been due partly to existing group differences, it was also suggested that providing a risk assessment may help reduce repeated self-harm.

Hawton and van Heeringen (2000) argued that hospital care for non-fatal suicidal behaviour should ideally be followed by some form of aftercare. This could include psychiatric inpatient admission, or outpatient or community-based care. The rate of participation in outpatient aftercare may be increased if the same clinician is involved as during the hospital based treatment. Home-based treatment has also been demonstrated to improve participation rates in aftercare (Hawton, 2000). Provision of a card with emergency access to clinicians via telephone showed some promise in reducing repeat attempts, although the intervention appeared to be more effective for patients attending hospital for the first time than for those with a history of deliberate self-harm (Evans, Morgan, Hayward, & Gunnell, 1999). An English study involving enhanced GP follow-up after an episode of deliberate self-harm also had equivocal results, however, in contrast with Evans et al. (1999), those with a history of repeated self-harm showed an improvement after the intervention, while those engaging in self-harm for the first time apparently reacted adversely, with a greater incidence of

repeat attempts in the subsequent 12-month period (Bennewith, Stocks, Gunnell, Peters, Evans, & Sharp, 2002). The reasons for these apparently contradictory results between studies were not clear.

Brown et al. (2005) conducted a randomised controlled trial with 120 adults who had recently attended an ED following a suicide attempt. Participants were allocated to either ten sessions of cognitive therapy or enhanced usual care and the rates of repetition of attempted suicide in each group compared over 18 months. While both groups continued to report suicidal ideation, that rate of repeated attempted suicide, self-reported depression, and hopelessness were all significantly lower in the intervention group (G. Brown et al., 2005).

Research has been conducted in emergency care settings to test the utility of brief interventions for patients attending with problematic alcohol and/or other drug use; involving elements such as information provision (written and verbal), motivational interviewing, brief counselling while in the ED, and referral to external services (Blow, Barry, Walton, Maio, Chermack, Bingham et al., 2006; Crawford, Patton, Touquet, Drummond, Byford, Barrett et al., 2004; Helmkamp, Hungerford, Williams, Manley, Furbee, Horn et al., 2003). Such brief interventions generally aimed to reduce the rate of re-attendance to the ED, decrease the level of substance use, and/or encourage attendance at some other support or counselling service. The rationale usually given for offering a brief intervention in the emergency care setting is that a person may be more accepting of such assistance when faced with a crisis caused by their alcohol and/or other drug use (Cherpitel, 2006). While some success has been noted for the studies relating to substance use cited above, there have been few similar brief interventions delivered wholly within the ED trialled for patients attending following self-harm. It would be of interest to consider whether this type of intervention could be a feasible model for cases of non-fatal suicidal behaviour and/or medication overdose (with or without suicidal intent).

Perceived needs for care

Analysis of data from the Australian National Survey of Mental Health and Wellbeing was conducted to determine the perceived treatment needs of people reporting suicidal ideation or a suicide attempt (Pirkis, Burgess, Meadows, & Dunt, 2001). The analysis included those who had experienced suicidality within the

preceding 12 months and who had used treatment services. The most commonly reported needs were for counselling, medication, and information. Fewer people reported the need for skills training or social interventions. Less than half the sample reported that their perceived needs for care had been adequately met (Pirkis et al., 2001). A qualitative study of family and close friends of people who had committed suicide also identified a need for more well-coordinated information and education, as well as proactive management of suicidal individuals (for example, follow-up after a suicide attempt) (Nirui & Chenoweth, 1999).

Prevention

It has been suggested that it is unlikely that there will ever be a randomised-controlled trial that conclusively demonstrates the efficacy of a suicide prevention program (Goldney, 2000). This is because completed suicide is a behaviour with a very low base rate, and assessment of risk factors yields a high false positive rate, making it very difficult to accurately predict who will eventually die by suicide, even amongst those identified as at-risk (Goldney, 2000). Nonetheless, prevention strategies have been introduced at the general population level, in primary care, and in psychiatric settings.

Suicide prevention programs have been wide ranging, including initiatives to improve suicide awareness among professionals and the public, screening to identify those at-risk, treatment of underlying psychiatric conditions, restricting access to highly lethal means of suicide such as firearms, and by taking care in the portrayal of suicide in the mass media. The most promising of these appear to have been education programs for doctors and restricting access to highly lethal means of suicide, with the effectiveness of other preventative measures requiring further research (Mann, Apter, Bertolote, Beautrais, Currier, Haas et al., 2005). It has also been suggested that unemployment and substance use (particularly alcohol) could usefully be the target of suicide prevention strategies at a population level (Australian Institute for Suicide Research and Prevention, 2003; Pirkis et al., 2000; R. Taylor et al., 2004). In-depth discussion of suicide prevention strategies is beyond the scope of this literature review, however, further information may be found in the following works; (Appleby, 2000b; Cantor & Baume, 1999; Dhossche, 2003;

Diekstra, Gulbinat, Kienhorst, & de Leo, 1995; R. Jenkins & Singh, 2000; Mann et al., 2005; Michel, 2000; Schmidtke & Schaller, 2000).

1.2.8 Summary

Suicidality is a term which can be used to cover a broad spectrum of thoughts and behaviour from the most fleeting of thoughts of self-destruction through to completed suicide. It is difficult to estimate accurately the prevalence of suicidal thought, behaviour, and completed suicide, due to a number of issues including the definition used, the population under study, and sensitivity around identification. Nonetheless, it has been estimated that almost 2% of deaths in Australia are due to suicide (rising to 20% in younger age groups). Almost 4% of the Australian population acknowledge having made a suicide attempt in their lifetime, and 16% report suicidal ideation. Risk factors for suicidality include psychiatric problems, substance intoxication and misuse, genetics, neurobiological dysfunction, gender (with males at increased risk of completed suicide, and females at increased risk of non-fatal suicidal behaviour), family background, social circumstances, personality, and stress. Previous suicidal behaviour is a strong predictor of ongoing suicidality. Treatments, both pharmacological and psychological, often focus on underlying mental illness. The effectiveness of such treatments and other preventative measures require further research. Medication overdose is a common means of both completed and attempted suicide.

1.3 Pharmaceutical medications and overdose risk

1.3.1 Definition

Given that medication related overdoses account for one in ten suicide deaths and almost nine out of ten suicide attempts, it is worth examining such overdoses more closely. Hawton and Catalan (1987) provide the following definition of overdose:

> *"…the deliberate ingestion of more than the prescribed amount of medical substances, or ingestion of substances never intended for human consumption, irrespective of whether harm was intended" (page 5).*

The above definition does not consider the physiological effect of the overdose event on the individual which may range from negligible to severe, a convention which has also been adopted in this thesis. Further information as to the specific definition adopted for the current study is contained in the Method section (Medication misuse or overdose, page 110).

1.3.2 Prevalence/incidence

Fatal medication overdose

Due to the way in which mortality statistics are recorded in Australia, it is difficult to determine exactly how many deaths are due to medication overdose, and of these, how many are intentional. There were over 1,800 deaths due to poisoning in 2002, although this included both poisoning by drugs, and by other substances such as gases (Kreisfeld et al., 2004). Even among deaths known to be caused by drugs, both licit and illicit drugs were included in the figures reported, making it impossible to distinguish exactly how many were due to medications.

Data from the Victorian Coroner's Facilitation Database (VCFD)[18] concerning poisoning deaths between 1989 and 1995 revealed that on average each year there were 15 deaths in the state of Victoria involving benzodiazepines, 6.5 from antidepressants, 5.8 from methadone, 2.0 from antipsychotics, 1.8 from codeine, and 1.3 from paracetamol (Routley, Ashby, & Lough, 1999). From the information

[18] The prevalence information contained in this section focuses on the state of Victoria, as this is where the current research was conducted.

provided it was not clear to what extent these deaths involved co-ingestion of more than one medication, or use in combination with alcohol or illicit drugs. However, it was highly likely that most of the benzodiazepine deaths recorded involved the concurrent ingestion of other central nervous system (CNS) depressants (Routley et al., 1999). The VCFD has since been superseded by the National Coroner's Information System (NCIS).[19]

Non-fatal medication overdose

Presentations to Victorian hospital EDs for poisoning are captured by the Victorian Emergency Minimum Dataset (VEMD) (Routley et al., 1999). The dataset includes poisoning by drugs, alcohol, medicinal, and biological substances.[20] In the period 1996-1998 there were over 18,000 presentations for poisoning by adults across the state, accounting for almost 5% of all injury cases. Just over half of the total poisonings reported were for medications; primarily benzodiazepines, paracetamol, antidepressants, and antipsychotics (Routley et al., 1999).

Ambulance attendances at drug-related cases in the Melbourne Metropolitan area have been routinely monitored by Turning Point Alcohol & Drug Centre, Inc. since 1998 (Cvetkovski, Dietze, & McElwee, 2002). That database revealed that prescription and OTC medications accounted for a large proportion of drug-related cases attended by ambulance in Melbourne between June 1998 and April 2001. For example, of nearly 40,000 drug-related cases attended across Melbourne, benzodiazepines were implicated in 22% of attendances, antidepressants in 9%, and analgesics in 8% of cases. Antipsychotic drugs were involved in about 4% of attendances.

1.3.3 Medications involved in overdose

As can be seen from the prevalence data above, certain classes of medication (i.e. benzodiazepines, antidepressants, and analgesics) have been found to be the most

[19] The National Coroners Information System http://www.ncis.org.au/index.htm attempted to improve the reporting of drug involvement in deaths. However, the Drug Module project stalled due to lack of funding.

[20] The authors caution that VEMD information contains some bias and inaccuracies, as a number of small hospitals were not included, and there were variable reporting practices between hospitals (Routley et al., 1999). However, it still provides a general picture of non-fatal medication overdose presentations to Victorian hospital EDs.

prevalent in studies of fatal and non-fatal overdose in Australia and elsewhere, though the order varies somewhat with location, availability, age and previous history (Baca-Garcia, Diaz-Sastre, Saiz-Ruiz, & de Leon, 2002; N. Buckley, Whyte, Dawson, McManus, & Ferguson, 1995b; Neeleman & Wessely, 1997; Schwarz, Ruder, Krappweis, Israel, & Kirch, 2004; Townsend et al., 2001). Despite their role in overdose, Baca-Garcia et al. (2002) concluded that the risk posed from an overdose on benzodiazepines, newer antidepressants, or antipsychotics was relatively low, particularly when compared to the suicide risk associated with under-treated mental illness, and that prescribers should be wary of withholding a potentially effective psychiatric medication due to fear of overdose.

This research aimed to investigate in detail the medications consumed in overdose as well as the reasons for and mechanism by which they were acquired (see Research Questions, page 103). Therefore a brief explanation of the purpose of benzodiazepine, antidepressant and analgesic medications will be provided here, along with information about the risks and prevalence of use.

Benzodiazepines

Purpose

Benzodiazepines, otherwise known as minor tranquilisers, act as a central nervous system depressant and are intended to be used for the short-term relief of anxiety and insomnia. Other purposes for which they may be used include muscle relaxation, as an anti-convulsant during alcohol withdrawal, for sedation during minor surgery, and in combination with general anaesthetics. Benzodiazepines are available on prescription (although there is also a black market trade) and come in a variety of preparations of varying strengths in both tablet and capsule form. They may have a short, medium, or long term duration of action, and their selection will depend on the desired effect (e.g. to alleviate anxiety or overcome insomnia). This class of drugs is intended for oral use, although some people do inject them (Ashton, 1994; Australian Drug Foundation, 2002; Mant & Wash, 1997; Muhleisen, 2001; National Health and Medical Research Council, 1991).

Misuse, side effects, and overdose risk

While there are clear guidelines concerning the appropriate prescription of benzodiazepines (National Health and Medical Research Council, 1991; Royal Australian College of General Practitioners, 2000), it is clear that prescription for other purposes is commonplace (for example, prescription for grief, anger management, and depression) as is prescription over excessively long periods of time (Redman, 2002; Vorma, Naukkarinen, Sarna, & Kuoppasalmi, 2002). The National Health and Medical Research Council (NH&MRC) (1991) guidelines recommend that prescription be for no longer than 2-4 weeks due to declining effectiveness after this time and the risk of dependence, however, many people continue to use these medications over a period of months or even years.

Furthermore, regardless of the medical condition for which the medications may have been prescribed, benzodiazepines are frequently used without medical supervision for a whole range of other reasons. For example, people may use benzodiazepines to become intoxicated, to increase the effects of heroin or other drugs, as a substitute for heroin or other drugs, to alleviate the symptoms of heroin withdrawal, or when coming down from recreational drugs such as amphetamine-type stimulants and ecstasy (Australian Drug Foundation, 2002).

Benzodiazepines are regarded as safer in overdose situations than many earlier sedative medications and tricyclic antidepressants, however, they are not without side effects. The potential for overdose to occur is heightened when used in conjunction with other CNS depressants including heroin and alcohol (Mant & Wash, 1997). Some types of benzodiazepine have been shown to be more toxic in overdose than others, for example, an Australian study demonstrated temazepam to be more sedating than oxazepam (N. Buckley, Dawson, Whyte, & O'Connell, 1995). Other negative effects may include: over-sedation and falls (particularly in the elderly), cognitive impairment (e.g. impairment to functions such as reasoning, co-ordination, reaction time, and short and long term memory), increased risk of accidents, lowered self-protective behaviour when engaging in injecting drug use or sexual activity, vein damage if injected, possibly “floppy-baby” syndrome if used during pregnancy, depression, dependence (even at normal therapeutic doses), and an associated withdrawal syndrome which may be characterised by symptoms such rebound insomnia, rebound anxiety, panic attacks and an extensive range of other

symptoms (Caplehorn & Saunders, 1993; Frels, Williams, Narayanan, & Gariballa, 2002; Holmes, 1999; Jorm, Grayson, Creasey, Waite, & Broe, 2000; Mant & Wash, 1997; Redman, 2002).

Benzodiazepine dependence

As mentioned above, dependence is a significant problem in relation to the ongoing use of benzodiazepines. Dependence is characterised by increased tolerance to the effects of the medication and a withdrawal syndrome when the medication is stopped (American Psychiatric Association, 2000). Paradoxically, the withdrawal is often worse than the initial condition the medication was prescribed to treat and can include a variety of distressing physical and psychological symptoms. However, it is dangerous to stop using benzodiazepines suddenly as there is a risk of seizure. Withdrawal from benzodiazepine use should therefore usually involve a gradual dose reduction under medical supervision (National Health and Medical Research Council, 1991). Given the problems identified above it is preferable to manage anxiety and insomnia with non-pharmacological interventions where possible. Such techniques could include relaxation, learning good sleep hygiene, stress management, problem solving, exercise, diet, general counselling, and cognitive-behavioural therapy (Andrews & Hunt, 1999; Ashton, 1994; Australian Drug Foundation, 2002; Mant & Wash, 1997; National Health and Medical Research Council, 1991; Norman, Ellen, & Burrows, 1999; Vorma et al., 2002).

Certain groups of benzodiazepine users have been found to be at greater risk of dependence or abuse, including people with borderline or dependent personality traits, those with a history of alcohol or other drug dependencies, and older people (Seivewright, 1998; Vorma et al., 2002). Also, benzodiazepines with high potency and a short half-life have a higher associated risk of developing dependence (Seivewright, 1998).

Prevalence of use

Despite some of the problems associated with benzodiazepine use, and evidence which suggests there are non-pharmacologic alternatives available to treat anxiety and insomnia, regular benzodiazepine use among adults has been estimated to be between 10-20% of the population in Western countries (Norman et al., 1999). A recent study conducted in a Swedish city found that 5.5% of females aged 45-73

surveyed were currently using anxiolytic-hypnotic medication (Johnell, Merlo, Lynch, & Blennow, 2004).

There is ample evidence to suggest that there is a high rate of benzodiazepine use within Australia. Prescription data can be accessed via the internet from the Commonwealth Department of Health and Aged Care, a search of which indicated there were approximately 7 million government subsidised prescriptions for benzodiazepines each year from 1992 to 2002 (Heale, 2002). In a report outlining the ten most commonly prescribed drugs in Australia in 1998, temazepam was ranked 7th, accounting for over three million prescriptions nationwide, and this is only one medication within the benzodiazepine group (Commonwealth Department of Health and Aged Care, 1999). Data available from an Australian study of General Practitioners showed that 4.1% of all medications prescribed were anxiolytics/sedatives. Furthermore, temazepam, diazepam and oxazepam were among the top 30 most commonly prescribed drugs (Britt et al., 2001). Results of the Australian National Health Survey found that 4.5% of respondents reported using sleeping tablets within the previous fortnight, 2% used medication for anxiety or nerves, and 0.7% used tranquillisers (Australian Bureau of Statistics, 2006a).

At a state level, it was estimated that in 2004 there were approximately 1.75 million government subsidised benzodiazepine prescriptions in Victoria, and, as for the national data described above, temazepam, oxazepam and diazepam accounted for the majority of these (36%, 20%, and 27% respectively) (Drugs and Crime Prevention Committee, 2006). The overall number of subsidised benzodiazepine prescriptions in Victoria fell by approximately 8% between 1999 and 2004, although there appeared to be some differences between sub-types. For example, the number of temazepam prescriptions fell (from 40% of total benzodiazepine prescriptions to 36%), while alprazolam appeared to increase (from 4% of the total to 7%) (Drugs and Crime Prevention Committee, 2006).

Benzodiazepines have a high potential for abuse. A project on “doctor shoppers” (i.e. people who see more than 15 GPs within 12 months) found that benzodiazepine medications account for 35% of prescriptions issued to this group (Muhleisen, 2001).

Antidepressants

Purpose

As mentioned in the section of this review concerning depression, there are several types of antidepressant drug which are used to treat depression, though some also have therapeutic effects on insomnia as well as anxiety related symptoms such as agitation, obsessive-compulsive behaviours, and panic attacks.

Types of antidepressant

This section contains information on the main types of antidepressant medication; the most widely used and commonly known of these are the tricyclic antidepressants (TCAs) and the selective serotonin reuptake inhibitors (SSRIs). Other antidepressant medications include the serotonin and noradrenaline reuptake inhibitors (SNRIs), noradrenaline-serotonin specific antidepressants (NaSSAs), monoamine oxidase inhibitors (MOAIs), reversible monoamine oxidase inhibitors (RIMAs), and tetracyclic antidepressants (TECAs). The information presented in this section is synthesised from several sources (Alchin & Tranby, 1995; Austin & Mitchell, 1998; BeyondBlue: The National Depression Initiative, 2002; T. Buckley, Parker, & Heggie, 2001; P. Ellis & Smith, 2002; Mitchell, 1999; Norman et al., 2004; Ramchandani, Murray, Hawton, & House, 2000).

MAOIs are the oldest group of antidepressants, but due to their toxicity are less frequently prescribed nowadays. TCAs were also one of the earliest depression medications. They have reasonable action, being effective in 50-60% of cases, and moderate improvement being shown in a further 20% of cases. Despite their effectiveness in treating the target symptoms (especially depressed mood, insomnia, anxiety, aches and pains, and obsessive-compulsive symptoms), they have some serious potential side effects as outlined in the section below. RIMAs have a similar pharmacologic action to MAOIs, however, they are not as effective as some other medications (e.g. TCAs) in elevating mood. TECAs were originally promoted as having a faster action and fewer side effects than other antidepressants, although this claim has since been questioned. The SSRIs were first developed in the 1970s and their mode of action is by inhibiting serotonin reuptake (i.e. there is more serotonin available). SSRIs do not interact with alcohol and are less toxic in overdose situations. They are also used in the treatment of anxiety and panic disorders, eating

disorders, personality disorders, and substance use disorders. SNRIs may be effective in the treatment of severe depression, while NaSSAs may be useful for individuals with anxiety and insomnia associated with depression

At present, the antidepressants of first choice are considered to be SNRIs, NaSSAs, and SSRIs, and others tried if these are ineffective (Norman et al., 2004). Despite the fact that the effects of antidepressants on noradrenaline and serotonin reuptake occur immediately after the medication is introduced, antidepressant medications may take 4- 6 weeks before reaching full therapeutic effect. Further, symptoms may deteriorate before they improve. Due to their differential effects on sleep/wakefulness, TCAs are generally better taken at night and MAOIs and SSRIs in the morning or early afternoon.

Misuse, side effects, and overdose risk

MAOIs are the most toxic antidepressants and can have severe interactions with particular foods (e.g. red wine and cheese). If switching from an MAOI to an SSRI, care needs to be taken to ensure one medication is out of the system before the next is commenced as they cannot be used in combination. Antidepressants may not only interact with each other, but also other classes of medication. TCAs are potentially lethal in overdose situations at a lower dosage than other antidepressants and should not be used with alcohol. Their use is advised against in children, the elderly, and people with heart disease. While similar to MAOIs, RIMAs do not have the same interactions with certain foods and alcohol. RIMAs have no adverse cardiovascular effects and are less dangerous in overdose situations. TECAs are highly sedating, however they do not have the cardiac effects of some other antidepressants and therefore have a low overdose risk as well as being suitable to be prescribed for the medically ill. SNRIs have relatively few side effects compared to older antidepressants and are considered safer in an overdose. NaSSAs are less likely to be associated with lowered libido than other classes of antidepressant.

The SSRIs have several side effects including nausea, nervousness, diarrhoea, headache, insomnia, sexual dysfunction, and weight loss (Norman et al., 2004). However, they are increasingly the favoured treatment because they do not interact with alcohol and have low lethality in overdose compared to other antidepressants such as TCAs. This is not to suggest that SSRIs are not implicated in overdose;

research has certainly found they are (Hawton, Fagg, Simkin, Bale, & Bond, 1997). SSRIs recently attracted controversy after evidence surfaced which cast doubt on their efficacy and which also suggested their use was associated with worsening depression and increased suicide risk via their disinhibiting effects, particularly among children (Geddes & Cipriani, 2004; D. Gunnell & Ashby, 2004; Lenzer, 2004). A prospective English study found that there was a higher incidence of deliberate self-harm among patients prescribed SSRIs than TCAs, though this was not a randomised control trial and there were several other methodological limitations to the research (Donovan, Clayton, Beeharry, Jones, Kirk, Waters et al., 2000).

There may be some slight risk in using antidepressants during pregnancy (e.g. prematurity), but when weighed against the benefit of improving the psychological state of a severely depressed pregnant woman, it may still be preferable to prescribe antidepressant medication (Austin & Mitchell, 1998).

A study of fatal antidepressant overdose conducted in England and Wales found that such overdoses were more likely to involve women and older people, and were less likely to involve people with a history of drug abuse (Oyefeso, Valmana, Clancy, Ghodse, & Williams, 2000). Five possible reasons for antidepressant overdose were given including: treatment resistant depression, non-compliance with prescribed medications, taking antidepressants in combination with other substances, under treatment of depression, and antidepressant toxicity (especially TCAs) (Oyefeso et al., 2000).

Discontinuation reactions

A range of psychological and physical signs and symptoms have been noted upon dose reduction or complete cessation of antidepressant use, especially if the medication is used over a period of some months, or when a high dose is being taken (Mitchell, 1999; Norman et al., 2004). Generally symptoms start within one or two days of reducing or ceasing medication use and usually subside within two weeks. Withdrawal symptoms include somatic complaints (for example, fatigue, headache, flu-like syndrome, anxiety, agitation), sleep disturbance (insomnia, vivid dreams), movement (unsteady gait, involuntary movements), altered affect (lowered mood, crying, irritability, lability), and miscellaneous other signs (for example, dizziness

and a sensation of electric shocks in the extremities). It is likely that some symptoms are more characteristic of particular antidepressant classes than others (Mitchell, 1999; Norman et al., 2004).

Prevalence of use

Antidepressants are the sixth most commonly prescribed medication group by GPs, and account for 3.3% of all prescriptions in Australia (Britt et al., 2001). A search of Australian prescription data available via the Commonwealth Department of Health and Aged Care website found that there were approximately 9 million government subsidised prescriptions for antidepressants in 2000/01, though it should be remembered that any one individual taking antidepressant medication would most likely receive several scripts throughout the year (Heale, 2002). SSRIs were the most commonly prescribed antidepressant. Five percent of respondents to the Australian National Health Survey reported use of antidepressant medication within the previous two weeks (Australian Bureau of Statistics, 2006a).

Analgesics

Purpose

While analgesics, or painkillers, do not cure the underlying cause of pain, they can be useful in alleviating the symptoms. There are a number of classes of analgesic, and the most appropriate will depend on the type of pain experienced, e.g. injury or inflammation of tissue (nociceptive pain), inflammation, trauma or degenerative disease of the nerves or axons (neurogenic pain), and pain experienced in the absence of any apparent injury (psychogenic pain) (Therapeutic Guidelines Limited, 1997).

Types of analgesic

Analgesics are available both on prescription and OTC, with the more potent ones tending to be by prescription only. Non-opioid analgesic medications (e.g. paracetamol) have anti-inflammatory, antipyretic, and anti-platelet effects. Medications such as paracetamol are most appropriate for less severe pain. The non-opioid group of analgesics includes a sub-class known as the non-steroidal anti-inflammatory drugs, or NSAIDs (e.g. aspirin, ibuprofen), which as the name suggests, are useful for treating pain associated with inflammation, tissue injury, and

fever. Non-opioid analgesic and NSAID medications are freely available OTC and are the most widely used forms of pain relieving medication (Stimmel, 1997).

Opioid analgesics activate the mu, kappa, sigma, and delta opioid receptors in the nervous system and are useful in cases of more severe pain, whether chronic or acute. Drugs in this group include morphine, codeine, methadone, oxycodone, and pethidine, and have application in the treatment of severe pain. Compound analgesics are those medications which combine two types of analgesic drug (e.g. Codeine with ibuprofen) (Rossi, 2003).

Analgesic drugs may be administered by several routes (for example; oral, sublingual, rectal, transdermal, inhalation, injection, or epidural) though the more readily available and commonly used ones tend to be oral preparations (Therapeutic Guidelines Limited, 1997).

Misuse, side effects, and overdose risk

Paracetamol-based medications have few side effects if taken within the recommended limits. However, due to the risk of hepatotoxicity, they should not be taken in excess of 4g (or > 100mg/kg) daily. The liver damage caused in overdose situations can be severe, and sometimes fatal. Those who regularly use alcohol or have liver damage may be even more susceptible (Hawton, 2002; Makin & Williams, 2000; Rossi, 2003; Stimmel, 1997; Therapeutic Guidelines Limited, 1997), although one study found overdose outcomes for patients with a documented history of chronic moderate-heavy alcohol consumption (i.e. >40g alcohol daily) were no worse than for other patients, provided appropriate treatment for toxicity was instituted (Ayonrinde, Phelps, Hurley, & Ayonrinde, 2005).

NSAIDs have been noted to cause sodium retention have therefore been associated with heart failure, elevated blood pressure, and renal dysfunction in vulnerable people. Aspirin can cause gastro-intestinal irritation and is sometimes associated with tinnitus when used in high doses. Those with peptic ulcers or a bleeding disorder such as haemophilia should avoid aspirin due to its effect on platelet function (i.e. reduces congealing properties of blood). Furthermore, it should not be used in combination with anticoagulant medications such as Warfarin. Aspirin has been shown to precipitate asthma in susceptible patients. Aspirin is not recommended for use under the age of 12 or in pregnant females, particularly in the

third trimester. Occasional use of aspirin by a breastfeeding mother is thought to be safe (Hardman, Goodman Gilman, & Limbird, 1996; Rossi, 2003; Therapeutic Guidelines Limited, 1997).

The adverse effects of opioid analgesics may include nausea, vomiting, constipation, respiratory depression, tolerance, and dependence (Rossi, 2003). Adverse effects noted with compound analgesics include increased likelihood of the side effects of the component drugs occurring and accumulation of drugs of different half lives in the system. Opioid analgesics potentiate the effect of other CNS depressants, and therefore are best avoided in conjunction with alcohol, other depressant medications, and drugs such as heroin. There may be some untoward drug interactions between analgesics and herbal medications (Adebe, 2002).

Prevalence of use

Analgesic medications such as paracetamol and aspirin are available both on prescription and OTC. Such medications are widely used in Western countries, with an estimate of 70% of the population using them regularly for pain and fever management (Abbott & Frase, 1998). Analgesics are the most commonly prescribed medications by GPs in Australia, accounting for 8% of GP prescriptions. GPs also frequently recommend analgesics for OTC purchase, particularly paracetamol and ibuprofen, and these account for more than 30% of the medications that GPs suggest to patients for purchase OTC (Britt et al., 2001). Between 1992 and 2002 approximately 5 million prescriptions for opioid analgesics were subsidised Australia-wide under the PBS or RPBS scheme annually (Heale, 2002). As commonly used analgesics such as aspirin were not included in this group, it can be assumed that the use of analgesics was even more widespread than the prescription data suggest.

1.3.4 Medical response to overdose

Most medication overdoses attending for hospital treatment are able to be managed with supportive care and observation alone (Jones & Dargan, 2002). In cases where more active management is required, treatment may involve gut decontamination (by limiting the absorption of the toxin, or increasing elimination), or the administration of an antidote (Daly, Little, & Murray, 2006; Greene, Dargan, & Jones, 2005).

An oral preparation of activated charcoal is the main method of reducing absorption of toxins via the gastro-intestinal tract. Activated charcoal needs to be given within an hour of the overdose event to be effective (or slightly longer for sustained release medications). Other gut decontamination techniques include gastric lavage and inducing vomiting, however, these are no longer routinely recommended. Bowel irrigation is used by some practitioners in cases where activated charcoal is ineffective (Daly et al., 2006; Greene et al., 2005; Jones & Volans, 1999).

Some medications and poisons have antidotes available. For example, intravenous N-acetylcysteine may be used for paracetamol overdose, naloxone for opioid overdose, and sodium bicarbonate for tricyclic antidepressant overdose resulting in cardiovascular toxicity (Greene et al., 2005). Antidotes are not necessarily a simple solution to an overdose situation. For example, the administration of N-acetylcysteine requires precise calculations of the time and amount of the overdose, as well as sound clinical judgement (GlaxoSmithKline, 2002).

It is rare that cases of medication overdose that reach hospital for treatment subsequently result in a fatality. An English study estimated that between 1997 and 1999 approximately 380 such deaths occurred in that country annually, accounting for only 0.5% of all medication overdoses treated within the hospital system (D. Gunnell, Ho, & Murray, 2004). This represented 29% of all overdose deaths, and 7% of suicide deaths. The most commonly implicated medications were paracetamol compounds (35%), benzodiazepines (18%) and tetra- and tricyclic-antidepressants (10%). The median time between admission and death was three days, with a third dying within one day, and 70% in the first week after admission. The most common conditions contributing to death were hepatic failure, cardiac arrest, pneumonia, cerebral anoxia, and septicaemia. At least 6% of cases were associated with malignant cancer (D. Gunnell et al., 2004).

1.3.5 Summary

Medication overdose accounts for several hundred untimely deaths in Australia every year, and several thousand ambulance attendances in the Melbourne metropolitan area alone. The medications most commonly implicated in overdose are those used in the treatment of mental health conditions (particularly benzodiazepines and antidepressants), and for pain management (particularly non-opioid analgesics

such as paracetamol). The use of these medications is widespread in the Australian community. TCAs, paracetamol, and opioid analgesics are among the most dangerous medications to consume in an overdose. Medical treatment for overdose most usually involves supportive care, though in serious cases more active intervention may be required. The majority of medication overdose cases who receive emergency care treatment survive.

1.4 Medication overdose studies conducted in emergency care settings

As can be surmised from the information presented earlier, there is considerable overlap between depression, suicidal thought and behaviour, and medication overdose. The findings of previous research conducted in emergency medical care settings of medication overdose are presented in this section. In particular, studies examining the intersection between medication overdose,[21] depression, and/or suicidality are reviewed.

Information for this section was obtained by conducting a systematic search of several relevant databases such as Medline, ProQuest Health and Medical Complete, PsychINFO, Embase, and International Pharmaceutical Abstracts. Search terms included suicide, self-harm, depression, medication, overdose, poisoning, hospital, emergency, and variants thereof.

1.4.1 Proportion and timing of medication overdose presentations

Many Australian and international studies examining ED presentations for medication overdose have reported the number of cases attending a particular service or group of services within a given timeframe. However, these figures have varied greatly, depending on the size of the hospital, the catchment area, and other variables, thus precluding comparison between studies. A more useful measure is the proportion of medication overdose or poisoning cases relative to the total number of patients accessing the ED service. Such estimates have ranged from 0.3-5% of all attendances (Aghanwa, 2001; D. Taylor, Cameron, & Eddey, 1998; Whyte, Dawson, Buckley, Carter, & Levey, 1997). As a proportion of deliberate self-harm cases attending hospital; medication overdose or self-poisoning has been found to account for 82-95% of presentations (Aghanwa, 2001; Colman, Dryden, Thompson, Chahal, Borden, Rowe et al., 2004; Haw, Hawton, Houston, & Townsend, 2001; Hawton et al., 1997; Horrocks, Price, House, & Owens, 2003; Townsend et al., 2001).

[21] Some of the studies involved "self-poisoning" which may not necessarily have been confined to medications. However, these cases have nonetheless been included as medications accounted for the vast majority of substances involved.

Medication overdose presentations have been shown to vary by time of day. Buckley et al. (1993), reported that half of all admissions for deliberate self-poisoning in a regional area of NSW occurred in the eight hours between 6 p.m. and 2 a.m. Similarly, a study conducted in regional Victoria reported medication overdose presentations were the most common in the late afternoon and evening (D. Taylor et al., 1998). Ambulance data collected in metropolitan Melbourne were also consistent with hospital ED data; the peak time for ambulance attendance at benzodiazepine-related cases was mid to late evening (Heale, Dietze, & Cvetkovski, 2002).

Two studies found no variation by day of week in the rate of medication (or benzodiazepine) overdose (N. Buckley et al., 1993; Heale et al., 2002) (although the latter study found that compared to benzodiazepine overdose, heroin overdose rates peaked over the weekend). In contrast, D. Taylor et al. (1998) found medication overdose presentations were more likely to occur from Monday to Wednesday than during the rest of the week. Buckley et al. (1993) found no variation in the level of attendances across the year, however, a small but significant effect was reported for female presentations according to lunar cycles (i.e. fewer presentations were recorded at the time of a full moon).

1.4.2 Patient characteristics

A number of Australian and overseas studies have investigated the demographic characteristics of medication overdose patients. English studies have found that 49-60% of all cases presenting to hospital for deliberate self-poisoning were female (Horrocks et al., 2003; Kapur, House, Creed, Feldman, Friedman, & Guthrie, 1998; Owens, Wood, Greenwood, Hughes, & Dennis, 2005; Townsend et al., 2001). A similar proportion (two-thirds) was reported in an Australian study (D. Taylor et al., 1998), while a French study found approximately 73% to be female (Vaiva, Ducrocq, Meyer, Mathieu, Philippe, Libersa et al., 2006), and a Fijian study reported 84% female (Aghanwa, 2001). In contrast, a Canadian study found 57% of hospital attendances for intentional medication overdose were male (Lo, Shalansky, Leung, Hollander, & Raboud, 2003). Ambulance attendance data collected in Melbourne revealed that 61% of calls to benzodiazepine-related cases from 1998 to 2001 involved female patients (compared to 24% females for heroin overdose cases) (Heale et al., 2002). Therefore, while the exact figures varied, most studies reviewed

concluded females were over-represented relative to males by an approximate ratio of 2:1.

Townsend (2001) and Taylor (1998) found that approximately two-thirds of patients attending for self-poisoning were aged 15-34 years, Vaiva et al. (2006) and Kapur et al. (1998) found the mean age of patients to be in the thirties, while Lo et al. (2003) found a mean age of 40 years. Horrocks et al. (2003) found that most self-poisoning cases in Leeds, England were aged 15-39 years. Heale et al. (2002) compared ambulance attendances for benzodiazepine and heroin overdoses, and found that the average age of those who had taken benzodiazepines was 36 years (compared to only 27 years for heroin cases). In a Newcastle based study, 4.1% of patients attending hospital for deliberate self-poisoning were aged 65 or over (Ticehurst, Carter, Clover, Whyte, Raymond, & Fryer, 2002). As a whole, the data suggest medication overdose occurred across age groups, although people aged in their twenties and thirties predominated.

1.4.3 Depression and other psychiatric diagnoses

Psychiatric conditions are common among people taking medication overdose. A study of hospital attendances for deliberate self-poisoning in regional NSW found 95% of patients met the criteria for a formal psychiatric diagnosis when assessed soon after admission (Whyte et al., 1997). In an English study of 150 people presenting to hospital for deliberate self-harm (96% of whom had self-poisoned), Haw et al. (2001) found that 92% could be diagnosed with a psychiatric disorder according to ICD-10 classifications.

The most frequent psychiatric diagnoses were affective disorders (mainly depression) in 72% of the sample, followed by substance use disorders (alcohol 27%, other drugs 9%), neurotic, stress-related and somatoform disorders (mainly anxiety) in 23%, eating disorders in 11%, and schizophrenia in 5% (Haw et al., 2001). Forty-six percent of those involved in a follow-up study were identified as having a personality disorder. There was considerable co-morbidity between diagnoses. Other studies also found depression to be the most common psychiatric diagnosis among medication overdose patients (Aghanwa, 2001; Hagedorn & Omar, 2002; Kingsbury, Hawton, Steinhardt, & James, 1999; Lifshitz & Gavrilov, 2002; Lo et al., 2003; Matthews & Fava, 2000). Regarding substance use, a different English study found a

somewhat lower rate of alcohol and/or drug dependence (14%) among self-poisoning patients, although a later study in the same region found the rates of alcohol dependence and drug dependence to be 20% and 7% respectively (Kapur, Cooper, Hiroeh, May, Appleby, & House, 2004; Kapur et al., 1998).

An Australian study investigating the characteristics of youth attending treatment for deliberate self-poisoning employed the same diagnostic measures used in the National Survey of Mental Health and Wellbeing (Carter, Issakidis, & Clover, 2003). Fifty-one self-poisoning patients were compared with 31 young people who had previously attempted suicide, and 842 young people with no reported history of suicidal thoughts or behaviour. The deliberate self-poisoning group had greater prevalence of anxiety, affective, and substance use disorders, and a greater degree of mental health related disability (Carter et al., 2003).

Age may be a relevant factor in the relationship between depression and medication overdose; a study comparing deliberate self-poisoning in people aged less than 65 years with those aged 65 or over found the rate of depression was significantly higher in the older group (Ticehurst et al., 2002).

1.4.4 Characteristics of hospital attendance

An English study found that patients attending hospital following self-poisoning were likely to be triaged[22] to be seen more urgently than those with other forms of self-injury (Horrocks et al., 2003). In a study conducted in regional Victoria information concerning the urgency of medication overdose cases, length of time in the ED, and disposal from the ED was recorded. Medication overdose patients were significantly more likely to be triaged to one of the top two most urgent categories (to be seen within 10 minutes of arrival) than other patients attending the ED (D. Taylor et al., 1998). However, those patients attending with repeated medication overdoses were more likely to be categorised as least urgent. Overdose patients

[22] "Triage" refers to the process or system of ordering injured and ill patients according to medical priority. Those with the greatest medical need are allocated a higher priority and are therefore seen before those in lesser need. According to the Australasian Triage Scale used in hospital emergency departments there are 5 triage levels: ideally cases allocated to category 1 (red) should be seen immediately, category 2 (orange) within 10 minutes, category 3 (green) within 30 minutes, category 4 (blue) within 60 minutes, and category 5 (white) within 120 minutes. Patients waiting to be seen should be continuously reassessed and if their symptoms change, re-triaged accordingly (Australasian College for Emergency Medicine, 2000).

generally also remained in the ED for longer than other patients and were more likely to be admitted, except for those who attended for repeated medication overdose, who were slightly less likely to be admitted (D. Taylor et al., 1998). A French study found that the average length of stay in the ED following deliberate self-poisoning was approximately 18-20 hours (Vaiva et al., 2006).

A comparison of elderly (65 or more years) with non-elderly patients found that older patients had a significantly longer average length of stay (90 hours compared to 29 hours), greater rate of admission to intensive care, and a higher level of mortality as a consequence of deliberate self-poisoning than younger patients (Ticehurst et al., 2002). This may have been due to the greater physical frailty of the older group, or more severe suicidal intent leading to a more medically serious overdose.

1.4.5 Type and number of medications

As previously noted (see Medications involved in overdose, page 73), medications such as benzodiazepines, antidepressants, paracetamol, and antipsychotics are frequently implicated in self-poisoning in Australia and elsewhere (Baca-Garcia et al., 2002; Beautrais, Joyce, & Mulder, 1998; Cantor & Neulinger, 2000; Hawton et al., 1997; Lo et al., 2003; Neeleman & Wessely, 1997; Shah, Uren, Baker, & Majeed, 2002; D. Taylor et al., 1998; Townsend et al., 2001).

An English study of presentations to hospital following deliberate self-harm found that the use of more than one category of medication was common, with the average number of medication classes consumed being 1.2 (Townsend et al., 2001). Vaiva et al. (2006) reported a higher mean number (1.8) of substances used in cases of deliberate self-poisoning attending French hospitals. Lo et al. (2003) reported that 71% of medication overdose presentations to a Canadian hospital implicated multiple medications. The same study also found individuals who overdose most usually take their own medications (85% of cases) (Lo et al., 2003).

Differences have been found in medications taken according to factors such as sex, age, and previous overdose history. One study showed females were more likely than males to use antidepressants, while males were more likely to use tranquillisers (Townsend et al., 2001). The same study found females were more likely to use multiple drugs, younger people were more likely to overdose on a single drug

(mainly paracetamol), while older people more often self-poisoned with multiple medications such as tranquillisers, sedatives, or antidepressants (Townsend et al., 2001). This is consistent with findings from another study which concluded that elderly patients were more likely to take benzodiazepines and less likely to take paracetamol in an overdose than younger patients (Ticehurst et al., 2002). The authors suggested that the relatively high rate of benzodiazepine use in the older group may have been related to accessibility, with older people being more likely to be prescribed that group of medications. People with a diagnosis of substance abuse have been found to be less likely than those without to take OTC medications in an overdose, instead using prescription medications (Lo et al., 2003).

1.4.6 Concurrent alcohol use

Concurrent alcohol use has been associated with medication overdose and self-poisoning. Data from French, English, Canadian, and Australian studies have implicated alcohol in 28%-40% of cases (Carter, Clover, Whyte, Dawson, & D'Este, 2005; Lo et al., 2003; Vaiva et al., 2006).

1.4.7 Repetition

Repeated occurrences of medication overdose have been studied either retrospectively (i.e. by enquiring about a patient's history) or, more commonly, by prospectively monitoring a group of patients following hospital attendance. In an example of the former, a Canadian study of patients attending hospital following deliberate medication overdose found that 74% of cases had ever had a previous suicide attempt and 71% a previous overdose (Lo et al., 2003).

Longitudinal studies have generally provided a conservative estimate of repetition as most have not counted previous hospital attendances for medication overdose before the study period, or captured those who overdosed more than once during the study period but not attended hospital, or who attended hospital elsewhere (D. Taylor et al., 1998). Comparisons between such studies may also be complicated by variations in their design, such as the length of follow-up. Kapur et al. (2002) found 15% of patients repeated self-poisoning within 12 weeks of the index episode. Studies involving 12 months follow-up have yielded estimates of 12-19% (Carter, Clover et al., 2005; Carter, Whyte, Ball, Carter, Dawson, Carr et al., 1999; Owens et al., 2005;

Vaiva et al., 2006), while a two year study found that 12% of individuals repeated within the study timeframe and the mean number of re-presentations was 2.3 (D. Taylor et al., 1998).

Characteristics found to be associated with repetition include younger age, female gender, being single (i.e. being married or de facto was protective against repetition), greater potential lethality of the index episode, and self-discharge from the ED prior to assessment (Carter et al., 1999; Kapur et al., 2002). However, the findings regarding the association between age and repetition may be equivocal, as Townsend et al. (2001) found a variable proportion of repeaters versus first-time attenders across the age groups, while Taylor (1998) found that those patients who presented repeatedly were likely to be slightly older.

A study in regional Victoria found those who attended repeatedly for medication overdose were more likely than those attending only once to take a single class of drugs, but were also more likely to have other self-inflicted trauma (though the overall rate of trauma in both groups was less than 11%) (D. Taylor et al., 1998). The finding that patients attending only once during the study period typically overdosed on antidepressant medication, while repeated presentations more frequently involved neuroleptics and paracetamol may indicate a different psychiatric diagnoses between groups. The former group were possibly more likely to have depression and the latter to have psychosis and other psychiatric disorders (assuming people overdosed on their own medications) (D. Taylor et al., 1998). Another study which compared first time overdose patients versus those who had made a previous suicide attempt found the group with a previous history were more likely to have experienced sexual abuse and exhibited more symptoms of post-traumatic stress disorder (C. Taylor, Kent, & Huws, 1994)

It has been suggested that when non-fatal repetition of medication overdose or self-poisoning occurs, the risk is greatest within the first few months after the index episode. One study found of those repeating within 12 months, a third did so within 28 days, and three quarters within six months (Carter et al., 1999). Intervention at the time of self-poisoning has been found to be associated with reduced rates of non-fatal repetition of self-harm. The evidence in relation to this is reviewed in ‘Models of care’, page 94.

1.4.8 Long-term fatal outcomes

Longer-term studies have investigated the rate of completed suicide among patients attending hospital for medication overdose or self-poisoning. For example, all presentations in the ten years from 1991 to 2000 to the Hunter Area Toxicological Service (NSW) following deliberate self-poisoning were followed-up to determine the subsequent mortality rate from suicide, other causes of early death (e.g. motor vehicle accidents), and natural causes (Carter, Reith et al., 2005a; Reith et al., 2004). At the time of follow-up a total of 5.6% of cases were deceased; 1.4% as a consequence of suicide, 1.5% by premature accidental death, and 2.6% by natural causes. While the follow-up period for cases in the study was variable (the mean was five years), the authors estimated the probability of death by suicide after 10 years to be 2%, higher than would be expected in the general population.

Analyses of risk factors in the above study revealed the following to be predictive of suicide: diagnosis of a psychiatric disorder arising in childhood such as conduct disorder (in men), involuntary admission to a psychiatric hospital from the service, increasing age, and previous suicide attempts (in women) (Reith et al., 2004). The risk factors for early deaths and natural deaths were similar, with the addition of male gender. Another study by the same group of authors investigating repeated presentations for self-poisoning found that increasing severity of overdose events, as measured by number of drugs involved, increased dose, increased alcohol and drug use, and decreased levels of consciousness upon presentation were all associated with elevated risk of subsequently completing suicide (Carter, Reith, Whyte, & McPherson, 2005b).

The risk factors for eventually completing suicide noted above were similar to those previously found in an English study to be associated with higher levels of suicidal intent in cases of deliberate self-poisoning. These factors included being older, male, making repeated attempts, and using multiple substances (Townsend et al., 2001). A comparison of fatal and non-fatal deliberate self-poisonings in South London found that taking a higher mean number of substances was more likely to be associated with fatal outcomes (38% of fatal cases involved multiple medications [mean 1.5], compared to 30% of non-fatal cases [mean 1.2]) (Neeleman & Wessely, 1997). An

Israeli study found that ingestion of more than two different types of medication was associated with greater suicidal intent (Lifshitz & Gavrilov, 2002).

1.4.9 Models of care

Hospital presentations for medication overdose have been associated with elevated risk of non-fatal repetition of the same behaviour, additional pressure on limited health care resources, and increased risk of eventually completing suicide relative to the general population. Therefore, the idea of introducing an intervention at the point of contact with emergency services has inherent appeal. Several studies conducted in Australia and elsewhere have reported on the efficacy of various forms of intervention. These studies have employed different designs (e.g. naturalistic, randomised-controlled trials), and types of intervention (e.g. usual care, follow-up contact via telephone or postcard, comprehensive assessment and referral programs). As previously mentioned, mortality among deliberate self-poisoning cases that actually present for emergency care has been found to be very rare, and has usually only occurred where death was inevitable anyway (D. Gunnell et al., 2004). It has been argued that it is unlikely that any intervention introduced would substantially alter mortality rates (Whyte et al., 1997), although the effect on other outcomes such as repetition or length of stay may be more readily apparent. The nature and findings of various studies concerning the response of emergency medical care services to patients presenting for medication overdose are described in this section, and the value of providing specialised support in addition to usual care discussed.

A model for the hospital care of deliberate self-poisoning evolved in the Hunter region of NSW during the late 1980s and early 1990s (Whyte et al., 1997). The elements of the model included; diversion of all toxicology presentations to one hospital, admission of all such cases under the care of a single multidisciplinary team (medical, psychiatric, nursing, and drug and alcohol) with particular toxicological and psychiatric expertise, and 24 hours a day, seven days per week coverage (Whyte et al., 1997). In addition to medical management of toxicity, all patients were automatically given a psychiatric assessment, regardless of the seriousness of the poisoning, as it was recognised that any deliberate self-poisoning is a symptom of a problem requiring attention, and that "*significant suicidal risk is present for many patients with toxicologically 'trivial' poisonings" (Whyte et al., 1997), p. 142.* In

addition, care was expected to be non-judgemental and non-punitive, and aimed to maintain safety, enhance treatment compliance, provide psychological support, address other factors contributing to the overdose, and include follow-up services. While there was no apparent reduction in mortality levels as a consequence of the program, there was a clear reduction in the average length of stay (both pre and post the program, and compared to other similar locations continuing with usual care), and no compromise of patient care (Whyte et al., 1997).

An intervention study based at the same site and conducted between 1998 and 2001 involved a randomised controlled trial comparing two groups of patients treated for deliberate self-poisoning (Carter, Clover et al., 2005). The intervention group were sent eight postcards from the toxicology service over a period of 12 months following an attendance for self-poisoning, while the non-intervention group received usual care. The postcards contained a short message enquiring after the welfare of the patient. No significant difference was found between the intervention and control groups in the proportion of people who had a repeated episode of self-poisoning within the study timeframe (15.1% compared to 17.3%). However, there was a significantly greater reduction in the number of repeat episodes per individual in the intervention group compared to the usual care group. The number of such episodes was reduced by almost half, and there was an associated substantial reduction in bed days (Carter, Clover et al., 2005). The intervention was more effective among females than males.

An English randomised control trial investigated the potential of brief psychological therapy versus usual care following presentation to hospital for deliberate self-poisoning (Guthrie, Kapur, Mackway-Jones, Chew-Graham, Moorey, Mendel et al., 2003; Guthrie, Kapur, Mackway-Jones, Chew-Graham, Moorey, Mendel et al., 2001). Six months after the overdose patients who had received the four intervention sessions reported significantly lower levels of suicidal ideation, higher levels of treatment satisfaction, and less self-harm (9% recurrence in the intervention group compared with 28% in the control group) (Guthrie et al., 2001). Those with lower levels of depression, no history of self-harm, and who had not consumed alcohol at the time of the overdose appeared to benefit the most from the intervention, with the authors concluding that a longer intervention may be useful for patients with more complex problems (Guthrie et al., 2003). A subsequent article pointed out the

limitations of the study by Guthrie and colleagues (for example, low participation rates, and pre-existing group differences), but nonetheless concluded that brief interventions addressing interpersonal conflict may have some promise in preventing recurrence of self-poisoning (House, 2002).

Another study from the United Kingdom which involved a naturalistic comparison of psychosocial assessment versus no assessment, found patients who had received a psychosocial assessment were only half as likely to repeat the behaviour (Kapur et al., 2002). A further naturalistic cohort study by the same group attempted to evaluate which of two interventions for self-poisoning was associated with the lower rate of repetition within six months; standard psycho-social assessment after presenting to the ED, or referral for specialist follow-up (Kapur et al., 2004). The results indicated that specialist follow-up (e.g. mental health professional or self-harm treatment service) had better outcomes than assessment alone. The authors cautioned that given the naturalistic design of the study the findings may partly reflect a referral bias.

A French study found telephone contact one month (but not three months) after hospitalisation for self-poisoning was associated with fewer self-reported suicide attempts in the ensuing year compared to treatment as usual (Vaiva et al., 2006). However, there was no difference between groups in the number of deaths by suicide or losses to follow-up within the study timeframe.

Despite the widely varying study designs and interventions, each of the studies reviewed above indicated some benefit of an enhanced response to medication overdose, in addition to usual care. The evidence suggested that a measure as simple as universal assessment of all cases attending a hospital ED service for self-poisoning had the potential to significantly reduce the re-presentation rate. According to one estimate, for every twelve people so evaluated after an episode of self-poisoning, there was a reduction of one person among those who repeated (Kapur et al., 2002). Owens et al. (2005) also argued that the universal application of good assessment and care to all patients attending an ED following self-poisoning was more likely to be effective in reducing subsequent mortality by suicide than targeted efforts. Their 16-year outcome study found that patient characteristics had insufficient predictive value to be relied upon in targeting prevention strategies and

so there was no value in trying to specifically identify or target sub-groups at particular risk (Owens et al., 2005).

Despite the above findings in favour of providing a psychosocial assessment at the very least, there is some evidence to suggest thorough review of medication overdose patients may not always occur. An English study found that 46% of cases of self-poisoning were discharged without any psychosocial assessment at all, although this was in contravention of local health department guidelines (Kapur et al., 1998). It is possible that decisions about care may sometimes be influenced by factors other than clinical need. One study found patients attending hospital following deliberate self-poisoning were less likely to be admitted or given a psychiatric assessment prior to discharge from the ED if they presented overnight (between 11 p.m. and 6 a.m.), or if they lived outside the hospital catchment area (Kapur, House, Creed, Feldman, Friedman, & Guthrie, 1999). These results suggest that the availability of resources can influence clinical outcomes, and that novel strategies may need to be employed to address such issues. As an example, a Welsh study found that the psychosocial assessment of patients attending hospital for self-poisoning could not only be conducted by a trainee psychiatrist, but equally well by a specialist mental health nurse (Griffin & Bisson, 2001). Increasing the potential pool of staff available to respond to patient needs through appropriate education and training may therefore assist in ensuring patients are thoroughly assessed.

1.4.10 Limitations of previous studies and future directions for further research

As is evident from the literature reviewed above, there have been several studies conducted in various countries regarding medication overdose which have shed considerable light on the nature and extent of this phenomenon. However, a number of interesting questions remain unanswered by the available evidence.

There have been no published studies conducted in a Melbourne hospital of adult medication overdose. It is therefore of interest to know whether the patterns observed in other locations are also true of an inner-city Melbourne ED.

Few previous studies have provided a comparison of the patients who presented following self-poisoning with other patient groups. Where comparisons were made,

it was generally with the total patient group. Colman et al. (2004) compared patients attending for self-inflicted injury[23] with asthmatics[24] and a random ED group. The study concluded that the self-injury group were chronic users of the ED, and had higher rates of psychiatric disorders than the other two groups. However, this study deliberately chose a primary comparison group that was very different to the self-injury group. An English study compared patients attending the ED following self-poisoning with patients attending as a consequence of some other form of self-injury. The self-poisoning groups were more likely than the self-injury group to be aged 45-49, to be female, to be triaged as more urgent, and to receive a psychosocial assessment (Horrocks et al., 2003). However, few other studies of this type have been conducted. Therefore, it is of interest to further compare patients attending for medication overdose with patients who have self-harmed by means other than pharmaceutical ingestion or who are at-risk of self-harm to see what factors, if any, distinguish the groups. D. Taylor and Cameron (1998) conducted a study in regional Victoria in which 175 self-inflicted trauma cases were compared to 441 overdose cases. However, in that study, the definition of overdose was not confined to pharmaceutical medications, and may have involved illicit drugs, or other toxins. It would be of interest to separate out patients attending with the same type of injury (i.e. overdose) but who had consumed two different classes of substance, namely illicit drugs and pharmaceutical medications. Heale et al. (2002) compared benzodiazepine cases with heroin overdose cases, however, this involved ambulance rather than ED data[25], and only one class of medications and one type of illicit drug.

While a great deal of information can be obtained from computerised patient data systems and other records, such sources provide only a partial understanding of the event. Hospital records have a limited amount of information on the personal circumstances of the individual and possibly none on their perspective of the overdose. Few studies have attempted to combine data collected from secondary sources such as hospital records with additional information obtained directly from

[23] This group included all types of self-injury, not just self-poisoning, or even more specifically, medication overdose.

[24] The asthma group was chosen for comparison on the basis that they are also high users of ED services.

[25] While ambulance attendance data and ED data can both be considered emergency medical care datasets, they represent distinct although overlapping groups. Not all cases attended by ambulance are necessarily transported to hospital, and not all cases attending hospital arrive via ambulance.

the patient by the researcher. D. Taylor et al. (1998) recommended that personal factors such as social class, employment, marriage status, substance or alcohol use, and psychiatric illness be studied in a prospective setting.

Neale (1999, 2000) conducted an ethnographic study in a Scottish hospital, though the focus of that study was patient experiences of illicit drug overdose rather than medication overdose. A Swedish qualitative study examined the perspectives of a small number of patients who repeatedly used the ED, focusing on life circumstances, and perceptions of the care received at hospital (Olsson & Hansagi, 2001). However, the study did not specifically look at the phenomenon of overdose. A worthwhile direction for medication overdose research would be to combine inclusive patient dataset information with patient interviews, and to relate this to patient care. For example, to examine how patients regard the experience, and whether they are satisfied with the care they receive.

It is clear that many patients attending hospital following a medication overdose have a psychiatric disorder, most commonly depression. However, few studies have investigated the severity of depressive symptomatology, either while at hospital, or possibly more importantly, at the time the overdose was taken. While severity of depression was assessed in Haw et al's (2001) study, there has been little exploration in any study of medication overdose into whether the level of depression at the time of self-harm relates to the degree of suicidal ideation experienced, or the level of intent to die.

Another drawback of studies which relied solely on information from standardised patient datasets is that little was recorded of the circumstances surrounding the overdose. For example, information contained in generic patient databases may not be useful in answering questions about where the medications were obtained from, for what purpose, how they were consumed in the overdose, and whether alcohol intoxication preceded or co-occurred with ingestion. The authors of a study which found the rate of benzodiazepine overdose was higher among population groups in receipt of more prescriptions for such medications suggested that the issue of prescription required further investigation (Ticehurst et al., 2002). It was not possible to tell from hospital data alone whether the medications had been deliberately sought with the intention of overdose, whether patients were being ineffectively treated with

benzodiazepines for depression, or whether the medications had a causal role in the overdose by precipitating disinhibition, depression, or anxiety. Such questions may be better answered by direct patient interviews, and may have important implications for prevention if improved prescribing practices lead to reduced access to a common means of self-harm.

1.4.11 Summary

ED-based studies have found that medication overdose usually accounts for a small proportion of the total cases (approximately 1%), but is implicated in most cases of self-harm (approximately 90%). The number of presentations to the ED for medication overdose varies considerably with time of day, with most occurring in the evening. Repetition is not uncommon, with Australian studies finding recurrence rates of about 12-14% within two years of the index episode. While the vast majority of medication overdose patients do not subsequently commit suicide, the risk level is higher than for the general population, as is the risk for early death by other non-suicide causes. Repeated overdose events of increasing severity are a serious suicide risk marker.

Most medication overdose patients are female. Psychiatric conditions, especially depression, are prevalent among this group and co-morbidity is common. Upon presentation to the ED medication overdose patients are categorised as being more urgent than other patients, and tend to require a longer hospital stay.

Psychotropic medications such as benzodiazepines and antidepressants, and analgesic medications such as paracetamol are the most commonly used medications in overdose cases. Most overdoses involve only one or two different medications. Consuming multiple medications is associated with higher suicidal intent, and greater likelihood of fatality. There are some group differences in the medications chosen for overdose, possibly reflecting underlying psychiatric diagnoses. Concurrent alcohol use occurs in about a third of medication overdoses.

In addition to medical management of overdose, there is emerging evidence that thorough psychiatric or psychosocial risk assessment of patients attending for care forms part of good clinical management. Referral to specialist follow-up services or intervention may offer additional protection against recurrent overdose, although

further research is required. Contemporary practice should avoid punitive or disrespectful treatment of medication overdose patients.

Previous emergency care based studies have made a significant contribution to the understanding of medication overdose. However, there still remains much to be learned about the phenomenon, particularly as experienced in a Melbourne ED. It is not yet well understood how medication overdose patients differ from two patient groups with apparently similar presentations; patients at-risk of self-harm by other means, and patients who overdose on illicit substances. It would also be of interest to supplement hospital data sources with information provided directly by medication overdose survivors regarding their psycho-social history, circumstances of their overdose, and experience of emergency care. While depression and suicidality are clearly associated in some individuals, the interplay between these factors as a person contemplates medication overdose has not been thoroughly examined.

2 Aims

2.1 Significance of Research

Non-fatal medication overdose represents a significant public health issue. This study aimed to provide a description of such presentations to the ED of one major inner city public hospital, using a range of temporal and personal characteristics. Unlike most previous studies of non-fatal medication overdose which relied on a single source of information, this study utilised data from three sources; computerised hospital records, patient interviews, and observation. The study findings therefore have the potential to contribute to a greater understanding of the characteristics of medication overdose patients in comparison to other similar patient groups, and to also provide a description of the environmental and psychosocial factors which may mediate the occurrence of medication overdose.

2.2 Specific Objectives

1. To assess the contribution medication overdose presentations made to the overall patient presentations to the ED of a major inner-city public hospital in Melbourne, Australia.

2. To describe who attended the ED for medication overdose, and to compare this group with three others: all patients who attended the ED, patients who attended for illicit drug overdose, and patients who attended because of potential self-harm or actual self-harm by means other than medication overdose.

3. To better understand the relationship between a) specific suicidal intent, b) suicidal ideation, and c) depression in a convenience sample of medication overdose survivors.

4. To document which prescription and OTC medications were implicated in medication overdoses presenting to the ED, and to qualitatively document how the medications involved were typically acquired.

5. To qualitatively document individual experiences of the emergency medical system following medication overdose.

6. To describe the experience of conducting research with a vulnerable population in a complex and sensitive environment and to comment on the feasibility of further similar research or of introducing a brief intervention into the ED environment.

2.3 Research Questions

A series of research questions were developed in relation to each of the stated objectives.

1 To assess the contribution medication overdose presentations made to the overall patient presentations of a major inner city public hospital in Melbourne, Australia.

   (i) How many presentations were there to the ED in a 12-month period for medication overdose?

   (ii) When did presentations occur?

2 To describe who attended the ED for medication overdose.

   (i) What was the broad demographic profile of all patients attending for a medication overdose, and how did this compare to those attending for illicit drug overdose, or for self-harm by means other than overdose?

   (ii) Of a sub-sample of patients, could a profile be developed to describe this group on a range of characteristics? (i.e. demographic, physical health, mental/psychiatric health, drug and alcohol use/dependence, treatment history, previous overdoses, personal and family history of self-harm, recent significant life events and social support).

3 To better understand the relationship between a) specific suicidal intent, b) suicidal ideation, and c) depression in a sub-sample of medication overdose survivors.

   (i) Were scores on standardised measures of depressive symptomatology (BDI-FastScreen) (Beck et al., 2000) and suicidal ideation (BSS) (Beck &

Steer, 1993) congruent with (i) each other, and (ii) with participant ratings of the deliberateness of their overdose and their wish to die at the time of overdose?

(ii) Were participant scores on the BDI-Fastscreen and BSS (and other measures) consistent with participant narratives regarding their state of mind and intentions at the time of the overdose?

(iii) Did other factors appear to be systematically related to BDI and BSS scores? (e.g. demographic, physical health, mental/psychiatric health, drug and alcohol use/dependence, treatment history, previous overdoses, personal and family history of self-harm, recent significant life events and social support).

(iv) What was the overdose process as described within participant narratives?

4 To document which prescription and OTC medications were implicated in medication ODs presenting to the ED, and to qualitatively document how the medications were typically acquired.

(i) What classes of medications were implicated in overdose presentations to the ED in a 12-month period?

(ii) In what manner were substances consumed in an OD situation? (e.g. all at once or gradually?)

(iii) Were other substances usually implicated in the OD? (e.g. were participants intoxicated on alcohol or other substances at the time of the OD?)

(iv) Were the medications involved acquired specifically with the intention of overdosing, or for therapeutic reasons but then used in an OD?

(v) Where prescription medications were involved (rather than OTC), how were they obtained, and was this through legitimate channels or otherwise?

(vi) What level of understanding did medication overdose survivors have of the intended purpose of their medications and recommended dosages?

5 To qualitatively document individual experiences of the emergency medical system following medication overdose.

(i) What were the typical pathways of care through the emergency medical system for medication overdose patients?

(ii) What experiences did medication overdose patients have of the emergency medical system? (including ambulance attendance, while in the ED, and upon discharge)?

(iii) Were patients satisfied with their treatment in the emergency medical system?

6 To describe the experience of conducting research with a vulnerable population in a complex and sensitive environment and to discuss the feasibility of further similar research or of introducing a brief intervention into the ED environment.

(i) What was the ED like as a research environment?

(ii) What was it like to conduct research interviews with medication overdose survivors recruited at the point of emergency medical care?

(iii) What did these experiences suggest about the conduct of future research?

(iv) What did these experiences suggest about the potential to introduce a brief intervention?

3 Method

3.1 Research Site

The research questions outlined in the preceding section were addressed using three main sources of data collected at St Vincent's Hospital ED. St Vincent's is a major public hospital and is located on the edge of Melbourne's Central Business District.

Access to the ED was negotiated with the Medical Director of the department. The Director was able to provide access to the department at all times, office space, computer facilities, access to the patient database, use of an interview room, and an introduction to ED staff. The Deputy Director, Nursing Unit Manager, Psychiatric Consultant Liaison and the Director's personal assistant also provided support to the project.

3.2 Data Sources

(1) Audit of Patient Administration System (PAS) Data - Information regarding every presentation to the St Vincent's Hospital ED is entered onto the PAS database by ED staff. A prospective audit of relevant cases entered onto the database was conducted for a 12-month period from 1st November 2003 to 31st October 2004.

(2) Patient Interview Data – In-depth semi-structured interviews were conducted with a convenience sample of medication overdose survivors seen in the ED.

(3) Observational Data – Detailed observational notes were kept by the researcher during the 12-month data collection period on the operation of the ED and interactions between staff and patients, with the purpose of creating a description of the ED response to medication overdose.

3.3 Explanation for the Selection of Data Sources

As can be seen from the research questions previously listed, this project aimed to investigate the phenomenon of medication overdose on a number of levels. At the broadest level, it sought to quantify the extent of this problem as experienced by a single ED on a range of dimensions (e.g. number of cases, temporal patterns, broad demographic profile, and medications implicated). The relevant research questions

were therefore primarily concerned with incidence. The audit of the PAS data enabled the researcher to capture all medication overdose events occurring within a 12-month timeframe, to describe the total population of medication overdose presentations in terms of the above-mentioned variables, and to explore the relationship between them via statistical analyses. However, as useful as these data were in describing the extent of medication overdose treated within a hospital ED, they explored only one dimension of the issue.

In addition to quantifying the extent of such presentations, the study also sought to examine the characteristics and experiences of individuals presenting to the ED for a medication overdose. For example, some of the research questions concerned multifarious characteristics of medication overdose patients (such as mental health history, previous experiences of self-harm, and intentions), the manner in which medications were obtained and consumed, and personal experiences of the emergency medical care system. As suggested in Flick (2002), not all research topics are necessarily suitable for empirical quantitative research methods. In particular, when the object of interest is in some way exceptional, or the concepts involved are imprecise, qualitative methods may be more appropriate. Given that the research aimed to investigate the phenomenon of medication overdose as experienced by individuals, it was thought that a semi-structured format could better capture the complexity of this than purely quantitative methods. This approach allowed for the inclusion of both “theory-driven, hypotheses-directed questions” (Flick, 2002, p. 81), and open questions that invited participants to provide their perspective in examining the topic.

The study was also intended to yield a description of the broader processes at a single ED for dealing with medication overdose. Such a view may not be readily available from the audit of all cases attending, nor is it likely that a single person presenting with an overdose would have a clear sense of the system more generally, though they may certainly be able to contribute a personal account. However, observational data provided a useful mechanism by which to build an overall picture of the workings of the ED and how the ED response might be improved upon.

This study therefore explored the phenomenon of medication overdose by involving multiple data sources and various methods. By triangulating data sources and

methods, conclusions reached by one technique were complemented by other techniques (Flick, 2002). Further detail on each of the data sources, including the method of data collection and analytic strategy, is provided below.

3.4 Audit of Patient Administration System (PAS) Data

3.4.1 The PAS

PAS is a computer database used within the ED. It has both a record keeping and clinical function. When a patient presents to the ED his or her details are taken by the triage nurse on duty. The information entered onto PAS includes both administrative details (e.g. name, address, next of kin), and clinical details concerning the current presentation. Any previous visits by the same patient can be retrieved and the new information added to their patient history. Each patient is assigned an identity number to link his or her records over time.

Information recorded at triage includes the date and time of presentation, presenting complaint, age, sex, patient record number, triage level and a brief narrative of the case.[26] Once the patient's details have been entered and they have been triaged, their name, age, presenting complaint and priority level appear as an icon on a computer screen showing a floor plan of the ED (i.e., it is possible to tell whether a patient is in the waiting room or a particular cubicle within the ED. When a patient is relocated within the department their icon will also be moved on the map). PAS information is accessible by all staff on designated computers within the ED and is used throughout the patient's stay in the department.

Treating staff may add brief additional information to PAS records as they go about their work. For example, a clinician may record regular observations (e.g. blood pressure), whether any tests were conducted, or whether the person was referred for psychiatric assessment.[27] The time the patient was seen, the time discharged, and discharge status[28] are also routinely recorded.

[26] For example, the narrative may say something like; "Patient brought in by ambulance complaining of headache and nausea. Admits to consuming alcohol and 8 serepax since 14:00. Patient history of depression and self-harm."

[27] This information is in addition to the more detailed information that is recorded on each patient's hard copy medical file. However, only information recorded in PAS formed part of the audit. Individual, hard copy patient

While information is added to PAS on a real time or live basis, it is possible to subsequently review the records for each day. Therefore, for any given day it is possible to determine how many cases attended the department and to access the record of each patient's stay. PAS does not contain full medical histories, however there is sufficient detail available to answer research questions posed via an audit of cases presenting within a 12-month period.

3.4.2 Data extraction

Process

The daily list of patient attendances recorded on PAS was reviewed for each 24-hour period (midnight to midnight) for a period of one year from 1st November 2003 to 31st October 2004. The total number of cases attending the department for any complaint was recorded and then the list reviewed for relevant cases (see 'Case selection' below). Where relevant cases were identified, the following information was noted for each patient:

- Date and time of initial presentation to triage
- Day of week of presentation
- Date and time patient seen by treating staff
- Date and time of discharge
- Patient identity number[29]
- Triage level assigned to patient
- Presenting complaint
- Age
- Sex
- Discharge status

---

files were not viewed by the researcher and did not form part of the data collection process. The purpose of the audit was to gain an overview of the Emergency Department's work in relation to medication overdose, rather than to conduct a detailed examination of individual cases via accessing medical records.

[28] Where the person was discharged to; for example, home, admitted to ward, etc.

[29] The patient identity number was recorded to enable the researcher to determine how many patients re-attended within the 12-month period with a similar presentation. No names or other identifying information were recorded.

- Brief case narrative as entered by triage and treating staff

While relevant cases were often identifiable from the presenting complaint listed (e.g. “overdose/ingestion/poisoning”), eligible cases could be listed under a variety of presenting complaints. Reviewing the case narratives often revealed additional cases for inclusion, therefore all presentations for any given day were reviewed to ensure every relevant case was included in the audit.

Case selection

While this study specifically focused on medication-related overdoses, it was of interest to compare these cases with presentations for illicit drug overdose and deliberate self-harm on variables such as age and sex. Therefore details were recorded of the following types of presentation:

- Presentations arising from misuse or overdose of medication(s), whether accidental or deliberate
- Presentations arising from intoxication or overdose on illicit drug(s), whether accidental or deliberate, and
- Presentations identified as involving thoughts, threats, or actions of deliberate self-harm.

A single case may have qualified for inclusion on any one, two or three of these counts. The overlap between cases and allocation to independent groups is described later.

There were times when it was difficult to determine whether to include a case on the basis of the information available on PAS. In such instances a decision was made on whether to include or exclude the case, the principle behind the decision recorded, and this “rule” then applied to all subsequent similar presentations to ensure consistency across the data collection period. These criteria are summarised below.

Inclusion and exclusion criteria

Medication misuse or overdose

The focus of this study was medication overdose. The first element of this term was relatively simple to define; “medication” was taken to mean any pharmaceutical

preparation available on prescription or OTC. Therefore, it did not include naturopathic or herbal preparations.

However, the concept of "overdose" in relation to medications was more difficult to define with precision. There is no single set of biological markers of excessive use (e.g. unconsciousness, shallow breathing) that apply across all medication types. Further, the amount of any particular medication required to have a toxic effect will depend on a range of variable such as the sex and weight of the individual, tolerance effects, substance interaction effects and so on. For example, a person who already has impaired liver function may be more susceptible to the effects of a paracetamol overdose than someone with a healthy liver. Additionally, the intention of the person may not be reflected in the amount of medication taken; one person may have consumed a harmless level of medication but regard it as an overdose, while someone else may consider their dangerously high level of medication consumption as innocuous.

Given the impossibility of establishing inclusion criteria based on the actual level of medication consumed or a particular set of medical signs occurring as a consequence of that consumption, a more general (and therefore inclusive) definition of medication overdose was adopted which included the misuse of medications. For the purposes of this study any case in which the inappropriate consumption of prescription or OTC medications contributed to the presentation to the ED was regarded as "medication misuse or overdose" and so included in the audit. Inappropriate consumption included taking medication in a manner other than what would ordinarily be prescribed or recommended and could therefore range from taking a small number of tablets with nil discernible ill-effect to taking hundreds of tablets with life-threatening consequences. The medication was regarded as contributing to the presentation if there was any direct relationship between the inappropriate use of medication and the presenting complaint. In the simplest example, a patient would be triaged specifically as an "overdose" upon arrival at the ED. In a less obvious example, a person might present with a complaint of "diabetes", but if the diabetic reaction followed a massive overdose of insulin, then it would be reasonable to claim the inappropriate use of medication contributed to the presentation. Such cases were therefore also included in the audit.

Although these inclusion criteria were adopted from the beginning of the project, the researcher continued to encounter cases in which further judgement was required as to whether or not a particular presentation should be included in the audit. Where such a judgement was made, the reasons for deciding for or against inclusion were noted and then this rule applied to all future cases with similar features. The following types of cases were excluded:

- Cases where the consumption of pharmaceutical medications was suspected, but not confirmed.
- Cases where the overdose was due to some other substance such as disinfectant or mouthwash (though if deliberate, the case may have been included as 'Self-harm, page 114).
- Cases where the narrative referred to the current prescription medications taken by the person, but where there was no implication of misuse or overdose. This was sometimes a difficult judgement to make in cases where a person presented for alcohol or other drug intoxication as it is possible that the concurrent use of medications, even as prescribed, may have contributed to the altered conscious state. In general, if a person had only taken their normal therapeutic dose (e.g. a single antidepressant tablet) the case was not included even if the person was intoxicated on some other substance such as alcohol. An exception to this was if the person had consumed benzodiazepine medication in conjunction with heroin, in which case the case was also counted as a medication overdose as the capacity of even small doses of benzodiazepine medication to potentiate the effects of heroin is well established.
- Cases where the patient alleged they had consumed a "spiked" drink. The handful of such cases that presented during the 12-month period were excluded on the basis that there was no confirmation that the drink did in fact contain a medication. Had such confirmation been available the case would have been included.

Occasionally a case was triaged as an overdose, but from the information contained in the narrative it was apparent that no overdose had occurred, although the case was medication-related. For example, there were a few cases where the patient was in fact seeking benzodiazepine medication from the ED. There was also a case triaged

as an overdose in which the consumption pattern (i.e. an extended period of excessive use of benzodiazepines followed by sudden cessation) and the physical symptoms described (i.e. nervousness, sweating, derealisation, seizures) were more consistent with a withdrawal syndrome than overdose, therefore this case was not included as an overdose.

There were a small number of cases where a person was brought to the department by third party (e.g. friend or relative) who alleged the person may have taken a medication overdose but where the patient denied any such event. These cases were excluded unless there was other evidence such as a test result that indicated an overdose had in fact been taken.

Cases where the person had taken the medication as recommended by a doctor, but then had an adverse reaction to the medication were not included, even if triaged as an overdose. (Conversely, if a patient was accidentally administered an excessive dose the case was included, for example, a patient in a nursing home given incorrect medication).

Illicit drug intoxication or overdose

As with medication overdose, there were two elements to the term illicit drug overdose, and also as with medication overdose, the definition of the substance was more straightforward than the definition of the outcome. Presentations involving the ingestion of illicit drugs were taken to be those involving substances including heroin, amphetamines, ecstasy, GHB, ketamine, cannabis, inhalants[30], hallucinogens, and cocaine.

In terms of overdose, some drug types lend themselves more readily to a tight definition than others. For example, an overdose of heroin might be defined as any case in which the person becomes unconscious, stops breathing and is cyanosed, or any case in which a positive response to the antidote naloxone is apparent. However, for many other drug types there is a much wider margin between an effective dose and a toxic dose (or overdose). Therefore it is unlikely that any person who has

[30] Inhalants are not strictly speaking an illicit drug. As inhalants are generally commonly available household products, they are legal to possess, although it is an offence for a shop-keeper to sell such products to an individual if the shop-keeper believes they are to be used for inhaling (Australian Drug Foundation, 2004). However, due to the risks associated with inhalant use, they have been included here as an illicit drug.

consumed an excessive amount of a drug such as cannabis would actually stop breathing as a direct consequence of their drug use, nor is there any antidote which can be used as a biological marker of an overdose.

Rather than try to establish different benchmarks for overdose according to each drug type, it was decided that any case in which recent illicit drug use (i.e. the person was substance-affected) was a feature of the presentation would be included in the audit. The rationale behind this was that any level of illicit drug intoxication warranting medical attention is problematic, regardless of whether it is life-threatening, and that in terms of understanding the contribution of illicit drug use to the patient load of the ED, the distinction between different levels of intoxication, or indeed defining the specific point at which an overdose might be said to occur, is spurious – resources are allocated to the patient regardless.

As with the medication related presentations outlined above, during the process of conducting the audit there were a small number of cases which at first glance broadly met the inclusion criteria outlined above, but which were excluded on the basis of further detail provided in the narrative. These included:

- Cases involving illicit drugs which were triaged as an overdose but where the narrative indicated the patient was in fact in withdrawal, seeking detoxification, or seeking medication.
- Cases where the presentation did relate to the use of illicit drugs, but where the person was not intoxicated at the time of presentation. For example, there was a case where a person had consumed amphetamines two weeks prior and presented complaining of feeling anxious ever since. This case was excluded from the audit. Similarly, there were cases of “drug-induced psychosis” – these cases were only included if the person was intoxicated as well as psychotic upon presentation. If the psychosis was an ongoing consequence of past drug use, but without evidence of current intoxication, the case was not included in the audit.

Self-harm

All presentations to the ED for the 12-month period that involved any reference to deliberate self-harm or suicide were included in the audit. This could range from a patient acknowledging having thoughts, feelings, or wishes of deliberate self-harm or suicide, through to actually engaging in deliberate self-harming behaviour. In terms

of deliberate self-harm, cases were included whether or not the person was actually suicidal (e.g. cases of self-cutting to relieve tension rather than to commit suicide).

As cases involving "medication misuse or overdose" and "illicit drug intoxication or overdose" were already being included in the audit, and it was not always possible to tell from the narrative whether such overdoses were instances of deliberate self-harm or accidental poisoning, such cases were not also counted as self-harm events unless either, (i) there was information in the narrative that made it clear that was the intent of the event, or (ii) there was some other self-harming behaviour undertaken in conjunction with the overdose. While these cases were included as self-harm for the purposes of data collection and calculating initial frequencies, the comparison of interest for the study is between medication overdose and self-harm by other means.

Other types of self-harming behaviour included poisoning by other substances, self-inflicted scratches/cuts/lacerations/stabbing, ingestion of foreign objects, jumping from height, hanging/strangulation, deliberate involvement in a car/train/tram accident, exhaust/gassing, and burning/electrocution.

There were a small number of cases that were borderline for inclusion in the audit and the following exclusions were developed:[31]

- If the narrative referred to a patient history of suicidal tendencies, but did not mention self-harm in relation to the current presentation.
- If the presentation referred only to "harm", e.g. "thoughts of harm", but did not specify whether these thoughts were directed at self or others.
- If the presentation was due to a third party reporting that the patient had suicidal thoughts which were denied by the patient, and there was no other evidence to suggest suicidal thoughts or behaviour. Similarly, if a patient was thought to be potentially suicidal but this was not firmly established due to a language barrier.
- If a patient complained of hearing voices telling them to die or kill themselves, but the person was able to resist and not act upon the voices and had no desire or impulse to self-harm.

[31] This list was developed as data collection progressed. Each time a case was borderline for inclusion, the researcher determined whether or not cases with that characteristic (e.g. history of suicidal tendency, but not in relation to the current presentation) were to be routinely included or not, and a written note made of the decision. Such rules were then consistently applied to all future cases identified with the same characteristic.

- If a person had taken an action that could potentially be regarded as suicidal, but the narrative gave rise to doubt about the intention of the person by the act. For example, there was a case of a person jumping from a dangerous height while intoxicated and with the police in attendance. This case was excluded as it was not clear whether the leap was an incident of deliberate self-harm or an attempt to evade the authorities.

3.4.3 Data entry and coding

Details for 1,475 relevant cases of the three types above were recorded by hand onto a daily log sheet and then transferred into a specifically designed spreadsheet. Information from the case narrative field was also coded to a further level of specificity. Where possible, the following information was extracted from the narrative field:

- Whether alcohol was implicated in the presentation
- Whether the patient was referred to "Psych Triage"[32] or "Alert"[33] services
- Whether there were any security concerns arising during the presentation (e.g. did the person require physical restraints)
- In regard to medication misuse or overdose cases, what medications were implicated
- In regard to illicit drug intoxication or overdoses, what substances were taken
- In regard to cases of deliberate self-harm, whether this took the form of thought, threat or action to self-harm and what means of self-harm were involved

Further explanation of each of the above is provided in the relevant results section.

The Australian Medicines Handbook (Rossi, 2003) was used as a guide in categorising the medication types named in the PAS narratives. In that publication

[32] Psych triage is a team of trained staff (e.g. psychiatric nurses, psychologists, etc) based in the ED who are able to provide a brief psychiatric assessment of any patient referred by the treating staff. If a more intensive assessment is required either the psych registrar or Crisis Assessment and Treatment Team (CATT) are contacted. The CATT service provides urgent assessment and short term intensive treatment in the community to people in crisis due to a mental illness.

[33] Alert is a multidisciplinary team (e.g. social workers, occupational therapists) who are called upon to respond to frequent presenters to the ED with the aim of identifying appropriate alternative community support services for the person and facilitating access to these in order to reduce the likelihood of continued presentations.

medications are divided into chapters according to the organ system that the drug is intended to affect or the broad therapeutic action.[34] Within these chapters the medications presented are further grouped into classes and subclasses. This structure guided the categorisation of medications implicated in presentations to the ED.

However, there are some medications which have more than one possible use and which appear in more than one chapter in Rossi (2003). The following decisions were made regarding medications that could be included in more than one category; clobazam, clonazepam, diazepam, and flunitrazepam are all benzodiazepine medications (i.e. psychotropic medications), which may also be used in the treatment of epilepsy (neurologic): these were classified as psychotropic for this study. Buprenorphine and methadone are both used in the treatment of opioid dependence (psychotropic), but are also listed as analgesic medications: for the purposes of this study they were classified as psychotropic medications for the treatment of opioid dependence, along with naltrexone (which may also be used in the treatment of alcohol dependence). Non-steroidal anti-inflammatory medications (NSAIDs) are used for both their analgesic and anti-inflammatory effects and may therefore be used for a range of conditions such as osteoarthritis. They are classified as musculoskeletal drugs in Rossi (2003), but are also cross-referenced in the chapter on analgesic medications. For this study NSAIDs were categorised as non-opioid analgesics. There were a small number of drugs named that are usually used in the treatment of coughs, colds and flu, some of which act on the respiratory system and some on the nose. These were all included in the one category, "cough, cold, and flu medications". Cases involving electrolytes[35] were also included as a separate category.

[34] The chapters are as follows; Allergy & anaphylaxis, Anaesthetics, Analgesics, Antidotes & antivenoms, Anti-infectives, Cardiovascular drugs, Coagulation & blood formation, Dermatological drugs, Ear, nose & throat drugs, Endocrine drugs, Eye drugs, Gastrointestinal drugs, Genitourinary drugs, Immunomodulators & antineoplastics, Musculoskeletal drugs, Neurological drugs, Obstetric & gynaecological drugs, Psychotropic drugs, Respiratory drugs, Vaccines and immunoglobulins (Rossi, 2003).

[35] This includes any oral or injectable electrolyte (e.g. potassium chloride). Electrolytes may be used for re-hydration following diarrhoea and are included in this study because highly concentrated doses may have a toxic effect.

Once all the information from PAS was entered into the spreadsheet and any additional coding completed, the entire 12-month data file was exported to SPSS 13.0 (SPSS Inc., 2004) for further analysis.

3.5 Patient Interview Data

3.5.1 Eligibility

To supplement data available from the PAS audit, in-depth semi-structured interviews were conducted with a convenience sample of medication overdose survivors seen in the ED. Any patient whose presentation to the ED met the criteria for 'Medication misuse or overdose' (page 110) was considered eligible for inclusion as an interview participant, provided they met the following additional criteria:

- Over the age of 18
- Capable of giving informed consent to participate in the study
- Able to speak English[36]
- Not currently in custody[37]
- Actually seen for treatment[38], and
- Cleared by the medical and/or Psych Triage staff

Each person who attended the ED in relation to medication misuse or overdose could only be interviewed once, regardless of how many times they presented during the data collection period.

[36] Unfortunately the researcher can only speak English. The employment of interpreters was beyond the budget for this project, and even if such resources were available the interview covered some sensitive and complex subjects that may not have been suitable for translation. The standardised measures would also have needed to be translated, giving rise to questions of reliability. For these reasons only English-speakers were included in the study. This criterion excluded a small proportion of potential participants.

[37] Some patients treated in the ED for medication misuse or overdose were either currently on remand or imprisoned, or were accompanied by police to the hospital for later questioning. It was decided not to include such cases in the sample due to the difficulty accessing some of these patients (i.e. they may not have been free to return to the department at a later date for an interview) and also the additional security concerns associated with interviewing patients who are in custody.

[38] Some potentially eligible patients left the department after being triaged, but prior to being seen by a member of the treating staff. As referral to the study could only happen at the conclusion of treatment, it follows that those who left before being seen could not be included in the patient interviews.

3.5.2 Recruitment process

Individuals who met the eligibility criteria were invited to participate in the research. The researcher was unable to approach patients directly due to privacy concerns, therefore treating staff were asked to assist in the referral process. Staff were requested to mention the study to patients and seek their permission for referral.

As it was impossible for the researcher to be in the department at all times the initial plan was that there would be two methods of referral. The first method was intended to operate at times when the researcher was not present in the department. Staff were to mention the project to eligible patients and, if the patient indicated they were interested in referral, to give them a study card. The study cards were printed with a brief description of the project, a serial number, and a free-call contact number so the patient could telephone the researcher if they were interested in participating. Staff were requested to record the details of any such referrals on a log sheet kept with the study cards in the clinical area of the ED. However, it became apparent during data collection that this method of referral was not very effective, as staff were often too busy or simply forgot to refer eligible patients. Only a small number of referrals were achieved through this means, despite the researcher attending staff meetings and putting up signage to alert staff to the project. The lack of success via these means did not appear to be due to staff antipathy towards the project, but rather a case of having other more pressing duties to attend to.[39]

The second means of recruitment was used when the researcher was actually in the department. Upon becoming aware that a potential participant was in the department, the researcher approached the relevant staff member to enquire whether referral might be possible once the patient was sufficiently medically and emotionally stable, and if so, whether the staff member could initiate this.

Many patients who were eligible for the study were receiving both medical treatment by the doctors and a brief psychiatric assessment by Psych Triage staff. Where there was involvement by both medical and psychiatric staff the researcher endeavoured to seek the approval of each party before requesting the patient be approached for

[39] When the study was originally conceived it was intended that 200 participants be recruited. However, once it became apparent that this target was unlikely to be attained, the sampling target and strategy was revised. See 3.5.3, Sample size.

inclusion in the study. This was to ensure that all relevant treating staff were satisfied that the patient could safely be referred and interviewed. There were a small number of instances where the medical doctor cleared the person for inclusion, but the Psych Triage staff involved expressed some reservations about the suitability of a particular patient, and vice versa. In the interests of patient safety and also preserving harmony within the department the researcher opted not to include any patient against the advice of a staff member, even if another person involved in their care had given permission for the person to be approached.

If the treating staff felt that the patient was well and that referral would be appropriate they briefly introduced the study to the patient and asked if the researcher could speak to them. If the patient was willing, the researcher then introduced herself, outlined what taking part in the project would involve, stressed that participation was voluntary, gave the person a study card and suggested that if they were interested in participating they could either make an appointment time for an interview or ring back later once they had time to consider the matter further.

In cases where the person was eligible, the treating staff were satisfied of their suitability for inclusion, and the person agreed to take part in the study a mutually agreeable time within 10 days was set to conduct a full research interview. The 10-day limit was set in order to maximise recall of the event, although in practice the researcher exercised some discretion in relation to this. For example, if a person initially made an appointment for within the 10 days but then needed to reschedule to a date falling outside the 10 days that request was accommodated. Verbal consent only was collected at initial recruitment. Full written consent was obtained at the time of interview.

It was generally suggested to participants that the interview time be arranged for a few days after discharge from hospital to give them a chance to recuperate from the overdose before the interview. Seven people had their interview on the same day they initially attended hospital, and another seven the following day. A further nine were interviewed within a week of attending and another four within two weeks. The remaining four participants were interviewed at 15, 19, 32 and 49 days respectively, although all initially made contact with the researcher within 10 days of the overdose

as requested on the referral cards. The mean number of days to interview was 6.2, and the median 2.0 days.

3.5.3 Sample size

The purpose of the in-depth interviews was to complement the data available from the audit with highly personalized, qualitative information. Therefore, the sample size was determined with the aim of obtaining a rich description of experiences from a limited number of patients. These participants were recruited via a convenience sampling strategy (Flick, 2002). Given the nature of the research environment (i.e. a busy ED), and the population of interest (patients with potentially high medical and psychiatric care needs), it was unlikely that it would have been possible to recruit a representative sample. The sections concerning the 'Recruitment process' (page 119) and 'Ethical Issues' (page 136) describe more fully some of the issues concerning recruitment of participants to this study. Over the data collection period 31 patients were recruited to participate in the interview component of the study.

Data collection for the patient interview component of the study commenced on 13/10/2003 (i.e. data collection for this component of the study extended for 12.5 months until 31/10/2004). During this time a total of 546 cases involving medication overdose or misuse attended the ED. Twenty-two of these left before being treated, 19 were ineligible due to the fact that they were aged less than 18 at the time of the presentation, and a further 13 could not be referred to the study because they were in custody. Therefore there were a total of 493 cases that were eligible for referral (one case was ineligible of two of these grounds), and these cases were accounted for by a total of 396 individuals.

Of the 493 presentations, 345 were not provided with a study card or in any way informed about the study, and there were a further 18 for whom it is not clear whether they were provided with a study card (staff may have provided these to patients when the researcher was not present, but if so, there was no record kept). As there was limited information available on patients not referred to the study at all, it is impossible to establish what proportion of this group may have been ineligible in any case due to inability to give informed consent and/or language difficulties. Most of these cases presented to the department at times when the researcher was not present to arrange referral, often overnight. There were an additional 47 cases where

the staff treating the patient recommended against referring the patient, generally due to concerns about their medical or psychiatric condition, or inability to speak English. Of the remaining 83 cases for whom some attempt at referral was clearly made, 41 patients initially accepted referral or were given a study card but did not recontact the researcher in order to be interviewed, 11 declined the referral altogether, and 31 accepted the referral and were subsequently interviewed. Therefore over a third of those who could be approached to participate elected to take part in an interview.

3.5.4 Data collection procedures

Location

Twenty-six interviews were conducted in a private room within the ED itself: 16 with patients who had already been discharged and who returned specifically to participate in the interview, and 10 who had already been seen by the treating staff, but who were awaiting discharge from the ED. The remaining five interviews were conducted with patients admitted to a hospital ward.

Six participants declined to have their interview audio-taped. In these instances notes were written following the interview (in addition to completing the interview schedule). The audio-tapes of the remaining 25 participants were transcribed.

Informed consent procedures

When participants presented for interview, the researcher again provided a brief verbal explanation of the purpose and requirements of the study. Each participant was given a written explanatory statement about the study which included the names of those involved in the research team, the aims of the research, the approximate length of the interview, the subject matter of the interview, payment, confidentiality provisions, limits to confidentiality, data storage, the voluntary nature of participation in the research, freedom to withdraw and complaints procedures. Permission was also sought to audio-tape the interview for later transcription and analysis. In the event that the person had difficulty reading the explanatory statement was read aloud to the participant. Once the statement had been read by the participant (or aloud by the researcher), the participant was asked whether they had any questions. Participants willing to continue at this stage signed an informed

consent form. This was countersigned by the researcher. A copy of the explanatory statement and informed consent form may be found at Appendix E, page 333.

Upon attending for an interview each person was required to return the numbered card to the researcher. The serial number on the card, rather than the person's name, was then used to identify all survey forms.

Piloting

The first 15 interviews for the project formed a pilot phase for the interview schedule. This phase indicated that some modifications to the originally proposed survey instrument were required. In summary, the originally proposed instrument was longer and contained more standardised scales than the final instrument. It was found that many participants had difficulty with some of these structured elements of the survey and also that the interview was taking an excessive amount of time to complete (up to 2 hours). This resulted in several surveys having missing data. The researcher was also concerned that the interview process might unduly fatigue participants. Accordingly the survey instrument was modified to drop some of the more troublesome components, simplify the structure, and shorten the survey overall. No new components were added at this stage, although some elements were re-ordered or incorporated within other sections to better reflect the flow of participants' story-telling. The data from all interviews conducted during the pilot phase were able to be included in the final sample.

Interview processes

The length of interview depended on the talkativeness of the participant and ranged from 30 minutes to 2 hours and 10 minutes (average 73 minutes). The interviews followed a semi-structured format as outlined in the 'Survey form' section (page 124).

Participants demonstrated varying capacities to remain focused on specific questions and therefore there the interview sometimes had to be modified to suit the individual. For example, the questions concerning physical and mental health were intended to proceed sequentially with each individual area being enquired about. However, if the participant was repeatedly distracted by questions that were not personally relevant,

or inclined to give highly detailed but tangential responses, the interviewer would modify the questions in an effort to elicit the only the most germane information.

There were times when participants provided information relevant to later sections of the interview before the specific questions had been asked. Where possible the interviewer allowed participants to tell their story in the sequence that arose naturally to them, and noted down the information on the relevant part of the form.

There were a small number of individuals in which the interview was terminated before all questions had been asked. One person asked to finish early due to tiredness, and another was only available for one hour. There was also one referral back to hospital staff because the person still had concerns regarding the plan in place regarding discharge from hospital, which he felt would place him at-risk once he left the hospital and this was clearly of greater immediate concern than completing the interview.

Upon completion of the interview participants were given an envelope containing a clean copy of the plain language statement and consent form for their records, a referral directory with telephone numbers for various support services (see Appendix F, page 338) and payment of AU$30 to cover out-of-pocket expenses and inconvenience. The researcher routinely checked whether the person was in need of immediate assistance before leaving the hospital e.g. “Do you feel safe to go now?”, “Would you like to speak to one of the staff here?”, “Do you want me to arrange for Psych Triage to see you again?”.

3.5.5 Survey form

Both quantitative and qualitative data were collected. The survey form comprised questions developed specifically for the purposes of the study and standardised measurement scales. The purpose of the quantitative data was to describe the sample and to analyse the relationship between suicidal ideation, depression, and other variables, while the qualitative data was intended to provide a context for the overdose event. For example, how the medications involved were typically acquired (e.g. appropriately prescribed, stockpiled, diverted, black-market), participant knowledge and access to information about the intended purpose of medications, previous responses of the health care system to help seeking behaviour, existing

social support networks and referral to ongoing care and support. A copy of the full instrument may be found at Appendix G, page 340.

Demographic information

Standard questions were asked concerning sex, age, living arrangements, education, employment, cultural background, sexual orientation and parental status.

General health and treatment history

Two charts were developed to briefly canvass participants' physical and mental health. Their purpose was to assess general wellbeing and to establish which medications each person routinely took. With regard to general physical health, participants were asked about each body system (i.e. cardiovascular, respiratory, gastrointestinal, genito-urinary, musculo-skeletal, neurological, endocrinological, allergies, dermatological, "eyes, ears, nose and throat", psychiatric, and "other"). Where necessary, a lay-persons description of these areas was provided. For each area, the person was asked whether they were currently experiencing a problem, to briefly describe that problem, the duration of the problem, whether they would rate the problem as *mild*, *moderate*, or *severe* and what kind of treatment, if any, they were currently receiving in relation to that problem. Notes on psychiatric problems were only noted briefly on this chart with fuller notes being taken on the subsequent chart of mental and emotional wellbeing.

For the mental health chart, participants were asked if they had ever had each condition (i.e. mood disorder, anxiety, substance use disorder, schizophrenia or other psychotic disorder, attention deficit (hyperactivity) disorder, eating disorder, or "other"). It was possible that some people were unaware that they met the diagnostic criteria for a particular condition, while others may have self-identified as having a condition when in fact their symptoms would be regarded as sub-clinical if a diagnostic interview were undertaken. However, it was assumed that most people would be able to identify with some accuracy what mental health conditions caused them problems.[40]

[40] As the focus of this study was medication overdose, suicidal ideation and depression, it was felt that there was already enough material to be covered in the interview without undertaking a full psychiatric diagnostic interview such as the Composite International Diagnostic Interview (CIDI). The use of such a tool would have

It should be noted that the mental health section only specifically enquired about DSM-IV-TR Axis 1 disorders (American Psychiatric Association, 2000). Therefore personality disorders (included in Axis 2) were not included, although it is likely that some participants met the criteria for a personality disorder. It was decided not to include personality disorders because (i) even when a personality disorder is diagnosed, not all clinicians will necessarily tell the patient, so the person may not be aware of the condition, (ii) it was a concern that some participants might be offended by the implication that their personality might be "disordered", and (iii) most of the other psychiatric conditions included are understood by lay-persons, whereas the term personality disorder is less widely used by the general community and therefore potentially confusing.

For each self-identified psychiatric condition, participants were asked to briefly describe the problem, the approximate date they were first diagnosed (if applicable), what type of treatment they received, whether they were currently medicated, and how they acquired their medications. Regarding substance use, participants were further asked to nominate any substances they may have had problems with in the past, any substances they were currently experiencing problems with, and whether they were a past or current injecting drug user. The researcher also made an assessment of whether the person was currently substance dependent according to DSM-IV-TR criteria (Appendix H, page 354). All participants were also asked whether anyone else in their family had been diagnosed with any of the psychiatric conditions listed, and if so, what relation that person was to them.

When completing the charts, participants were prompted to provide more in-depth information about the medications they were taking (particularly those relating to psychiatric conditions) and any previous help-seeking experiences they had in relation to mental health and emotional wellbeing.

Medications involved in overdose

A chart was developed specifically for this study on which to record all medications and other substances consumed in the 24 hours prior to receiving emergency medical care for an overdose (included in Appendix G, page 340). The collection of

considerably lengthened the interview, and therefore it was decided that self-identification of mental health problems would be a sufficient alternative in this instance.

information regarding alcohol and drug use over a 24 hour period followed a similar format to the data collection method described in a previous study of suicide attempt (Kresnow et al., 2001).

The vertical axis of the chart was divided into 3 broad categories each made up of relevant sub-categories, i.e. prescription and OTC medications (antidepressants, benzodiazepines, antipsychotics, analgesics, methadone/buprenorphine, other), alcohol (spirits, beer, wine, other), and "other" drugs (cannabis, heroin, amphetamines, cocaine, hallucinogens, ecstasy). Along the horizontal axis, the page was divided into 24 columns, each representing an hour in the 24 hours preceding the person receiving medical attention. The chart was completed by the researcher asking the participant about each drug type and recording how much of each drug type had been consumed in each hour, or block of hours, prior to care. To improve the accuracy recall concerning pharmaceutical medications, a copy of the Australian Medicines Handbook (Rossi, 2003) was available during the interview and was consulted when necessary.

The source of most medications used was generally established in the section concerning health. However, if any medications not already mentioned were implicated in the overdose, the participant was asked at this point where the medications had been obtained from and what they thought their purpose was.

Medication related emergency care and the overdose event

The questions in this section concerned the specific experience of medication overdose for which participants had been referred to the study and previous overdose experiences.

With regard to the current overdose experience, participants were asked whether the word "overdose" was an "OK" term for them. Once acceptable terminology had been established, the date and time of the overdose for which they were referred to the study was ascertained. Participants were then asked several open-ended questions about their experience of the emergency medical system following the overdose. For example, how they got to hospital, what happened to them once they reached the ED, their interactions with various personnel (e.g. ambulance, doctors, nurses, Psych Triage), what happened upon discharge, any referrals or follow-up, and whether there had been subsequent contact with their GP or psychiatrist.

The next group of questions concerned to what extent the overdose was deliberate and why, and to what extent the person intended to die and why. Participants were asked to rank the deliberateness of the overdose for which they received the study recruitment card on a 5-point scale where 1 equalled *completely accidental/no intention to OD* and 5 equalled *completely deliberate/intended to OD*. The use of the scale was to allow participants to report ambiguity of intent in a way that would not be possible with a dichotomous choice of deliberate or not deliberate. Respondents were also asked why they had answered as they had. This allowed respondents to reflect on the reasons behind their overdose. The suicidal intent of the overdose was examined by asking respondents to nominate on a 5-point scale how strong their wish to die was, with 1 equalling *no wish to die* and 5 equalling *strong wish to die*. Again, participants were asked to reflect on their reasons for responding as they had.

BSS

Suicidal ideation at the time of the overdose was assessed using the Beck Scale for Suicide Ideation (BSS)® (Beck & Steer, 1993). The BSS may either be self- or interviewer-administered and consists of 21 items; 19 contributing to the overall score (each with three responses options, scored 0, 1, or 2), and two informational items which do not contribute to the overall score. The first five items of the BSS act as a screen so that only those who endorse active or passive suicide attempt are asked the full range of questions. The subtotals from the five screening questions and subsequent 14 questions are added together to give a total score (0-38). For the purposes of the present study those who were screened in for further questioning were regarded as having suicidal ideation, while those screened out were considered to have less severe suicidal ideation (although ideation may not have been completely absent). The administration time for the full inventory is 5-10 minutes. The instrument is based upon an earlier version of the same tool, the Scale for Suicide Ideation (SSI; Beck, Kovaks & Weissman, 1979, in (Range & Knott, 1997; Reinecke & Franklin-Scott, 2005)).

The BSS has been shown to have good reliability; and concurrent, construct, discriminant, factorial, and predictive validity have also been established (Beck & Steer, 1993). The reference period for the BSS is the past week, including the current day. However, the manual refers to studies where the scale was used in regard to a

more distant reference period and still demonstrated adequate reliability and validity. The reference period inquired about for the present study was *immediately prior* to the overdose. In this study the instrument was self-administered[41] unless the interviewer decided it would be preferable to assist the participant, due to poor reading skills or inability to concentrate on a written task. This occurred in 20% of cases.

BDI-FastScreen

Rather than assess whether a participant was depressed or not according to standard diagnostic criteria it was decided instead to assess the severity of depressive symptomatology. This was because many in the sample were likely to have previously been diagnosed with depression, and therefore more new information would be obtained using a scale (i.e. severity), rather than a dichotomous measure (i.e. depressed versus non-depressed).

The Beck Depression Inventory (BDI) FastScreen was used to assess the severity of depressive symptomatology (Beck et al., 2000). The BDI FastScreen is a 7-item self-report instrument that relates to the psychological, or non-somatic criteria, of the *Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition* (DSM-IV, 1994). The BDI-FastScreen is a shortened version of the well-known 21-item BDI-II (Beck, Steer, & Brown, 1996). It was specifically developed for use with populations with biological, medical, or substance use problems, the somatic and behavioural symptoms of which may overlap with those for depression (for example, changes in sleep patterns or appetite). An instrument excluding such items should avoid spuriously elevated severity scores (i.e. reduce the likelihood of false positives). As the sample included in the current study were considered likely to have medical and/or substance use problems, the BDI-FastScreen was chosen in preference to the full inventory. The shortened form also has the advantage of taking only minutes to complete.

The manual explains that of the seven items retained on the shortened form, the items relating to sadness and anhedonia were included because these must be present for a clinical diagnosis to be made, the item concerning suicidal thoughts or wishes

[41] The interviewer reviewed participants' answers to the first five questions (i.e. the screening component of the BSS) to determine whether the remainder of the instrument needed to be filled in by the participant.

was kept as an indicator of clinical risk, and the remaining four items relating to pessimism, past failure, self-dislike, and self-criticalness were chosen because previous research has found them to be especially salient to the cognitive dimension of depression (i.e. not overlapping with physical symptoms) (Beck et al., 2000).

Possible scores on the BDI-FastScreen range from 0 to 21. The manual provides cut-off scores based on medical settings where the average score is 8 and the standard deviation 4. Under these circumstances, the recommended cut-offs are 0-3 = minimal depression, 4-8 = mild depression, 9-12 = moderate depression, 13-21 = severe depression. The reliability, validity and clinical utility of the precursor instruments to the BDI-FastScreen (BDI, BDI-IA, BDI-II) have been well established in a range of studies (Beck et al., 1996, , 2000). The psychometric characteristics (reliability, content, and construct validity) of the BDI-FastScreen have also been found to be satisfactory (Beck et al., 2000). As with the BSS, the timeframe for the BDI-FastScreen is the two weeks prior to interview, including the current day. Once again however, participants were asked to answer according to how they felt in the hours *immediately prior* to the overdose. Participants self-administered the instrument unless it was apparent that they had difficulty in doing so. The interviewer administered the instrument in 17% of cases.

After completing the BSS and BDI-FastScreen participants were about their history of overdose events. For example, participants were asked how many times they had previously received emergency medical care as a result of taking too much medication, what treatment response they had received, how many times similar events had occurred where emergency medical care was not sought, and how many times, if any, the person had overdosed on illicit drugs. Participants who had previously overdosed (on any substance and whether or not help was sought) were then asked to reflect on their past reasons for so doing.

Personal and family history of suicidal behaviour

Participants were asked if they had ever deliberately hurt themselves without meaning to commit suicide (self-harm). They were also asked whether they had ever attempted suicide, and if so, how many times, the dates of the first and most recent attempts, and the method/s used (including medication overdose). Finally,

participants were asked whether anyone in their family or friends or close acquaintances had attempted or committed suicide.

Adverse life events

Given the established association between adverse life events and suicidal behaviour (Beautrais, 2000; Fremouw et al., 1990; Hawton & Catalan, 1987) it was thought important to gauge how many potentially stressful life events each participant had experienced in the 6 months prior to the overdose. To quantify the number of stressful events experienced (as opposed to the degree of stress objectively felt) participants completed a yes/no checklist of potentially stressful life experiences.

Participants were asked "In the last 6 months, have you experienced unhappiness or distress as a result of any of the following issues?" and provided with a list of 29 items (problems with parents, sexual abuse, problems with friends, unplanned pregnancy, anxiety about school/university performance, suicide of a friend, relationship break-up, own violent or criminal behaviour, financial hardship, sexual identity conflict, family member's death, physical abuse, problems at work, death of a parent, failure at school/university, abortion, unemployment, physical illness, parental divorce, sexually transmitted diseases, friend's death, physical disability, own alcohol consumption, homelessness, own drug use, suicide of a family member, violence in the home, mental illness, being bullied). Participants also had the option of identifying some other event they had found stressful, even if was not specifically included among the items.

The list of items was obtained from the survey used in The Queensland Young People's Mental Health Survey (Donald, Dower, Lucke, & Raphael, 2000), though in that study the timeframe was "ever", not the "last 6 months". This survey was chosen because it listed a comprehensive range of problems that have been recognised as risk factors for depression and suicidal behaviours such as relationship problems, work or study problems, financial problems and bereavement, and also because it was straightforward to administer. As in Donald et al. (2000), the number of stressful events experienced was totalled for each participant. Participants were asked which of the events they had experienced contributed most to feeling stressed in recent times and how it had affected them. This factor may not necessarily have precipitated the overdose itself.

Social support

To assess whether participants had a supportive network interviewees were asked whether they felt they received much support from their friends, family, and partner (if applicable).

Other considerations

In concluding the interview, all participants were given a final opportunity to provide any further information about their experience which they felt it was important for the researcher understand.

3.5.6 Data management

The researcher completed the interview schedule by hand during the interview and, where necessary, made additional notes immediately following the interview (e.g. if there was too much information to capture in detail during the interview). The data were later entered into an SPSS 13.0 (SPSS Inc., 2004) database (i.e. all of the quantitative information and brief elements of the qualitative data). In addition, the interviews were audio-taped and transcribed by the interviewer, and then imported into the QSR N6 software program (QSR International Pty Ltd, 2002) for later content analysis of the qualitative information. Interviewer notes only were imported into QSR N6 in cases where the participant declined to be taped.

3.6 Observational Data

The researcher kept field notes during the data collection period in a daily diary format. The notes included:

- days and times spent in the department
- observations about the operation of the ED
- interactions between staff and patients
- conversations with staff about their work in relation to medication overdose presentations, and
- recruitment of participants to the patient interviews (which staff members were involved - doctor, nurse, Psych Triage, etc, whether recruitment was possible, and if not, why not, efforts to improve recruitment).

Overall the researcher attended the department on approximately 230 days during the 12-month period at various times of the day and days of the week.

The purpose of collecting the above information was to increase the researcher's understanding of the ED environment in general and enhance the description of the response to medication overdose presentations in particular. Observational data were used to contextualise information from the PAS audit and patient interviews about how overdoses were dealt with in the ED and how different parts of the organisation linked together.

3.7 Analysis

The three data sources were of differing relevance in addressing each of the six research objectives previously described. Table 1 below shows the intersection between the research objectives and the three data sources. It can be seen that for some objectives more than one source was utilised in answering the specific research questions.

Table 1 Data Sources Used to Address Each Research Objective

Objective	PAS audit	Interviews	Observation
1. Number of medication ODs presentations	✓		
2. Characterisation of OD survivors	✓	✓	
3. Suicidal intent, ideation, and depression		✓	
4. Medications implicated	✓	✓	
5. Individual experiences of the ED		✓	✓
6. Conducting research in the ED			✓

3.7.1 PAS audit data

Basic frequencies of each of the three types of presentations of interest (medication misuse or overdose, illicit drug intoxication or overdose, and self-harm) were calculated and expressed as a proportion of the total presentations to the ED in the 12-month period. A Venn diagram was produced to show the overlap between the three. The data were then divided into three independent groups (i.e. some cases were dropped due to overlap between groups – see Results, page 144). Additional

descriptive analyses were run to determine the age and sex distribution of patients attending in each of the three independent groups, and to investigate temporal patterns such as the time of day/day of week of presentations, and total monthly presentations. Where data were available, analyses were also run for total presentations of any type to the ED in the reference period.[42] Frequencies were also run on the types of medication consumed.

Multinomial logistic regression was used to examine associations between several explanatory variables (age, sex, season, day, and time of attendance) and patient group. Logistic regression was used to explore the relationship between patient group membership and two binary treatment outcome variables (triage level and discharge destination). As the study focused primarily on medication overdose and the analyses were exploratory in relation to this group, it was necessary to nominate one of the remaining groups as the reference group. Given the body of evidence available relating to characteristics of illicit drug overdose, that group was selected as the reference group against which both the medication overdose and self-harm groups were compared. SPSS 13.0 (SPSS Inc., 2004) was used for all analyses.

3.7.2 Patient interview data

There were two forms of data available from the interviews; quantitative data entered into SPSS 13.0 (SPSS Inc., 2004), and qualitative data in the form of interview transcripts. The quantitative data was mainly used to generate basic descriptive statistics. As the BDI-FastScreen, BSS, and the two Likert-scales concerning intention all yielded ordinal data, correlation co-efficients were calculated as a measure of the association between these variables.

The interview transcripts were searched for text concerning the acquisition of medications and typical stories/typologies identified. The text was also examined for recurring themes or patterns concerning the reasons for, and circumstances of, the overdose in an effort to identify particular sub-types of overdose. The qualitative components of the transcripts were also scrutinised for information relevant to the person's experience of the emergency medical care system, such as how the person

[42] The results for total presentations of any type to the ED include presentations for medication misuse or overdose, illicit drug intoxication or overdose, and self-harm as it was not possible to separate out these cases from the data provided. For this reason, no statistical tests were conducted using total presentations to the ED.

came to attend the ED (i.e. self-referred or instigated by another). A content analysis of individual descriptions of the treatment process from beginning to end was conducted (observational data were also utilised in this process). To assess the satisfaction of patients with the emergency medical system following an overdose, the transcripts were also searched for both positive and negative reflections on current and previous treatment experiences and the relevant comments summarised. Qualitative data were analysed using the QSR N6 software program (QSR International Pty Ltd, 2002).

Some of the research questions posed were best answered by considering the quantitative and qualitative interview data in conjunction. To determine whether the BSS and BDI-FastScreen scores were an accurate and comprehensive reflection of the emotional state of each participant at the time of the overdose, individual participant scores on the BSS and BDI-FastScreen were compared with the accompanying participant narratives and inconsistencies between the two forms of information noted.

The relationship of BSS and BDI-FastScreen scores to other participant factors (i.e. demographic variables, physical health, mental/psychiatric health, drug and alcohol use/dependence, treatment history, previous overdoses, personal and family history of self-harm, recent significant life events and social support) was also considered. To achieve this end the participants' BSS and BDI-FastScreen scores were each dichotomised into *high* and *low* and a matrix constructed to show the relationship between these and the other participant factors.

3.7.3 Observational data

Observational data were recorded in handwritten form in a research diary. Relevant sections were subsequently transcribed into electronic form and grouped together according to relevant subheadings. The data were used in the construction of an account of the treatment process, including arrival at the ED, triage, medical treatment, Psych Triage, and discharge. The researcher's experience in recruiting participants and in collecting and analysing the data were considered in relation to the discussion around the feasibility of future similar research or of introducing a brief intervention.

3.7.4 Handling missing data

While every effort was made to collect comprehensive data from all interview participants, and this was largely achieved, there was some individual variation in the completeness of the information. This was partly due to the nature of the interview schedule which invited participants to explore their experience within a semi-structured format, rather than highly structured. As a consequence, many participants provided the most information on those topics that were of high personal relevance, and less information on those aspects of the interview that were not of current concern. For example, a participant may have been particularly forthcoming about the current crisis precipitating the overdose event, but have been relatively brief in responses about treatment history. Given the proximity of the interview to the overdose event this tendency in some participants is perhaps unsurprising. The researcher endeavoured to guide participants to respond to specific prompts, but was also respectful of participant inclinations where these were evident.

There were a small number of people for whom the BDI-FastScreen and the BSS were unsuitable for various reasons (e.g. the person found the task of choosing between the different response options too difficult, the person used the response options as a prompt to discuss their depressive illness but did not engage in the task of choosing an option, the person spoke English as a second language and did not feel confident in responding to the items, or there was insufficient time to complete the forms). In these cases it was not possible to obtain BSS and/or BDI-FastScreen scores.

Data from all 31 interviews were included in the analyses. Where numerical data based on the interviews are provided in the results section, the number of missing cases is noted. No imputations were made for missing data.

3.8 Ethical Issues

This study raised several ethical issues, both in terms of general research protocols and also specifically in relation to the sensitive nature of the topic. These issues were canvassed prior to study commencement and the project received approval from the Human Research Ethics Committees of Curtin University of Technology, St

Vincent's Hospital Melbourne, and the Victorian Department of Human Services.[43] Submissions to these committees were prepared with reference to the National Statement on Ethical Conduct in Research Involving Humans (NH&MRC, 1999) and the principles of ethical conduct outlined in this statement were adhered to throughout the project.

The ethical issues discussed below relate primarily to the patient interviews, though there were also ethical considerations in relation to the PAS audit and observational components of the study.

3.8.1 Interviewer training

Due to the sensitive and potentially emotionally disturbing content of the interview, it was recognised that the interviewer for the project needed to be appropriately trained in dealing with suicidal research participants. The researcher participated in a "LifeForce Suicide Prevention Workshop" conducted by the Wesley Mission Health and Counselling Services. The workshop consisted of information concerning the extent of suicide in Australia, an examination of some common misconceptions concerning suicide, the suicidal process, intervention strategies and community resources. The workshop included presentations, discussion, group work, written material, role-plays and videos. Training was delivered by a qualified counsellor with several years experience in delivering training on the topic of suicide prevention.

The researcher also attended a number of one-day training sessions offered by a non-government organisation specialising in the treatment of people with benzodiazepine dependence and anxiety disorders. The training sessions covered anxiety, depression, benzodiazepine medication, antidepressants and principles of cognitive behaviour therapy. Ongoing interview debriefing and support was available to the researcher from her supervisors (all of whom are qualified psychologists) throughout the data collection period.

[43] Curtin University and St Vincent's HREC reviewed all elements of the project while the Department of Human Services approved the Patient Interview component.

3.8.2 Research involving persons highly dependent on medical care

The NH&MRC guidelines caution about the inclusion of people who are highly dependent on medical care, for example, those who receiving treatment in an ED (NH&MRC, 1999). The specific concerns raised by the guidelines are that in such settings consent to participate in research may need to be obtained rapidly at a time when the individual may be particularly vulnerable, and also that people may acquiesce to the research out of fear that their treatment may be compromised by refusal to participate.

With regard to the first of these, there was no need to obtain rapid consent, as the research did not involve a treatment intervention. The purpose of basing the research in the ED was to recruit people known to have recently had a medication overdose (i.e. the ED was simply a point of referral to the study). Referral generally occurred at the end of the person's stay in the department, and therefore did not interfere with treatment or require the person to make an important decision under pressure. Participants had plenty of opportunity to opt-out of the research: individuals could decline referral in the first instance, elect not to contact the researcher to make an appointment, or choose not attend for the interview appointment.

As indicated in the NH&MRC guidelines (NH&MRC, 1999), the other potential problem with conducting research in a clinical environment is that potential participants may feel obligated to participate in return for receiving treatment. To avoid the possible misperception that there was an expectation they would participate in the study, the researcher introduced herself as being from Turning Point Alcohol and Drug Centre and specifically indicated she was not a member of hospital staff and therefore not involved in treatment. The researcher also provided assurance that participation was entirely on a voluntary basis.

3.8.3 Informed consent and capacity to give informed consent

As outlined earlier, all participants in the patient interviews were asked to provide informed consent before the interview commenced. Participants were provided a copy of the Plain Language Statement to read and were also given a verbal summary of the contents. The form may be found at Appendix E, page 333. Participants were asked to sign the informed consent form, but were told they could use a pseudonym

if they preferred. Confidentiality was further preserved by not recording the person's name anywhere on the data collection instrument.

Participants were considered ineligible to participate in the study unless they had the capacity to give informed consent. In relation to this issue, the NH&MRC guidelines indicate that special consideration needs to be given before including persons with intellectual or mental impairment in research. For the purposes of this study, any person who was in the active phase of a psychotic illness was regarded as being mentally impaired and therefore not included. Staff were also asked to consider capacity to give informed consent when referring patients to the study. There were occasions when a patient was in the ED for a medication overdose where staff and/or the researcher determined it was inappropriate to include the person, for example, if the patient was drifting in and out of consciousness.

Therefore, determining capacity to give informed consent involved, to some degree, staff and/or the researcher making a judgement on behalf of a potential participant. That is, some potential participants were excluded from participating without being given a choice in the matter. This in itself raises a further ethical dilemma in trying to strike a balance between clinical judgement and the right of the individual to have opportunity to participate. In making these choices the researcher bore in mind the ethical principles that apply to research with humans; integrity, respect for persons, beneficence and justice (NH&MRC, 1999), and also tried to take a practical approach in terms of fitting in with the operation of the ED.

3.8.4 Confidentiality

While it was important to foster an atmosphere of trust between the researcher and participant, it was essential that the participant be made aware that there were some circumstances under which the researcher was obliged to reveal information to a third party. It was explained during the informed consent procedures that confidentiality might need to be broken if a person indicated an intention to harm him- or herself or another person, if there were any information revealed concerning the protective safety of children, and in circumstances where disclosure was required under the law (i.e. subpoena). The most relevant of these limits to the participant group in this study was the threat of self-harm.

Particular care was taken to ensure participants understood the limits to confidentiality regarding self-harm. For example, while obtaining informed consent the researcher would specifically say something like “Before we start the interview it is important for you know that if I am concerned during the interview that you might be at immediate risk of hurting yourself, I will need to tell someone here at the hospital.”

If the participant gave any indication during the interview that they were at-risk of self-harm, such as a particularly elevated score on the Beck Scale for Suicidal Ideation (BSS), the researcher followed the matter up directly. The response included expressing concern for the well-being of the client, screening to assess the degree of risk (e.g. emotional state, frequency/intensity of suicidal thoughts, asking about any suicide plans or methods the person may have in place), enquiring about what resources and supports the person might have had in place, and offering to refer the person back to the hospital staff. The researcher also reinforced the supports available to the participant and encouraged them to access such supports (e.g. if the person had an appointment booked with their psychiatrist in the near future this was reinforced as a support).

Extracts of text from the transcripts have been used as illustrative examples in the Results section of this report. However, to preserve the anonymity of participants, no transcripts have been reproduced in full. Furthermore, where quotes are used, any details that might identify an individual have been omitted or altered in a way that does not diminish the meaning of the text (for example, details of where the person works or lives might have been changed).

3.8.5 Distinction between treatment and research

It is possible with research of this nature that some participants may confuse the purpose of the interaction with the researcher, mistaking it for a therapeutic or treatment relationship. Where necessary during the interview process the researcher indicated she was not in a position to provide advice or ongoing support and encouraged the person to access the treatment options available to them.

3.8.6 Potential risk to participants

The interview included questions on sensitive topics that had the potential to distress some participants (e.g. medication use, overdose and suicidal thoughts and behaviour). Given that the study was specifically concerned with these issues, such questions were impossible to avoid. To reduce the risk of unduly upsetting participants the study information sheet and informed consent form alerted potential respondents to the topics covered in the interview. The right of participants to choose not to discuss personally sensitive or distressing issues was respected in that participants were assured that they could refuse to answer any or all of the questions, even after giving informed consent. Participants were also informed that they could withdraw from the study at any time without prejudice and procedures were put in place for ensuring the participant was aware of available supports after the interview.

3.8.7 Age limit for participation in interviews

Participants had to be over the age of 18 years.

3.8.8 Participant payment

As mentioned previously, participants were paid AU$30 for taking part in the research. This was in accordance with standard practice at Turning Point Alcohol and Drug Centre and was regarded as fair recompense for the time and inconvenience of attending an interview, and travel expenses incurred, and in recognition of the vital contribution participants make to such research. It was felt that the amount of money offered as reimbursement was not sufficiently great in itself to be an inducement to participate.

3.8.9 Data storage

All consent forms and survey data are currently kept under secure conditions accessible only by the researcher. No identifying information was recorded on the survey forms. Consent forms are stored separately from data. All data will be destroyed seven years after the final publication of results. Audio tapes were wiped once analysis of the patient interview data was complete.

The security of the data is the responsibility of the researcher. The data are stored under locked conditions in a designated room at Turning Point Alcohol and Drug

Centre. Electronic data does not include any identifying information. Computer files are stored within a limited access network.

3.8.10 Epidemiological research

The PAS audit was a form of epidemiological research and is therefore covered under the NH&MRC guidelines (NH&MRC, 1999). There were two ethical issues arising from the use of the PAS data: the potentially identifiable nature of the information, and obtaining individual patient consent to use it.

Regarding the potential for the data to be identified, no names, addresses or other personal information were recorded. The patient identity numbers are potentially identifiable only to those people who already have access to PAS (i.e. hospital staff who are already in a position to access patient information). The identity numbers were gathered with the sole purpose of determining re-attendance rates in the 12-month period, allowing the data to be analysed according to number of individuals presenting, as well as instances. The only person with access to the audit database was the researcher.

The NH&MRC guidelines (NH&MRC, 1999) recommend that where possible the consent of participants be obtained for the use of such data. However, the guidelines also state such data may be accessed without individual consent under particular circumstances, for example, if collecting consent would be impracticable. Given the nature of the ED it would have been impossible to obtain consent from all people who attended to access the data. Furthermore, the audit yielded valuable information that could not be gained by any other means.

3.8.11 Observational research

The ethics committee of the hospital approved the observational component of the study. It was impractical to obtain informed consent from staff-members every time the researcher asked them a question or observed them in their work, however, as the researcher had been introduced at relevant staff meetings and the project explained, it was thought ethically sound to proceed with observational data collection without the written consent of every staff member. Further, as the purpose of the observation was not to assess or evaluate individual staff, but to describe the usual processes involved in responding to overdose, there was no risk of individual staff being disadvantaged

as a consequence of the observation. Further, the observations were intended to inform a description of ED processes, rather than a critique, therefore the risk of the ED as a whole being disadvantaged was also minimal.

4 Results

The Results section has been structured so that data are presented in the order that relates to each of the six objectives, rather than according to the data source from which they were derived.

4.1 Objective 1 - Number of medication misuse or overdose presentations to the ED

Data to address Objective 1 were available from the PAS audit. The cases of primary interest were those involving medication overdose, with information on self-harm, illicit drug overdose, and all presentations to the ED during the 12-month study period also collected for comparative purposes.

4.1.1 Medication misuse or overdose presentations to ED

Number of cases

PAS data were collected on the number of presentations to the ED of (a) any kind, and (b) for medication misuse or overdose, illicit drug intoxication or overdose, and self-harm. There were a total of 32,139 presentations in the sampling frame. Of these, 521 cases involved medication misuse or overdose (1.6% of all presentations), 477 involved illicit drug intoxication or overdose (1.5%) and 732 self-harm (2.3%). However, presentations for each of these were not necessarily independent; a presentation may have involved more than one category (Figure 1).

Overall 1,475 (4.6%) of all ED presentations for the year fell into one or more of the three categories. Table *2* shows the overlap between the groups; with the greatest commonality occurring between self-harm and medication misuse or overdose (10% of relevant cases).

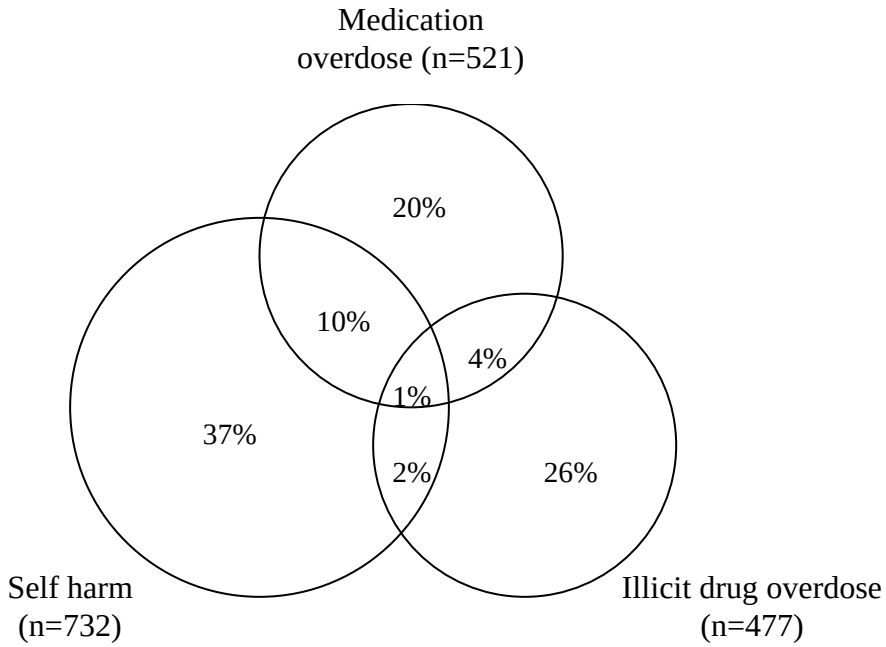


Figure 1 *Overlap between Self-harm, Illicit Drug Intoxication or Overdose, and Medication Misuse or Overdose Presentations*

Table 2 Overlap between Self-harm, Illicit Drug Intoxication or Overdose, and Medication Misuse or Overdose Presentations

Group number	Medication misuse or overdose (n= 521)	Illicit drug intoxication or overdose (n= 477)	Self-harm (n= 732)	N (1,475)	% of cases
1.	×	×	✓	545	36.9
2.	×	✓	×	386	26.2
3.	✓	×	×	296	20.1
4.	×	✓	✓	23	1.6
5.	✓	×	✓	157	10.6
6.	✓	✓	×	61	4.1
7.	✓	✓	✓	7	0.5

A sizeable proportion of the medication misuse or overdose presentations were probably in fact also attempts at self-harm, even though they were not recorded as such in the triage notes. Therefore a second estimate of self-harm cases was calculated including medication misuse or overdose cases, excepting those instances where the PAS information clearly indicated the event was not one of self-harm. The estimated rate of self-harm when both self-harm and medication misuse or overdose cases were combined, and excluding the 42 cases where there was specific indication of an accidental medication overdose or denial of self-harm by the patient, was 3.3% of total presentations to the ED in the 12 month period.

Selection of cases for analyses

There was overlap between the above groups in 16.8% of cases. To allow statistical analyses to be conducted it was necessary create independent groups by collapsing some groups and excluding others. Group 1 (self-harm only, n=545) was retained as an independent group. Group 2 (illicit drug intoxication or overdose only) and Group 4 (illicit drug intoxication or overdose AND self-harm) were combined into a single group (n=409). Groups 3 (medication misuse or overdose only) and 5 (medication misuse or overdose AND self-harm) were also combined into a single group (n=453). Therefore the primary comparisons presented in this section are of cases

involving medication misuse or overdose (MOD, n=453)[44] illicit drug intoxication or overdose (DOD, n=409)[45], and self-harm by means other than medication or drug overdose (SH, n=545). Therefore a total of 1,407 cases were retained in the analyses.

The cases in the remaining two groups were considered more closely to determine whether they could be reasonably re-classified into another group, or whether it was better to exclude them from the analyses. Group 7 included the few cases (n=7) that involved all three factors of interest. The narratives for these cases implicated a range of illicit drugs and medications. As it was impossible to determine which factor predominated (i.e. self-harm, medication overdose, or illicit drug overdose) in the presentations, the cases could not be assigned to a single category and were also excluded.

It was particularly difficult to decide whether to re-categorise or exclude cases in the final overlapping group (Group 6), where the overdose involved both illicit drugs and medications. The PAS narratives revealed that about two-thirds of these cases involved heroin in combination with benzodiazepines. This is a common combination (Gerostamoulos, Staikos, & Drummer, 2001) and in illicit drug research would typically be regarded as a heroin overdose. However, as some of these cases involved very large doses of benzodiazepines (i.e. much larger quantities than some cases that only involved medications) it cannot really be argued that all these overdoses were primarily heroin. The other cases in this group ranged across various different medications and drug types (e.g. cannabis, amphetamines, ecstasy). As the recording of quantities consumed was inconsistent on PAS, it was impossible to judge in many instances whether these overdoses were mostly related to the illicit drug, or the medication. Therefore it was impossible to devise a consistent rule by which to reclassify these cases as either medication overdoses or illicit drug overdoses, and case-by-case allocation would have been arbitrary in many instances. For these reasons it was decided to exclude these cases from the analysis (n=61).

[44] Therefore this category includes all medication related overdoses **regardless** of suicidal intent (i.e. deliberate or accidental), but excludes those cases known to also involve an illicit drug.

[45] Therefore this category includes all illicit drug related overdoses **regardless** of suicidal intent (i.e. deliberate or accidental), but excludes those cases known to also involve any medication.

Number of individuals

The PAS audit data shown in the Results section generally refers to the number of presentations, rather than the number of individuals. However, it is also important to know how many individual people account for the 1,407 presentations of interest in the 12-month data collection period. This was calculated by aggregating cases according to identification number. Altogether, there were 1,158 people who presented once or more in each of the three categories (361 individuals for MOD, 367 for DOD, and 430 for SH). Most individuals attended the ED only once, however, 11% of people who attended for MOD attended more than once, as did 17% for SH, and 7% for DOD (Table *3*). Regarding all presentations to the ED in the 12-month period, the mean number of attendances was 1.4, with a maximum of 69 visits by one individual.

Table 3 *Number of Individuals Presenting and Number of Presentations per Individual for MOD, DOD, SH & ED Total*

Statistics	MOD (n=453)	DOD (n=409)	SH (n=545)	ED Total (n=32,139)
	Number of individuals			
	361	367	430	22,516
	Number of presentations per individual			
Range	1-16	1-8	1-10	1-69
Mean	1.3	1.1	1.3	1.4
Standard dev.	1.2	0.6	0.8	1.4
	Number of presentations by individuals in 12 months (%)			
1	88.6	92.6	83.7	78.6
2	7.2	6.0	10.7	13.1
3	2.2	0.8	3.0	4.3
4	0.8	0.0	2.1	1.6
5	0.3	0.0	0.0	0.9
>5	0.9	0.5	0.4	1.5

4.1.2 Time of presentations

Information from PAS was used to identify temporal patterns of MOD presentations to the ED. Comparative data are presented for DOD and SH, and for presentations to the ED as a whole.

Season

Seasonal figures are expressed as a proportion of the yearly total for each group.[46] Presentations for MOD occurred most frequently in summer (Figure 2), as did those for DOD. The pattern of presentations for the ED as a whole appeared to be relatively stable across the year, as were SH presentations.

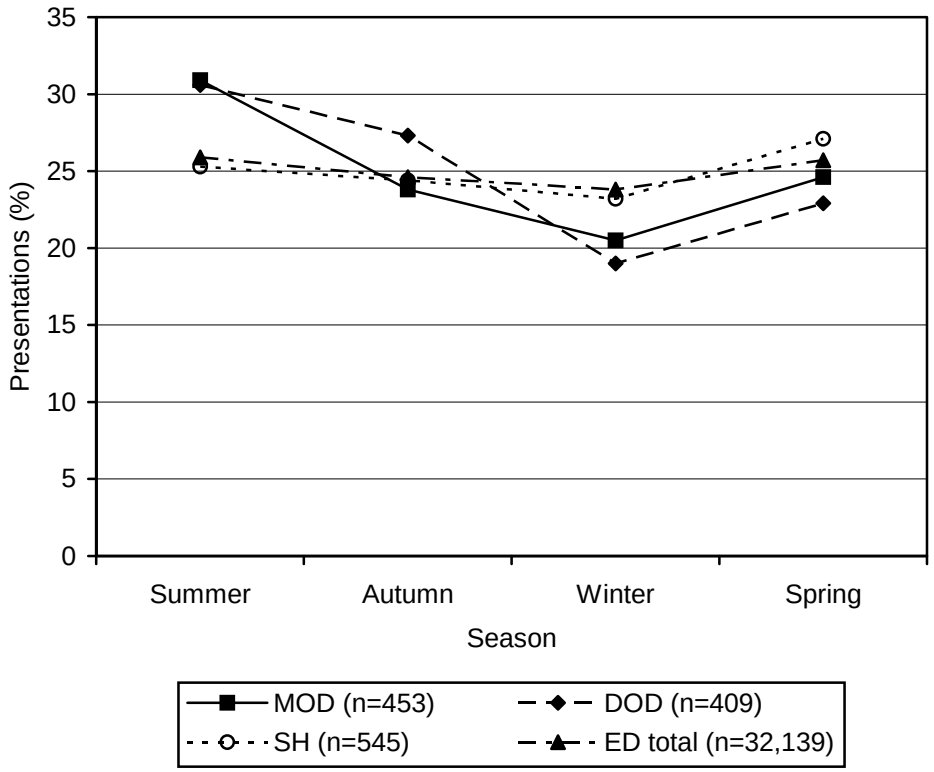


Figure 2 Season of Presentations for MOD, DOD, SH & ED Total

There was no consistent association between season and group membership (Table 4). The only significant results were that the SH group were about one and a half times as likely as the DOD group to present to the ED in the winter and spring.

[46] Data collection commenced in November 2003 rather than at the beginning of a season, therefore that month was grouped with September and October 2004 as "Spring" although these months were not contiguous.

Table 4 Group Membership and Percent Attending the ED per Season

Group	n	Season	%	OR	*95% CI*
MOD	453	Autumn	23.8	0.861	*0.60-1.23*
		Winter	20.5	1.065	*0.72-1.57*
		Spring	24.7	1.064	*0.74-1.53*
		Summer	30.9	REF	
SH	545	Autumn	24.4	1.076	*0.76-1.53*
		Winter	23.1	1.463[+]	*1.01-2.12*
		Spring	27.2	1.426[+]	*1.00-2.03*
		Summer	25.3	REF	
DOD	409	Autumn	27.4	REF	
		Winter	19.1	REF	
		Spring	23.0	REF	
		Summer	30.5	REF	
ED Total [*]	32,139	Autumn	24.6		
		Winter	23.8		
		Spring	25.7		
		Summer	25.9		

[+] Result significant at the 0.05 level
[*] Data for ED Total were not included in the logistic regression analyses

Day of week

MOD cases were spread relatively evenly across the week, with a low of 12% on a Tuesday and a high of 17% on a Saturday (Figure 3). For SH cases, the day of lowest attendance was Sunday (13%) and the highest Monday (16%). For both of these types of presentation the percentage range was small (about 3%). In contrast, presentations for DOD ranged from a low of 10% on Monday, to 21% on Saturday, a spread of nearly 11 percentage points. Total presentations to the ED did not differ across the week (14% on Thursday to 15% on Sunday). The data on which the graph is based may be found in Appendix *I*, page 355.

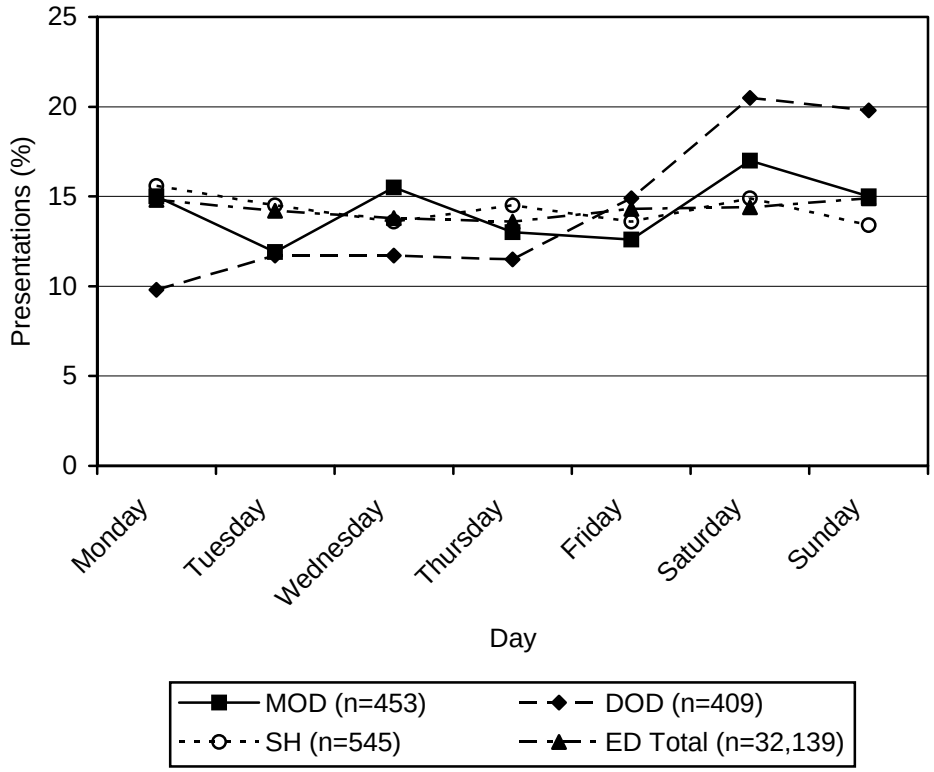


Figure 3 *Day of Week of Presentations for MOD, DOD, SH & ED Total*

As initial inspection of the data revealed few patterns in the data, with the exception of elevated weekend attendances, day of presentation was recoded as either "Weekday" (Monday to Friday) or "Weekend" (Saturday and Sunday) for analysis of difference between groups. Weekday attendances were 1.4 times more likely to be for MOD and 1.7 times more likely to be for SH than to be for DOD (Table 5).

Table 5 *Group Membership and Percent Attending the ED on a Weekday*

Group	n	% Weekday attendance	OR	*95% CI*
MOD	453	68.0	1.436[+]	*1.09-1.89*
SH	545	71.7	1.717[+]	*1.31-2.25*
DOD	409	59.7	REF	
ED Total [*]	32,139	70.7		

[+] Result significant at the 0.05 level

[*] Data for ED Total were not included in the logistic regression analyses

Time of day

The proportion of presentations for MOD, DOD, SH and total presentations to the ED by 6-hourly blocks is presented graphically in Figure 4. There was an increase in the number of MOD presentations across the course of the day, with few presentations between 6 a.m. and midday, and then an increase between midday and 6 p.m. The peak time for attendance was between 6 p.m. and midnight, gradually decreasing again from midnight to 6 a.m. A similar pattern existed for DOD and SH cases, although the increase in SH cases appeared to start somewhat earlier (midday to 6 p.m.), while for DOD it finished later (midnight to 6 a.m.). For total presentations to the ED, the quietest time of day was from midnight to 6 a.m., and the busiest from midday until 6 p.m.

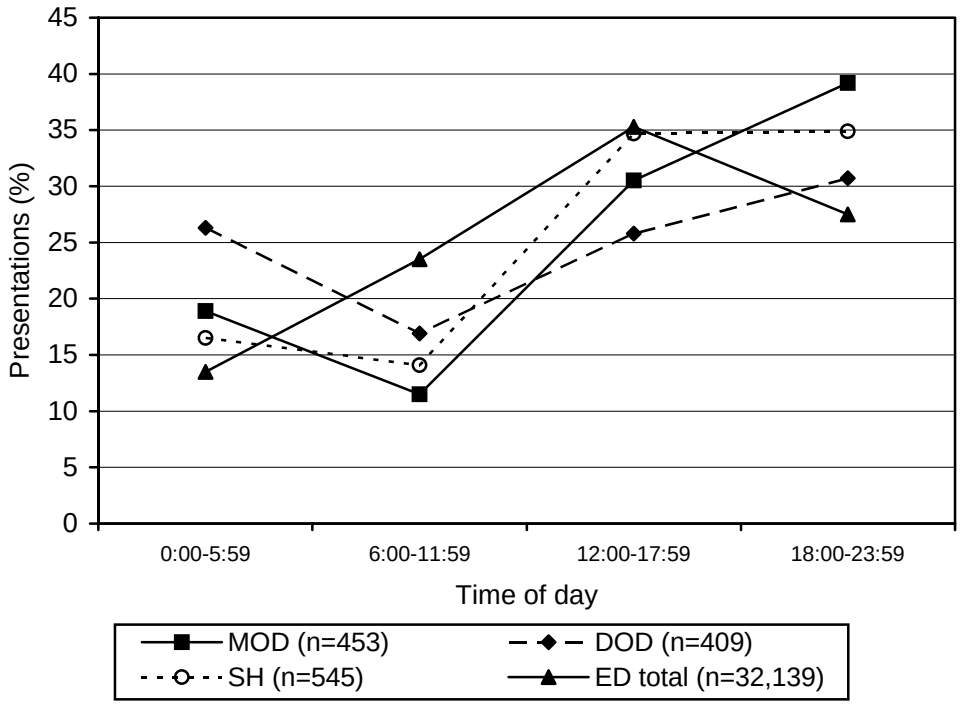


Figure 4 Time of Day of Presentations for MOD, DOD, SH & ED Total

The MOD and SH groups were each only about half as likely as the DOD group to attend between the hours of midnight and 6 a.m., and the same applied to the MOD group between 6 a.m. and 12 noon (Table 6). There were no significant differences noted for other times of the day.

Table 6 Group Membership and Percent Attending in 6-hourly Blocks

Group	n	Time attended	%	OR	*95% CI*
MOD	453	00:00-05:59	19.0	0.567[+]	*0.39-0.82*
		06:00-11:59	11.5	0.536[+]	*0.35-0.82*
		12:00-17:59	30.5	0.927	*0.66-1.30*
		18:00-23:59	39.1	REF	
SH	545	00:00-05:59	16.5	0.553[+]	*0.38-0.79*
		06:00-11:59	13.9	0.730	*0.49-1.09*
		12:00-17:59	34.7	1.182	*0.85-1.64*
		18:00-23:59	34.9	REF	
DOD	409	00:00-05:59	26.4	REF	
		06:00-11:59	16.9	REF	
		12:00-17:59	25.9	REF	
		18:00-23:59	30.8	REF	
ED Total [*]	32,139	06:00-11:59	13.5		
		12:00-17:59	23.5		
		18:00-23:59	35.3		
		06:00-11:59	27.5		

[+] Result significant at the 0.05 level
[*] Data for ED Total were not included in the logistic regression analyses

4.1.3 Summary

Altogether medication misuse or overdose cases accounted for approximately 1.6% of cases attending the ED in a 12-month-period. Most medication overdose patients (88.6%) presented only once within a year. Presentations were most frequent in summer (30.9%), on Saturdays (17%), and between 6 p.m. and 12 midnight (39%). Compared to the other two groups, DOD cases were more likely to attend on the weekends and from midnight to 6 a.m. (and from 6 a.m. to midday in comparison to MOD).

4.2 Objective 2 - Characterisation of MOD patients at the ED

This objective was met by considering two sets of data: the information available from PAS was used to broadly characterise cases of medication overdose, and patient interview data were used to examine the psychosocial circumstances of individuals attending the department. The intentions of this objective were to determine whether medication overdose patient characteristics in this study were similar to those found in previous studies, and also to explore whether these cases differed systematically from self-harm and illicit drug overdose cases. The purpose of the patient interviews was to obtain additional information regarding the profile of medication overdose patients that was not otherwise available from the computerised hospital records accessed.

4.2.1 Broad demographic profile and summary of ED attendance

Basic demographic information (e.g. sex, age) was available from PAS, along with a range of other details such as triage level, presenting complaint and discharge destination.

Sex

While females accounted for 64% of MOD presentations, a greater percentage of males attended for DOD (68%) and SH (56%) (Table 7). The SH group most closely resembled the gender distribution for all attendances at the ED.[47] Females were 3.8 times more likely to be in the MOD group and 1.7 times more likely to be in the SH group than the DOD group.

[47] There were a very small number of cases where sex was listed as indeterminate (i.e. approximately 0.2% of all attendances). These cases have been dropped from the analysis concerning sex

Table 7 Group Membership and Percent Female

Group	n	% Female	OR	*95% CI*
MOD	452	63.6	3.769[+]	*2.84-5.00*
SH	545	44.0	1.689[+]	*1.29-2.21*
DOD	409	31.8	REF	
ED Total [*]	32,083	44.1		

[+] Result significant at the 0.05 level
[*] Data for ED Total were not included in the logistic regression analyses

Age

MOD presentations ranged from 14 to 94 years of age, with a mean of 36 years and a median of 34 years (Table 8), with a comparable age distribution evident for SH presentations. Presentations for DOD covered a smaller age range (15 to 61 years), with a mean of 27 years and a median of 25 years. The average age for all three groups was somewhat lower than the average for the ED overall (48 years).

Table 8 Age of Presentations for MOD, DOD, SH & ED Total

Statistics	MOD (n=453)	DOD (n=409)	SH (n=545)	ED Total (n=32,081) [1]
Mean	36.2	27.2	34.8	47.8
Median	34.0	25.0	33.0	44.0
Std. Deviation	13.9	8.4	12.3	21.3
Minimum	14	15	15	1
Maximum	94	61	85	102

[1] Age data were missing in 58 cases

The age distribution of patients attending for MOD, DOD, and SH is presented graphically below (Figure 5). In all three groups, most attendances to the ED were by individuals aged in their twenties or thirties. This was also true for total ED presentations, although a flatter distribution existed across all age groups, with a concentration of cases above the age of 75 years.

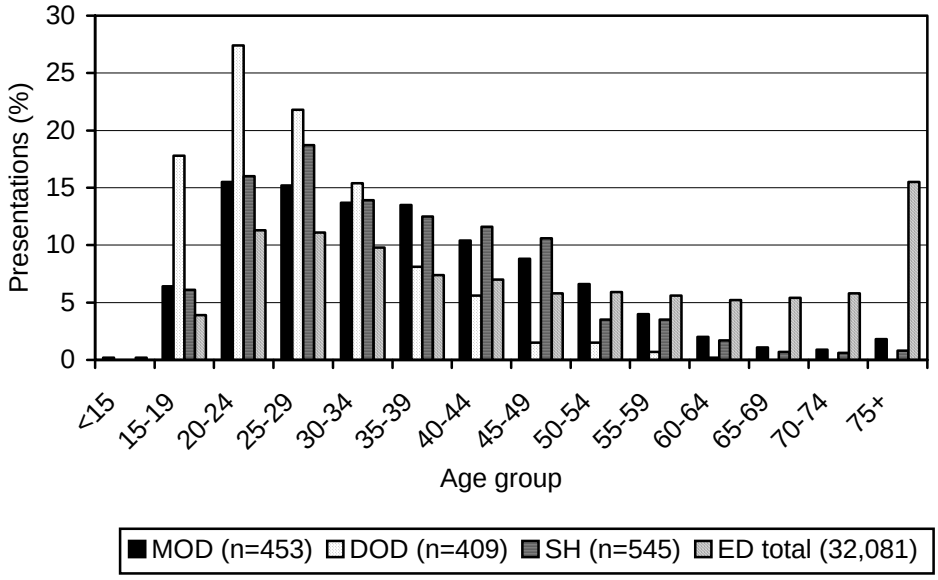


Figure 5 Age Group of Presentations for MOD, DOD, SH & ED Total

Initial inspection of the age data (as presented above) suggested different patterns of attendance between groups, primarily driven by the younger age groups. Age was therefore recoded into four categories: <20, 20-29, 30-39, and 40+, for analysis of group differences. Age group was a significant predictor of group membership, with DOD cases ten times as likely to be aged less than twenty than either MOD or SH cases, approximately five to six times as likely to be aged in their twenties, and approximately three times as likely to be aged in their thirties (Table 9). This suggests that the MOD group were on the whole older than DOD patients and more similar in age to SH patients.

Table 9 Group Membership and Percent Attending by Age Group

Group	n	Age group	%	OR	*95% CI*
MOD	453	<20	6.6	0.100[+]	*0.06-0.17*
		20-29	30.7	0.168[+]	*0.11-0.25*
		30-39	27.2	0.310[+]	*0.20-0.48*
		40+	35.5	REF	
SH	545	<20	6.1	0.098[+]	*0.06-0.17*
		20-29	34.7	0.205[+]	*0.14-0.30*
		30-39	26.4	0.327[+]	*0.21-0.50*
		40+	32.8	REF	
DOD	409	<20	17.8	REF	
		20-29	49.1	REF	
		30-39	23.5	REF	
		40+	9.5	REF	
ED Total [*]	32,139	<20	4.1		
		20-29	22.4		
		30-39	17.2		
		40+	56.3		

[+] Result significant at the 0.05 level
[*] Data for ED Total were not included in the logistic regression analyses

Presenting complaint

While information from PAS was used to allocate cases to the three groups: MOD, DOD, or SH, triage nurses nominate a single "presenting complaint" for each patient from a large pre-determined computerized list of complaints.[48] Given the great number of different presenting complaints assigned to cases in the audit, only the most common ones for each group (MOD, DOD, and SH) have been listed here. For MOD cases, the most common presenting complaint was 'OD/ingestion/poisoning' (86%), followed by 'Altered consciousness' (3%), 'Psych behaviour' (3%), and

[48] "Presenting complaint" for cases in the PAS audit included; Alcohol intoxication, Allergic reaction, Altered consciousness, Amputation, Arrest (cardio/pulm), Cellulitis, Collapse, CVA? TIA?, Diabetes, Dizzy, Foreign body, Haem & melaena, Hypotension, Hypothermia, Inhalation, Laceration, LOC, Malaise, Nausea, OD/ingest/poisoning, Other, Pain abdomen, Pain back, Pain chest, Pain limb, Pain neck, Palpitations, Parasthesia, Poisoning, Psych behaviour, Psych harm, Psych mood, Psych relationships, Psych thoughts, Review, Seizure – atypical, Seizure – post ictal, Short of breath, SOB - Asthma, Social/placement problem, Trauma abdomen, Trauma hand, Trauma head, Trauma limb, Trauma multiple, Trauma neck, Violent behaviour, Vomiting/diarrhoea, Vomiting/nausea, Weakness.

'Psych harm' (3%). Similarly, for DOD, the most commonly listed complaints were 'OD/ingestion/poisoning' (68%), 'Altered consciousness' (15%), and 'Psych behaviour' (3%). In relation to SH, the most frequent complaints assigned by the triage nurse were 'Psych mood' (23%), 'Psych behaviour' (23%), 'Psych thoughts' (21%), 'Psych harm' (15%), and 'Laceration' (9%).[49]

Triage level

The most common triage category for all three types of presentation was "3" (Table 10), which is assigned to cases to be seen within 30 minutes of attending the ED. However, the remainder of the MOD cases tended towards the more urgent end of the spectrum. This was also true for DOD cases. In contrast, two-fifths of SH presentations were assigned a "4" (i.e. to be seen within 60 minutes). Triage categories "3" and "4" were the most frequently used across all ED presentations.

Table 10 Triage Level Assigned to MOD, DOD, SH & ED Total Presentations

Triage level	%			
	MOD (n=453)	DOD (n=409)	SH (n=545)	ED Total (n=32,139)
1	3.8	19.3	3.9	1.5
2	20.1	15.6	9.4	9.3
3	63.8	39.4	44.0	40.1
4	11.7	23.0	39.8	41.6
5	0.7	2.7	2.9	7.5

To determine whether group membership predicted urgency, triage level was dichotomised into two groups; those to be seen immediately "Triage 1", versus those not to be seen immediately "Triage 2-5". When compared with DOD, both the MOD group and SH group were approximately six times as likely to be categorised as Triage 2-5 (Table 11). It therefore appears that MOD and SH patients were

[49] The various psychiatric categories (e.g. psych behaviour, psych thoughts, psych mood) are applied to patients attending with primarily psychiatric symptoms. The specific one chosen depends upon the predominating features of the presentation, for example, someone presenting hearing voices would be assigned psych thoughts, while some found acting in a bizarre manner would be psych behaviour.

significantly less likely to be assessed as requiring immediate attention (as denoted by allocation to triage category 1) than DOD.

Table 11 Group Membership and Percent "Triage 2-5"

Group	n	% Triage 2-5	OR	*95% CI*
MOD	453	96.2	6.140[+]	*3.57-10.57*
SH	545	96.0	5.973[+]	*3.62-9.85*
DOD	409	80.7	REF	
ED Total [*]	32,139	98.5		

[+] Result significant at the 0.05 level
[*] Data for ED Total were not included in the logistic regression analyses

Length of time between being triaged and being seen by treating staff

The length of time waited between triage and being seen by treating staff was calculated for the three groups (Table 12). Among the MOD cases, 17 people left after triage but prior to treatment, as did 26 DOD cases and 20 SH cases. No data were available concerning how long such people stayed in the waiting room before leaving. Of those who remained, 5% of MOD cases were seen immediately, compared to 23% of DOD and 4% of SH. Cumulatively, 87% of both MOD and DOD cases were seen within an hour of being triaged, compared to 76% of SH cases. The median waiting time for each of the groups was 17 minutes for MOD cases, 9 minutes for DOD cases and 24 minutes for SH cases.[50] These data were not available for the ED as a whole.

[50] Median waiting times were calculated rather than mean waiting times due to skewed data and the presence of outliers.

Table 12 *Length of Time between Triage and Being Seen by Treating Staff for MOD, DOD, SH & ED Total*

Time waited	MOD (n=436)		DOD (n=383)		SH (n=525)	
	%	Cumulative	%	Cumulative	%	Cumulative
Seen immediately	5.0	5.0	22.7	22.7	3.8	3.8
1-10 minutes	36.0	41.1	29.8	52.5	24.2	28.0
11 to 30 minutes	26.4	67.4	20.6	73.1	27.8	55.8
31 to 60 minutes	19.5	86.9	14.1	87.2	19.8	75.6
1 to 2 hours	11.5	98.4	8.9	96.1	15.8	91.4
More than 2 hours	1.6	100.0	3.9	100.0	8.6	100.0

Length of time between being seen by treating staff and being discharged from the ED

The length of time between commencing treatment and being discharged was also calculated for the three groups. Ten percent of MOD patients remained an hour or less in the department, 21% were discharged within two hours, 42% within four hours, and 88% within 12 hours. After 24 hours, less than 3% of MOD patients remained in the ED. Approximately 25% of patients treated for DOD (n=383) were discharged from the ED within an hour, 41% within two hours and 95% within 12 hours of being seen by a member of the treating staff. Of the 525 SH patients who remained for treatment, 31% were discharged within an hour, and 51% within two hours and over 96% within 12 hours. The median time as a patient of the department was 4 hours 47 minutes for MOD patients, 2 hours 44 minutes for DOD patients and 1 hour 56 minutes for SH patients. The data table relating to the above may be found in Appendix J, page 356. Figure 6 shows the proportion of cases remaining in the department at each time interval (please note the scale used on the X axis is not directly proportional). These data were not available for the ED as a whole.

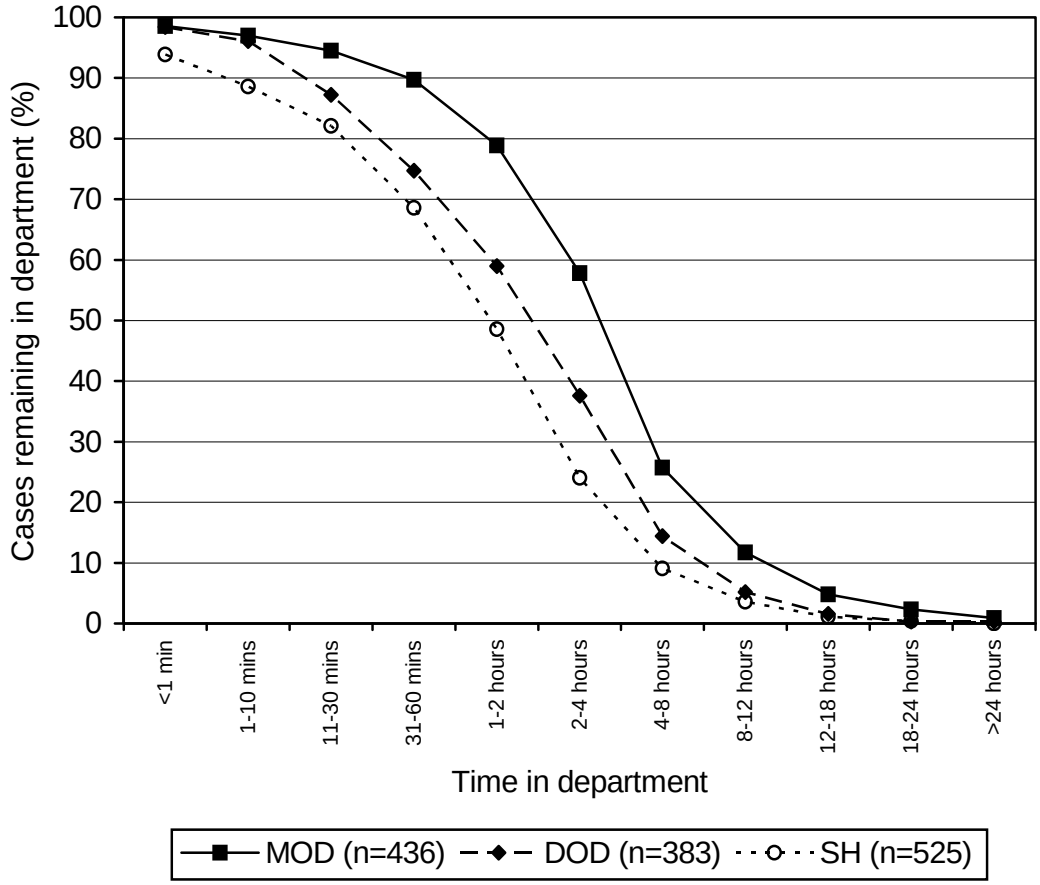


Figure 6 *Proportion of Cases Remaining in the ED at Each Time Interval for MOD, DOD, SH & ED Total*

Discharge destination

Almost 70% of MOD and SH patients were discharged home, compared to over 80% of DOD patients (Table 13). Relatively fewer DOD patients required admission (6%) than for MOD and SH (about 20%). Approximately 7-9% of patients in all three groups left at their own risk prior to the completion of treatment. Other discharge destinations accounted for relatively few patients.

Table 13 Discharge Destination for MOD, DOD, SH & ED Total

Discharge	%			
	MOD (n=453)	DOD (n=409)	SH (n=545)	ED Total (n=32,139)
Home	66.7	82.4	69.4	65.7
Admitted	21.6	6.8	19.1	24.5
Own risk	4.0	2.7	2.4	1.1
Own risk – no tx	3.5	6.4	4.8	4.9
Another hospital	2.4	1.0	2.9	2.6
Other*	1.8	1.7	1.4	1.2

* "Other" discharge destinations included; return to ward, mental health, left after advice, residential care, correctional facility, died in emergency.

For the purposes of determining whether group membership predicted outcome, discharge destination was recoded as a dichotomous variable. The categories of "Admitted" and "Home" were retained, while all other categories of destination were recoded as missing (approximately 10% of cases across all groups). The MOD group were almost four times as likely to be admitted in comparison to the DOD group, and the SH group were 3.3 times as likely to be admitted (Table 14).

Table 14 Group Membership and Percent Admitted

Group	n	% Admitted	OR	*95% CI*
MOD	400	24.5	0.256[+]	*0.16-0.40*
SH	482	21.6	0.302[+]	*0.19-0.47*
DOD	365	7.7	REF	
ED Total [*]	32,139	27.2		

[+] Result significant at the 0.05 level
[*] Data for ED Total were not included in the logistic regression analyses

Other information

Additional information about presentations was recorded in many (but not all) of the PAS narratives. Other data available included alcohol consumption, referral to Psych Triage or Alert, whether a Code Grey[51] was called, and if the person was in custody

[51] In the case of an emergency a "code" may be called. These may occur in a range of situations, e.g. smoke/fire, evacuation, patient aggression, police attendance required, medical emergency, personal threat, etc. In case of an emergency, a staff-member called a central number and stated the nature and location of the emergency to the

at the time of presentation. These factors did not form mandatory fields within PAS, so if there was no mention of alcohol (for example), it did not mean that alcohol was not involved, simply that it was not recorded. Therefore the data presented below can be taken as a minimum estimate of each of the factors and for this reason no statistical comparisons were conducted between groups (Table 15).

A case was included as "Alcohol-related" if alcohol was mentioned in the triage notes (e.g. 'has been drinking today', 'intoxicated', 'blood alcohol level = 0.05+'). "Mental health assessment" was recorded if the triage notes indicated the person was referred to or seen by Psych Triage, the psychiatric registrar, or CATT, or if the person was admitted to the psychiatric unit. "Social work assessment" was recorded if the notes said the person had been seen by a member of the Alert team or an alcohol and drug worker. Cases were recorded as a "Code Grey - Actually called" when the PAS notes made any reference to a Code Grey or Code Black being called, or if the person was restrained, listed as involuntary, or sectioned under the Victorian *Mental Health Act 1986*. A case was listed as a "Code Grey – Warning" if the notes instructed that a Code Grey was to be called if the person tried to abscond from the department. "In police custody/imprisoned" applied to cases where the person was in the custody of police while in the ED, or was brought to the ED from the police cells, the remand centre, or a prison.

A greater proportion of MOD cases involved alcohol (at least 24%) than DOD or SH (18%). The group most likely to receive a mental health assessment was SH (at least 77%), followed by MOD (59%), with relatively few DOD cases (10%) being assessed. Likewise, SH were the group most likely to have a reference made to Code Grey in the PAS notes (at least 12%). Frequencies for all 'other information' obtained from the PAS narratives are presented in Table 15.

operator. This was then broadcast on loudspeakers throughout the hospital. Staff were trained to respond to the emergency, and once resolved, an all clear was broadcast. Each type of code had a particular colour attached to it. The most relevant code to this project was Code Grey which meant an incident of patient aggression was occurring. Code Black meant the police were to be called.

Table 15 Other Information Derived from PAS for MOD, DOD & SH

Other information	%		
	MOD (n=453)	DOD (n=409)	SH (n=545)
Alcohol-related	24.3	17.6	17.8
Mental health assessment	58.9	10.0	77.2
Social work assessment	4.4	4.2	4.0
Code Grey	7.9	6.1	12.3
Actually called	*4.4*	*5.4*	*9.7*
Warning	*3.5*	*0.7*	*2.6*
In police custody/imprisoned	2.4	2.7	1.2

4.2.2 Summary

The PAS data suggest that patients attending the ED for medication misuse or overdose may broadly be characterised by female gender (64%), being aged in their thirties, being listed as a case of "overdose/ingestion/poisoning" at triage, and being assigned to triage category 3. In addition, a mental health assessment was conducted in at least 60% of cases, and alcohol was implicated in at least a quarter of cases. In contrast, more illicit drug overdose cases were male (68%), and aged in their twenties. Illicit drug overdose cases were also likely to be listed as an overdose, and assigned to triage category 3. Relatively few received a mental health assessment (at least 10%). Patients presenting for self-harm (not including medication or illicit drug overdose) approximated the ratio of males to females attending the ED as a whole (56% male). Most were in their thirties. The presenting complaints most often assigned to this patient group were psychiatric (i.e. psych mood, psych behaviour), and they were generally triaged at level 3 and below. At least three quarters of these cases received a mental health assessment. Statistical comparison of the three groups confirmed that both the MOD and SH groups were more likely to be female than DOD, but that DOD patients were on the whole younger. While DOD patients were also more likely than MOD or SH to be assigned to triage category 1 (denoting that the patient requires immediate treatment), this group was also the least likely to be admitted to hospital, suggesting that their care, while acute, is most usually managed within the ED.

4.2.3 Profile of interview sample

In addition to the information available on medication overdose attendances from PAS, the profile of this group was further developed with information from patient interviews. The data presented below is from a small sub-sample and therefore may not be representative of all medication overdose patients attending hospital EDs. However, it gives a rich description of 31 patients who attended the ED within the study period who were able to be interviewed.

Thirty out of the 31 interview participants were classified in the MOD group. All of these participants had clearly had an incident of medication overdose or misuse in the lead up to their presentation to hospital. Further, the PAS record of nine of these made specific reference to self-harm in association with the event in the narrative, though other cases may have also involved some suicidal intent, even if not mentioned. There were three cases where the PAS report indicated the medication overdose was not an instance of self-harm. There was only one case not classified as MOD for the purposes of the PAS audit. This case involved concurrent medication misuse or overdose, and overdose or intoxication on an illicit substance, and was therefore one of the few cases excluded from the audit by the process of creating independent groups (see Selection of cases for analyses, page 146).

Demographic information

Age and sex

Of the 31 participants interviewed, 55% were male and 45% female. The youngest participant was 20 and the oldest 76. More people aged in their twenties and thirties were interviewed (42% and 29% respectively), compared to older people (13% of people were in their forties, 13% in their fifties, and one person in his/her seventies). The age distribution of the interview sample was similar to that for the total presentations for medication overdose. There were slightly more males interviewed than would be expected on the basis of the PAS audit data.

Living circumstances

Participants generally had stable accommodation; with 83% reporting they currently lived in a private residence (either rental or privately owned). However, 16% were in marginal housing circumstances; 10% were residing in boarding house style

accommodation, one (3%) was staying in a refuge, and one person (3%) was homeless. In keeping with the catchment area for the hospital, about two-thirds of participants resided in the northern and eastern suburbs of Melbourne (including inner suburban areas). About half the participants were from inner urban areas, including the CBD.

Most people interviewed lived with others. Clearly those in transitional housing shared their accommodation, although not necessarily with friends or relatives. Among the 26 in private residences only five (19%) lived alone. Nineteen percent were living with friends/housemates at the time of the overdose, 19% were living with their partner (without children), one person (4%) was living with a partner and housemates, 15% were living with their parents, 15% with other relatives, and 8% with their children (one with a partner and one without). While only two people (6%) were actually living with children, 26% participants indicated they had a child/children, although in half of these cases someone else had custody.

Education and employment

In terms of educational background, 58% of participants had completed secondary school, another 23% had completed Year 10 or 11, and the remainder had a less than Year 10 education. Fifteen people (48%) had completed further education since leaving school; 16% had undertaken a short course (e.g. certificate in horticulture), 3% had completed a trade qualification, and 29% had completed a university degree.

Most people interviewed were not currently working. Twenty-nine percent were unemployed, while another 29% were on a pension (generally a disability pension). Eight people (26%) were currently working (19% in full-time employment), 13% were students and one person had a job, but was taking extended leave due to her mental health (3%).

Cultural background

All but one participant indicated that English was the main language they spoke at home. When asked what cultural or ethnic background they identified with, 84% said

"Australian", 10% people indicated European heritage, one person (3%) was of Asian heritage, and one person North American.[52]

Sexual orientation

Most participants identified themselves as heterosexual. Two people (6%) interviewed were bisexual and one gay/lesbian (3%).

Physical and mental health

Physical health

Participants indicated whether they currently (i.e. at the time of the interview, but not necessarily as a consequence of the overdose) experienced any significant medical problems in any of the body systems (Table 16). The most common area in which people experienced a problem was the musculoskeletal system, followed by the cardiovascular and gastrointestinal systems. A fifth of the sample indicated significant problems concerning respiration, glands and hormones, and skin conditions. As may be seen, data were missing in a small number of cases.

Table 16 Physical Health Problems Currently Experienced (n=31)

Physical health problems	%		
	Yes	No	Unable to determine
Musculoskeletal	32.3	67.7	0.0
Cardiovascular	22.6	77.4	0.0
Gastrointestinal	22.6	77.4	0.0
Respiratory	19.4	80.6	0.0
Endocrinological	19.4	77.4	3.2
Dermatological	19.4	74.2	6.5
Neurological	16.1	83.9	0.0
Eyes, ears, nose & throat	16.1	74.2	9.7
Allergies	12.9	80.6	6.5
Genitourinary	6.5	93.5	0.0
Other	3.2	90.3	6.5

[52] More specific information on cultural heritage was provided by participants (other than those identifying as

Only 16% of people said they experienced no physical health problems, 32% people had problems in only one area, 23% people had problems in two areas and the remainder had three or more body systems in which they experienced problems. The greatest number of physical health problem areas for any one person was six. On average, participants indicated they had two significant current medical problem areas.

The musculoskeletal problems described by participants were generally either arthritic pains or related to an old injury or surgery. Participants suffering from musculoskeletal problems had generally been troubled by their complaint for a number of years and found it to have a moderately severe impact on their life. Of the half currently being treated for their musculoskeletal problems, the most common response was to take prescription analgesics.

Most cardiovascular problems identified by participants were described as a "heart murmur", except for two participants who said they had high blood pressure. Two people had experienced cardiovascular problems for 10 or more years, the remainder only recently. In every case the problem was rated as only mild or moderate, and there was only one person currently on medication.

The most common respiratory problem mentioned by participants was asthma, which most reported having had since childhood. Not all reported current treatment, but those who did were using antiasthmatic medication. Only one person regarded their respiratory health problem as severe, the rest rating it mild to moderate.

Reported gastrointestinal problems related mainly to digestion (such as Irritable Bowel Syndrome or constipation), though one person reported severe pancreatitis and another person reported a peptic ulcer. In most cases the problem was of some years' duration. Only two people were on medication, while others indicated they managed their problem by avoiding triggers (e.g. alcohol).

Of those identifying themselves as having endocrine problems, the types of conditions included diabetes, menopause, glandular fever, and hyperthyroidism. Most often the person had suffered for a year or more, and rated the impact on their

"Australian"), but to protect anonymity, general terms are used here.

lives as moderate to severe. The two diabetic participants were both currently treated with insulin.

Participants mentioned a range of skin conditions, including eczema, cirrhosis, acne, and general rashes. In general, participants reported that these conditions were intermittent, and were of only mild importance. A number of people commented that their dermatological conditions were exacerbated by stress and worry.

Four participants (13%) indicated that they had Hepatitis C, only one of whom was currently being treated for the condition.

While physical and mental health complaints were separated for the purpose of data collection, it was clear from a number of participant responses that problems in one area sometimes exacerbated or even caused problems in the other, therefore physical and mental wellbeing were not necessarily distinct. In particular, cardiovascular symptoms, dermatological conditions and digestive disorders seemed to be related to mental health. For example, concerning Irritable Bowel Syndrome one participant noted;

Interview 11 *I think it's a combination of my diet and my alcohol intake and also I am a bit of a perfectionist and I worry a lot, so I would say yes definitely, it's all of those factors*

Therefore, poor physical health in some cases had a deleterious effect on the mental wellbeing of the participant, just as poor mental health sometimes resulted in physical symptoms.

Mental/psychiatric health

This section reports on psychiatric disorders (self-identified and/or diagnosed)[53] described by the interview participants. Thirty of the participants indicated they had experienced psychiatric problems (either past or current). It may be seen from Table 17 that the most commonly identified problems were mood disorders (e.g. depression, dysthymia, bipolar), anxiety disorders (e.g. generalised anxiety, panic disorder, obsessive-compulsive disorder), and substance-related disorders

[53] Participants were asked, "Would you say you have/had X?" for each psychiatric condition, and if so, when first diagnosed, if ever. Inclusion as a case for each condition in this section was based on either self-identifying as having that condition, and/or having been formally diagnosed by a relevant professional.

(dependence, abuse). A quarter of people reported an eating disorder (e.g. anorexia nervosa, bulimia nervosa), 19% indicated a psychotic disorder (e.g. schizophrenia) and 10% indicated they had been diagnosed as having an attention deficit/hyperactivity disorder as a child. Two people identified as having some "other" psychiatric disorder; one a gambling problem, and the other indicating problems in relation to sexual identity which were causing psychological distress.

Table 17 Mental Health Problems Ever Experienced (n=31)

Mental health problem	%		
	Yes	No	Unable to determine
Mood disorder	87.1	12.9	0.0
Anxiety disorder	80.6	9.7	9.7
Substance use	74.2	19.4	6.5
Eating disorder	25.8	61.3	12.9
Psychosis	19.4	74.2	6.5
ADD/hyperactivity	9.7	80.6	9.7
Other	6.5	83.9	9.7

Of the 30 participants who indicated they had experienced mental health problems, the average number of conditions identified was three. Most participants (87%) identified themselves as having experienced between two and four mental health problems (Table 18).

Table 18 Number of Mental Health Problems Identified (n=31)

Number of problems	N	%
0	1	3.2
1	2	6.5
2	6	19.4
3	9	29.0
4	12	38.7
5	1	3.2

Further information on specific mental health problems is presented below. As mentioned earlier, due to individual differences in responding to the survey, not all participants necessarily provided information about every topic of interest in this section, although a vivid picture of the mental health of participants was still evident from the information provided.

- **Mood disorders**

Most participants (87%) indicated they had a mood disorder. The majority of these had been formally diagnosed, although there were a small number who said that while they had never been officially diagnosed, they believed that they were in fact depressed. Considering the duration of depressive symptoms described, the fact that most had been treated with antidepressants (see below), and that scores obtained by many participants on the BDI-FastScreen were indicative of depressive symptomatology (see BDI-FastScreen, page 190), it seemed reasonable to conclude that this was an accurate diagnosis in most cases. There were three participants who indicated they had been diagnosed with a Bipolar Disorder.

Almost all participants could trace their first feelings of depression back to their teens or early childhood, with some saying they had "always" felt depressed. The most common age of onset seemed to coincide with puberty. Only two or three people had their first experience of depression in their twenties or later. Therefore among the older participants it was common to have felt depressed for more than 30 years. For most people, formal diagnosis seemed to lag some years behind the initial onset of the problem. Although most participants said they now recognise they were depressed in their teens, most were not diagnosed or treated until their twenties or beyond.

Interview 21 *I think basically when I was about 14, 15 I started to notice things that were different and I lost interest in everything and um, sort of no care for any consequences (…) it gradually got worse. I think I didn't realise I had depression, you know, till I think 27 (when) I went to get help for it (…) Whenever I feel depressed I feel like my body is all bruised.*

***

Interviewer *OK, so you've mentioned that you think you've got depression, but have never been diagnosed. Yep, how long would you say that's been…?*

Interview 9 *Oh, years. I've had it on and off for years. I've had it for a long time, a very long time. Since pretty much since I went, I left home at 14, so, and I haven't had anything to do with my family since (…) A lot of the time I have abused the medications and there've been times when, I've been suicidal a couple of times that way, with pills.*

Past or current experience of depression treatment was common, with only three people who said they had a history of depression never having received any treatment for it. The treatments people mentioned fell into two main groups; medication and counselling (although a small number of people also mentioned the use of telephone help lines). As alternative treatments such as yoga, acupuncture, and St John's Wort were not enquired about directly, it is not possible to tell how many participants had ever tried such methods.

The most commonly prescribed medications were antidepressants. Fourteen people (45%) indicated they were currently taking antidepressant medication. Seven of these were taking an SSRI, six people an "other" antidepressant and one person a TCA. However, of those taking an antidepressant, about half mentioned one or more other medications they were on that they believed were prescribed to assist with their depression. The most frequently used additional medications were benzodiazepines, antipsychotics, and antiepileptics (the last of which may be prescribed for Bipolar Disorder where other treatments have not been effective) (Rossi, 2003). Most people indicated that they currently took their antidepressant medication on a regular basis as prescribed, although there were a small number of participants who expressed difficulty in maintaining a consistent pattern.

Very few participants had only ever taken one type of antidepressant. Most had previously tried several antidepressant medications (up to 12 in one case), but had stopped for a range of reasons such as poor efficacy, thinking they were no longer required, or being recommended to change to something else. Many participants who were prescribed medication also received some level of counselling from their

prescribing GP or psychiatrist. This apparently ranged in nature from brief, relatively directive counselling through to long-term psychotherapy. Few participants commented on the usefulness of undertaking counselling or psychotherapy with their doctor.

Many participants had also tried counselling with a psychologist or other trained professional, aside from their doctor. Some regarded this support as very valuable, but there were a greater number of participants who had found the experience to be unsatisfactory in some way. Problems identified included the counselling focussing on the wrong issues, difficulty in establishing rapport, the person feeling they did not need to discuss their problems, and the counsellor leaving the service. Those who had the most positive experiences of counselling were able to point to some tangible gain made or skill learnt through the process, such as the ability to distract oneself from negative thoughts.

Of the 27 people with mood disorders, 89% were able to provide information on their family history. Of these, 63% indicated at least one relative suffered from a depressive illness, and 38% of these identified multiple relatives with depression. Forty-two percent of those providing a family history said one or both of their parents were depressed.

Interviewer *And has anyone in your family got depression?*

Interview 25 *Um yes, my dad. All of them, everyone's, my mum, and my brother have all been diagnosed with depression. And my brother's the only one who takes antidepressants regularly, and that's mostly been to sleep though… We think on my Dad's side that his dad suffered from depression, but he's gone now.*

- **Anxiety disorders**

Most participants (25/28, 89%) indicated they had an anxiety disorder. Many of these recognised they had in fact had anxiety problems extending back into childhood or teen years, although this may not have been identified as such until some years later (either by formal diagnosis, or through the increased awareness of the individual). A smaller number of participants developed anxiety in their twenties. For most participants, anxiety has remained an active problem several years after the

initial onset. Here is one participant's description of her first panic attack at the age of fifteen, a problem that she has continued to experience into her thirties:

Interview 21 *That was the first one I had, when I was fifteen actually (…) I was at school and the whole school just span, like it was spinning, and um, I felt really queasy and um I started crying and um I just was standing in the middle of the courtyard at school. All of a sudden I couldn't move, I just stood there.*

Some participants provided greater detail on their anxiety problems. At least 48% of those with anxiety said they had experienced panic attacks, some on a daily basis. Twenty percent were particularly prone to anxious feelings in social situations, 12% of those with anxiety described symptoms of agoraphobia, and 8% indicated a diagnosis of Post-Traumatic Stress Disorder (PTSD) associated with past sexual abuse (although it is possible a larger number would actually meet the diagnostic criteria).

In discussing depression and anxiety, many participants (14) spontaneously commented that they consider them to be the same thing or have found one condition leads to the other. Therefore, in terms of personal experience of psychological distress, the distinction between the two was not always relevant. Similarly, in discussing medications used for the treatment of one condition, participants frequently listed drugs more commonly associated with the treatment of the other (for example, benzodiazepines used to combat depression).

Interview 25 *Anxiety is probably my major one. Anxiety is what causes me to become to be depressed because I wear myself out with it. That's my main problem, and so, just generalised anxiety. If anxiety is left untreated too long it can turn to sort of a combination of depression and very high anxiety at the same time which can lead to sort of social phobia problems. There's panic attacks.*

***

Interviewer *So with the [antidepressant medication], was it mainly prescribed for your panic attacks or do you think your doctor also prescribed it for depression?*

Interview 19 *Both. Yes, the psychiatrist said, "You'll have the benefit of, these will control your panic attacks, you shouldn't even get them, and they're actually an antidepressant, so I think they're excellent for you."*

It was established that 17 participants (68% of those with anxiety, and 55% of the total sample) were currently taking medication for anxiety. The majority of these were taking either one or two types of benzodiazepine medication (typically alprazolam or diazepam). A number of people were on antidepressants (mainly SSRIs and "other" antidepressants) in conjunction with benzodiazepines. There were two participants who were only taking antidepressant medication specifically prescribed for its anxiolytic properties. The majority of people had been prescribed their medication by a GP or psychiatrist, although at least six people (19%) described "doctor shopping" in order to obtain scripts for benzodiazepines and one person used other peoples' medication.

There seemed to be a wide range of recommended dosing regimes among those who had their medication prescribed, and variable adherence to them. Some were prescribed regular doses at set times of the day, while others were instructed to take them "as needed" which for many participants appeared to be varying amounts several times a day (one person up to 12 times per day). Many participants appeared unaware of the dependence-inducing potential of benzodiazepines, despite having taken them under medical supervision for an extended period of time. However, there were a small number of participants whose doctors were currently encouraging them to withdraw from benzodiazepine medication, and/or switch to an antidepressant. Here is an extract from the interview transcript of one participant taking three different types of benzodiazepine under medical supervision, who also experienced frequent "anxiety attacks":

Interview 23 *I use the [oxazepam] to help me sleep, [diazepam] because I have anxiety attacks and the [nitrazepam] helps, my body has just become immune to [nitrazepam], so it's just sometimes I can just take, instead of being in a massive comatose sleep I might just take two of those just to wind down, instead of taking maybe you know four [diazepam] or something like that (…).*

Interviewer *And the [diazepam], you would take at a regular time, or…?*

Interview 23 *I take two in the morning and two at night. Unless I feel like I'm having an anxiety attack, and then I'll take more.*

Interviewer *And how many (more) do you normally need to…*

Interview 23 *Two, I don't abuse them. They're too bloody hard to come by.*

Interviewer *The [oxazepam], you take to sleep at night, how many do you…?*

Interview 23 *Just two.*

Interviewer *How often do you have an anxiety attack?*

Interview 23 *Every day.*

Interviewer *Are they predictable?*

Interview 23 *They are predictable because I can feel them coming on. It's like I get really edgy, and I can feel it get any further than that I'll take, you know, a couple of [diazepam] (…).*

Interviewer *With the [diazepam] and [oxazepam], are they prescribed by your GP, or…?*

Interview 23 *All through my doctor, everything from one doctor. I don't doctor shop or anything like that, so.*

Interviewer *OK, and how often does (your GP) issue you scripts?*

Interview 23 *Well, whenever I go there and I need it, he will issue it. Knowing now, now when he finds out that I'm suicidal he will issue it per weekly, not, he won't let me have scripts…*

A number of people who indicated they had an anxiety disorder have had counselling from a psychologist or other professional "counsellor", although it seemed in many cases this did not specifically address anxiety, but was of a more general nature (e.g. for depression, relationship issues, substance use, etc). There were certainly a number of people on anxiolytic medication who had not received counselling. Participants' experiences of counselling were mixed, with many people feeling that the counselling process was of limited assistance, for reasons such as finding it

difficult to discuss their problems openly or having to change counsellors. Only a couple of participants mentioned being taught specific anxiety reduction techniques (such as relaxation and breathing exercises), and even then these were not perceived as especially helpful. The most positive experiences of counselling seemed to be associated with liking the counsellor, rather than any substantial improvement in anxiety levels. Other forms of assistance for anxiety accessed by a small number of people included telephone help lines, an anxiety support group and personal research and reading into the problem, all of which were regarded as helpful.

Anxiety disorders were also common among the family members of participants. Of the 23 people who provided information regarding this, 57% said they had at least one family member with an anxiety disorder, and in 35% of cases one or both of the person's parents were regarded as anxious.

- **Substance use disorders**

Although only one person interviewed was specifically identified on PAS as having had an illicit drug involved in the medication overdose for which they attended hospital (see Profile of interview sample, page 165), this should not be taken to suggest the interview participants were primarily a non-drug using group. Most participants (23/29, 79%) indicated they had current or previous substance use problems. The majority of these recalled that their problematic alcohol and/or drug use commenced in their teens, although there were also a smaller number who commenced using in their twenties. Many people described a variable pattern of consumption over the years, with periods of using more heavily, or "bingeing" (often as a coping mechanism in times of stress), interspersed with periods of relatively low levels of use. A number of people continued to struggle with dependence (see below). The most commonly mentioned substances were heroin, alcohol and cannabis, although some participants also made reference to amphetamines and inappropriate use of medications.

An effort was also made to determine whether each participant could be regarded as meeting the criteria for substance dependence. It was only possible to establish this for 24 participants, half of whom met the criteria for dependence. Of those meeting the criteria, 42% were poly-substance users, 25% were alcohol dependent and 17%

were heroin dependent. Two people indicated they were currently dependent on prescribed methadone, but also had extensive histories of poly-substance use.

Information was available from 25 participants regarding injecting drug use. Of these, 56% said they had never been an injecting drug user, 24% had been in the past but were not at time of interview, and 20% were currently injecting drug users.

All of the participants who indicated a substance use problem provided some information on their treatment history. Six of the 23 people (26%) had never had any substance-related treatment at all (two had ceased use on their own). The remaining 74% had accessed a wide range of treatment types, with varying outcomes. Treatment types accessed by these 17 people included seeing a community-based counsellor/psychologist (59%), doctor/psychiatrist (other than for pharmacotherapy, 47%), residential detoxification (41%), pharmacotherapy (methadone or buprenorphine, 29%), a therapeutic community or residential rehabilitation service (24%), Alcoholics' Anonymous (18%), services provided through the justice system (both in and out of prison, 18%) and telephone help lines (6%). The number of different treatment types ever accessed ranged from one to five, with most people having tried two or three types at least once, sometimes several times. Participant experiences of treatment were variable, with both positive and negative comments made. Among the good things people mentioned about treatment were that they liked the counsellor/s and felt supported, a sense of structure, and learning about their problem.

Interview 6 *You know it's absolutely fantastic, (…) someone just to help you see the structure, to create a structure in my life, and to help me see it, basically create a framework in which to operate and then sort of manage that (…)*

However, negative experiences – some treatment centred and some client centred - outnumbered positive ones. The following difficulties were each mentioned by at least one participant; barriers to accessing treatment (such as waiting lists, travel distance, and cost), lack of structure within the program, not fitting in with other program participants or being asked to leave, side effects of pharmacotherapy, not being able to maintain change, missing drug use, and treatment focusing on the wrong problem.

Interview 11 *In the end I really, I was miserable not ever having a drink (…) I would rather be dead than like not, be stopped forever (…) in the end it just wasn't, it wasn't going to be the answer (…)*

***

Interview 26 *Well it's good, but it's sort of like, it can't do anything for me if I'm not willing to do the work as well, and I always do the same thing. After a while I start feeling better, I feel like I'm safe, and I just fall back in the shit again. Yeah, it's a really powerful disease and sometimes I feel like I'm wasting their time, you know what I mean, these people are getting paid and they could be seeing someone who is going to recover, you know what I mean. Whereas I sort of, I get these times when I'm feeling really positive and I feel like, yeah, I will recover, but then, you know, I just fuck it all up again and get to a point where I just feel like yeah, the possibility of recovery for me doesn't exist, you know.*

Twenty-two people provided information on their family history of substance use problems. Of these, only three people (14%) indicated they were not aware of anyone else in their family who had problems in this area. Fifty-five percent named only one other person who had substance use problems and the remainder had multiple relatives with problems. At least 68% of participants providing a family history indicated a relative had problems with alcohol dependence (some with other drugs also), while most of the others were injecting drug users (especially heroin). Approximately half of those with a family history identified that one of their own parents (or a primary caregiver during childhood) had a substance use problem.

Interview 3 *Ah yes, my sister was a heroin addict and is now on the methadone program. She's an alcoholic and yeah, the family all drink too much.*

- **Eating disorders**

Eight people (8/27, 30%) said that they had experienced an eating disorder either in the past or currently. This included both male and female participants. Half of the participants who self-identified as having an eating disorder described a restrictive

eating pattern typical of Anorexia Nervosa, while the rest mentioned binge eating followed by purging (via vomiting or laxatives), typical of Bulimia Nervosa. Most had first experienced disordered body image and eating during their teens, and for many this issue had since resolved itself, although a couple were still susceptible to the problem. For example:

Interview27 *I still don't feel right, … I don't throw up, I just don't eat that much, maybe once about 5 or 6 o'clock.*

Most people who had experienced anorexia or bulimia had discussed it at some stage with a counsellor, though not in the context of specialist treatment for eating disorders, but rather while engaged in general counselling addressing a range of other issues. Two participants said they had never previously discussed their problem with anyone. None of the eight reported having ever been hospitalised specifically in relation to an eating disorder.

Many of those who had suffered from eating disorders spontaneously commented on the close association that existed for them between disordered eating and depression: either negative thoughts and feelings about body weight precipitated an episode of self-starvation or bingeing/purging, or their depression was exacerbated by poor eating habits. Some even described their disordered eating or purging behaviour as a form of self-harm or self-abuse, akin to other self-harming behaviours. One person found that treatment for depression paradoxically made her eating disorder worse as weight-gain was an unwanted side effect of the medication.

Four interviewees indicated they had a relative with an eating disorder.

- **Psychosis**

While six people (6/29, 21%) self-identified as ever having had a psychotic disorder (and were therefore counted as such), there were in fact ten people (34%) altogether who described an experience of psychosis; three non-substance-induced and seven substance-induced. Three participants (10%) indicated they had been previously diagnosed with either schizoaffective disorder or schizophrenia. All three were currently under the care of a psychiatrist and had additional support workers, and two were currently taking antipsychotic medications. All described difficulty in taking their medications as prescribed and/or seeking additional medications

elsewhere (i.e. one person found it difficult to comply with a routine regime of medication, and two sought additional medications via doctor shopping and/or using other people's medications). The remaining seven participants said they had previously had at least one substance-induced psychotic episode associated with intoxication or withdrawal (three of these were related to the use of medications, and four to the use of illicit drugs). For some this had been a once off event, while others had experienced multiple episodes. Only one participant was aware of a relative with a psychotic illness.

- **ADD/ADHD**

Three participants (3/28, 11%) self-identified as having a history of ADD/ADHD, although only one was formally diagnosed as such and medicated during childhood (but not currently). One person reported a family history of ADD/ADHD.

- **Other**

In addition to the two people who self-identified as having some "other" psychiatric disorder (gambling and sexual identity), there were two reported cases of family members having some "other" mental health problem. One participant mentioned a sibling with a personality disorder and one reported a parent with a gambling problem.

Acceptability of the word "overdose"

In order to check whether the main concept of the study was meaningful to participants, and the language appropriate, participants were asked whether the term "overdose" was "OK" for them. The majority thought it was acceptable (27/29, 93%), one person (3%) gave an unclear response and one person (3%) rejected the term. This person believed the term "overdose" should only be applied to situations where a person stops breathing, is unconscious, and does not respond to stimulation. With regard to the events for which he was referred to the study, this participant said he showed none of these signs, instead describing his state as "*being severely stoned, being too stoned"*. However, as this person also believed he had taken too much medication and had required medical attention as a consequence, it was possible to include him in the study even though he rejected the term overdose. Given the

general acceptability of the term "overdose" to participants it was thought possible to use it throughout the study.

Previous overdoses

Information was gathered concerning the previous history of overdose among participants. Two-thirds of the interview participants (20/31, 65%) had received emergency medical care (i.e. ambulance attendance and/or hospitalisation) as a result of taking too much medication on at least one previous occasion. Two of these (10%) were unable to say how many times they had received medical care for a medication overdose. Of those who had overdosed, a quarter reported only one previous overdose requiring medical care, half had required care on up to five occasions, and the remainder had emergency care on more than five previous occasions. The person with the greatest number of occurrences reported in excess of 60 medication overdoses for which medical care had been sought.

A small number of people had a history of medication overdose extending back into their teenage years (for two people their first overdose occurred more than 30 years previously), though others had first overdosed in their twenties or later. About a third of those with prior overdoses had sought emergency medical care at least once within the last 6 months for the same reason. On the whole, previous medication overdoses had been taken deliberately, whether as active suicide attempts, or to temporarily escape from negative feelings. Only a small number were accidental.

In terms of treatment received for previous medication overdoses, the range of interventions described was similar to those for the current overdose (see Medication overdose patients' experiences of the emergency medical care system, page 235). For example, aspects of care mentioned included ambulance attendance, monitoring in the ED, psychiatric assessment, sometimes hospitalisation (medical or psychiatric) and psychiatric follow-up. Several people mentioned having previously being administered charcoal or having their stomach pumped, which was a comparatively rare treatment experience in relation to the presentation for which people were referred to the study. In general, people felt they had been well-treated on previous occasions:

Interview 11 *No, I've only had good, from what I can remember, I've only had good care*

***

Interview 13 The hospital staff were just the same, just as good

In addition to those occasions where the medication overdose actually resulted in ambulance attendance and/or hospitalisation, several participants (12/25, 48%) reported that there had been times in the past when they had consumed too much medication but where they had not sought emergency medical care. Half of these had only one such previous experience, but one person reported 20 medication overdoses and another person "hundreds".

Interview 22 Yeah, I've taken too much morphine before. My friend just drove me home and put me to bed. That's about it.

It was possible to establish from the interview data that at least 11 people (35%) had previously experienced an illicit drug overdose. Most of these were accidental heroin overdoses, the most common treatment received was the administration of naloxone, and in some cases, transportation to hospital. Two participants (6%) reported previously overdosing on amphetamines and one (3%) on ecstasy.

Personal and family history of self-harm

Participants were asked about their own history of self-harming behaviour, and also whether there was a family history of suicidal behaviour.[54] More than half of (15/28, 54%) indicated they had previous history of deliberately hurting themselves, but without meaning to commit suicide (for example, cutting or burning). Of these, about half had done so only once or rarely, while the rest indicated a history of more regular self-harm, mainly involving self-laceration. One participant described how occasional self-laceration relieves tension as follows:

Interview 21 I have done it when I think, when my brain goes on overload, it sort of again, it sort of takes away the pressure in my brain for some reason

Information was available from 25 participants on whether they had previously attempted suicide. Twelve (48%) indicated a history of attempting suicide (excluding

[54] This examination of personal history of self-harm excluded the current overdose event, which is dealt with under
Objective 3 - Specific suicidal intent, suicidal ideation, and depression, page 190).

the overdose for which they were included in the study); a quarter of these had only attempted once previously, and the remainder had multiple attempts. Most had five or less previous attempts but one person estimated they had attempted suicide about 50 times. All had previously attempted suicide by overdose, three people had attempted by cutting/slashing themselves, and one person had previously tried to hang herself.

Further information concerning history of attempted suicide was available from the BSS, which was completed by twenty-four participants. Thirteen (54%) indicated a previous suicide attempt (which may have included the most recent medication overdose). Of these, three (23%) reported their wish to die during the last attempt as low, five (38%) as moderate and five (38%) said they had a high wish to die during their most recent suicide attempt. Greater detail concerning the BSS is provided in the results relating to Objective 3, page 190.

Regarding family history of suicide, four people (4/27, 15%) indicated at least one member of their family had committed suicide (one person had multiple suicides within the family), and a further 11% said someone in their family had attempted suicide. None of these events had occurred recently. Suicide among friends and acquaintances was more common; with 11 (n=25, 44%) people saying they had a friend or acquaintance who had committed suicide, and a further four (16%) knowing someone who attempted suicide. Again, most of these events had occurred some years previously, although one person had received news of a friend suiciding within the last 6 months.

Recent significant life events

Nineteen participants were able to provide information on whether they had experienced unhappiness or distress as a result of particular life events in the last six months. Most participants indicated problems arising from their mental health and/or problems with their parents (Table 19). About half the group had experienced stress related to a relationship break-up, financial hardship, problems at work, and/or problems with friends. The number of different stressful events reported by participants ranged from 4 to 12, with an average of 7.

Table 19 Number of Recent Significant Life Events in Last 6 Months (n=19)

Significant life events	Experienced in the last 6 months	
	N	%
Mental illness	14	73.7
Problems with parents	13	68.4
Relationship break-up	10	52.6
Financial hardship	10	52.6
Problems at work	10	52.6
Problems with friends	9	47.4
Own alcohol use	8	42.1
Being bullied	8	42.1
Physical illness	7	36.8
Unemployment	5	26.3
Own drug use	4	21.1
Anxiety about school/university performance	3	15.8
Violence in the home	3	15.8
Own violent/criminal behaviour	3	15.8
Physical abuse	3	15.8
Homelessness	3	15.8
Failure at school/university	2	10.5
Parental divorce	2	10.5
Death of a friend	2	10.5
Physical disability	2	10.5
Sexual abuse	1	5.3
Suicide of a friend	1	5.3
Sexual identity conflict	1	5.3
Other*	11	57.9

* Other sources of stress identified included illness in family (n=3), interpersonal conflict/anger (n=3), death of pet, release from jail, self-harming behaviour, feeling suffocated, and having a new partner

Participants identified the biggest contributing factor to feeling stressed lately (although some nominated more than one factor which they saw to be of equal importance, or the factors were interrelated).[55] Six people (n=19, 32%) nominated

[55] Participants were not asked about the relative contribution of each life event to the overdose, nor should it be assumed that the biggest contributing factor to feeling stressed necessarily precipitated the overdose (although in some cases a causal relationship was mentioned by the participant). However, these data provide some

work or study: for some this was about issues of workload, while others indicated they had been subject to workplace bullying. Disruption to key relationships (including separation from partner, removal of children, and family conflict) was the greatest stress for six participants (n=19, 32%). Problems relating to mental health or substance use were of greatest importance to five people (n=19, 26%). Financial difficulties and/or unemployment were particularly concerning to three people (16%).

Interview 11 *I feel threatened that I could lose my job, and I've been assured I'm not going to lose my job, right, but I feel threatened that these particular people at work could help me out the door, you know what I mean, (…)*

***

Interview 4 *Oh just the booze and the alcohol and, you know, the way I treat people. It's getting worse, each year it seems to be getting worse. I have less and less close friends, I used to have heaps, play all sports, I had friends everywhere, but now they're just dwindling away, because they know what I'm like when I get drunk, so if they have a party, don't invite (participant), because he'll end up doing…something stupid.*

***

Interview 25 *(…) probably the mental illness I guess (...) because um, it kind of takes over, it can take over.*

***

Interview 15 *Um, I haven't had money and it's like a kick in the guts for pretty much anyone, walking around, can't go out, get to see all these people go out with money buying all these things, and not being able to buy anything.*

---

information regarding the general level and nature of stress experienced by the sample. Information specific to events precipitating the overdose may be found in the section 'The overdose process' page 206).

Social support

Participants were asked whether they felt as though they received much support from their friends, family and partner. Only eight people indicated no support was forthcoming from any of these sources. However, this did not necessarily mean such people had no support, as some had a caseworker or other professional support person available to them.

Family

Of the 16 participants who provided information on whether their family was supportive, only six (38%) indicated that encouragement or assistance was forthcoming, and even then, four qualified this by saying their family was supportive only "sometimes". The remainder of participants who commented on family were either estranged from their relatives, were in touch but found them to be unsupportive, or were in active conflict. It therefore seems that a sense of being in a supportive family environment was rare amongst this group.

Interview 13 *No, because I don't talk to my mother, or any of my other relatives. I live with my father but he's got depression and he just can't relate to anyone.*

Friends

Eighteen participants provided comment on the support received from friends. In contrast to perceptions of family, friendships were seen to provide more support. Two-thirds indicated they had a friend or friends from whom they could get help or could talk to, although some further commented that they did not like to trouble friends with their problems. The remaining participants had no friendships, had fallen out with friends, or were avoiding drug-using friends while trying to give up drug use.

Interview 13 *My psychiatrist has actually pointed out how wonderful my friends are, not using that word, but how exceptional they are because of their loyalty.*

***

Interview 23 *I find it very hard to talk to people that aren't on the same wavelength that I'm on, like being through a heroin addiction,*

> *you know, all this, a lot of people haven't been, wouldn't even know about it. When I take my son to the day care, no one even talks to me, because they think I'm the biggest laugh in the world, where they look at me like I've got leprosy. I'm always neatly dressed and I always neatly dress my son, so I feel like I'm really isolated and… I don't know why.*

Partner

Of the 18 people who commented on this, about half had no partner (three of these had very recently separated, although ten people altogether had earlier indicated a relationship break-up within the last six months). Among those with partners, perceptions of support were evenly divided, between those who found their partner supportive and those who did not. Therefore, simply having a partner did not necessarily imply a support mechanism.

4.2.4 Summary

From the interviews conducted it is apparent that while most of the participants were currently in stable accommodation, and the majority had attained a Year 10 or higher level of education (both of which might be considered protective factors), many were experiencing a range of other problems in terms of current functioning. For example, the majority were either unemployed or on a disability pension, and a number of those currently engaged in work or study indicated they were experiencing problems related to that role. Financial problems were also common. A number of people indicated they had recently experienced problems in relationships with their families, and to a lesser extent with friends. Many had a primary relationship end within the preceding six months. Almost all participants described mental health issues, the most common of these being mood disorders, anxiety disorders, and problematic substance use, all of which affected more people than not. A quarter also had a history of eating disorders. Most mental health problems described were of many years duration and experiences of unsuccessful treatment (both pharmacological and psychological) were frequently mentioned. Previous overdoses and other self-harming behaviours were widespread, although not universal. The majority of participants were currently prescribed psychotropic medications for their mental health condition. Participants tended to have at least one or two current physical

health problems, although these varied in severity. However, a number of participants commented on the capacity of physical health problems to impact negatively on their mental health, and vice versa.

A case-by-case summary of the personal characteristics of participants as they related to severity of depressive symptomatology and suicidal ideation is presented in the next results concerning Objective 3 (page 200).

4.3 Objective 3 - Specific suicidal intent, suicidal ideation, and depression

Data from the patient interviews were used to further explore the relationship between depression, suicidal ideation, and suicidal intent among survivors of medication overdose, and are divided into four parts.

Firstly, the findings relating to instruments intended to measure the main variables of interest are presented. Depressive symptomatology at the time of the overdose was measured using the BDI-FastScreen, the level of suicidal ideation among participants at the time of the overdose was measured with the BSS, and the deliberateness and intentionality of the overdose were assessed using two 5-point Likert scales. An analysis of the correlation between these measures is also provided.

Next the relationship between the scores obtained and participant narratives concerning the overdose is examined. This was to determine whether depressive symptomatology, suicidal ideation, and suicidal intent as measured by the scales were reflected in participant descriptions (i.e. do the scales appear to have content validity), and also to further explore these concepts.

Thirdly, BDI-FastScreen and BSS scores were considered in relation to a range of other variables to assess whether any consistent pattern emerged between participant characteristics and levels of depression and suicidal ideation.

The section concludes with a description of the overdose process based on participant narratives.

4.3.1 Measures of depression, suicidal ideation, and intent of overdose

BDI-FastScreen

The mean score on the BDI-FastScreen was 11.1 (median = 10.5, range 3-21, n = 24, 20 self-completed, and 4 interviewer administered). BDI-FastScreen scores can be divided into minimal (0-3), mild (4-8), moderate (9-12), and severe (13-21). In this sample 4% scored in the minimal range (1 person), 42% in the mild range (10 people), 12% in the moderate range (3 people) and 42% in the severe range (10 people). Therefore over half those interviewed reported moderate to severe depressive symptomatology at the time of the overdose.

BSS

The mean score on the BSS was 11.2 (median = 8, range = 0-27, n = 25, 20 self-completed, and 5 interviewer administered).[56] Unlike the BDI-FastScreen, there are no suggested cut-off scores relating to severity for the BSS. However, the first five questions of the BSS serve as a preliminary screen, and those who answer in a way that suggests no significant suicidal ideation do not go on the answer the remaining questions. Eleven people were screened out after the first five questions. Seven people scored zero on the BSS.

Likert scales

When asked how deliberate the overdose was on a scale of one to five, where one equalled *completely accidental, no intention to OD* and five equalled *completely deliberate, intended to OD,* the mean score was 3.4 (median = 4, range 1-5, n = 30). In terms of the intention at the time of the overdose, where one equalled *no wish to die* and five equalled *strong wish to die*, the mean score was 2.7 (median = 2.5, range 1-5, n = 29).

Correlation between measures (BDI-FastScreen, BSS, and Likert scales)

Correlation co-efficients were calculated to determine whether scores on standardised measures of depressive symptomatology (BDI-FastScreen) and suicidal ideation (BSS) were congruent with each other, and with participant ratings of the deliberateness of their overdose and their wish to die at the time of overdose. The results indicated that these participant scores on these measures were correlated with one another (Table 20).

[56] The mean score was calculated using all participants who completed the BSS, regardless of whether individual participants answered only the first five screening questions, or the entire inventory.

Table 20 *Correlation Matrix for Measures Regarding Suicidal Ideation, Depression, Intentionality, and Wish to Die*

Measure		BSS	BDI FastScreen	Accidental v deliberate	Wish to die
BSS	Pearson	1.00	.80*	.66*	.85*
	Sig (2 tail)	-	.000	.000	.000
	n	25	23	25	25
BDI FastScreen	Pearson		1.00	.62*	.74*
	Sig (2 tail)		-	.001	.000
	n		24	24	24
Accidental v deliberate	Pearson			1.00	.68*
	Sig (2 tail)			-	.000
	n			30	29
Wish to die	Pearson				1.00
	Sig (2 tail)				-
	n				29

* Correlation is significant at the 0.01 level (2-tailed).

Summary

Current mild, moderate, or severe depressive symptomatology was common among the interview sample. Almost half of those who completed the BSS were screened out after the first five questions, suggesting either low or no suicidal ideation in relation to the overdose. The responses given by the remainder of the group to the screening questions qualified them to complete the entire instrument, suggesting they experienced suicidal ideation preceding the overdose. Most participants reported the overdose to be more deliberate than accidental (i.e. >3). However, most also rated their wish to die as being closer to *no wish* than *strong wish* (i.e. <3).

4.3.2 Consistency between scale scores and participant narratives

Participant narratives about the overdose were firstly considered in conjunction with scores obtained on both standardised instruments (BSS and BDI-FastScreen), and then the two Likert scales concerning the deliberateness of the overdose and wish to die.

BDI-FastScreen and BSS

BDI-FastScreen scores were separated into two groups, with those scoring 0-8 classified as *low*, and those scoring 9-21 as *high*. The *low* group corresponded to scores indicative of minimal or mild depression, while the *high* group corresponded to moderate or severe depressive symptomatology (Beck et al., 2000).

Similarly, BSS scores were divided into *low*' and *high* scoring groups. As there are no set cut-offs between levels of severity of suicidal ideation suggested for this instrument, the decision was made to include those participants who were screened out after answering the first five questions as *low* in suicidal ideation, and those who were screened in to answer the full BSS as *high* (though it should be noted that not all those who were screened out were necessarily free of any suicidal ideation, nor that those screened in were highly suicidal) (Beck & Steer, 1993). It was then possible to divide participant narratives into four groups depending on the scores obtained on both instruments (i.e. High BSS/High BDI-FastScreen, High BSS/Low BDI-FastScreen, Low BSS/High BDI-FastScreen, and Low BSS/Low BDI-FastScreen). Altogether, 23 participants were classified on this basis, while there were 8 people for whom scores were missing on one (n=3) or both (n=5) instruments, and who could therefore not be classified. The number of participants in each group is presented in Table 21.

Table 21 *Number of Participants Scoring 'High' or 'Low' on the BSS and The BDI-FastScreen*

	High BSS	Low BSS	Total
High BDI-FastScreen	10	2	12
Low BDI-FastScreen	4	7	11
Total	14	9	23

Once participants had been classified the accompanying participant narratives were considered. The purpose of this was to determine whether the standardised scores obtained were congruent with the participants' narrative descriptions of their emotional state and intentions at the time of the overdose.

High BSS/High BDI-FastScreen

The High BSS/High BDI-FastScreen group was the most frequently occurring classification, with 10 people classified in this way. According to BDI-FastScreen scores, nine of these people showed evidence of severe depressive symptomatology, and one of moderate depressive symptomatology. Participant narratives concerning life circumstances and perceptions of self at the time of the overdose were consistent with high levels of depression. These included descriptions of severe stress such as prolonged insomnia, poor health, significant problems with substance use and gambling, interpersonal conflict (in intimate relationships, with family and friends, at work, etc), separation from children, and sexual identity issues. A number of participants described other distressing emotional states in conjunction with depression, saying they felt angry, abandoned, empty, useless, and unable to control their feelings. These feelings appeared to be compounded by the highly self-blaming view many participants took of their situation and frustration at their inability to alter it. For example:

Interview 26 *I think there's got to be some learning in there for me somewhere, and I'm just not learning it, you know. I'm hard headed, and it's like it just keeps on going and going because I'm not seeing the lesson, I'm not grasping what I'm supposed to grasp out of this.*

***

Interview 23 *I don't want to die like I said, but I'm not in a hurry to live either. If I could change my life and be happy, no problem, I'll live until I'm a hundred and fifty, but I'm not happy, and that makes it hard to live when you're not happy, and I don't have any self-confidence in myself, I'm not happy with myself and who I am, I'm not happy about the mother I am because I'm suicidal, like I constantly think about having suicidal thoughts, and then I feel guilty because I don't want to leave my son without a mother, he hasn't got a father.*

***

Interview 11 *I'm not out to hurt anyone, it's just I have this overwhelming feeling of worthlessness, you know.*

In almost all of the cases classified as *high* BSS the participants saw little hope for their future and had given consideration to death as a solution to their problems. Therefore the overdose was regarded as a suicide attempt by most in this group. However, many also mentioned protective factors that suggested some ambivalence about death, such as not wanting to hurt others, or being afraid of death. Three people, while scoring highly on the BSS, then provided reasons for the overdose that suggested a desired outcome other than death. One person wanted to go to sleep and not wake up, and two others indicated the main reason for overdosing was that they wanted help, although they also saw death as a possible consequence of the overdose.

Interview 2 *I think I just wanted to go to sleep and never wake up, but not really die.*

This group was the one most likely to think frequently about suicide, and many had a history of previous serious suicide attempts.

Low BSS/Low BDI-FastScreen

Seven people interviewed were categorised as *low* on the basis of both their BSS and BDI-FastScreen scores. However, six of these scored in the mildly depressed range (one was minimally depressed). Therefore this group was not depression free, just less severely so than some of the other groups. Participant narratives concerning the lead up to the overdose made reference to problems consistent with mild depression, such as insomnia, stress, erratic moods and feeling isolated, but lacked some of the more extreme experiences noted in the groups with higher levels of depressive symptomatology. Participant comments regarding suicide were largely consistent with the low BSS scores obtained, with most stating that they did not want to die at the time of the overdose. A number commented on the capacity of pills to help them escape unpleasant cycles of thinking and to make them feel better, but their intention in taking them fell short of a wish to permanently escape via death. However, this group was not completely devoid of suicidal ideation, with about half saying that they had thoughts about death and dying, even though they were not actively suicidal. Other comments indicative of relatively low suicidal ideation included

taking the medications to sleep, by accident, to get high and, in one case, to get attention.

High BSS/Low BDI-FastScreen

The High BSS/Low BDI-FastScreen group included four participants. This group might be regarded as the most curious because it is counter to common understandings of suicide that a person who is not at all or only mildly depressed would have high levels of suicidal ideation.[57] All four had mild depressive symptomatology as measured by the BDI-FastScreen. One of the participants described life circumstances and emotions leading up to the overdose that were similar to those of people in the High BSS/High BDI-FastScreen group, such as current family conflict, a history of abuse, and feeling angry, unhappy and abandoned. However, her depressive symptomatology at the time of the overdose was only rated as mild. This participant had a particularly high score on the BSS, which was consistent with other information she provided. For example, she indicated that she planned the overdose and wrote a suicide note (although she also said she thought about reasons for living at the time of the overdose). A possible explanation for the apparent inconsistency between mild levels of depression and high levels of suicidal ideation may be found in her comment that she was drunk and therefore possibly not rational at the time of the overdose.

Two participants in this group did not mention any particular feelings of depression prior to the overdose in the interview, which was consistent with their BDI-FastScreen scores. However, both regarded the overdose as deliberate, which is in keeping with their allocation to the *high* BSS group. The first of these participants indicated that he often felt suicidal, and that this was in someway a comfortable state for him to be in. In discussing suicidal thoughts the participant said the following:

Interview 6 *The certainty is probably driven by the fact that I am suicidal, so I don't know, but you're that suicidal that you're quite happy, and quite happy to be mad, you know. Generally after you know, 70 percent of the time you feel fairly good, relatively, so.*

[57] Although there is evidence to suggest that partial remission of depressive symptomatology may be associated with increased risk of suicide in some individuals (Ferrier, 1999).

The second participant whose narrative lacked mention of depression indicated that at the time of the overdose he wanted to sleep, shut out the world, and thought his whole life was a delusion. This last comment suggests he was possibly in a psychotic state when the medications were taken. It is interesting to note that the last two participants reported a history of psychosis, while the first participant mentioned in this section has a history of bipolar disorder. This more complex psychiatric history may in part account for the apparent paradox of relatively low depressive symptomatology in conjunction with suicidal ideation.

The final participant in this group provided an account of her current life circumstances that was consistent with her score on the BDI-FastScreen (i.e. symptomatic of mild depression). However, while she was screened in to complete the full BSS, her overall score on this instrument was in fact quite low and she showed few other indications of suicide risk.

Low BSS/High BDI-FastScreen

There were only two participants who were rated as having moderate depressive symptomatology but who indicated low levels of suicidal ideation. In both these cases the participants identified feeling stressed, worried, and unhappy about difficulties in their primary relationship at the time of the overdose, as well as other life concerns, which was consistent with their BDI-FastScreen scores. However, the low scores on the BSS indicated minimal suicidal intent. This was further evident from the narratives around the overdose. One had primarily *"wanted to get that shit-faced"*, rather than die, and stated that *"suicide is a coward's way out"*. The other participant was somewhat ambivalent about his intentions, but in the end was concerned about the impact of harming himself on others, and also actively sought help immediately following the overdose.

Summary

There was a high level of consistency between scores obtained on standardised measures (BDI-FastScreen and BSS), and participant narratives regarding depressive symptomatology and suicidal ideation. Even where an individual scored highly on one instrument and not the other, this differentiation was generally also apparent in the accompanying narrative. Among this sample a low score on the BSS was not necessarily indicative of a complete absence of suicidal thoughts. Many participants

with such scores reported thinking about death and dying, even in the absence of an active suicidal wish or plan.

Likert scales

As mentioned earlier, participants rated the deliberateness of the overdose and their wish to die at the time on a 5-point scale. To further explore the concept of intent, participants were then asked why they had rated the overdose as such, and the responses were considered in light of the rating selected.

"Deliberateness" of overdose

As reported earlier, the median rating for the "deliberateness" of the overdose was "4" (n=30), indicating in most cases the overdose was more deliberate than accidental. Of those who answered "1", indicating the overdose was completely accidental, only one had actually been unaware of the amount of medication being consumed (i.e. the person was accidentally administered an excessive dose of methadone by someone else as part of a supervised pharmacotherapy program). Others who rated the deliberateness of the overdose as "1" or "2" had intentionally consumed the medications, but from their comments it was apparent that the outcome (i.e. an overdose) was unintentional. These nine participants said they wanted to sleep, get high, make a statement, or thought it would be OK to take the medication in that quantity. The six participants who rated the deliberateness of the overdose as "3" or "4" acknowledged they had taken the medications, and therefore that it wasn't accidental, but professed some ambivalence about what outcome they wanted. For example:

Interview 15 *"I didn't want to deliberately hurt myself, and it wasn't completely an accident, because I mean, 15 tablets don't accidentally pop down your throat."*

Fourteen people rated the deliberateness of the overdose as "5". These responses were divided between those who said that they knowingly took the medications, and therefore that the overdose was by definition "deliberate", regardless of the intended outcome, and those who went on to give some further explanation for why they overdosed. These reasons included being down or depressed, wanting help, and wanting to escape intolerable inner states.

"Wish to die" at time of overdose

The median rating by participants of their "wish to die" at the time of the overdose was 2.5 (n=29), indicating a slight preference towards the not wishing to die end of the scale. The nine who rated their wish to die as "1" generally supported this rating with a statement that made clear their desire to live, and/or was a rejection of suicidal intention at the time of the overdose. Fifteen participants rated their intention to die as somewhere in the middle (2-4), and many supported this rating with a statement indicating ambivalence about the outcome of the overdose. For example, some said they did not know whether they wanted to die, or did not care whether they died, others wanted to escape from their present reality without actually dying, and a couple of people who were considering suicide also cited reasons for living, mitigating the strength of their wish to die.

Interview 11 *I didn't really want to die, but I thought that "I'm useless in this world", and that the world would be better off if I went, you know what I mean, but I didn't really want to die because I'm frightened of death. I've got a fear of death. I mean, that's like so stupid, you know what I mean?*

***

Interview 8 *Um, I'd started to write a suicide note and I planned where I was going to go in the car. I had taken all my pills out and they were all in front of me on my bed, I was sitting on my bed with them all there. I started to write a note and I guess trying to explain myself, to myself, you know, and then I decided that I couldn't leave my Dad.*

Five people selected "5", indicating a strong wish to die. All of these participants provided a comment about their strong wish to die that was consistent with their rating. Most indicated a sense of hopelessness; believing their problems were too big to solve and there was no prospect of a better future. One person said she did not feel worthy of living at the time of the overdose.

Summary

As for the BSS and BDI-FastScreen, participant stories concerning the circumstances surrounding the overdose were congruent with Likert scale ratings of the deliberateness of the overdose and the participants' wish to die. It was also clear that the concepts of "deliberateness" and "wish to die" were not interchangeable, with many of those who considered their overdose to be deliberate expressing considerable ambivalence about the intended outcome, and relatively few unambiguously wishing to die.

4.3.3 Other factors related to suicidal ideation and depressive symptomatology

Scores on the BDI-FastScreen and BSS were considered in relation to a range of other variables. As there were only a limited number of non-representative cases in the sample, and a number of these contained missing data on various survey items, statistical analyses of relationships between variables were not considered appropriate. Descriptive statistics for various factors under study were included in previous sections; however, it was also of interest to investigate how some of these variables related to scores on the standardised measures of suicidal ideation and depressive symptomatology.

As an alternative to statistical analysis as a means of synthesising the data on participant characteristics as they relate to BSS and BDI-Fast Screen scores, a case matrix was constructed. This involved plotting participants' responses on a range of variables on a case-by-case basis, and then grouping cases according to their BSS and BDI-FastScreen scores. This gives a visual representation of the patterns of responding according to symptom severity, although of course this does not determine levels of statistical significance. Table 22 shows the pattern of responding on a range of variables on a case-by-case basis, with individual cases represented in rows and the variables of interest in columns. The presence of an asterisk in a row means that the individual case possessed the characteristic identified in the column heading.

The following variables were included in a matrix (Table 22); age, sex, physical health, mental health, history of medication overdose, personal history of deliberate self-harm or attempted suicide, family or friend who has committed suicide, recent

significant life events, and level of wish to die. Some of these have been simplified, for example, by converting a continuous variable into a dichotomous one. A definition of how each of these has been operationalised is provided under the subheadings below, along with a description of how the data appear to relate to the four groups; High BSS/High BDI-FastScreen, High BSS/Low BDI-FastScreen, Low BSS/High BDI-FastScreen, and Low BSS/Low BDI-FastScreen. The matrix relates to the 23 participants who completed both measures, and each row represents a single case (grouped according to BSS and BDI-FastScreen scores). Case numbers have not been included as the information used in conjunction with direct participant quotes may render individuals potentially identifiable.

A number of variables were excluded on the basis that there was low variability in participant responses, and as such their inclusion in the matrix would add little information. For example, living circumstances, cultural background, sexual identity, education and employment were all excluded. Social support from family, friends, and partner were also excluded, as there was a considerable amount of missing data for these items.

Table 22 Relationship between Other Variables and Scoring 'High' or 'Low' on the BSS and the BDI-FastScreen (n=23)

Group	Variables of interest								
	Wish to die (>=3)[1]	Self-harm and/or suicide attempt[2]	Previous emergency care for OD[3]	Family/friend committed suicide[4]	Life problems (>= 7)[5]	Mental health conditions (>=4)[6]	Physical health conditions (>=2)[7]	Female	Age (>=30)
High BSS High BDI	*	*	*		*	*		*	*
	*	*	*	*	*		*		*
	*	*	*				*	*	
	*	*	*		*		*	*	*
	*	*	*	*	*	*			*
	*	*	*	*	-	*	*	*	*
	*	*	*	*	*	*		*	
	*	*		*	*		*		*
	*	*				*		*	*
	*			*	*	*	*		*
High BSS Low BDI	*	*	*		-	*			
		*	*	*	*	*			*
	*	*			-	*	*	*	
				*	*			*	*

Group	Variables of interest								
	Wish to die (>=3)[1]	Self-harm and/or suicide attempt[2]	Previous emergency care for OD[3]	Family/friend committed suicide[4]	Life problems (>= 7) [5]	Mental health conditions (>=4)[6]	Physical health conditions (>=2)[7]	Female	Age (>=30)
Low BSS High BDI	*				*				
					-		*		
Low BSS Low BDI		*	*	*					
		*	*	*			*		
		*	*					*	
			*		-	*	*		*
			*		*			*	*
		*		*			*		
				*					

[1] This relates to the "Wish to die" Likert-scale scores (range 1-5), where * denotes a score >=3

[2] This item combines participant responses on previous deliberate self-harm and attempted suicide, where * denotes a positive response to either or both items

[3] This concerns participants who have previously sought emergency medical care following an overdose, where * denotes a positive response

[4] This item combines responses on whether a family member or friend of the individual has committed suicide, where * denotes a positive response to either or both items

[5] Participants with >=7 life problems in the last 6 months denoted by *, missing cases denoted by -

[6] This relates to the number of mental health problems endorsed by the participant, where * denotes >=4 mental health problems

[7] This relates to the number of physical health problems endorsed by the participant, where * denotes >=2 physical health problems

Wish to die

Participants who scored greater than or equal to "3" on the five-point Likert scale concerning "Wish to die" are denoted in Table 22 with an asterisk. This selection appears to have a strong relationship to scoring highly on the BSS, although not the BDI (unless in conjunction with a high BSS score). This is consistent with the correlation analysis presented earlier and suggests the five-point scale is in itself a reasonable indicator of suicidal ideation.

Previous self-harm or suicide attempt

Participant responses concerning whether the individual had ever deliberately harmed themselves but without meaning to commit suicide (e.g. cutting, burning) and/or whether they had ever attempted suicide were combined into a single variable. Almost all participants who were categorised as *high* BSS (whether high or low on the BDI-FastScreen) had a history of self-harming or suicide attempts. This was also true for some people who had low ideation at the time of the overdose (as measured by the BSS), but as a lesser proportion overall.

History of emergency care for medication overdose

A relatively high proportion of positive responses were evident in both the High BSS/BDI group and the Low BSS/BDI group. Therefore, there was no clear relationship apparent between having previously sought or required emergency care for a medication overdose from the ambulance service or an ED and scores on the BSS and BDI-FastScreen.

Family or friend committed suicide

Having a family member or a friend who had committed suicide was collapsed into a single variable. This appeared to be a common experience among participants, and no clear relationship to BSS and BDI-FastScreen scores emerged from these data.

Recent significant life events

Participant responses were dichotomised into those who reported experiencing seven or more life problems in the six months prior to interview, and those who reported less than seven problems. The pattern of responding was indicative of those with more severe suicidal ideation and depression reporting more recent stressful life

events, although there were several instances of missing data in relation to this item. If a relationship between life stress and suicidal ideation existed, it is not clear what direction this took. That is, whether those participants with the most problems became the most highly suicidal, or whether those who were most suicidal and depressed had a tendency to perceive their lives as being filled with stress, or were more likely to report such events.

Mental health

All participants who identified themselves as having four or more mental health conditions are denoted with an asterisk in Table 22.[58] All participants included in this table had at least two or three mental health conditions, therefore the unmarked cases were not free of psychiatric problems, they just had fewer than the others. Self-identification as having four or more mental health conditions was most common among those with *high* BSS scores. Participants categorised as *low* on the BSS and BDI-FastScreen only rarely indicated the presence of four or more problems in this area.

Physical health

Participants nominating two or more physical health problems are marked with an asterisk in Table 22. No clear pattern emerged from the data in relation to the presence of physical health problems and scores on the BSS and BDI-FastScreen, with participants in all four groups having two or more conditions.

Sex

There were approximately equal number of males and females in the groups categorised as *high* BSS. However, there was a tendency for males to outnumber females among the groups based on *low* BSS scores.

Age

Participants were dichotomised according to age. Those aged 30 or more appeared to be over-represented in those groups based on high BSS scores relative to those in

[58] Problems relating to the use of alcohol and other substances were included in this total, and therefore substance dependence is not presented as a separate variable in the case matrix.

their twenties, who were more frequently characterised by low scores on both instruments.

Summary

While the information presented in the case matrix does not represent a statistical analysis of factors associated with elevated BSS and BDI-FastScreen scores, nor model how these factors interact, it does provide a preliminary indication of the variables which appear to be related to the scale scores. Having a wish to die of "3" or greater, a history of self-harm or suicide attempts, seven or more recent life problems, four or more mental health problems, and being aged over 30 all appear to be somewhat more common among participants categorised as *high* BSS, and to a lesser extent *high* BDI-FastScreen.

4.3.4 The overdose process

This research aimed to uncover and document the overdose experience. Participant narratives were therefore examined to identify the process of taking an overdose, and common themes noted. The means by which people acquired and consumed their medications are covered in 'Acquisition of medications involved', page 226.

Three common elements were noted in participant stories surrounding the overdose: the *events* leading up to the overdose, the *feeling-state* of the individual at the time, and finally, the *desired outcome* of the overdose. Participant narratives may not have necessarily followed a chronological progression through these elements (for example, some people mentioned the intended outcome first, and then provided the context for that), but some mention of each was typically made as the person recounted the overdose. Furthermore, many people mentioned more than one point relevant to each element. Texts of the overdose story were examined and examples of the relevant elements identified for each case. The range of precipitating events, feeling states and intended outcomes found in the data are described separately below.

Participants differed greatly in their eloquence; some provided highly detailed accounts of what had occurred in the lead-up to the overdose, had a wide vocabulary with which to describe the nuances of their own emotions at the time, and could reflect on the sometimes contradictory nature of their intentions. Others provided

rather more straightforward accounts of what occurred and how they felt (for example, “angry”). In a small number of cases it was quite difficult to identify what precipitated the overdose, how the person was feeling and/or what they hoped the outcome would be, though it is not clear whether such scant accounts were due to the inability of the person to articulate what had occurred, or unwillingness to discuss this with the researcher. Therefore, the information presented below does not necessarily capture the whole experience of all participants, but is reflective of the information provided to the researcher.

Precipitating events

Participant stories about the lead up to the overdose included descriptions of a number of precipitating or activating events and situations. These were grouped together according to common themes. Most people mentioned one or two events or situations that appeared to have a contributory effect to the overdose, and some mentioned up to three distinct events. Broadly speaking the most common precipitating events were alcohol and drug use, unpleasant memories, and interpersonal conflict. The events described generally occurred immediately prior to (or at least within several hours of) the overdose, or represented an ongoing problem for the individual (but one that had troubled them in the 24 hours prior to the overdose).

Eight participants mentioned problematic alcohol or drug use (e.g. bingeing, being in withdrawal) as contributing to their overdose. That is, from the point of view of the individual concerned, this factor was not simply associated with the overdose, but had a causal influence. In one instance the substance use was also associated with gambling problems.

Eight people reported being troubled by unpleasant memories from the past (remembering traumatic incidents, for example) or had been ruminating on earlier events (such as previous disappointments) in the lead up to the overdose. In some cases these memories were triggered by external events such as contact with a family member, but in other cases the distressing memories surfaced without any obvious prompt. In these cases the emotional impact of past events was clearly as significant to the person as events occurring in the present.

Interpersonal conflict was a theme mentioned by many. There were three main areas in which interpersonal conflict was most apparent: primary relationships, family relationships, and/or work. Eight people described having a major dispute or misunderstanding with their partner/spouse prior to the overdose, in some cases culminating in the relationship ending. Seven people mentioned significant conflict with family member/s prior to the overdose (this includes one case where the participant was separated from children). Work related problems included both actual conflict and general stress in the context of employment or study and were experienced by five people. While some of these conflictual events occurred in the days or weeks prior to the overdose, all participants who raised this theme reported being troubled by the conflict in the 24 hours prior to overdose.

Four people reported being unemployed, experiencing financial problems, or being homeless as a significant issue at the time of the overdose, and three were distressed about the loss of a support person or lack of help available to them. The following excerpt is from a participant who had learned her counsellor could no longer continue to see her on the morning preceding the overdose:

Interview 2 *(…) I felt very alone and I knew that the only person that was very stable and always had been since I've been here was my counsellor and the thought of losing her was really frightening.*

"Other" events were also mentioned, though each by relatively few people. Two participants were greatly troubled by insomnia, two participants remarked upon poor health/health concerns in the lead up to the overdose, one person discussed being troubled by issues of sexual identity, one person could not give a clear account of events, other than going out with friends and being upset by "something", and finally, one person was accidentally administered a methadone overdose by their pharmacist.

Feeling states

Participant narratives were closely examined for text concerning how the person was feeling in the time immediately before overdosing, and passages concerning emotional and physical states highlighted, for example *"I was worried sick"*, and *"feeling down"*. While there were almost as many different words used to describe feeling states as there were participants, these were grouped into six broad themes;

'anxious/stressed', 'depressed', 'unworthy', 'negative interpersonal emotion', 'physical state', and 'unclear'. Most participants could be included in one or two of these categories, although some descriptions fitted three.

A number of adjectives were included under the broad umbrella term of 'anxious/stressed' (e.g. worried, overwhelmed, confused). Nine participant narratives included reference to being under stress or feeling anxious in some way. Six participant narratives made direct reference to feeling depressed and/or hopeless and were included within the theme 'depressed' (though from the BDI-FastScreen scores discussed earlier, it is reasonable to suggest that depression, or at least a depressed mood, was a feature of more than these six overdoses). The theme 'unworthy' related to at least six participants. In these cases participants expressed that they felt worthless, unloved, or were self-castigating.

'Negative interpersonal emotion' was noted for overdoses occurring in situations of interpersonal upheaval that resulted in the person experiencing feelings such as frustration, anger, or a sense of being undervalued. This theme was relevant to eight of the narratives. For example:

Interview 20 *Yes, yeah, I just had the pip because she was telling me, saying "I still love you heaps", and all that sort of stuff, just the more I thought about it, thinking about her with another bloke I was just getting angrier and angrier. I just wanted to, I didn't give a shit really.*

In the above quote the participant specifically linked the content of his cognitions with his emotional state (i.e. his thoughts intensified his feelings). However, many participants did not articulate awareness of any such connection.

Many participant narratives made reference to the physical condition of the person at the time of the overdose. Altogether 17 narratives made reference to a physical state: in 13 cases the person was intoxicated, in three the person referred to extreme tiredness or exhaustion, and one person reported experiencing withdrawal symptoms in the lead up to the overdose. While these are not emotional states, it is reasonable to conclude that physical sensations such as 'feeling drunk' or 'feeling exhausted' were associated with the overdose event, possibly as an additional causal factor.

Finally, the participants' state of mind in the lead up to the overdose was not clearly articulated in four cases.

Desired outcomes

Desired outcomes were primarily considered in terms of whether or not the person wished to die as a consequence of the overdose (or was ambivalent about this), but other intended outcomes are also discussed below. In discussing the overdose event only five people expressed that they had a clear and unambiguous wish to die at the time of the overdose, though none of these indicated they still wished to die at the time of the interview. This was consistent with the results of the "Wish to die" Likert scale. Nine people were equally clear that they had not wished to die as a consequence of the overdose. The remainder expressed ambivalent intentions.

Among the nine people with no wish to die, the intentions of the overdose were varied (most stated only one desired outcome, though one person mentioned two). Three people primarily wanted to get stoned, two people were trying to get some sleep, two wanted to escape from thinking/consciousness but were also clear that they did not want to die, and one person wanted to make a statement to his partner. There was also one person who did not want to die, but for whom the intention was unclear, and another who had no intention at all, as a third party had administered the medication to them, and had accidentally given enough to cause an overdose.

Among the 17 participants with ambiguous intentions, uncertainty about desired outcomes was manifested in two main themes within participant narratives: 'apparent contradictions' and 'escape'. Some narratives contained elements of both. 'Apparent contradictions' were those narratives where the participant expressed intentions that could be regarded as competing or contradictory. Examples of such pairings are listed below and occurred in about half the narratives.[59]

- I thought the world would be better off without me/I didn't want to die
- I thought these medications might kill me/I knew they probably wouldn't
- I wanted to die/I sought help immediately afterwards
- I wanted to sleep and not wake up/I am not sure about dying

[59] Please note, while these examples are based on actual narratives they are not direct quotes.

A desire to "escape" or shut out the world was also noted in about half the narratives where the person was ambiguous about their desire to live or die. Participants generally wanted to escape from their problems and/or the strain of continuously thinking about them. It was as though many participants needed a rest from whatever difficulties were consuming them in the lead up to the overdose. Death, or at least prolonged unconsciousness, seemed to offer a possible solution in this regard, manifesting in a sense of ambivalence about dying.

Interview 27 *I have suicidal thoughts, but that day especially (…) so I don't know, so it was a little bit, but not, not a definite "I wanna die" it was just, I just wanna go away for a bit, have a rest (…) I don't want to hurt my body in anyway, like a train or anything like that, but if there was euthanasia I'd have it right away, so I don't know, I don't know.*

Other desired outcomes articulated by a small number of people in the ambiguous group included getting some sleep (i.e. overcoming insomnia), to get intoxicated, or to get help and/or attention. These were generally secondary to the other two desired outcomes noted above.

Interview 25 *(…) I started just thinking that maybe all these diagnoses were right and there was something seriously mentally wrong with me, and I'd better get myself to hospital, and I've tried to like admit myself to mental health facilities before believing that I was very ill, and being told that I wasn't, and so I thought "well", it was sort of like me going, "well, I'll show you all that I really am".*

Relationship between precipitating events, feeling states, and desired outcomes

An attempt was made to formally explore how the sub-themes within *precipitating events*, *feeling states*, and *desired outcomes* related to one another. That is, were there particularly strong associations between sub-themes across these three domains? A hypothetical example of such a relationship would be conflict with a partner being consistently related to negative interpersonal emotions, which in turn might be consistently related to a wish to die.

The software used to analyse the participant interview data, NVIVO, allows searches to be conducted between different elements of the data.[60] However, an exploration of the intersections between the various sub-themes yielded little information. In many cases there seemed to be no particular relationship between the sub-themes. There were a few instances where an association appeared to emerge, but the number of cases involved was too small to report with any confidence.

Because the large number of sub-themes within the *precipitating events* and *feeling states* categories resulted in complex matrices, it was thought that any patterns in the data might possibly be obscured. Therefore the theme structure within these categories was simplified by collapsing some sub-themes into broader categories on the basis of like content (e.g. grouping together conflict with partner, conflict with family, and work conflict). However, no consistent patterns emerged even when the simplified matrices were generated.

Despite the insufficient evidence to explore links between sub-themes within *precipitating events, feeling states,* and *desired outcomes,* it was still possible to propose a relationship between these themes at the broadest level. The overdose process as described by most participants suggested that it was the interaction of feelings and events that led to the overdose being seen as a desirable outcome.

Summary

Three themes consistently emerged in relation to the overdose process: precipitating events, feeling states, and desired outcomes. Common precipitating events included problematic drug use and interpersonal conflict. Precipitating factors were not necessarily confined to present day experiences; current memories of past events were clearly relevant to the overdose in a number of cases. A lack of resources (including employment, money, and emotional support) was also significant in some instances.

[60] Matrices of co-occurring data elements can be constructed in NVIVO that are similar to a cross-tabulation procedure within standard quantitative data analysis packages. Searches were conducted for the sub-themes of *Precipitating events x Feeling states, Precipitating events* x *Desired outcomes, and Feeling states x Desired outcomes.* This type of search returns a table showing the total number of documents coded to each cell of the matrix. It should be noted that for both *Precipitating events* and *Feeling states,* some participants were coded to more than one sub-theme.

The feeling states described by participants were generally negative, and related to both the interpersonal and internal emotional worlds of participants (for example, feelings of anger and frustration with others, as well as feelings of depression, worthlessness, and self-hatred within the individual). Physical states such as intoxication, and to a lesser extent, extreme tiredness were also common.

Only a few participants had a clear desire to die at the time of the overdose, and a slightly larger number were definite that they had not wanted to die. The majority of overdose survivors interviewed were ambiguous about their intentions. Among those who seemed ambivalent in this regard were many who expressed a wish to escape their current problems. Ambivalence was also noted in the tendency of some participants to articulate competing or contradictory thoughts about the overdose.

The main contributory precipitating events and feeling states identified here (i.e. problematic substance use, interpersonal conflict, and negative emotions such as depression and anxiety) are similar to the recent significant life events earlier identified by participants as causing unhappiness or distress in the previous six months (Recent significant life events, page 184).

4.4 Objective 4 - Medications implicated in medication misuse or overdose

Objective 4 was addressed with reference to both PAS audit data and patient interviews. The information from PAS was used to broadly describe the range of prescription and OTC medications implicated in overdoses presenting to the ED over a 12-month period, whereas the interview data were used to describe actual patterns of consumption in the lead up to overdose, as well as any concurrent alcohol or drug use. Patient interview data were also used to address the questions concerning the acquisition of medications implicated in the overdose.

4.4.1 Medications implicated in overdose presentations to the ED

The PAS narratives for most medication misuse or overdose presentations included enough information to categorise the medications into drug classes and subclasses. However, more detailed information concerning the specific brand and/or the actual quantity of medication taken was not recorded with sufficient consistency to be able to judge from PAS whether individual events were medically serious. Other relevant factors in determining the likely seriousness of presentations were also unknown (such as the tolerance and body weight of the person).

As noted at the beginning of the results section, there were a total of 521 cases during the 12-month data collection period where the misuse of medications or medication overdose contributed to the presentation to the ED. Of these, there were a small number (22/521) for whom no information concerning the specific medications involved was recorded (e.g. the narrative may simply have referred to the event as a "polypharmacy OD"). Table 23 shows the medications used in the 499 cases where the medication type was known and recorded. The left hand data column shows the medications used by the MOD group (i.e. those presentations where only medications were implicated in the overdose, not illicit drugs, and excluding 21 cases with missing data). The middle data column contains information relevant to cases presenting at the ED with an illicit drug overdose that also involved medications (i.e. this column corresponds to groups 6 and 7 in Table 2, less one case with missing data). The far right data column is the total of the previous two columns

(i.e. all presentations to the ED for medication misuse or overdose for which data on the specific medications used were available).

Medications involved in medication misuse or overdose presentations to the ED in the 12-month period fell into nine of the broad categories described in Rossi (2003); allergy/anaphylaxis, analgesics, anti-infectives, cardiovascular, coagulants /anticoagulants, endocrine, gastrointestinal, neurological, and psychotropic, as well as the "cough, cold, and flu medication" and "electrolytes" categories described in the Method (page 106).

The most commonly implicated broad group of medications were psychotropic medications (75%), followed by analgesics (23%), and neurologic medications (6%) (Table 23). Within each of these categories there were a number of subcategories. Column percentages sum to more than 100% as patients may have consumed more than one broad class of medication (for example, a psychotropic and an analgesic medication).

Table 23 Medications Implicated in Medication Misuse or Overdose Presentations to the ED

Medication	%		
	MOD	Medication & illicit drug overdose	Total
	(n=432)	(n=67)	(n=499)[1]
Psychotropic	72.5	88.1	74.5
Benzodiazepines	*49.3*	*74.6*	*52.7*
Antidepressants	*19.4*	*10.4*	*18.2*
Antipsychotics	*14.2*	*6.0*	*13.0*
Other anxiolytics/hypnotics	*2.7*	*3.0*	*2.8*
Opioid dependence treatment	*2.3*	*9.0*	*3.2*
Bipolar medication	*0.7*	*0.0*	*0.6*
Analgesic	26.4	4.5	23.4
Non-opioid	*17.6*	*3.0*	*15.6*
Combination	*7.4*	*0.0*	*6.4*
Opioid	*3.9*	*1.5*	*3.6*
Neurologic	6.8	1.5	6.0
Antiepileptic	*5.8*	*1.5*	*5.2*
Anticholinergic	*0.9*	*0.0*	*0.8*
Cardiovascular	5.5	4.5	5.4
Endocrine	3.9	1.5	3.6
Allergy & anaphylaxis	2.1	0.0	1.8
Gastrointestinal	1.6	1.5	1.6
Anti-infective	1.6	0.0	1.4
Cough, cold & flu	1.6	0.0	1.4
Coagulation & blood formation	0.7	0.0	0.6
Electrolytes	0.7	0.0	0.6
Medication not otherwise listed	0.9	1.5	0.8

[1] 22 out of 521 cases had no information on medication type consumed.

The average number of medications involved was 1.6 (Table 24). However, the median (1.0) is probably a better measure of central tendency as the data are skewed. The highest number of medications taken in any one case was seven. Across the range of relevant presentations recorded, about two-thirds involved only one medication, while the remainder implicated two or more. Where more than one

medication contributed to the presentation, this may have involved medications from the same class or different classes.

Table 24 Number of Medications Implicated in Medication Misuse or Overdose Presentations to the ED

Statistics	Group		
	MOD	Medication AND illicit drug overdose	Total
	(n=432)	(n=67)	(n=499)[1]
	Statistics		
Mean	1.6	1.4	1.6
Median	1.0	1.0	1.0
Std. Deviation	0.9	0.6	0.9
Minimum	1	1	1
Maximum	7	3	7
	Number of medications implicated per presentation (%)		
1	63.2	70.1	64.1
2	22.0	23.9	22.2
3	10.0	6.0	9.4
>3	4.8	0.0	4.3

[1] 22 out of 521 cases had no information on medication type consumed.

Commonly implicated medications

Benzodiazepines, antidepressants, non-opioid analgesics, and antipsychotics all made a substantial contribution (14-49% each) to the overall number of presentations.

Benzodiazepines

Of the 213 MOD patients (49%) whose hospital attendance implicated benzodiazepines, 82% had taken only one type, 16% two types, and 2% more than two types (mean =1.2 types, range 1-4). The most frequently mentioned benzodiazepines among the MOD group were diazepam (46%), alprazolam (26%), temazepam (20%), nitrazepam (10%), and oxazepam (6%) (Table 25). The 50 cases

of illicit drug overdose that also involved benzodiazepines were also examined.[61] An apparently greater proportion of these cases involved diazepam, alprazolam, and oxazepam than in the MOD group (i.e. no significance testing was undertaken of group differences). Other types of benzodiazepine were infrequently mentioned in this group.

Table 25 Specific Medications Implicated in Benzodiazepine-Related Misuse or Overdose

Benzodiazepine	Group		
	MOD	Medication & illicit drug overdose	Total
	(n=213)	(n=50)	(n=263)[1]
Diazepam	46.0	58.0	48.3
Alprazolam	25.8	34.0	27.4
Temazepam	20.2	2.0	16.7
Nitrazepam	9.9	2.0	8.4
Oxazepam	6.1	20.0	8.7
Clonazepam	3.8	0.0	3.0
Unspecified benzodiazepine	3.8	4.0	3.8
Flunitrazepam	2.8	0.0	2.3
Bromazepam	1.4	0.0	1.1
Lorazepam	0.5	0.0	0.4

[1] The sum exceeds 100% because some individuals had taken more then one benzodiazepine type.

Antidepressants

Eighty-four people in the MOD group (19% of those patients for whom the medication involved was known) attended the ED in relation to antidepressant misuse or overdose in the 12-month period. In all of these cases but one, the event had involved the ingestion of a single antidepressant. In the MOD group, the most commonly used antidepressant sub-class were the SSRIs, accounting for 52% of antidepressant-related attendances (n=44: 10 paroxetine, 10 sertraline, 8 citalopram, 7 fluoxetine, 5 fluvoxamine, 3 escitalopram, 1 unknown SSRI). "Other"

[61] Comparable data on the specific sub-types of medication taken in conjunction with illicit drug overdose are not presented for other categories of medication (e.g. antidepressants, non-opioid analgesics) due to the small number (<10) of relevant cases in each category.

antidepressants were taken by 25% of the group (n=21: 11 mirtazepine, 10 venlafaxine, 1 reboxetine). The next most often mentioned group were the tricyclic antidepressants (23%) (n=19: 5 amitriptyline, 5 dothiepin, 3 doxepin, 1 clomipramine, 1 imipramine, 1 trimipramine, 4 unknown TCA). There was one case involving an unspecified antidepressant. No overdoses attending the department involved tetracyclic or MOAI use. The data described above do not include the seven people who had taken antidepressants in conjunction with illicit drugs.

Non-opioid analgesics

Seventy-six MOD cases (18%) involved the ingestion of a non-opioid analgesic. As described earlier, the non-opioid analgesic group included aspirin, paracetamol and other NSAID preparations. Most of the presentations related to paracetamol (78%, n=59), 18 were for other NSAIDs, and five for aspirin.

Antipsychotics

Of the 61 MOD cases (14%) whose attendance at the ED concerned the use of antipsychotics, 56 had taken only one type, while in five cases two different antipsychotic medications had been used. Most of the presentations (75%) related to atypical antipsychotics (n=46: 23 olanzapine, 15 quetiapine, 5 amisulpride, 3 clozapine, 2 respiridone, 1 aripiprazole), while a quarter involved conventional antipsychotics (n=16: 15 chlorpromazine, 1 fluphenazine decanoate, 1 trifluoperazine). The four people who had taken antipsychotic medication as well as illicit drugs are not included here.

Less commonly implicated medications

The remaining medications listed below each accounted for less than ten percent of MOD cases.

Combination analgesics

This class included a range of medications (e.g. aspirin/codeine, aspirin/morphine, codeine/ibuprofen, paracetamol/codeine, paracetamol/dextropropoxyhene). However of the 32 cases of combination analgesic misuse or overdose (7% of MOD cases), only three different types were implicated. Thirty involved paracetamol with codeine, one case involved codeine with ibuprofen, and the remaining case was paracetamol with dextropropoxyhene medication.

Anti-epileptics

Twenty-five MOD cases (6%) implicated anti-epileptic medications. Twenty-one involved only one type, while the remainder involved two or three anti-epileptic medications. One case involved the barbiturate anti-epileptic primidone, while the rest were medications classified as “other antiepileptics” (Rossi, 2003) (11 Valproate, 10 carbamazepine, 2 gabapentin, 3 lamotrigine, 1 levetiracetam, 1 phenytoin, 1 topiramat).

Cardiovascular

Cardiovascular medications were involved in 24 of all MOD presentations (6%). These generally involved only one cardiovascular medication, but in one case two medications were used and in another four different cardiovascular medications had been taken prior to hospitalisation. The majority of cases (n=21) involved drugs used in the treatment of hypertension, including 16 cases involving the centrally acting antihypertensive clonidine. Most of the cases of overdose implicating this medication were attributable to a single individual with a pattern of frequent overdose. Therefore, this sample may overestimate the contribution of cardiovascular medications to total overdose statistics relative to other samples. Antiarrhythmic medications and lipid lowering drugs each accounted for two cases and drugs for heart failure for one case.

Opioid analgesics

Of the 17 MOD presentations (4%) relating to opioid analgesics, six involved tramadol, six codeine, three oxycodone, and two morphine. This group excluded two opioid analgesics, buprenorphine and methadone, which are covered separately under opioid dependence treatment medications.

Endocrine

Over the 12-month period there were 17 MOD presentations (4%) relating to medications affecting endocrine function. In one case the person had taken three endocrine medications. Antidiabetic medication (e.g. insulin) was used in 15 cases, two cases involved thyroid hormones and one involved a medication affecting calcium homeostasis.

Other (non-benzodiazepine) anxiolytics and hypnotics

There were 12 MOD cases (3%) related to other (non-benzodiazepine) anxiolytics and hypnotics. Most of these were zolpidem (10 cases), one person had taken zopiclone, and one person had taken both zolpidem and buspirone. There were also another two people who had taken a medication from this group in combination with illicit drugs

Opioid dependence treatment medications

Ten MOD cases (2%) implicated medications used in the treatment of opioid dependence. Of these, nine involved methadone, and one naltrexone (which is also used in the treatment of alcohol dependence). There were an additional six cases where the person had taken a medication from this class, as well as illicit drugs.

Allergy & anaphylaxis

Nine MOD cases (2%) involved medications used in the treatment of allergy. Eight of these were of a “sedating antihistamine” such as promethazine hydrochloride and one was of a “less sedating antihistamine” (Rossi, 2003).

Gastrointestinal

Seven MOD presentations (2%) followed the ingestion of gastrointestinal medications. Four were for a medication used in the treatment of peptic ulcers and reflux, one was a medication used in the treatment of nausea, one an antidiarrhoeal, and one a laxative.

Anti-infective

Medications used in the treatment of infection were used in seven MOD cases (2%). Six presentations involved an antibacterial (e.g. penicillin), and in one case an antiprotozoal had been taken.

Cough, cold & flu

Seven MOD presentations (2%) involved the ingestion of medications intended to treat coughs, colds and/or flu. Dextromethorphan (a cough suppressant) was used in two, psueudoephedrine products in a further two (used for rhinitis and sinusitis), and non-specific cough/cold medications in the other three.

Anticholinergics

Four presentations implicated anticholinergic medication; three benztropine and one benzhexol.

Bipolar medication

Three medication cases involved lithium.

Electrolytes

Potassium chloride had been taken in all three cases involving electrolytes.

Coagulation & blood formation

There were two MOD cases in which oral anti-coagulants had been taken, and one involving a haemopoietic agent (iron tablets).

Other medications

The four MOD presentations involving medication not elsewhere classified involved an immunosuppressant, adrenaline, diet pills and dexamphetamine.

Age and sex

Age and sex frequencies were calculated for cases involving benzodiazepine, antidepressant, antipsychotic, and non-opioid analgesic use, as these were the four medications types for which there were the greatest number of attendances. These data were generated for the MOD group only. In considering these data it should be remembered that the groups were not independent, as over a third of patients took more than one type of medication and hence may be included in multiple categories. For this reason, no statistical analyses have been conducted to determine whether the age and sex distributions differ according to medication type.[62]

Females accounted for most presentations in each medication category, ranging from 62% of antipsychotic presentations to 78% of non-opioid analgesic presentations (Table 26). The medication types for which males were most highly represented were the antipsychotics (38%) and benzodiazepines (36%). In all four groups the average age of patients was between 32 and 37 years.

[62] When independent groups were created, some medication types retained as few as 40% of the original cases.

Table 26 Age and Sex of MOD Cases Involving Benzodiazepines, Antidepressant, Non-Opioid Analgesics, or Antipsychotics

Medication	Age					Sex
	N	Mean	Median	Std Dev	Range	% Female
Benzodiazepines	213	37.0	35.0	13.3	16-90	64.0
Antidepressants	84	34.8	33.5	12.1	17-76	69.9
Non-opioid analgesics	76	32.2	27.5	13.3	14-52	77.6
Antipsychotics	61	37.2	35.0	15.2	18-94	62.3

Summary of medications used in cases of medication misuse or overdose

Psychotropic medications were the broad class of drugs most frequently implicated in MOD attendances to the St Vincent's Hospital ED, with benzodiazepines (49%), antidepressants (19%) and antipsychotics (14%) typically involved. Analgesics were the next most commonly implicated class, typically non-opioid analgesics (17%) such as paracetamol. Small proportions of cases involved neurologic medications (7%), cardiovascular medications (6%), and endocrine medications (4%). A variety of other medications were named within the 12-month data collection period, but in even smaller numbers. It therefore appears that medications prescribed for mental health conditions, and/or painkillers (especially those available OTC), are the most likely to be used in cases of medication misuse or overdose, and that involvement of medications for other physical ailments is comparatively infrequent.

4.4.2 Manner of consumption

While the PAS audit provided a good overview of medications commonly consumed in overdose, more detailed information on how these were consumed and what other substances were implicated was available from the participant interviews. Participants were questioned regarding the medications and other substances used in the overdose (i.e. the 24 hours prior to receiving emergency medical care). In the couple of cases where the person had delayed seeking medical care until the following day, the 24 hours up until the overdose were considered.

Most people used only one or two different medications in the 24-hour period (with an average of 1.8), but there was one person who had taken five different

medications. The most commonly used medication types were benzodiazepines (14 participants, particularly diazepam, temazepam and alprazolam), antidepressant medications (12, predominantly SSRIs, and "other" antidepressants), analgesics (7, mainly paracetamol), atypical antipsychotics (4), and antiepileptic medication (3). Other types of medications taken by only one or two people included methadone, lithium, cardiovascular medication, dexamphetamine, gastro-intestinal medication, and antihistamines. For those taking more than one medication, there seemed to be no particular pattern in terms of combinations.

While the medications described above were all taken in the 24-hour reference period, not all necessarily formed part of the "overdose". For example, there were a couple of cases each where the person had taken their benzodiazepine or antidepressant medication as prescribed earlier in the 24-hour period (and one case involving methadone), and then later taken some other medication/s in an overdose situation. However, on the whole, the medications taken in the reference period were taken in quantities exceeding the recommended dose and therefore can be considered to have contributed to the person's presentation to the ED.

It is difficult to make a general statement about the quantities of medication consumed, as some participants were able to give more specific information about this than others. Further, the toxicity of the dose would have varied considerably between cases, depending on the class of medications involved, the dose-strength, the tolerance of the individual, and whether there were other medications, alcohol or illicit drugs consumed within the relevant timeframe. However, it can be said that the quantities taken were wide ranging, from approximately 10 benzodiazepine tablets/capsules, through to in excess of 100 analgesic tablets/capsules. Consumption of smaller amounts (e.g. less than 50 tablets/capsules) was far more typical among interview participants than larger amounts (e.g. greater than 50 tablets/capsules).

The most common pattern of consumption was for the medications to be consumed all at once, rather than spaced out over time. In a few cases participants described spreading the medication consumption out over two or three hours, particularly where larger quantities were involved. There were very few cases where the medications were taken over a longer time frame than that. Further information concerning the 24 hours prior to receiving medical attention, including the length of

time waited until seeking assistance is outlined in ‘Medication overdose patients’ experiences of the emergency medical care system’, page 235.

4.4.3 Concurrent alcohol and illicit drug use

Of the 31 participants, at least 16 had used alcohol and/or illicit drugs in the 24 hours preceding or concurrent with the medication overdose. Of the 13 people who discussed their alcohol use, the most commonly consumed alcoholic beverages were spirits (6), followed by beer (5), and wine (5). One person consumed fortified wine and another person did not specify what type of alcohol they had drunk (participants may have had more than one type of alcohol). In terms of the pattern of drinking and quantity consumed, most had drunk alcohol over several hours, with two or three describing having been on a “bender” over the previous two or more days prior to the overdose. Most continued drinking up until taking the medications, and almost all of those who consumed alcohol would have been intoxicated at the time of the overdose. At least ten of those who had been drinking had consumed well in excess of the recommended daily limits, with many describing drinking very large quantities (e.g. most of a two litre cask of wine, or an entire bottle of sherry followed by four longneck bottles of beer). The rate of alcohol involvement revealed by participant interviews was greater than that indicated by PAS, which recorded alcohol involvement in only a quarter of cases.

In contrast, relatively few people reported the use of illicit drugs in the 24 hours leading up to their medication overdose. Only five people had used any such substance. Three of these had smoked cannabis, and in each case the amount taken was typical for that person in any 24-hour period and appeared to be unrelated to the overdose. The amount smoked ranged from a “couple of tokes” on a joint to “a few cones”. One person reported having a hit of heroin in combination with large quantities of tricyclic antidepressant medication both on the morning of the overdose, and over the preceding days (i.e. 50 x 50mg tablets over a four day period, including a large quantity on the day of the overdose). One person had taken amphetamines during the previous day, and then being unable to sleep, took excessive quantities of a sleeping medication and attended hospital as a consequence.

4.4.4 Acquisition of medications involved

Reasons for acquiring medications

For the vast majority of participants, the medications involved in their overdose had originally been acquired for therapeutic reasons, such as depression, anxiety, insomnia, or pain relief. In a small number of such instances the medication had been prescribed (or bought OTC) some time previously, and was not routinely taken by the person at the time of the overdose. In such cases the participant had generally stopped taking their medication without medical advice, but may have kept it for over a year before it was used in the overdose (although in such cases the medication did not appear to have been kept with the purpose using it in an overdose in mind). The following participant had ceased taking a tetracyclic antidepressant medication that was subsequently used in an overdose;

Interview 26 *That was the one that Dr X prescribed me a long time ago, and because I'd gone off them I stuck them in the cupboard. OK, I'll use them if I couldn't sleep but I've only done that a couple of times over time.*

There were five cases where the reason for acquiring the medications appeared to be that the person used the medications recreationally. For example, one person liked the "buzz" associated with the use of a combination analgesic, another person sought the hallucinogenic effect of antihistamines, and a third enjoyed "getting smashed" on benzodiazepines.

There were only two people who specifically acquired medications with the express intention of self-harm via overdose; one person bought OTC analgesics and the other acquired a range of medications via doctor shopping and stealing a relative's medication. There was one case where it was not clear whether the purpose of acquiring their medication was therapeutic, recreational, or in order to overdose.

Method of acquisition

Transcripts of the participant interviews were searched for information concerning the source of medications used in the overdose. Stories concerning acquisition were divided into four groups; obtained from the participant's "regular doctor", obtained by "doctor shopping", bought "OTC", and "other". In most instances the medication

used in the overdose had been acquired from only one of these sources, but in six cases there were two sources. As would be expected given the finding above that most people originally acquired their medications for therapeutic purposes rather than for recreational use or self-harm, the most common method of acquisition was prescription by the individual's "regular doctor" (either a GP or psychiatrist). Six people referred to "doctor shopping" in order to obtain prescriptions, usually because they found it impossible to acquire the medications they felt were required through a single doctor. In general, such behaviour appeared to be in the context of an ongoing pattern of regular over-use of medication, rather for the purposes of obtaining enough medication to overdose. Six people had obtained their medications from a chemist without requiring a prescription (i.e. "OTC" medications such as non-prescription analgesics). In terms of "other" sources of medication, CATT had given one person their medication, one person had stolen medication from a relative, a friend had given one person a free sample pack, and one person did not provide any information on the source.

Interview 5 *At one stage I had about 12 doctors, you know, and I thought, "I'd better give this up because if the health department catches me I'll be stuffed mate", so (…) that's why I've cut right down to two doctors (…)*

Participant understandings of purpose of medication and recommended dosages

Almost all participants were able to articulate what condition each of the particular medications they were taking was intended to treat. There was only one person who was not sure of all the medications he was currently prescribed; his relatives and pharmacist managed this person's medications for him. Participants generally had no trouble recalling the dosage recommended to them by their doctor and could recall other relevant information where that had been given, for example, interaction effects, side effects, and length of time until onset of action. It was not possible to check the veracity of participants' responses regarding recommended dosages against actual prescriptions, but the information provided was plausible and there was no apparent reason to doubt individual stories. While many participants indicated they most usually took their medications correctly (with the exception of

the overdose), some participants acknowledged they did not always take them as prescribed even though they were aware of the instructions for use.

It was difficult to reach any conclusion regarding the appropriateness of prescribing for any given participant. Such an assessment would require a full case review of the person's diagnosis and treatment history by a trained psychiatric specialist, and was beyond the scope of this project. However, as a number of participants were currently being encouraged by their doctor to reduce their use of benzodiazepines, and others were continuing to take these medications over an extended period of time, despite national guidelines that recommend otherwise (National Health and Medical Research Council, 1991; Royal Australian College of General Practitioners, 2000), it is possible that a number of participants had in the past or were currently experiencing dependence problems connected with the use of benzodiazepines. This was consistent with the findings regarding doctor shopping presented above; in relevant cases the most commonly sought medication type was benzodiazepines.

4.4.5 Summary

The data from the participant interviews were consistent with that from the PAS audit in terms of the medication classes consumed. That is, benzodiazepines, antidepressants, and analgesics dominated, with an important contribution also being made by antipsychotic and antiepileptic medications. However, these were by no means the only types of medications used, and many cases involved a wide range of other substances. The mean number of medications used by the interview sample was also very similar to that revealed by PAS (1.8 and 1.6 respectively). Consumption of the medications most often took place over a discrete time period (up to 3 hours if large quantities were involved). Intoxication on large quantities of alcohol prior to the overdose occurred in approximately half the cases, and may be considered a contributing factor to the overdose, but other drug involvement was comparatively rare. In general, participants had generally acquired the medications used in the overdose through legitimate channels, and for genuine conditions. Deliberately acquiring medications in order to overdose was comparatively rare.

4.5 Objective 5 - Individual experiences of the emergency medical system

The literature concerning treatment for self-harm generally, and medication overdose in particular, recommends that various treatment elements be included in any comprehensive response to these issues (see literature review). The treatment of medication overdose patients at St Vincent's ED is therefore described here both to provide a detailed picture of how such cases are managed, and to later discuss this in comparison with identified best practice. The information presented in this section is derived from both patient interviews and observational data.

4.5.1 Typical pathways of care through the emergency medical system

An understanding of the pathways through the emergency medical care system was developed on the basis of observing staff and patient interactions during the period of data collection, and also via informal conversations with ED staff regarding the process in individual cases. For example, if there were a person eligible to be included in the study within the department, the researcher would speak to treating staff to establish whether referral was appropriate at that time. This would depend on factors such as whether the person was yet medically clear, or had been assessed by Psych Triage. By discussing these considerations with staff the researcher was able to begin conceptualising typical treatment processes. By the end of the data collection period the researcher was able to anticipate in most cases when referral might be appropriate relative to other activities, signalling that an understanding of the typical progression had been reached. This conceptualisation of the process was further confirmed by treatment descriptions contained in interview transcripts, presented in a later section – 'Medication overdose patients' experiences of the emergency medical care system', page 235.

The outline provided here covers arrival in the ED, triage, medical treatment, psychiatric assessment, referral to other support mechanisms, and discharge, and is depicted in a flow chart (Figure 7). While the information is presented in a linear fashion, the pathway through care observed was not necessarily sequential, as certain process may have occurred in tandem, such as medical observation and psychiatric

assessment. Events varied somewhat from patient to patient depending on the details of the individual case.

Arrival in the ED and triage

Medication overdose patients arrived at the ED either by ambulance, in which case they were delivered via the ambulance bay[63], or by other means, in which case they walked into the waiting room. A triage nurse briefly assessed each patient as soon as possible after arrival. On the basis of the patient's description of the reason for attending, further questioning by the nurse, and any clinical measures such as heart rate, blood pressure, and Glasgow Coma Scale score, a triage score from 1 to 5 was assigned to prioritise the person relative to other patients. The nurse may also have asked to see the packaging of any medications the patient took.

Patients arriving by ambulance generally remained on a trolley or were transferred to a cubicle within the department after triage. Patients arriving on foot usually waited in the waiting room until called by the doctor, although patients triaged as a high priority were more quickly moved into the clinical area. Occasionally a medication overdose patient arrived in a highly agitated state, posing a risk to either themselves and/or others. In such instances a Code Grey was called upon arrival to ensure the safety of the individual, staff and other patients.

Once triaged, patients received medical care in the order of greatest need. There were a small proportion of individuals who chose not to wait and left the department at their own risk prior to being seen by a doctor. There were also a very small number of cases presenting for medication overdose that the triage nurse referred directly to Psych Triage (an example of a case where this may happen is a person who frequently presented to the ED with psychiatric and social issues, but who also said they "overdosed" on a non-toxic dose of a regular medication, e.g. 3 diazepam tablets, by way of giving a reason for their presentation).

Medical treatment

Once patients were called through to see the doctor they were again questioned about the amount, type, and time of medications consumed. The medical response varied depending on the medication(s) taken and severity of overdose. The more medically

[63] A small number of patients in police custody or from jail are also delivered via the ambulance bay.

serious the overdose the greater the level of intervention warranted. The response ranged from immediately giving the person medical clearance, monitoring only while the person recovered (e.g. heart rate, blood sugar levels, etc), giving activated charcoal[64], through to administration of an antidote, for example, N-acetylcysteine for paracetamol overdose (Jones & Volans, 1999). In addition to the medical requirements arising from the medication overdose, other aspects of the presentation were also managed (for example, tending cuts in a person who had self-harmed).

Where the person progressed to from this point depended on two factors; whether they were medically clear, and whether or not there were any psychiatric issues requiring further attention. With regard to medical clearance, most medication overdose patients recovered sufficiently to be discharged home from the ED without requiring admission to the hospital (as found by the PAS audit). If there were no ongoing medical complications and no need for psychiatric assessment, the person was typically discharged home. However, if it was apparent the person was still too ill to go home, an inpatient admission was arranged, either to the short stay Emergency Medical Unit (an extension of the ED), or to a general ward. Whatever the medical status of the patient, further assessment was typically arranged if there was the possibility of psychiatric or social issues requiring attention (see below).

Psychiatric assessment

If there was any indication the overdose may have been intentional or if there were other concerning signs such as high levels of distress, refusal to speak, agitation, or bizarre behaviour, a psychiatric assessment was arranged. Responsibility for conducting the assessment depended upon the medical status of the patient. If the patient was likely to be medically clear for discharge, Psych Triage was responsible, whereas if the patient was likely to require medical admission to the hospital, a member of the Consultation-Liaison Psychiatry Service (CL) generally conducted the assessment (see below).

As with admission on medical grounds, inpatient admission to a mental health service did not occur in most cases of medication overdose, even among those people

[64] Activated charcoal is given as it helps absorb toxins in the stomach, preventing them from being absorbed into the blood stream. It is best used within an hour following ingestion of the toxic substance, after which time it is less effective (Jones & Volans, 1999).

who had some degree of suicidal intent at the time of the event. The Victorian *Mental Health Act 1986* (and subsequent amendments to April 2005) outlines ten principles of treatment and care that should apply in the provision of health care services to people with a mental disorder (reproduced in Appendix K, page 357). The second of these is that "wherever possible, people with a mental disorder should be treated in the community". Therefore, unless the person continued to be at immediate risk of harming themselves or others, both legislation and current clinical practice favoured the least restrictive treatment option available.

Psych Triage

The Psych Triage team conducted brief psychiatric assessments in the ED when requested by a member of the medical team. As suggested by the word "triage", the Psych Triage service determined the risk and urgency of the presenting case, rather than providing a full assessment. If the person appeared to be at low immediate risk of self-harm, they were generally discharged home. This sometimes involved ongoing mental health support such as CATT follow-up or referral to community-based services.

Crisis Assessment and Treatment Team (CATT)

In cases where the Psych Triage brief assessment indicated the patient was at ongoing risk, CATT was generally called to attend the ED to conduct a more thorough assessment. Depending on the outcome of the assessment the person may have been discharged home or, if there were no ongoing medical complications, admitted to the psychiatric unit. Some privately insured patients were transferred to a private clinic.

Consultation-Liaison (CL) Psychiatry Service

The CL psychiatry service is part of the St Vincent's Mental Health Service. Among the services provided by CL is the responsibility for assessing and treating hospital inpatients referred with psychiatric conditions. Therefore any medication overdose patient likely to become an inpatient on medical grounds who also required psychiatric care was seen by a member of this team.

Other support mechanisms - Alert and A&D clinician

A multidisciplinary team called Alert had the role of assessing frequently attending patients in an effort to address some of the social circumstances that may have contributed to the recurrence of visits (for example; finances, accommodation). There was also a specialist drug and alcohol clinician available to assess and refer on patients with drug and alcohol related problems. When the treating doctor or Psych Triage worker identified the need for additional social support or alcohol and drug assessment, a medication overdose patient may have been referred to the Alert team.

The diagram on the following page is a flowchart depicting how a medication overdose case might progress through the ED (Figure 7). The unshaded boxes represent assessment or treatment processes, while the shaded boxes represent endpoints in terms of the ED involvement with the patient. The points at which decisions need to be made regarding the person's progression through the system are posed as questions.

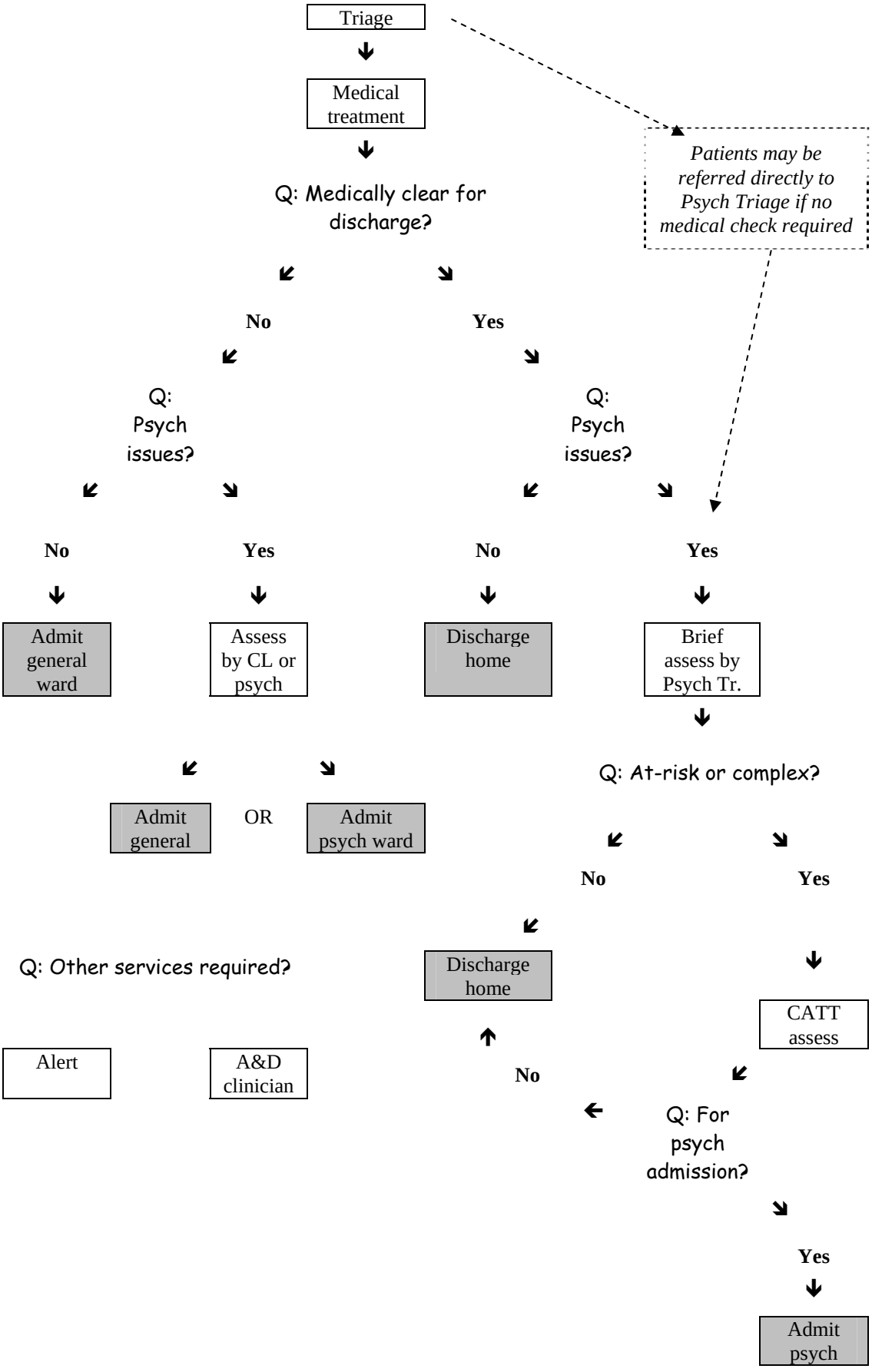


Figure 7 Diagram of Pathways Through ED for Medication Overdose Cases

4.5.2 Medication overdose patients' experiences of the emergency medical care system

Participants were asked to describe the care received from the ambulance service (if applicable), while in hospital, and upon discharge from the ED. A content analysis of the interview transcripts was undertaken to identify common stories. As some participants were interviewed while still a patient of the ED, or while an inpatient of a ward, not all had necessarily experienced the later parts of the process (e.g. discharge and referral), and therefore could not comment on these aspects of care.

Length of time until help-seeking initiated

It was difficult to arrive at a precise estimate of how long after the overdose event emergency medical care was sought. Participants generally did not know exactly what time they had commenced and finished taking the medications involved in the overdose, when an ambulance had been called and how long it took to arrive, or what time they arrived at the ED. However, patient arrival times at the ED were consistently recorded on the PAS system, therefore this information was used as a surrogate measure for the time at which emergency medical care was sought (although some participants were in the care of ambulance staff prior to that time). Twenty-four participants were able to provide an approximate estimate of the time at which they ceased using medications involved in the overdose (at least to the nearest half hour, but some with greater accuracy than that). This was subtracted from their arrival time in hospital to give a proxy measure of the length of time until emergency medical attention was received.

It appears that half the sample sought medical attention within 4 hours of finishing taking the medications (6/24 in under 2 hours, and 6/24 within 2-4 hours). Four people arrived at the ED within 4-6 hours, four within 6-12 hours, and three within 12-24 hours. One person arrived at the ED just over 24 hours following the overdose. Therefore three-quarters of those attending the ED who could estimate the time of their overdose arrived at hospital within 12 hours.

Mode of transport to the ED

Participants were also asked about means of transport to the ED. There were only two participants who did not provide any information regarding how they had arrived

at hospital. Of the 29 who did discuss this topic, most (20) had been transported to the ED by ambulance. Only three of these had actually called the ambulance themselves; in two of these cases the call had been made fairly promptly following the overdose, while in the third case the call was made a few hours later, but at the onset of symptoms caused by the overdose.

Among the participants who did not call the ambulance themselves, there were a range of other people who made the call: these included a relative of the participant (5 cases), friend (4), partner/spouse (2), police (2), hotel/hostel staff (2), and GP or psychiatrist (2). Although these seventeen people did not make the call to the ambulance themselves, many can be regarded as having initiated care by alerting someone else to their state. Most people actively alerted someone else to the fact that they had overdosed, who then arranged for the ambulance. Of the seven who did not actively let someone else know they had overdosed, five participants were found at home by others who lived in the house (and in some cases who had also been home at the time of the overdose), and two were witnessed in an intoxicated state in a public place, prompting others to call for assistance.

There were nine people who arrived at the ED by means other than ambulance. Four people were driven to hospital by a relative or partner, and one person by a friend. In most of these cases the participant had asked that they be taken to hospital. Four participants were referred to the ED by a health care worker (pharmacist, counsellor or doctor) who upon seeing the person for their regular appointment had become concerned about their state. In most of these cases the person arrived on their own at the ED with a referral letter from their worker. For example;

Interview 27 *…and then I went (to) counselling and my counsellor seen that something wasn't right and called the doctor (…) Yeah, I went to the GP in X St, and um, she rang Poisons, and they said that I'd have to go to hospital to have my heart monitored, and she couldn't do anything, so she wrote a letter and I had to go up to St Vincent's.*

From the results above it seems that while very few of the participants had actually called the ambulance themselves, it was quite common among this group of

medication overdose survivors to initiate help-seeking or alert others to their condition, even if someone else then arranged for transport to hospital.

Arrival at the ED

Most people were triaged fairly rapidly upon arrival at the ED (arrivals by ambulance are most usually triaged first, but all patients are triaged at the earliest opportunity). Patients were generally placed in one of the cubicles closest to the doctors and nurses station, for easy observation.

A number of participants commented in the interview that they had limited memory of both transportation to hospital and arrival in the ED. A couple of participants were unconscious when they arrived, but most were intoxicated on medications (and in some cases alcohol). Therefore, while their memory of the ambulance trip and triage was hazy, they had been moderately aware of their surroundings at the time. At least two people realised at the time that they had been transported to hospital but were not sure which one, while one person described being completely disoriented and frightened by the experience of arriving at hospital.

Interview 3 *Yeah, I remember vaguely arriving, waking up and feeling cross, and them asking me where I was. I knew I was in hospital, but I wasn't sure which one, whether it was Western General or St V's.*

***

Interviewer *Do you remember the ambulance arriving?*

Interview 4 *No.*

Interviewer *Do you remember anything about the trip, or arriving at hospital?*

Interview 4 *All I remember was getting here and the worst thing that ever happened in my life, I was screaming out for my mother and my brother and I couldn't move and no-one could hear me.*

Interviewer *Did you know where you were?*

Interview 4 *No. I thought I was in bed. I just couldn't get out of bed and I couldn't talk and you know, no-one could hear me, and I was trying to pick something up to throw against the wall.*

Interviewer *Did you gradually realise where you were, or…?*

Interview 4 *After a while I started to think maybe I'm at the hospital, but I was still yelling out, then when I started to come good and I, you know, seeing these faces, and I realised where I was.*

Interviewer *And how did you feel then, when you realised where you were?*

Interview 4 *Oh, I felt safe. I wasn't where I thought I was. It felt like I was drowning and no-one could hear me, and I was yelling out to my mother, "help me", and my brother (…). Yeah, once they started (…) saying you'll be all right, I could hear em, but I couldn't see, I thought I was blind.*

The experience described above was an exceptional one, but serves to demonstrate how confused a patient in an altered conscious state might be, and how this may in some cases translate into apparently aggressive or violent behaviour, although the person is actually feeling scared.

Medical treatment

Given the altered conscious state of most participants when they arrived in hospital it followed that many had limited memory of being in the ED, although there were others who had clear recall. According to participant descriptions of their treatment, the majority of cases were handled with only observation and minor intervention. A number of people described being left to sleep off the effects of the medication, although with active monitoring of their condition by the ED staff. Blood pressure and heart rate was routinely recorded for most, and a number of people also had a blood test performed to check for dangerously elevated paracetamol levels. Occasionally participants were asked to provide an alcometer reading. A small number of people said they were given intravenous fluids, and one person was given glucose to counteract an insulin overdose. Only a very small number of participants experienced more interventionist treatment such as being given activated charcoal or

being administered parvolex, which is the antidote used in cases of paracetamol poisoning.

For the majority of those who stayed in the ED for monitoring and to sleep off the effects of the medication, the experience of being in hospital did not appear to be particularly upsetting (over and above the emotional impact of the overdose), even if the person had a disturbed night's sleep:

Interview 21 *What do I remember of it? I remember different people that came in and (…), these vague people pop up. I'd doze off and then someone would wake me up for something, so I remember things like that. I remember being very sleepy, but I felt comfortable. I felt like um, there was one time that I got really uncomfortable, I got twitchy and I had to sit up and then I remember being nauseous and vomiting.*

***

Interview 22 *I just sort was feeling bad for a while, I just sort of slept it out, woke up in the morning still a little bit dizzy, but I was pretty good.*

However, one person had arrived in a conscious state subsequently took a turn for the worse, required restraining for her own safety, and then woke up not knowing what had happened to her:

Interview 23 *It didn't have any effect until I got into hospital, and then I woke up, and I was restrained. I didn't even know what the hell went on, so I didn't have, I thought I was fine, and then when I fell asleep, I woke up and I had restraints on my arms, my legs, and a catheter in me, so I don't remember anything about that, so I don't know what I did, I've got no idea (…) I don't want to know! (…) I did crack it, because I didn't know what the hell was going on, you know, all I remember is falling asleep in a nice state and waking up in restraints, so, I didn't know what the hell had gone on.*

There was one other instance where the person found the experience of medical treatment quite traumatising because it brought to the forefront pre-existing issues about being violated and out of control, even though intellectually she understood the necessity of what the treating staff were doing to her.

Interview 2 *Um, no, just it's a horrible experience, the overdose, it's a horrible experience (…) It was dreadful, it was horrible. It was horrible being awake and not being able to do anything because I was…that was awful. Having to have things taken off you…it was all really traumatic to me, it was traumatic, like having ECGs, you know, being exposed like that. Having no control over having to use a bedpan. It's just traumatic for me because it brings up issues from my past.*

Interviewer *About loss of control?*

Interview 2 *About loss of control of my body. Obviously they're doing a job and trying to help but it feels like being violated. It felt like it that night because I didn't have control because I wasn't physically and mentally capable of saying I don't want you to do that or no, I tried, but I couldn't. And I knew they were doing their job, but it just brought back feelings of violation from the past, so I found it really traumatic having no control and just the fact that I had actually done what I had done.*[65] *I found it quite traumatic that I had done that. I thought, "Why did I do that?"*

Aside from the very few cases where the person was no longer able to provide consent for him or herself (such as described above), participants generally agreed to the treatment provided. However, one person removed their drip, another disputed the need for him to take activated charcoal, and a third discharged himself without telling anyone after becoming tired of waiting to be cleared to go. One person's request to be given more diazepam (following a benzodiazepine overdose) was refused.

[65] That is, the overdose.

Three-quarters of the patients interviewed were medically fit to be discharged home from the ED after a period of observation, and the rest required admission.

Psychiatric assessment

Over two-thirds of the people in the interview sample received some form of psychiatric or social work assessment while in hospital (22/31, 71%), a rate of assessment similar to that earlier indicated by PAS (63.3%). Eighteen were assessed psychiatrically, while four people were referred to Alert. Participants with only short-term medical needs were initially seen by a member of the Psych Triage team (13), though in six of these cases the person was then referred on to CATT for a more detailed review. The psych registrar from the CL Psychiatry Service saw five people. In most cases the participant was assessed to no longer be at acute risk of self-harm, though two people specifically said in the interview that while they were not currently in crisis, they had informed the person conducting the psychiatric assessment that they could not guarantee their safety at other times in the future. Participants generally seemed to regard the interaction with psychiatric services as neutral or positive, although one person said it was of no help.

Of the four people referred for Alert or alcohol and drug assessment, two people received help in relation to accommodation issues (though one of these requested referral back to Alert during the interview to discuss these further), and two were referred to other alcohol and drug services.

Eight people were not seen by either a psychiatric worker or Alert. Two of these people said their overdose was not deliberate, and there was no risk of self-harm. Two people declined to see Psych Triage, one because she had an appointment with her private psychiatrist and the other because she was tired. One person left before being seen and it is not clear why the remaining three people were not assessed. There was only one person for whom no information on psychiatric assessment was available.

Admission to hospital

Of the people interviewed who were admitted to hospital, seven were patients of the Emergency Medical Unit or a general ward, while one was admitted to the Mental Health inpatient unit. Those admitted on medical grounds had all consumed very

large quantities (for example, several dozen tablets) of medication compared with those who did not require admission. At least three of these people were at-risk of sustaining liver damage through paracetamol poisoning and were placed on a parvolex drip. Most stayed in hospital about three days, though this ranged up to a week. There was one person who was on the methadone programme at the time of the overdose and she continued to receive this medication regularly while an inpatient. Neither positive nor negative comments were forthcoming about the experience of being a medical inpatient.

It was usual for the medical inpatient group to be seen by a psychiatric registrar while in hospital, though subsequent Mental Health admission was not required. The person who was admitted to the Mental Health unit had also taken a substantial quantity of medication, but not enough to require ongoing medical care once transferred from the ED. However, he was deemed to be at continued psychiatric risk, hence his admission. When interviewed this person was pleased to have been admitted, regarding it as an opportunity to *"take some time out"* for a week or two.

The proportion of people interviewed who were admitted to hospital (25.8%) was similar to the overall rate of admission to hospital among MOD patients described earlier (21.6%).

Discharge and referral

As mentioned at the beginning of the results section, there were ten patients interviewed while in the ED awaiting discharge, and a further five interviewed while still an inpatient of a hospital ward. Therefore only 16 of the 31 interview participants had already been discharged at the time of interview. As a consequence, the information presented in this section only describes the full experience of approximately half the sample. However, information from cases not yet discharged has also been included as some these participants were aware of the arrangements being made on their behalf for discharge and referral.

Aside from those participants mentioned above who were admitted as an inpatient, the most common discharge destination was home (one person was transferred to a private psychiatric hospital, and another person left before formal discharge after being refused further diazepam). People either made their own way home or were picked up by a friend, relative, or worker. In at least one case where the person lived

a considerable distance from the hospital a cab charge was provided to cover the journey.

Of the thirty-one interviewees, 15 participants indicated their GP and/or psychiatrist knew about the overdose (or the person anticipated they would be informed by the hospital if they had not already been discharged), 11 said their prescribing doctor did not know about the OD, and five people did not provide any information regarding this. Among the cases where the person's doctor was aware of the overdose, four patients had told their doctor themselves, and in at least three cases the doctor knew of the overdose because they had referred the person to the ED in the first place. There were only six cases in which the hospital informed the prescribing doctor about the overdose, and this was often done by way of a letter given to the patient to pass onto their GP or psychiatrist. At the time of the interview at least ten people had seen their doctor, spoken to them on the telephone, or made a future appointment with them since being discharged from the ED. In the few instances where people commented on their doctor's reaction to hearing about the overdose, most often participants felt that their doctor responded in a supportive way, although there were a couple of cases where the person said their prescribing doctor was angry with them about the overdose.

Aside from follow-up with the participant's GP or psychiatrist, referrals were also made to other sources of assistance in a small number of cases, including CATT, alcohol and drug treatment, and accommodation services. In some cases this involved referring a person back to an existing support, while in others a new link was made. There were some cases in which the person was discharged from hospital without their doctor being informed or any other referral being made. However, in such cases it was most likely that a psychiatric assessment had been conducted while the person was in the ED, and that the person was regarded as being at low ongoing risk.

Feelings afterwards

Sixteen people reflected on how they felt about the overdose experience afterwards. Most expressed regret and/or guilt about the overdose event, wished that it had never happened, or viewed themselves negatively for having taken an overdose.

Interviewer *And how do you feel about the overdose now?*

Interview 17 *Pretty stupid really, yeah, it won't happen again.*

***

Interview 13 *I regret it, but I don't think I would have done anything else. I feel, like I feel regret that I abused the hospital system and I abused my psychiatrist and I stuffed my boyfriend around for the day and worried my friends. You know, I have regret, and bit of guilt, that I did that. Yeah, yeah, regret and guilt, that's how I feel. Guilty. Guilty, yeah I feel guilty*

At least six participants said they were relieved to be alive and to have avoided any long-term damage from the overdose, and/or that they would not overdose again. This sense of relief was true even of people who reported higher levels of suicidal ideation at the time the overdose was taken (although five of these had a previous history of at least one overdose). Four people saw the overdose as a learning experience from which they could think about other more constructive ways of dealing with their problems. Finally, two people described going home and using illicit drugs to relax themselves after the experience.

No participants indicated a wish that the overdose had been successful as a means of killing themselves, or regret at having received emergency medical care. However, it should be remembered that anyone still actively suicidal after being treated in the ED would be unlikely to have been referred to take part in the study.

4.5.3 Patient satisfaction with treatment

Participants were specifically asked whether there was anything they had wanted to happen in hospital that had not occurred. Most participants did not identify any gaps in the care that they had received. Responses varied from non-committal, "*there's not much they can do*", to enthusiastic "*I think this is a wonderful hospital.*" A small number of people who were happy with their treatment commented that as they were drowsy while in hospital discussing the overdose with anyone at that point would have been of limited use, while others had valued the opportunity to speak to Psych Triage or CATT. The particularly distressing experiences some participants described above were in the minority, and in all cases the person also recognised that

the hospital staff had actually acted in accordance with the patient's needs, even though they may not have been aware of this at the time.

In terms of gaps in the treatment received, there were four people who made suggestions in relation to follow-up and/or referral. Two people thought some form of debriefing or follow-up organised by the hospital may have been useful. One person had been recommended to seek psychotherapy by a hospital psychiatrist, but was having trouble accessing a bulk-billing psychiatrist in the community. Another person thought referral to a Cognitive Behaviour Therapy practitioner would have been useful, though he had since arranged this for himself.

In general, participants had few other complaints about any aspect of their treatment (including their contact with the ambulance system), and many in fact expressed satisfaction. However, there was one instance each of people feeling a police officer, an ambulance officer, or an ED doctor involved in their case treated them poorly by being rude to them.

4.5.4 Summary

There are a number of common pathways through the emergency medical care system for people presenting with medication overdose. The specific pathway of care taken depends on both the medical seriousness of the event and the mental health status of the individual.

Most people included in the study sought assistance within six hours of the event, and initiated care themselves either by calling for help directly or alerting someone else to their condition. The most common mode of transport to the ED was ambulance, followed by being driven by a friend or relative. Medication overdose patients were generally at least somewhat intoxicated upon presentation to the ED. Common treatment in the ED included routine observation and screening tests, with administration of antidotes and activated charcoal being reserved for the more medically serious presentations. Most participants were physically well enough to be discharged home from the ED after the effects of the medication had time to wear off, though the majority were also given at least a brief psychiatric review before discharge, which may or may not have involved referral to community-based services. In a minority of cases the person's doctor (GP or psychiatrist) was

informed. It was common for participants to express regret and guilt about the event, as well as relief at having recovered from the overdose. Few complaints about the emergency medical care system emerged. A very small number of participants found the treatment experience to be traumatic at the time, though afterwards acknowledged the necessity of what had occurred.

4.6 Objective 6 - The research experience

In this section the researcher's experience in conducting a project in the ED will be discussed with reference to all components of data collection (i.e. the PAS audit, patient interviews, and observation). This experience will be used to inform a commentary (see Discussion) on the feasibility of future research into medication overdose in the ED, or of introducing a brief intervention for medication overdose survivors.

4.6.1 The ED as a research environment

In considering what the ED is like as a research environment, a brief description will first be given of the operation of the ED, followed by a summary of some of the challenges posed and advantages offered by conducting a study within this setting, as experienced by the researcher.

Nature of the ED

In conceptualising the ED it is useful to bear in mind three elements; function, physical environment, and staffing, and further, how these three relate to a fourth element, the patient. There is no doubt that the primary function of the ED is to provide an emergency medical response to people requiring acute care. In a sense, the ED is intended as a "clearinghouse" for the acutely sick or injured (over half those triaged during the data collection period were allocated to level "3" or above). Patients are prioritised according to need, have an assessment made of their medical and psychiatric needs, are treated and/or stabilised where possible, and then dispatched to an appropriate destination with further care arranged elsewhere if that is required, such as by transfer to the intensive care unit, or a referral back to the patient's GP. Approximately 90 cases are triaged at the hospital ED each day and the intention is that these people should only remain within the department for a short length of time, that is, until they are stable enough to go home, or until transfer to an appropriate ward can be arranged. Any other activities occurring in the ED, such as research, need to be undertaken with an understanding that the primary role of the department must always take precedence.

The physical environment of the ED reflects its function; it is primarily set up as an acute clinical area. On the outer are the waiting room and ambulance bay, and once inside, most of the floor space is devoted to beds. The areas not used for beds are used as a station for medical and nursing staff, triage and administrative functions, storage for equipment, preparation rooms, and toilets and showers. There is one interview room available, which is used for some psychiatric assessments, as a waiting room for family members of patients, and other similar functions. Separated from the clinical area are the staff room, some small offices and a training room. Therefore, while the ED itself is a reasonably sizeable department, there is little room for activities and people not directly related to the care of patients and the function of the department. Patients are only allowed two visitors at a time, and they are usually encouraged to sit with the patient or in the waiting area, rather than move around the department. While patient beds are separated into individual cubicles, and these can be screened off with curtains if necessary, there is limited privacy. The beds holding the sickest patients need to be within clear view of the medical and nursing station for ongoing observation. Even with the curtains drawn cubicles are not soundproof, especially if the treating staff need to speak in a loud voice for a patient to hear, or if the patient is making a lot of noise.

Staff numbers are large because the department is one of Melbourne's major EDs, the staff-to-patient ratio required in an acute medical setting is high, and the service operates 24 hours a day, 7 days a week. The diverse workforce includes medical, nursing, allied and mental health staff, administrative workers, and Support Service Associates (SSAs).[66] Because the ED is situated within a major teaching hospital there are also groups of medical students who rotate through the department on a regular basis.

Challenges

The very nature of the ED poses some challenges to researchers choosing to conduct a project within that environment. As just mentioned, the function of the ED is to provide care and therefore it has a primary clinical orientation. The systems within the ED are all geared towards the provision of treatment, the physical layout is

[66] This is a role equivalent to what used to be called an orderly, i.e. assist with patient transport, cleaning duties, etc.

designed to facilitate this, and staff are oriented towards clinical outcomes. While an ED may readily accommodate researchers wishing to locate their project at that site, it is up to the researcher to adopt a research design that fits around the primary function of the ED. A small number of illustrative examples are provided below.

The PAS database provides a record of every patient attending the ED. It provides a brief, real-time summary of each presentation, and therefore represents a potentially useful source of data regarding patient attendances. Information on PAS is not as comprehensive as the associated paper-based patient files, particularly in so far as clinical observations, test results, and so on, are concerned. However, it has the advantage of being more readily accessible than hard copy files, is searchable on a daily basis, and consistently provides certain basic data items such as age, sex, time of arrival, triage level, and presenting complaint. Nonetheless, PAS is primarily a clinical tool, designed to assist staff in their management of patients while they are in the department (for example, current status, location, etc), and to provide a record of attendance. While basic searches can be conducted and summary reports are routinely produced from PAS for internal purposes, undertaking a non-routine search (such as that required for this study) is more difficult. For example, to audit cases involving medication overdose it was not enough to simply run a search on "overdose". Such a search would return many irrelevant cases, and could also miss potentially relevant ones in which the search term does not appear. Similarly, using the presenting complaint to select cases could return an incomplete data set. The only solution was to manually search through every case presenting to the ED on a daily basis in order to find those matching the audit criteria (see Method), and to record the relevant data items for those cases in a separate spreadsheet. The advantage of this was that the researcher could be assured of capturing all cases, but the process was time intensive.

The physical space of the ED also presented particular challenges to the researcher. While office space was made available for the project, the need to conduct observation of ED processes and to promote awareness of the study by discussion with staff required the researcher to spend time in the clinical area of the ED. With space at a premium and everyone aside from the researcher having a clearly defined role contributing to the overall functioning of the ED, it was at times difficult for the researcher to find an unobtrusive position from which to observe. Staff were

generally accepting of the presence of the researcher once the project was explained, but there were times when the department was at its most frenetic that the researcher felt "in the way" (this is not meant in the literal sense, as the researcher was careful to be physically unobtrusive, and avoided interrupting clinical staff in the middle of their work, but taking on the role of observer for an extended period of time amidst such a hive of immediately required activity was at times an uncomfortable contrast).

Another challenging aspect of the physical layout of the ED was in ensuring privacy during the referral process. In briefly introducing the study, the researcher necessarily had to make reference to the main topic of the research (i.e. medication overdose), which flagged the reason for the patient's attendance. As the initial referral often took place within the cubicle, any loud conversation would possibly be heard from adjoining beds. The researcher was always very careful to ensure other patients and visitors did not hear the conversation with the patient about the study. There were times when the patient wanted to take part in the study and initially expressed a preference to be interviewed within the cubicle rather than the interview room. In these instances the researcher explained the impossibility of this given the need for a private and confidential space.

Related to this sense of being out-of-place is the contrast between the strong clinical orientation of ED staff where evaluation of a situation is geared towards choosing an immediate course of action to optimise treatment outcomes, and the more removed, contemplative orientation required for research. Although many staff undoubtedly had previously been connected with research in the ED, and/or studied research subjects during their clinical training, it was apparent that the role of the researcher was not necessarily clearly defined in minds of all staff. Despite the project being introduced at staff meetings, and written material being placed on notice boards and in the staff room, there were times when it became evident a staff member was not sure why the researcher was there. For example, the person may have known the researcher was interested in "overdose" cases, but thought this involved some type of clinical intervention. The researcher dealt with such misapprehensions by giving further information about the project.

Provision of information to staff about the project was complicated by the fact that staff work according to a roster, and therefore there was never a time at which all, or

even most staff were likely to be present at once in order to discuss the project. As mentioned above, the ED is multidisciplinary, and the different professions tended to have different meeting schedules. At the commencement of the project the researcher attended meetings with medical, nursing, allied and mental health staff to present information about the study, request assistance and respond to any queries or concerns. It is not clear what percentage of the relevant workforce were in attendance at these meetings, and in any case, over the 12-month period there were changes in staff (for example, new employees, people returning from leave). The researcher attended another meeting of medical staff mid-way through the data collection process to remind people about the project.

Communication about the study was supplemented by a variety of other mechanisms. Where possible, use was made of staff notice boards (including the posting of regular updates once the project commenced), a communication book located in the staff room, and the ED newsletter, published on an occasional basis. A project folder was placed in the clinical area and information sheets in the administration area. Towards the end of the data collection period an internal ED website was developed on which an article about the study was also posted. In addition, the researcher also spent considerable time speaking to individual staff members, particularly medical and Psych Triage staff (who were the most involved in referral) about the project. Despite these mechanisms, it was difficult to ensure all staff were aware of and interested in the study. In practice, there were a small number of staff members who particularly took on board the role of referring patients to the project at times when the researcher was absent from the department.

Advantages

While the challenges outlined above at times made the experience of data collection in the ED difficult, there were several advantages to situating the project within the department. Being located within the ED for a period of 12 months allowed the researcher to develop an understanding of how the department functions, and how the different elements of the treatment team work together (for example, at what point the medical staff might involve Psych Triage). Close observation of the system in action enabled the researcher to become far more familiar with it than would have been possible through the verbal descriptions of staff and/or patients alone. The

observations made provided a useful context in which to situate participant narratives about experiences of the ED, as the researcher had no difficulty in "imagining" the physical locations and personnel described, and could clarify the narrative against knowledge both parties shared (for example, the participant may have been unsure whether the person they had spoken to was a member of Psych Triage but would give a name or physical description that confirmed this for the researcher).

Some of the challenges associated with communication were outlined above. The flipside of those difficulties was that by being regularly present in the ED the researcher was available to discuss the research with staff, clarify referral procedures as necessary, and, as was often the case, remind staff about the project when an eligible patient attended. Without this presence, it is unlikely that as many patients would have been interviewed, as staff did not always remember to mention the project without prompting.

By being present in the ED, the researcher was also able to gain a greater understanding of the response to medication overdose patients, as staff would explain events as they were occurring. For instance, the first time the psychiatric registrar was called to assess a patient rather than the Psych Triage, a staff member was able to explain that this was because it was anticipated the person would be admitted as a medical inpatient (see Objective 5 for an explanation of pathways through care). By being exposed to the day-to-day operations of the ED the researcher was able to pick up on many of the details of typical patient care, which may have been overlooked if the information concerning treatment pathways was obtained via some other means, such as a brief interview.

A presence in the department also meant that the researcher had greater access to information as to why a certain person might not be suitable for interview. As has already been stated, not all potentially eligible patients were necessarily referred, particularly when the researcher was not physically in the ED. However, simply by observing the researcher was able to clearly see that there was a sizeable proportion of patients for whom referral to the study would be inappropriate. Examples of such cases included people who were highly agitated, or conversely, badly drug affected, people who were extremely emotionally upset, refusing to talk, requiring transfer to the inpatient psychiatric unit, able to speak only limited English, and a range of other

circumstances that made introducing the study at that time unfeasible. The researcher was also able to see that this group of patients is only one small part of the overall ED work, and that treating staff are often working between several patients at a time with a range of needs.

Being witness to some of the complexities of different cases allowed the researcher to shift in focus from endeavouring to maximise recruitment, to an acceptance that attempting referral would not always be reasonable for either the individual or for the smooth functioning of the ED. Therefore while the selection criteria for the study were reasonably broad, in practice, the group of people interviewed reflects a convenience sample of patients for whom both the treating staff and the researcher believed inclusion would not have an adverse impact. If the reason for non-referral was temporary (such as being drug affected), it was sometimes possible to ask that the person be referred at a more suitable time. The complexity of some cases, and the implications of this for recruitment, may not have been as clear to the researcher without the observational component of the study, as this information was not readily apparent from PAS.

Another advantage of conducting the research within the ED was that it was a supported environment. Although patients were only referred with the approval of treating staff, and patients further had to provide their informed consent to participate, it was considered an advantage for the interviewing to take place in a location where there was immediate psychiatric support on hand should it be required. As it turned out, such back up was not needed, but having additional support on hand represented sound risk management given the sensitive nature of the project.

4.6.2 The experience of being an “external” researcher

Some of the issues raised in the section above could suggest that having an external researcher enter the ED to investigate an issue may be a disadvantage (for example, initial unfamiliarity with local processes, being unknown to staff, having no other “role” in relation to the patient). However, while a researcher new to the ED environment has much to learn before the information gathered can be made sense of, the independence of this position also conferred its own advantages. Being new to the situation meant asking a lot of questions and having many informal discussions

with a range of people in order to reach an understanding of how the system worked, rather than being informed by one's own previously held perceptions and assumptions. An internal staff member conducting a similar research project may have had easier access to patients (as there would be valid reasons besides the research for speaking to a patient which could assist with recruitment). However, this would have come at the cost of a dual relationship, requiring careful balancing. As an external researcher there was no role conflict to negotiate. Similarly, the researcher was able to provide an assurance to participants that as she was not a hospital employee, the information they provided concerning the overdose or their treatment would not be discussed with the ED staff (with the usual exception of ongoing risk of self-harm).

4.6.3 Conducting research interviews with survivors of very recent medication overdose

The rationale for recruiting participants at the point at which they received emergency medical care and interviewing them shortly thereafter (preferably within 10 days) was to maximise the accuracy of recall. The study sought to examine the specifics of the medications used, and also patients' experiences of care, memories of which may become less reliable with time. The individuals who took part all appeared to be suitable for interview at the time, though there were some factors that required special consideration in accessing this group, particularly at the point of recruitment.

There were some instances where a member of hospital staff was of the opinion that an eligible patient was in a suitable condition to be interviewed. However, when the researcher then went to approach the person it was occasionally apparent that readiness for interview means different things to different people. For staff used to dealing with sick and injured patients, an individual being alert and oriented when roused might signify capacity to give informed consent and participate in an interview, even if the person is still connected to an intravenous drip, somewhat drowsy, and unable to get out of bed. After all, ED staff are accustomed to interacting with patients in such states; patients who are "well" do not need to be in the ED. However, for a social researcher wishing to conduct an interview taking an

hour or more, recruiting a patient in this condition, let alone interviewing them, is unlikely to be regarded as satisfactory or ethical.

Because the researcher was reliant on the assistance of staff in introducing the study to patients, such precipitous offers of referral had to be handled carefully. It was up to the researcher to decline to proceed with recruitment at that stage, while still encouraging the staff member to make a referral at a more appropriate time. As patients often remained in the department for several hours the researcher could not always wait for a suitable moment for the referral to take place (the most suitable moment generally occurring just before the patient was ready to be discharged). In such cases the researcher would ask the staff member to pass on a study card to the person before they left, or to ask the next person on duty to do so if their shift finished before the patient could be referred. Alternatively, if the person was well enough to consent to referral, but not well enough to immediately participate in a lengthy interview, the researcher would introduce the project and arrange to speak to the person again at a later date.

On the whole it was the preference of the researcher that participants return to do the interview at least a couple of days after the overdose occurred, as it was felt this may give the person an opportunity to have some rest, shower, change clothes, and possibly review their decision to participate. However, as mentioned earlier in the results, a number of people opted to participate in the interview before leaving the hospital. Reasons people gave for wanting to participate immediately included anticipated difficulties in returning on another day (e.g. due to travel time, other commitments, etc), and wanting to do the interview while they were waiting for something else to occur (e.g. someone to arrive to take them home). Provided the researcher felt the person was truly able to provide informed consent and was in a condition to be interviewed, and treating staff were happy for the interview to take place, every effort was made to accommodate patient inclinations in this regard.

The researcher was at all times mindful that the interviews were being conducted at very close temporal proximity to the overdose. In many cases the life circumstances contributing to the overdose were unlikely to have changed in the time the patient had been in hospital (though their thoughts and feelings about these circumstances may have). Throughout the interview the researcher remained alert to the possibility

that the person remained at-risk, even if Psych Triage had assessed them as low risk. Therefore it was essential that the researcher have the capacity to conduct a risk assessment as needed. This involved knowing when to stop the interview in order to follow up any indication of ongoing suicidal thoughts or feelings. As it happened, there were no participants who were assessed to be at acute suicidal risk during the course of the interview, though there were a few who could be regarded as at ongoing chronic risk, which is not surprising given the study population. In such instances the researcher reinforced any supports mentioned by the participant during the interview, such as an upcoming appointment with the person's counsellor or psychiatrist.

While all research involving humans must allow participants the opportunity to opt out at any stage, it was thought particularly important in this study to reiterate the point at any stage where there was the slightest concern that the participant might be finding the interview taxing. For example the researcher might say "How are you doing? Let me know if you've had enough." There was only one case (as mentioned previously) where the interview was terminated early.

At the conclusion of each interview the researcher again enquired whether the person was feeling OK and ready to go home. Participants were routinely asked if they would like to speak to someone from the hospital (i.e. a member of Psych Triage) before leaving or returning to their cubicle. However, no participants took up this option.

4.6.4 Summary

The ED presented a challenging environment in which to conduct a sensitive research project. Nevertheless, the project yielded rich information about medication overdose, particularly patient experiences thereof, not readily available by other means. Factors impacting on the research included the nature of the ED, staffing changes and communication, the clinical rather than research orientation of hospital data systems, the importance of maintaining patient confidentiality, the perceived role of the researcher, and patients' capacity to provide informed consent. The implications for future research into medication overdose or for introducing a brief intervention within the ED are considered in the Discussion.

5 Discussion

5.1 Objective 1 - Number of medication misuse or overdose presentations to the ED

This study aimed to assess the contribution of medication overdose cases to the work-load of a single inner-Melbourne ED over a period of one year, and also to compare these presentations to cases of illicit drug overdose and self-harm.

5.1.1 Number of presentations

The proportion of cases due to medication overdose (1.6%) fell well within the upper limit (5%) found by previous studies (Whyte et al., 1997). The expansive definition of medication overdose employed in the present study may partly account for the higher proportion of medication overdose cases recorded compared to Taylor et al's (1998) study conducted in regional Victoria (0.7%). The present study found that illicit drug and medication overdoses made an approximately equivalent contribution to ED presentations. However, this may have been influenced by the study setting, a busy inner-city hospital. It would be of interest to examine the relative contribution of such cases in hospitals with differing catchment areas in other parts of metropolitan Melbourne, and across Victoria.

A small proportion (22%) of the 432 cases categorised as self-harm involved medication overdose as the agent, although this figure only included those medication overdoses in which the PAS information specifically indicated an intention of self-harm. However, even once all cases of medication overdose were included in the calculation (on the basis that most are likely to be self-harm events), the proportion increased to 50%, still lower than previous studies which have found 85-95% of self-harm cases to be via medication overdose. Again, this most likely reflects the definitions employed in this study, with self-harm including not just actual self-injury, but also suicidal ideation, thoughts, and threats. A less inclusive definition would result in a smaller denominator and therefore a larger proportion of medication overdose cases relative to total self-harm cases.

5.1.2 Temporal patterns

The temporal pattern of MOD presentations to the ED was consistent with earlier studies, with the evening being predominant (N. Buckley et al., 1993; D. Taylor et al., 1998). A similar pattern was also evident for both SH and DOD cases; although in the latter cases the peak time for arrival extended into the early morning. There was a distinct difference between the daily pattern for all cases attending the ED and the pattern for the three study groups. In contrast to MOD, DOD, and SH cases, overall presentations to the ED in general peaked in the late morning and early afternoon. The findings regarding temporal patterns in presentation-type across the course of the day have implications for the staffing of the ED, as those cases likely to involve elements of toxicity and/or a requirement for psychiatric assessment are most likely to attend overnight. Rostering in EDs should ensure there are staff members with relevant specialist expertise available on duty overnight. This would avoid the potential danger identified by Kapur et al. (1999) of sub-optimal psychosocial assessment services being available to those patients attending the ED overnight following a medication overdose.

The present study replicated the findings of previous studies in demonstrating only minimal or no variation in MOD attendances according to the day of week (N. Buckley et al., 1993; D. Taylor et al., 1998). In addition, this study found MOD and SH presentations both follow a similarly even pattern across the week (as do ED presentations overall), while DOD presentations clearly differed by day of week, with a greater number of attendances on the weekend. This differential pattern of attendances is consistent with ambulance attendance data which found calls to benzodiazepine-related cases were spread across the seven days of the week, while heroin attendances showed a distinct spike at the weekend (Heale et al., 2002).

While the greatest number of MOD presentations occurred in summer, there was no strong evidence of variation across a 12-month period. DOD presentations also peaked in summer, while SH presentations and total ED presentations appeared relatively evenly distributed across the year. Given that data were collected for only one year, it may be that any underlying seasonal trends in attendance rates were unable to be detected by this study. Extended data collection over several years may reveal cyclical patterns for one or more of the groups in question, or a relationship

with other external events, such as changes in the availability of medications or illicit drugs. Ongoing monitoring of ED overdose presentations that clearly distinguishes between medication, illicit drug, and other poison overdose cases would assist in this regard.

5.1.3 Repetition

Eleven percent of MOD cases attending the ED returned at least once with the same complaint within the 12-month data collection period. This is consistent with previous research which found a rate of repetition of approximately 14% within two years, and even higher rates over a lifetime (Carter et al., 1999; D. Taylor et al., 1998). While medication overdose is recognised as an oftentimes recurrent behaviour, few previous studies have actually compared the rate of repetition from medication overdose with other types of presentation. In this study, recurrent MOD presentations were less common than recurrent presentations for SH (16%), and more common than for illicit DOD (7%). However, recurrent presentations for all three types of case were less than for the ED overall; 21% of all individuals attended more than once in the 12-month data collection period, although some of those repeated presentations may have been for entirely separate complaints (for example, asthma on the first occasion and a soft tissue injury on the second). The mean number of attendances for all four groups ranged from 1.1 to 1.4. It may therefore be that the tendency for medication overdose patients to repeatedly attend the ED for the same reason is somewhat overstated in the literature when other types of presentation are also considered. As with previous studies, the data on repetition included here do not take into account attendances to other EDs during the data collection period, overdose events for which the person did not seek help or attend the ED, or events occurring before or after the defined data collection period, all of which would inflate the rate of repetition.

5.2 Objective 2 - Characterisation of MOD patients at the ED

This study sought to characterise medication overdose patients in two ways; at a broad level in comparison to illicit-drug overdose patients and self-harm patients using patient information routinely collected by ED staff, and more specifically via

in-depth interviews with a sub-sample of medication overdose patients to obtain information that would not otherwise be available.

5.2.1 Broad demographic profile using PAS data

The audit of PAS data enabled MOD presentations to be described on a range of variables including sex, age, presenting complaint, triage level, waiting time, and discharge destination. This discussion will compare the findings on these factors with previous research. The audit also allowed the three study groups to be compared with each other and the total ED attendances on the variables of interest, allowing a differential profile to be built. Where relevant, reference is also made to the patient interview data, although this is more thoroughly discussed in a subsequent section

Sex and age

The finding that 64% of MOD patients included in the audit were female was highly consistent with previous studies of medication overdose conducted in various settings (including the ED, ambulance attendances, and elsewhere), which have found the female to male ratio to be approximately 2:1 (Heale et al., 2002; D. Taylor et al., 1998; Townsend et al., 2001; Vaiva et al., 2006). The proportion of MOD cases that were female was substantially higher than for all cases presenting to the ED during the study period, again suggesting that female sex is particularly associated with this complaint. Further, MOD patients were significantly more likely to be female than DOD patients, which accords with previous ambulance attendance data comparing benzodiazepine and heroin-related cases (Heale et al., 2002).

Previous research suggests that non-fatal self-harming behaviour is far more prevalent among females than males (and fatal behaviour more prevalent among males than females) (Australian Bureau of Statistics, 2006b; Graham et al., 1999). In contrast, this study found 56% of SH cases were male. However, it should be remembered that in creating the three independent groups for comparison, any cases involving SH by way of medication overdose were assigned to the MOD group. Were these cases included as SH cases, it is likely that the female proportion would have been greater. Horrocks et al. (2003) also considered self-poisoning and self-injury as separate groups and found females to be over-represented in the former

group (54.7%) and males in the latter (54.4%). These groups can be regarded as similar to the MOD and SH groups in the current study.

While the preponderance of females among MOD patients was clear, it should also be remembered that about a third of such cases were male, which in this study equated to more than 160 men over the 12 months in which data were collected, or one man presenting to the ED every two or three days following a medication overdose. If these figures were to be extrapolated across the state the overall number would be in the thousands per annum. Therefore prevention and intervention efforts concerning medication overdose should not overlook men, and there may need to be differential targeting according to gender. Given that medication overdose is widely perceived as a female phenomenon, further research specifically investigating medication overdose among males may yield important data to inform gender-specific interventions.

The age of MOD patients spanned nine decades from 14 years to 94 years, although the average age was in the mid-thirties. Previous studies have also found a wide range of ages represented among medication overdose patients, with a concentration in the lower age groups. A very similar pattern was found for the SH patients. In comparison, DOD cases were more tightly concentrated from 15 years to 61 years, and were significantly younger than MOD patients, with an average age of 27 years. All three groups were more skewed towards the younger age groups than the ED patients overall. This difference could partly be because younger people are more likely to be at-risk of these behaviours, or because older people are at greater risk of other health problems necessitating an ED visit.

Characteristics of hospital presentation

The most commonly used presenting complaint for both MOD and DOD was ‘OD/ingestion/poisoning’, which identified 86% and 68% of relevant cases respectively. The next most common complaint for both types of overdose was ‘Altered consciousness’. As these presenting complaints give no indication of the agent involved, it was not possible to use this information to categorise cases, and further information from the narrative field was required. While overdose cases most usually had a presenting complaint which reflected the physical state of the patient, SH cases were more typically assigned a presenting complaint which referred to their

mental state. Over 80% of presenting complaints for this group were psychiatric (for example, ‘psych thoughts’, ‘psych mood’). The most frequently mentioned physical state of patients presenting for SH was ‘laceration’ accounting for only 9% of the group.

Although the presenting complaint labels assigned were generally accurate, they may in part explain why the rate of psychiatric assessment appeared to be somewhat higher among SH cases (at least 77%) compared to MOD cases (at least 59%), even though most of these could also be assumed to be self-harming. It may be that cases given a psychiatric label were flagged in the minds of staff as requiring mental health attention more so than medical attention. In contrast, for cases of ‘OD/ingestion/poisoning’ the physical risk may have been the focus of treatment, with psychiatric care being less routinely instigated. The apparent difference in the rate of psychiatric assessment between SH and MOD cases appears to be the reverse of that found by Horrocks et al. (2003) who noted that self-poisoning cases were more likely to receive a psychosocial assessment than self-injury cases. The reasons for the difference between studies are unclear. It would be of interest to know whether staff believe deliberate medication overdose patients should universally receive a mental health assessment during their stay in the ED. It would also be of interest to know why such a small proportion of DOD cases (10%) were psychiatrically assessed. For example, do medical staff members simply assume such cases occur because the individual mistakenly took too much of the relevant substance, or do they choose not to request an assessment only once they have established that the overdose was definitely not deliberate?

Almost nine out of ten MOD cases were categorised to triage category three or higher (to be seen from immediately to within 30 minutes), suggesting that these cases are regarded as relatively urgent. In comparison, only half of all cases attending the ED were assigned to the same degree of urgency. This is consistent with the findings of Taylor et al. (1998). SH cases tended to be triaged somewhat more urgently than the ED total, but less so than MOD, which is consistent with the findings of Horrocks et al. (2003). DOD cases were triaged as significantly more urgent than the other groups. The average length of time each group was required to wait was consistent with triage status (i.e. DOD were seen the most quickly, followed by MOD, and then SH).

The greater urgency with which DOD patients were triaged and seen is most likely a reflection of the medical seriousness that may be associated with illicit drug toxicity. For example, overdoses on substances such as heroin and gamma hydroxy-butyrate (GHB) may leave the patient comatose, with a very low respiratory rate, or requiring an antidote or intubation. Furthermore, illicit drug users may be less likely to attend hospital at lower levels of intoxication because the purpose of use is to be somewhat intoxicated anyway, and hospital attendance generally only occurs when the risk from toxicity is high. This could account for the significantly greater likelihood of being categorised to the highest triage level, requiring immediate attention. In contrast, medication overdose is less likely to be recreational, and more likely to be in order to self-harm, and/or to seek care. Care-seeking behaviour may result in attendance at the ED with a lower level of medical need compared to illicit drug intoxication, although the psychiatric needs of the individual may of course be acute. Nonetheless the triage system will necessarily prioritise someone in extreme physical danger (for example who has stopped breathing) ahead of all others, no matter how psychiatrically distressed those others may be.

Among the three patient groups MOD cases spent the longest average time in the department; over two hours longer than DOD patients and almost three hours longer than SH patients. Previous research has found that medication overdose patients have a longer length of stay compared to the overall patient group (D. Taylor et al., 1998). Such a comparison was not possible in this study. The differences noted in length of time in the ED are most likely due to the relative complexity of presentations. Most MOD cases required a medical assessment, followed by treatment which may have simply involved monitoring and supportive care, but which may have also included blood tests, the administration of an antidote, and occasionally gut decontamination techniques. Once the patient was medically stable, a psychiatric assessment may have also been warranted. Given that benzodiazepines (the most common medication involved in overdose) are CNS depressants, some patients remained too drowsy to allow for psychiatric assessment for a considerable period of time. These factors would all contribute to lengthening a patient's stay in the ED.

DOD patients may have also required resuscitation, supportive care, and the administration of an antidote if appropriate, but were relatively less frequently referred for a mental health assessment. As the SH group in this study excluded

medication overdose patients, and included those with suicidal thoughts and ideation as well as suicidal action, only a relatively small proportion would have required medical attention for an injury, such as suturing a laceration. However, the majority of SH cases required a psychiatric assessment. It seems likely that those deemed to be at ongoing high suicide risk would have been admitted fairly promptly, while those not at high risk tended to be discharged fairly rapidly as the current legislation governing mental health treatment, the Victorian *Mental Health Act 1986,* specifies that patients should be attended to in the "least restrictive environment". These treatment differences between groups may in part account for the shorter length of time between being seen and being discharged for both DOD and SH compared to MOD.

For all three groups of interest, and for total ED presentations, the most common discharge destination from the ED was home (66-82%), followed by admission to hospital (7-25%). However, there were some group differences, with about a fifth of both MOD and SH cases being admitted, compared to less than a tenth of DOD patients. It was not clear from the data available what proportion of admissions were for medical versus psychiatric reasons, though it is likely that a number of patients in the SH group in particular would have been admitted for further psychiatric monitoring.

The results of the present study differed somewhat from those of Taylor et al. (1998) who found overdose patients were more likely to be admitted than other patients. In that study, 47% of presentations for a single overdose and 32% of recurrent overdoses were admitted to a general ward or intensive care (compared to 35% of general patients). A further 7-8% of overdose patients were admitted to the psychiatric ward. While not tested for statistical significance, the MOD patients in the present study had a lower rate of admission than ED patients in general (22% compared to 25%). It is not clear why there appears to be a lower rate of admission in the present study, but as this seems to apply to all types of presentation, not just medication overdose, it may be due to different practices or bed availability between locations, or changes in these factors since the previous study was conducted.

It is significant to note that 7-9% of the three comparison groups and 6% of ED patients overall left at their own risk and without being formally discharged; a

number of whom had not been seen by a member of the treating staff. It is not possible to determine how long such patients waited prior to deciding to leave, what motivated them to leave without being treated, and what psychiatric and medical risk they were at when they left. These questions could be the focus of future studies.

Information available on PAS regarding alcohol involvement, the need for a psychiatric or social work assessment, security issues, and custodial status point to the complexity of some patient presentations. As indicated in the results section, data concerning these factors are a minimum estimate only, as it was not compulsory to complete the relevant fields. It has previously been found that about a third of medication overdoses involve concurrent alcohol use (Lo et al., 2003), somewhat higher than the one quarter of MOD cases according to the PAS audit. The likelihood of the latter figure being an underestimate was reinforced by patient interviews; just over half the interview participants indicated alcohol played a role in the lead up to their overdose on medications. The discrepancy is most likely because the PAS data was largely based on rapid triage assessment, which may have overlooked some details of presentation that later become apparent during the treatment process, and during an in-depth interview. MOD cases appeared more likely to involve alcohol compared to either SH or DOD, but once again, the likely inaccuracy of the data limits the conclusions that can be drawn about this.

A mental health or social work assessment is currently recommended by some as an integral part of thorough ED care for people at-risk of self-harm or self-poisoning (Hawton, 2000; Hickey et al., 2001; Whyte et al., 1997). In this study, such assessment was recorded as having been conducted for over 60% of MOD cases and over 80% of SH cases (DOD cases are discussed below). Further, the patient interview data revealed that two-thirds of that sub-sample had been given a mental health or social work assessment. Among that group there were instances where an assessment was deemed unnecessary (for example the overdose was accidental, or the person had an imminent appointment with their psychiatrist). Therefore, while it appears that the rate of assessment was reasonably high for both MOD and SH cases, there is room for further improvement. It would be of interest to further investigate the small proportion of cases for which there was no record on PAS of an assessment having been done. It is likely that some of these cases were in fact assessed, but the information was not recorded on PAS (although it may have been recorded on the

limited access information system used by the Psych Triage staff, which the researcher did not have permission to view).

DOD cases had a relatively low rate of mental health or social work assessment (at least 14%). It not clear whether this is because DOD cases were seen by staff as less likely to require such intervention and were therefore not offered it, whether such offers were generally refused, or whether other services were regarded as more appropriate for this patient group. At the time the data were collected, the Alert Team included a specialist alcohol and drug worker, although the position was relatively new at the time. A greater proportion of DOD cases may be referred for assessment as other ED staff members become more familiar with the alcohol and drug expertise available.

A Code Grey or Code Black may be called for the protection of the patient, staff, and other people in the ED. The group with the highest rate of such codes being called or warned was SH (12%). This probably reflects the duty of care owed by the hospital towards patients deemed to be at-risk of self-harm to protect them from further suicidal behaviour. Observation of ED operations revealed that very few patients were physically restrained while in the department, but in some cases a notation was placed on the PAS record of patients at high risk of self-harm to alert staff to intercede if the person tried to leave before formal discharge.

It is not clear from the results of this study whether the proportion of patients in the three groups in police custody or from prison (1.2-2.7%) was high relative to other hospitals. However, this seems likely given that one of the main hospital buildings at St Vincent's was constructed with a secure ward to provide acute inpatient facilities for Victoria's prison system.

5.2.2 Interview sub-sample

The circumstances surrounding recruitment precluded the inclusion of a representative sample of medication overdose patients. The sample was necessarily limited to those deemed to be capable of providing informed consent by medical and psychiatric staff, and was further limited by the patient's own interest in participating in a voluntary interview about a potentially distressing personal event. Nonetheless, the interviews provide a detailed first hand account of the experience of medication

overdose among a diverse group of individuals. The information obtained from patients regarding their background, physical and mental health, previous experience of overdose and self-harm, recent significant life events, and social supports was not contained within PAS. The interview data therefore represent an important additional means of understanding the characteristics and experiences of medication overdose survivors.

Demographic characteristics

The ratio of males to females in the interview sample was somewhat higher than would be expected from either the literature or the information from the PAS audit. It is not clear why more males participated than females. It may be that more males were deemed suitable for interview by staff than females, and were therefore over-represented in the number referred to the study, or that males were more likely to agree to take part when approached to participate.

As a whole the group were reasonably well educated, with over 80% having at least a Year 10 level of education, and 58% having completed Year 12. Almost a third had university qualifications. However, it is not clear whether the education levels of the interview sample would hold true for all medication overdose cases, or whether there was a self-selection bias operating. Of all the demographic characteristics investigated, employment was the area in which impaired functioning was most apparent, with about two-thirds of the group not currently in paid work. A substantial number of these were on a disability pension, generally as a consequence of their mental and emotional problems, rather than physical disabilities. It may of course be that patients not currently in work were more likely to have the time available to participate in the interview and that a representative sample of medication overdose patients would show less work-related impairment. However, even among those who were employed, most reported that problems at work were a significant source of stress. These findings regarding unemployment and job-related stress are consistent with the literature relating to risk factors for self-harm (Australian Institute for Suicide Research and Prevention, 2003; Pirkis et al., 2000; R. Taylor et al., 2004).

Participants on the whole reported stable living circumstances, although the 16% in marginal living conditions was higher than what would be expected among the general community. This may be a reflection of, as well as a contributor to, the

psychiatric and social difficulties reported by many of the participants. Similarly, the fact that four out of the eight parents in the sample did not have custody of their children could be regarded as both a consequence and a cause of the mental health issues experienced by some individuals.

Health

The literature identifies physical illness and disability to be risk factors for suicidality (Pirkis et al., 2000; Stenager & Stenager, 2000; M. Williams, 1997). The present study found that almost all participants identified themselves as having current health problems, with an average of two per person. While it was not possible to assess the contribution of each and every physical health complaint to the subsequent medication overdose, it was clear from the patient narratives that many participants were aware of an ongoing relationship between their physical and mental health, with fluctuating symptoms in one being related to changes in the other. From patient descriptions, it appeared that cardiovascular, dermatological, and digestion related symptoms were particularly sensitive indicators of mental health. Exploring the link between current physical and emotional states may be a fruitful area for those working with people at-risk of medication overdose or other forms of self-harm, and the use of such symptom awareness as an early warning system of deteriorating mental health should be further explored.

Most participants described complex and longstanding psychiatric problems in both themselves and among family members. All but one person said they currently or previously had experienced a psychiatric problem, with the vast majority self-reporting multiple diagnostic categories. The high prevalence of mood disorders, anxiety, and problematic substance use was entirely consistent with previous evidence regarding psychiatric diagnoses among medication overdose survivors and people at-risk of self-harm, as was the high prevalence of co-morbidity (Aghanwa, 2001; Beautrais et al., 1996; Carter et al., 2003; Goldney, 2004; Hagedorn & Omar, 2002; Haw et al., 2001; Kingsbury et al., 1999; Lifshitz & Gavrilov, 2002; Lo et al., 2003; Lonnqvist, 2000; Matthews & Fava, 2000; Murphy, 2000; Nock & Kessler, 2006; Pirkis et al., 2000; Rossow & Lauritzen, 2001; Whyte et al., 1997).

In general, participants indicated that their mental health problems were of long-standing duration. It was striking to note that many had lived with such problems

from adolescence or earlier, although diagnosis and treatment may not have occurred until some years later. The finding that mental health problems first emerged in adolescence was consistent with previous research which found that initial episodes of depression most commonly occur from 15-19 years of age (Hazell, 2004). The long delay between symptom onset and diagnosis typical of many participants in the present study was true even though similar problems were also evident among parents and other first degree relatives of participants, suggesting that a family history of psychiatric illness did not necessarily contribute to early detection. It is possible that early exposure to the psychiatric problems of other family members normalised the experience of psychological distress for many, making diagnosis and help-seeking less rather than more likely. The role of family history in the emergence and detection of mental health problems is an important area for future research. Specifically, earlier detection and management of mental health problems may be important for the prevention of medication overdose, to help reduce the cumulative effects of such illness on the social and emotional development of at-risk individuals.

Many participants had experienced ineffective treatment of their psychiatric disorders, although it was not clear to what extent this was due to inappropriate treatment, low levels of compliance with suggested treatments, or the condition not responding to conventionally available treatments. For depression and anxiety, the most common treatments were medication and/or counselling. Antidepressants and benzodiazepines appeared to be the most commonly prescribed medications for these conditions, although the patient narratives raised some questions about the efficacy and appropriateness of their application. It seemed than many participants had previously tried a number of antidepressant medications without experiencing significant and sustained improvement in their mood. Similarly, many participants reported taking various combinations of benzodiazepines over the years but were still experiencing functional impairment due to their feelings of anxiety and depression at the time of the overdose. Over half the participants had sought treatment for alcohol or drug use (approximately a third of these had tried pharmacotherapy for heroin dependence), with mixed results.

The extensive use of long-term benzodiazepine treatment to manage anxiety-related symptoms in this group was a matter of concern. Australian guidelines available for over 15 years specifically caution against prolonged use of benzodiazepines for more

than 2-4 weeks, even at a normal therapeutic doses because of the high risk of inducing dependence, and the decline in effectiveness with extended use (National Health and Medical Research Council, 1991). While some participants were aware of this and indicated their prescribing doctor was actively trying to assist them in reducing their benzodiazepine intake, a greater proportion of those being prescribed benzodiazepines were unaware of their side-effects. The question remains as to whether the doctors of participants in this study and the medical profession more generally are also unaware of current prescribing guidelines, the risks associated with extended benzodiazepine use, appropriate gradual withdrawal techniques, and other alternative forms of treatment for anxiety, depression, and insomnia. Although there were a number of participants with a history of substance use problems, none indicated their current use of benzodiazepines was primarily to assist in either alcohol or heroin withdrawal (another common application for these medications), therefore the high level of use cannot be attributed to this.

Counselling for various mental health problems also appeared to be of variable assistance to the interview participants. Factors that appeared to reduce the effectiveness of counselling included both internal and external barriers (for example, not wanting to discuss problems, changes in counselling personnel). Overall, participants did not strongly endorse counselling as having been particularly helpful in overcoming their problems with depression, anxiety, and substance use, although as participants were interviewed shortly after a medication overdose it is possible that the unhelpful elements of the process may have been more readily recalled than the helpful ones. Factors identified by participants as being associated with positive counselling experiences included liking the counsellor, and in a small number of cases, learning specific techniques to assist them in coping with their difficulties such as cognitive restructuring. The importance of a good therapeutic alliance is widely accepted in the helping professions, but that alone may not be sufficient to bring about therapeutic benefit. The use of more structured, evidenced-based psychological strategies with groups at-risk of medication overdose, other forms of self-harm, and depression more generally has been well canvassed in the literature (Guthrie et al., 2001; Hawton et al., 1999; Heard, 2000; McKenzie et al., 2004), and should be more widely available to at-risk individuals than the data available from this study suggest.

The high rate (at least 80%) of past or current problematic substance use in the interview sample was of particular interest, as was the finding that approximately half were substance dependent (where this was able to be established). The episodic pattern of use in response to stress described by many suggests a maladaptive coping strategy in some instances, though it is also possible that in some cases substance dependence caused stress, rather than being used as a solution to it. At least a third of the sample had ever injected illicit drugs, five currently. It was not anticipated that there would be such a substantial proportion of injecting drug users among the sample, and it is not clear whether this would be true of medication overdose patients in general, or whether the finding was specific to this sample. If the relationship were to hold true across a larger sample, it may indicate that injecting drug users are at elevated risk for medication overdose, as well as illicit drug overdose, and that treatment programs aimed at this population should address mental health issues generally, and overdose risk in particular (whether from illicit drugs, medications, or a combination of both).

About a quarter of the interview sample indicated they currently or had previously suffered from an eating disorder; a somewhat higher rate than the 11% found by Haw et al. (2001). However, that study could be expected to yield a more conservative estimate as it measured symptomatology at the time of interview via a standardised diagnostic instrument, rather than self-reported lifetime experience of various psychiatric disorders used in this study. Many interview participants drew a link between their eating and/or purging habits, mood-related symptoms, and desire to self-harm (or at least desire not to self-nurture). As such, eating disorders in this sample can be seen as part of a constellation of behaviours ranging from neglecting one's own health through to outright self-harm, both impacting on, and being impacted by the level of depression experienced by the individual.

Only three (10%) of the participants in the present study indicated they had a psychotic illness, which was low compared to the other psychiatric conditions. This is comparable to the rate of 5% reported in Haw et al. (2001), although that study involved more stringent assessment of psychiatric symptomatology using standardised diagnostic criteria, while the present study employed self-report. A further seven participants in the present study said they had experienced psychoses as a consequence of drug intoxication or withdrawal. An unknown number of

medication overdose patients presenting to the ED were excluded from the study on the basis that their active psychotic state prevented them from being able to give informed consent. Therefore it is likely that the interview data collected do not adequately address the experience of overdosing on medications as a direct consequence of a psychotic episode (for example, obeying an auditory hallucination to overdose). A sensitively designed study could usefully address the experience of suicidal impulses and commands among psychotic patients provided the issues of informed consent were adequately addressed (for example, by retrospective report once the psychotic episode was over, or by interviewing significant others).

Previous history of overdose and self-harm

Previous estimates of repeated overdose have been limited by the fact that they have generally only counted repeated presentations to the same hospital (or hospitals within the same region) in a given time frame, and cannot capture the lifetime prevalence of repetition. A greater proportion (2/3) of the interview participants in this study acknowledged at least one previous deliberate overdose than would be predicted on the basis of earlier research (e.g. (Carter et al., 1999; D. Taylor et al., 1998)), or from the PAS data discussed above. While studies based on hospital data collected for a limited period of time may underestimate the true rate of repetition, it is also unclear to what extent people who had overdosed multiple times self-selected into the present study, resulting in an overestimate of the rate of recurrence. The finding that a third of the interview participants had previously experienced an illicit drug overdose is perhaps unsurprising, given the substantial proportion of participants with a history of problematic substance use, as discussed above.

About half of those participants able to provide information on whether or not they had any past episodes of self-harm indicated they had previously tried to kill themselves. As the proportion of participants who had previously overdosed on medication exceeded the proportion reporting a prior suicide attempt, it appeared that many of the overdoses described above, while deliberate, were not taken with the intention of committing suicide. However, medication overdose was still the main method chosen for previous attempts, with other methods relatively infrequently used. While the entire participant group can be regarded as at-risk, those reporting multiple earlier suicide attempts via medication overdose may be at particular risk.

Repeated presentations for medication overdose with increasing severity is a recognised risk factor for fatal outcome (Carter, Reith et al., 2005b).

As noted by Maris et al. (2000), suicidality encompasses a broad range of thought and action, and therefore includes self-mutilation, even in the absence of a true wish to die. About half of the study participants interviewed acknowledged ever engaging in behaviour such as self-cutting and burning. This behaviour can be viewed as a strategy used to cope with stress. It did not necessarily appear to be the case that individuals progressed from such forms of self-harm onto more life-threatening behaviour such as a medication overdose. Rather, participants with a history of self-harm, both with and without suicidal intent, reported moving in and out of different states characterised by fluctuating levels of suicidal ideation, rather than following a linear trajectory.

Completed suicide has a very low base rate in the general community. Therefore to find four people in a relatively small group with at least one family member who had committed suicide, and another three with relatives who have made a serious suicide attempt, suggests that this group of medication overdose survivors had a greater level of exposure to suicide within their families of origin than the general population. This is consistent with the suicide literature which indicates such a family history is a significant risk factor for suicidal behaviour (Beautrais, 2000; Fergusson et al., 2000; Rossow & Lauritzen, 2001). The present study noted the presence or absence of such a family history, but did not explore the meaning of this history to participants in the experience of their own suicidality. Greater understanding of individual's perceptions of suicides within their own family could help inform prevention and intervention strategies aimed to assist those also showing risk of suicide via medication overdose or other means.

Recent significant life events

Life events were measured in this study using the same instrument as employed by Donald et al. (2000) in their mental health survey of young people from the Queensland general population. In their sample, the average number of life events endorsed was four, while in this study the average number was seven, indicating the present sample of medication overdose patients had more life stressors than a general population sample. This difference is even more striking when one considers that in

the previous study, participants were asked about their lifetime experience of each of the events, while in this sample, the timeframe was confined to the past six months. Psychosocial stress is a well recognised risk factor for both depression and suicidality (Alchin & Tranby, 1995; Beautrais, 2000; Becker & Kleinman, 1991; Hawton & Catalan, 1987; Paykel, 2004), and it appears that the present sample was consistent with the literature in this regard.

The direction of causality between life stress and mental illness is an interesting question. It makes intuitive sense that experience of stress may contribute to depression, or even self-harm. However, almost three-quarters of participants who completed the life-events checklist for this study said that their mental illness was itself a source of stress, and for many, the most important stressor in their life during the past six months. Therefore the experience of stress may equally be regarded as a consequence of poor mental health, as well as a cause. In addition to mental illness, the two other important sources of stress identified by this sample were disruption to key relationships, and work or study-related issues. The ability to cope in these areas (i.e. mental well-being, work/study, interpersonal relationships) can be regarded as central to being able to function effectively in the culture in which the participants live. These data suggest that the stress experienced in these areas by participants represented a significant challenge to their coping skills, and by extension, their ability to enjoy life.

Social support

In general, the participants in this study identified few reliable sources of social support. Almost without exception, the medication overdose patients interviewed did not see their families as supportive. Given the high rate of mental health problems in first degree relatives of participants discussed earlier, it is likely that the capacity of many families to give support was limited by their own difficulties. Similarly, among those participants with partners, these relationships were often regarded as a source of stress rather than a source of support. Where participants had friendships, these appeared to offer more emotional sustenance than either family members or partners, however, many people reported having few or no friendships, and therefore this cannot be relied upon as a source of support among people at-risk of overdose.

Being without meaningful sources of social support and feeling lonely increases the risk of suicidal thought and behaviour (Hassan, 1995). The findings of the present study highlight that simply counting the number of people in the lives of those at-risk of self-harm may be a poor indicator of the level of support a person has, as a number of participants experienced many of their closest interpersonal relationships to be deleterious rather than helpful. It is therefore important to consider the quality of relationships, as well as the quantity. It may in some cases be unrealistic to hope that a network of positive relationships will arise naturally, especially if the person has little experience of being in a supportive, healthy relationship with anyone. Therefore, community members without any source of social support, and who are at-risk of suicide or self-harm may benefit from formal helping structures designed to link them into social networks that can offer a sense of encouragement and companionship (for example, support groups).

5.3 Objective 3 - Specific suicidal intent, suicidal ideation, and depression

The advantage of including an interview component in a hospital-based study of medication overdose was that it allowed an exploration of patient perspectives on the overdose not possible through examination of ED database information alone. In particular, the interviews allowed a sub-sample of the relevant patient group to provide information regarding their level of depression and suicidal ideation at the time of the overdose, and to discuss their intentions in taking an overdose.

5.3.1 Assessment of suicidality and depression, and participant narratives about the overdose

This study found a wide distribution of scores on the scaled measures used to assess depression, suicidal ideation, wish to die, and deliberateness of overdose. The broad range of scores suggest a highly heterogeneous group, even though the study included only a limited sample of patients who had all attended an ED following a medication overdose, and who therefore might be expected to show a more standardised profile. These findings suggest that no assumptions can be made about the severity of either depression or suicidal ideation in people who have recently had a medication overdose and that these should be routinely assessed as part of

psychiatric care within the ED, as should the intention of the overdose, and whether it was accidental or deliberate. It does appear however, that these four factors are correlated, with a high score on any one of these measures likely to be associated with high scores on each of the others.

The strongest association found was between the BSS and the Likert-scale concerning the strength of the person's wish to die at the time of the overdose. While the former obviously provides far more specific information about the suicidal thinking and behaviour of an individual, and is therefore a superior instrument to use in a formal assessment or for treatment planning, simply asking someone to indicate on a five point scale the strength of their wish to die at the time they self-harmed could be used as a rough indicator of suicidal intent in a situation where thorough assessment is not possible. On average, participants rated the deliberateness of the overdose more highly than the strength of their wish to die, suggesting that other factors besides suicidal intent contribute to the decision to overdose.

As would be expected given the correlation found in this study between measures of depressive symptomatology and suicidal ideation, most participants could be classified as either high scorers on both measures, or low scorers on both measures. On the whole narratives were consistent with numerical scores on standardised measures, with those at the higher end describing far more severe depression and being more likely to regard death as a solution to their problems. This finding is perhaps unsurprising, as it makes sense that most people will give an account of events that confirms the responses selected on formal measure. As would be expected, those who had lower scores on the BDI-FastScreen and BSS generally also described milder symptoms of depression and identified reasons for the overdose other than wishing to die. However, this group were not free of all suicidal ideation, and therefore could still potentially benefit from interventions aimed at people at-risk of deliberate self-harm.

A small number of participants presented the apparent anomaly of being classified as high on the BSS and low on the BDI-FastScreen. It was not clear why some people with signs of mild depression would apparently be suicidal, although this study suggests psychiatric complexity, in particular psychotic symptomatology, may be a factor worthy of further consideration in any study of suicidality in the absence of

significant depression. Specific features of psychotic disorders, such as delusional thinking, could drive suicidal behaviour, rather than the sense of hopelessness and constricted pattern of thinking regarded as typical of depression. As mentioned earlier, any such study of medication overdose or deliberate self-harm would need to be specifically designed to take into account issues such as capacity to consent.

5.3.2 Characteristics associated with high levels of depression and suicidal ideation

The current study design precluded statistical analysis of the ability of various participant characteristics to predict scores on the BSS and BDI-FastScreen. However, it can tentatively be concluded that certain factors appeared to have a relationship with high scores on BSS and BDI-FastScreen in the interview sample. These factors included; wishing to die, a history of suicide attempts or self-harm, life problems, mental health problems, older age, and being female. The identified factors were consistent with the literature regarding depression and suicidality. However, it is still not clear how these factors relate to one another in their association with depression and suicidality. Future research involving a large representative sample could examine the interaction effects between these variables in cases of medication overdose or other forms of deliberate self-harm. An understanding of the primacy of the risk factors in their contribution to suicidal thought and behaviour would have significant implications for the design of intervention and prevention efforts.

5.3.3 Overdose process

This study identified three elements to the overdose process; precipitating events, feeling states, and desired outcomes. Events of particular significance in this study included being troubled by unpleasant memories, interpersonal conflict (with partner, family, or at work), alcohol and drug use, and being without adequate resources (unemployed, homeless, without emotional support). An interesting finding was that memories played such an important role in the overdose process for many. The fact that an emotionally charged memory could significantly contribute to the decision to self-harm, even in the absence of any other precipitating event, suggests that the

connection between unhappy ruminations and subsequent self-harming actions could be a useful target for psychological therapies for people at suicidal risk.

The three elements of the overdose process identified in this study have much in common with Beck's cognitive-behavioural orientation to suicide (G. Brown et al., 2006). Activating events were clearly identified, as were the participants' emotional responses and behavioural consequences. What did not emerge strongly from participants' narratives was a conscious awareness of a cognitive element to the process which, according to cognitive-behavioural theory, mediates the relationship between events and emotional responses. If the premise that cognitions influence feelings and behaviour is accepted to be true, the frequent absence of a well-articulated "thinking" component from participant narratives may be highly relevant. Even where participants engaged in "unhappy ruminations" as described above, few seemed to regard this potential precipitant of suicidality as being within their control. Therapeutically, encouraging greater awareness of the contribution of thought processes to emotional responses and providing coaching in strategies for counteracting negative thinking to people at risk of medication overdose may be of assistance in interrupting the overdose process.

As would be expected, negative feelings such as anxiety, depression, and unworthiness were commonly articulated by the interview participants. These internally focussed emotions were experienced by many, while some were more likely to regard the source of their negative feelings to be outside themselves (for example, being frustrated, angered, or undervalued by others). This distinction may be useful in working with a person at-risk of medication overdose; that is, the approach taken may be guided by whether the person perceives their emotions as arising internally (within the self) or externally (within the relationship). People at-risk of medication overdose may also be particularly susceptible to physical states such as exhaustion and intoxication. The importance of maintaining good physical health and trying to get adequate sleep should be emphasised as part of any prevention efforts. Use of alcohol and other drugs should also be kept to a minimum, both because they can have a depressive effect, making already negative emotions worse, and also because of their potential disinhibitory effect.

Although organised differently, the precipitating events and feeling states identified in this study are also somewhat similar to the psychological needs identified by Schneidman (1996), including (briefly) love, control, avoiding assaults to one's self-image, maintaining key relationships, and dominance/counteraction. Schneidman argues that if those needs are not adequately met, or are distorted, such significant psychological pain may be caused that suicidal thinking is stimulated. The participants' narratives in general, and stories regarding the events and feelings associated with the overdose in particular, suggest these needs were frequently unmet in the lives of those interviewed.

Regarding the desired outcomes of the overdose, relatively few participants included in this study reported an intention to die at the time of taking the medication. Participants were more commonly ambivalent about what they hoped would happen as a consequence of their actions. The predominant theme was that of escape (from problems, negative emotions, and so on), although many also expressed contradictory wishes such as to die, and simultaneously to not die. The finding that most instances of medication overdose were associated with a desire to escape is entirely consistent with the theoretical perspectives on suicide and suicidal ideation offered by authors such as Schneidman (1996), Williams (1997), and Maris (2000), who all suggest that one of the primary drives of suicidal behaviour is to escape. The finding that relatively few participants indicated that they overdosed in order to obtain help, receive attention, or communicate their distress to significant others is also consistent with previous work on suicidality which suggest such aims are generally only secondary to the primary goal of escape (J. Williams & Pollock, 2000; M. Williams, 1997). A small proportion of the participants in this study indicated their overdose had no suicidal component at all, and in such instances the motivations included wanting to become intoxicated (which could also be regarded as form of escape) or to sleep.

The description of the overdose process developed from participant narratives can be regarded as a preliminary schema for the interaction between precipitating events, feeling states, and intended outcomes. A future study could investigate this model further, both to determine whether it holds true for other forms of self-harm, and also to investigate more closely how the three elements relate to each other. For example, are certain types of events and/or emotional states more likely to be associated with

some types of intended outcome than others? While some effort was made to explore such relationships in the present study, a study specifically focussed on the overdose or self-harm process could collect more detailed and targeted information, allowing the description to be further refined.

5.4 Objective 4 - Medications implicated in medication misuse or overdose

The information obtained from PAS allowed for a complete audit of all medication types involved in medication overdose and misuse presentations to the ED over a 12-month period, while the interview material provided additional information on how the medications were actually consumed, and how, where, and why they were acquired.

5.4.1 Medications implicated in overdose

The data obtained in this study were consistent with previous findings regarding the most commonly implicated medications in overdose; that is, benzodiazepines, antidepressants, and analgesics were the main classes of medications involved (Baca-Garcia et al., 2002; N. Buckley, Whyte et al., 1995b; Cvetkovski et al., 2002; Neeleman & Wessely, 1997; Routley et al., 1999; Schwarz et al., 2004; Townsend et al., 2001). The finding that psychotropic medications accounted for the greatest proportion (75%) of cases is not surprising, as the issues of psychiatric illness and overdose are inextricably linked; those with mental health problems are clearly at greater risk of overdose than those without. In addition, many psychotropic medications act as a sedative which, as can be seen from the discussion above regarding reasons for overdosing, is an effect many people overdosing may specifically be looking for (i.e. the wish to escape consciousness).

The finding that two-thirds of cases in this study involved only one medication type was consistent with the non-fatal medication overdose cases investigated by Neeleman & Wessely (1997), but was greater than the proportion of single medication overdoses (30%) noted by Lo et al. (2003). The mean number of different medications consumed in this study (1.6, range 1-7) was also similar to previous studies (Neeleman & Wessely, 1997; Townsend et al., 2001; Vaiva et al., 2006). As it is thought that taking a greater number of medications in an overdose is indicative

of a higher level of suicidal intent (Lifshitz & Gavrilov, 2002), it may be that the wish to die was not very strong in many of the cases included in the audit, although this was of course only assessed in the interview sub-sample. The quantity of medications taken may have also be an important indicator of suicidal intent; however, it was not possible in most cases included in the PAS audit to assess the actual volume of medications taken, or other relevant details, such as individual tolerance levels. Current computerised patient information systems most likely do not contain enough information to systematically study the quantity of medications consumed in all relevant presentations, or to assess the associated toxicity. However, these questions may be of interest to future research.

The finding that benzodiazepines, antidepressants, and analgesics were commonly used by patients presenting with medication overdose was also consistent with the prescription data (and the recommendations of medical practitioners in the case of OTC analgesics), outlined in the literature review. In particular, diazepam and temazepam are two of the most commonly prescribed benzodiazepines and were the most frequently implicated in medication overdose in this study. However, while diazepam accounted for approximately a quarter of benzodiazepine prescriptions in Victoria in 2004 (Drugs and Crime Prevention Committee, 2006), it was over-represented among medication overdoses in this study, being implicated in almost half the cases. Also of interest was the finding that the relatively short-acting benzodiazepine alprazolam was used in approximately a quarter of benzodiazepine overdoses, a rate higher than the prescription data reviewed would suggest (7%) (Drugs and Crime Prevention Committee, 2006). The extent of use and misuse of these particular medications may therefore warrant further attention. The most commonly prescribed or used antidepressants and analgesics (SSRIs and paracetamol respectively) were both implicated in the greatest number of overdoses within their class of medications.

5.4.2 Patient descriptions of the consumption process

The findings of the participant interviews regarding the type and number of medications consumed mirrored those of the PAS audit. However, the interviews provided additional information regarding the manner in which medications were consumed in an overdose.

Alcohol or illicit drug intoxication appeared to play a role in the medication overdose of about half of those interviewed. Excessive alcohol use in particular seemed to be key part of the spiral towards overdose, perhaps through reduced inhibition, and the depressant effect of this substance. The majority of those who had drunk alcohol in the 24 hours prior to the overdose consumed very large quantities that can be assumed to have severely impaired the person's judgement. The rate of alcohol use within the interview sample was higher than either that estimated by the PAS audit (25%), or the third of OTC overdose patients found to have consumed alcohol in an earlier study employing a chart review method (Lo et al., 2003). It is possible therefore that the individual patient interview method utilised in this study uncovered a higher rate of alcohol use than studies relying on hospital data alone.

As intoxication is a recognised risk factor for attempted and completed suicide (Dhossche, 2003; Hawton & Catalan, 1987; Powell et al., 2001; Rossow et al., 1999), persons at-risk of medication overdose and other forms of self-harm may need assistance in identifying and implementing other coping strategies besides alcohol and drug use. Doctors prescribing medications to people with psychiatric illness also need to be aware that binge drinking may increase the risk of overdose, and to modify their prescribing practices and general care accordingly. For example, by limiting the number of repeat prescriptions provided during those periods when a person is engaging in substance use, or encouraging patients to develop other non-harmful crisis plans, such as contacting a support service.

While impaired judgement associated with intoxication was a relevant feature of approximately half the overdoses closely examined in this study, the remainder made the decision to overdose when sober. Examining the differences between cases of intoxicated versus non-intoxicated medication overdose was beyond the scope of this study, however, it would be useful to know whether various patient characteristics, such as level of suicidal ideation or psychiatric diagnoses have any predictive capacity in this regard.

The interview data revealed that in most cases the medications involved in overdose were consumed within a fairly short space of time; generally all at once for smaller quantities, or in several batches over two or three hours where larger quantities were involved. Therefore in contrast to the extended period of alcohol use which may have

preceded the overdose in many cases, the actual overdose event itself appears to have been quite short.

5.4.3 Medication acquisition

The data about why medications were initially obtained, their source, and participant understandings of their intended uses give rise to several possibilities for reducing the risk of medication overdose. Significantly, the acquisition of medications with the specific intent of using them in an overdose was rare among this sample, with people primarily overdosing on medications they had previously acquired for therapeutic purposes. This finding suggests that prevention efforts could usefully focus on reducing the risk associated with medications people have in their possession as a matter of course.

A number of interviewees overdosed on medications prescribed some time previously, which they had ceased to use but still kept in their possession (although not with the intention of subsequently using them in an overdose). Encouraging the community in general, and those at-risk of overdose in particular, to dispose of unused medications in a safe way may assist in reducing the ready availability of medications as a means of self-harm. Another way of reducing the risk potential would be for prescribing doctors to consider the quantities of medications they prescribe at a single time to those at-risk (for example, not providing repeat prescriptions to those with a previous history of overdose), and by routinely reviewing patient progress. This could include not only monitoring the mental health status and ongoing life stressors of vulnerable patients, but also their compliance with medication and other forms of treatment, storage of unused medications, and current alcohol and other drug use. At times of elevated risk it may be appropriate to consider dispensing only small amounts of medication every two or three days to prevent large quantities building up and to put in place additional supports such as counselling or arranging for an inpatient admission. Such strategies do have potential disadvantages, such as being perceived as punitive, controlling or patronising; however the evidence from this study clearly suggests that it is legitimately prescribed or acquired medications that account for the greatest amount of harm.

While this study was not designed to address the appropriateness of the prescribing practices of participants' doctors, there was some evidence to suggest that more

conservative dispensing of medications, particularly benzodiazepines, could assist in the prevention of overdose. The information provided by several of those interviewed suggested they may have been prescribed an excessive quantity of benzodiazepines over a lengthy period of time without any apparent improvement in their psychiatric condition, and with these same medications then being used as a means of self-harm. As discussed in relation to Objective 2 above there are clear guidelines for the prescribing of these medications which do not appear to have been followed in many instances. It is not clear whether this was due to a lack of awareness among prescribers (of the guidelines, the dependence-inducing potential of benzodiazepines, and treatment alternatives), or whether some doctors disagreed with the guidelines and therefore chose to disregard them. It is also possible that doctors are under pressure to prescribe these medications because they do in fact provide some immediate symptomatic relief (notwithstanding their long-term risks), or are unwittingly involved in their over-prescription by patients who engage in "doctor-shopping", as was acknowledged by a small number of participants in the present study. These issues are all important areas for further investigation.

5.5 Objective 5 - Individual experiences of the emergency medical system

The research questions concerning typical pathways through care following a medication overdose, and patient experiences of, and satisfaction with their treatment were answered with reference to both the patient interviews and observational data. These are discussed in relation to the pre-existing evidence base.

5.5.1 Treatment processes

Treatment of medication overdose patients presenting to the ED generally followed a somewhat predictable route depending on the individual features of the case, such as medical seriousness, and ongoing suicidal risk. As recommended in the literature concerning emergency treatment of medication overdose and other forms of self-harm (Hawton, 2000; Whyte et al., 1997), it appeared that St Vincent's had a comprehensive treatment model in place that included both the requisite medical attention, and appropriately qualified staff available to conduct psychiatric assessment. As suggested elsewhere (Jones & Dargan, 2002), patients in general

received supportive care and observation, with more serious intervention such as decontamination or antidotes only being used where medically necessary. However, an area where treatment may be strengthened would be to ensure at least a brief psychiatric risk assessment is universal for medication overdose patients. As discussed earlier it was not absolutely clear from the PAS data what proportion of medication overdose cases were provided with a psychiatric assessment, although the Psych Triage service certainly was available and well-utilised. At the time the study was conducted there was no standardised follow-up or aftercare of medication overdose patients following discharge, though in many cases referral was made to external sources of support such as the patient's GP, community-based psychiatric services, and alcohol and drug treatment. Previous authors have stressed the importance of ongoing support post discharge (Guthrie et al., 2003; Hawton, 2000; House, 2002; Kapur et al., 2004).

5.5.2 Active help-seeking

There were several indications from the data regarding patient experiences of emergency medical care that most of the patients interviewed experienced some hesitation about the desired outcomes of their self-harming behaviour. The majority of participants actively sought assistance on their own behalf, most by alerting someone else to their condition who then called an ambulance. Help was also sought fairly rapidly, generally within six hours of the overdose, suggesting many participants had decided by that time that they did want to recover from their self-poisoning. Participants were frequently regretful about the overdose, and many readily acknowledged their relief at being alive. Taken together, these findings provide further support for the notion that suicidal or self-harming behaviour is often accompanied by ambivalent feelings, and is often prompted by a temporary sense of having run out of other options, rather than a fixed and unequivocal wish to die (Schneidman, 1996; J. Williams & Pollock, 2000; M. Williams, 1997).

5.5.3 Staff-patient interactions

Whyte et al. (1997) caution against treatment practices which are judgemental or punitive in responding to patients who have taken a medication overdose. Participants in this study were generally positive or neutral about their treatment

experience, suggesting that disrespectful or punishing treatment was rarely an issue in this setting. It is possible that this finding was influenced by selection and reporting biases, with those people who had a bad experience being less likely to volunteer for the study, or those who did participate feeling uncomfortable about criticising the care received. However, responses regarding this topic seemed to be as genuine as for other parts of the interview, the use of the more unpleasant interventions such as activated charcoal appeared to be confined to those cases where it was medically warranted, and observation of ED practices did not indicate any antagonism towards medication overdose patients among staff, all of which were consistent with a non-judgemental, non-punishing treatment environment.

Participant experiences of being frightened or out of control while in the ED represented only a small minority of cases, but naturally gave rise to more explicit narratives than for the other cases. The intention in including these non-representative narratives in the Results section was to highlight that while such unpleasant experiences are rare, they have a great impact on the patient. Therefore if it is known that a patient has required restraining while in the ED, part of the later psychiatric assessment could usefully include debriefing about why this was necessary. This would also provide an opportunity for the patient to have their experience acknowledged and understood, and should the patient want it, to have the treatment staff assist to fill in any gaps in the patient's memory of the event.

5.6 Objective 6 - The research experience

This section utilised the researcher's experience in conducting a research project into medication overdose within the ED to consider two questions; "What do these experiences suggest about the conduct of future research regarding mental health issues in the ED environment?", and "What do these experiences suggest about the potential to introduce an ED-based brief intervention relevant to medication overdose and other forms of self-harm?"

5.6.1 Implications for future research

Upon reflection of the 12 months spent in the ED, a number of suggestions emerge that may assist in the planning of future ED-based research regarding the data

sources used, key relationships to be established, and recruitment strategies to be considered.

Given that the ED is a challenging setting in which to undertake a study, and the particular sensitivities associated with interviewing an at-risk population such as those with mental health problems or who have self-harmed, it is undoubtedly worth minimising the amount of data that needs to be collected from individuals. In conducting such a study it is important to take the time to establish what secondary data sources may be available to answer some of the research questions posed. In this instance PAS was used, although other potential sources of information for future research could include de-identified paper-based records and possibly even the state-wide psychiatric database, though of course such data sources are becoming increasingly (and rightly) difficult to access as a consequence of more stringent privacy legislation. Use of secondary data sources helps define the parameters of the research topic, and may assist in refining the specific research questions to be addressed via any client interviews. There is a wealth of data routinely collected in health care settings, not all of which are in a format immediately suitable for research purposes, but that when reviewed systematically can yield an enormous depth and breadth of information. Clinicians working in such settings may well have a sense of patterns in patient presentations from their own experiences (for example, which medications predominate in medication overdose cases); however, it is of great benefit to be able to support these impressions with comprehensive data analysis.

Similarly, direct observation of the operation of the ED can contribute significantly to a researcher's understanding of the processes associated with particular types of presentations, and also the likely impediments to undertaking research in an acute health care setting and/or with at-risk populations. Such knowledge can assist in the design of any subsequent primary data collection mechanisms. For example, what recruitment techniques might be appropriate, when and where could interviewing occur, and at what alternative locations, if any, could the study be situated. Another strategy (not employed in the development of this particular study but which could be useful for similar research in the future) would be to conduct a series of key informant interviews with various ED staff members, such as the director, Psych Triage, and senior medical and nursing personnel. While the researcher undertook several preliminary discussions with some key individuals prior to the

commencement of the project, a formalised process of interviewing would help solidify the researcher's understanding of the most crucial issues to be considered before embarking on patient interviews, and also yield a valuable data source in its own right. In addition, this process could be useful in the establishment of relationships with relevant staff members who have a particular interest in the topic and who may be able to act as a liaison for the project. A snowballing approach could be adopted, with each person interviewed being asked "who else" would be useful to speak to, until all relevant personnel have had an opportunity to be heard.

Such preliminary work is essential, not only in building a picture of the issue under study and potentially answering some of the research questions, but also in determining what interview method is likely to be the most suitable for the population of interest. On the basis of the experience gained while conducting this study, the researcher has formed the opinion that when studying a difficult to access, potentially at-risk population, it is crucial that the demands of participation be very carefully considered. If a large, representative sample of patients providing standardised information is believed to be required, the demands of the study on those patients should be kept to a minimum (for example a very brief interview or paper-based survey), for both pragmatic and ethical reasons. However, if detailed personal information is of particular interest, such as a personal account of events or psychosocial history, it may be better to adopt a qualitative research design involving a limited sample. A possible drawback of this approach is that such a method may selectively sample relatively "well" patients. However, in a population of people who have recently overdosed this could be considered a responsible bias, and does not necessarily detract from the relevance of the information obtained. Care would need to be taken to ensure that findings from a select sub-group were considered with caution in relation to other groups not adequately represented in the research.

Finally, recruitment and interviewing in this setting with this specific population is difficult, time consuming, and involves many practical and ethical considerations. Therefore other recruitment options should also be thoroughly canvassed. This study was originally designed to include recruitment via the Metropolitan Ambulance Service, which would have allowed potential participants to make contact with the researcher several days after the overdose. The proposed recruitment method was passive in the sense that the researcher made no contact at all with the potential

participant; rather it was up to the individual to opt-in by contacting the researcher. In some ways this could be regarded as a less intrusive form of recruitment than relying solely on the ED. However, one of the ethics committees reviewing this proposal before the commencement of the project was concerned that all interviews should take place within a highly supported facility, and therefore restricted recruitment to within the ED only. It is of course unknowable whether this was a necessary precaution, and the researcher acknowledges that a duty of care exists for both the researcher and any ethics committee approving study protocols. All concerned want to minimise the risk of a hypothetical worst case scenario becoming reality. Ongoing research in this area must continue to grapple with the difficult question of how to best to extend our knowledge of depression, self-harm, and suicide in order to reduce their personal and social impact, while not exposing those most affected by them to any further risk.

5.6.2 Implications for introducing an intervention

One purpose of conducting this study was to investigate the possibility of introducing some form of intervention at the point of contact with the ED that may be of value to medication overdose patients in order to reduce the likelihood of future presentations of this type. Such programs have been introduced with some success for patients attending the ED with problematic alcohol and/or other drug use, on the basis that a time of crisis represents an excellent opportunity to intervene (Blow et al., 2006; Cherpitel, 2006; Crawford et al., 2004; Helmkamp et al., 2003). These programs have tended to involve the provision of information or brief counselling within the ED, or encouragement to attend external services. The experiences outlined above suggest that there may be limited potential to introduce an intervention designed to be delivered wholly within the ED due to both the intended purpose of the service, and the relative complexity of medication overdose presentations. However, this point of contact in the care system may be an especially significant opportunity for assessment and referral.

As mentioned earlier, the ED is designed to respond to the acute medical and psychiatric needs of patients, and therefore provides a rapid response, rather than ongoing care. It is therefore questionable whether it would be appropriate to resource the ED to conduct ongoing therapeutic work of the type likely to be required to

address the often complex mental health and social needs of medication overdose patients. Given that the ED is only a brief point of contact, it lends itself more readily to the conduct of high quality psychiatric assessment and liaison work. Any additional resources provided to the ED could usefully be put to ensuring these functions are as comprehensive as possible.

In order for assessment and liaison to be effective, however, it needs to be supported by community-based services that are able to follow through with the after care of the patient. There are several examples in the literature review of patients attending the ED for self-harm being enrolled for follow-up, rather than discharged home with no further care. It is contended here that while such interventions may potentially be useful to the patient, and represent good continuity of care, it may be more suitable for this type of intervention to be delivered by a community-based agency able to maintain an ongoing relationship with the patient at non-crisis times. The ED could undoubtedly play a significant role in referring medication overdose patients to such a service, but may not be best placed to actually deliver it. Nor would a system of this nature preclude the ED from developing a case management plan to guide the response to a particular patient with special needs (for example, a frequent presenter) to ensure consistency in their treatment.

While it is argued here that it would be more suitable to locate any program of ongoing care and support elsewhere, the experience of care received whilst in the ED may still be pivotal. In addition to ensuring any assessment and referral process is both thorough and effective, patient perception of treatment is also crucial. For a vulnerable and possibly marginalised population, receiving respectful care may help alleviate some of the distress associated with the overdose event. From the participant narratives reported in relation to Objective 5, it appears that on the whole patients were satisfied with the treatment received. This climate of non-judgemental care should continue to be fostered; even among the small proportion of patients who behave disruptively while in the ED (maintaining a respectful style of interaction with the patient is unlikely to make matters worse and may make them better).

Although it was not systematically enquired about, several participants spontaneously commented that they found the research experience to be a positive one, as they found it “good” to talk to someone about the event. The interaction itself

was not intended to be therapeutic, but these comments suggest that for some people simply being listened to can assist. While staff may have limited time to spend with each patient, ensuring whatever interaction does occur is positive may confer some therapeutic benefit in its own right, and may increase the likelihood of the patient taking up any referral options offered.

5.7 Study limitations

The design and scope of the study reported here imposed some restrictions on the wider applicability of the data. The data collection period extended for 12 months, which was sufficient to obtain a sample of several hundred patients from PAS, to recruit 31 medication overdose patients for interview, and to conduct an extended period of observation. However, a longer period of data collection, particularly of the computerised hospital records would allow for investigation of trends over time in attendances for medication overdose, illicit drug overdose, and self-harm which may reveal greater seasonal variation than the current study. Such prolonged data collection could also show changes in the pattern of attendances which may be related to external factors (for example, an increase or decrease in the prevalence of a particular type of medication following changes in prescribing practices). Similarly, extending data collection to include other hospitals in inner city Melbourne, or across the metropolitan area or state-wide, may uncover differences related to the geographic and demographic catchments of each setting. Furthermore, extended geographic and temporal coverage would allow for repeated presentations to be more accurately estimated, provided cases could be linked across sites.

The current study was unusual in that it included comparator groups (illicit drug overdose, actual or potential self-harm by means other than overdose, and total presentations to the ED) against which to assess medication overdose presentations. However, comparisons were only made using the PAS data, with the interviews being restricted to medication overdose patients. There were some important elements of the interview data that were simply not available from PAS, such as recent life events, mental health history, and levels of social support. These factors may also be relevant to the presentations of the other groups. Future studies could include comparison groups to see to what extent these factors contribute to the ED presentations of other types of cases, as it is possible that significant problems in

these areas are not exclusive to medication overdose cases and that some of the circumstances identified here as preceding treatment-seeking behaviour have wider applicability.

As already discussed in detail, the interview component of the present study was limited to 31 patients with both the capacity to consent, and an interest in participating in an extended interview about their experiences. There were a number of patients deemed by hospital staff to be inappropriate to interview, and an even greater number whose capacity to and interest in participating were unknowable, due to the limited resources available for recruitment. As it was, more than a third of those approached to participate agreed to take part, which is a reasonable response rate when the location of the study and the nature of the interview are considered. However, the sample included cannot be regarded as representative of all medication overdose cases, as there were likely to be some important biases in who was included. For example, those excluded by ED staff on the basis of high, ongoing suicide risk may have had a different profile on a number of dimensions from those who were included. Participants in this study also reported high levels of current and/or past alcohol and other drug use, and it is not clear whether this characteristic would be as evident among a representative sample. It may be that truly representative study designs are not appropriate when dealing with at-risk groups as caution will always need to prevail over such methodological imperatives. Were future studies to investigate those patients known to be excluded from this study, such as those without capacity to give informed consent, alternative research designs would need to be employed, for example by interviewing significant others such as friends, family and treatment providers, or delaying recruitment to such time as informed consent to participate is able to be obtained.

There were specific instances in which the detail of data able to be collected was limited for reasons beyond the researcher's control. For example, while information as to the type of medication involved was almost always recorded on PAS, the quantity was only noted in some instances. Therefore it was not possible in this study to accurately estimate the amounts of different medications taken. The patient interview data provided more information regarding quantity of medications, but the participants had highly variable recall of this even a few hours post overdose. Greater accuracy in estimating the amount taken may be possible by combining data

sources such as self-report, witness accounts, and blood testing (in cases where such information was available). Some of the information obtained from PAS, such as whether or not alcohol was implicated, was recorded in a free-text field, and can therefore only be taken to be a minimum estimate, as it is not known in how many cases relevant information was not recorded. Likewise, not all participants were able to complete every section of the interview due to factors such as inability to choose between response options provided, disinclination to discuss certain issues, and time constraints. The last of these issues led to the decision to shorten the interviews after the pilot phase (i.e. the first 15 interviews), which meant not all information collected from these interviews could be included. Nonetheless, the majority of the final 31 participants provided information for most of the survey questions included in the revised version, allowing group responses to be reported.

Rather than use a standardised psychiatric diagnostic or screening measure, participants were asked to self-report current and past mental health problems. The rates of various psychiatric conditions reported may have therefore been influenced by factors such as participants' recall, accurate knowledge of their condition, and willingness to disclose sensitive personal information. Self-report was considered sufficient in the present study, due to its focus on the phenomenon of medication overdose rather than prevalence of various psychiatric disorders, the use of the BDI-FastScreen to measure depression symptom severity, and the already lengthy nature of the survey form. However, future research could benefit from objective verification of psychiatric conditions. Diagnoses of particular interest could include psychotic disorders (which may have been under-represented in the present study due to issues with informed consent), and personality disorders, which although previously shown to be associated with suicidal behaviour, were not reported by any participants.

There were some potential sources of data that may inform understandings of medication overdose that were beyond the scope of this study. For example, various professionals involved in the care of medication overdose patients such as ambulance officers, ED doctors, nursing staff, Psych Triage and CATT members may have all had insights to offer about the management of these presentations had they been interviewed. While observational data contributed to knowledge of the role of each of these groups in patients' pathway through care, there was no formal opportunity to

seek their opinion on the appropriateness of the treatment offered, or what alternative models of care should be considered. Other important personnel who could also be included in future studies would be doctors and pharmacists who have prescribed or dispensed medications to people who have subsequently overdosed. This would assist in determining whether current practices could be modified to reduce the likelihood of such outcomes. Finally, representatives of those agencies to which medication overdose patients are referred following discharge from hospital could also be interviewed to determine to what extent such services are utilised, and how these referral opportunities could be maximised.

number and severity of previous medication overdoses or other forms of self-harm, and levels of social support available. If differences do exist, these may have implications for treatment, suggesting that a differential response could be required.

Psychiatric assessment and follow-up is acknowledged in the literature as an important element of care for medication overdose patients. This study revealed a reasonably high level of assessment being conducted within the ED; however, such assessments were not universal. The reasons for this warrant further investigation. For example, was the lack of psychiatric assessment in some cases due to patient refusal to participate, the treating doctor deciding that assessment was not required, or Psych Triage being too busy to respond immediately and the patient leaving prior to being seen? The data suggest that ongoing suicidal risk was highly variable among medication overdose patients, and should therefore always be carefully assessed, rather than assumed.

Also with regard to the provision of psychiatric services, there is a state-wide database in existence used by mental health clinicians based in the ED. This represents a significant untapped data source about the movement of patients between hospitals, changes in their patterns of attendance, and usual pathways through care. The database in question is strictly limited in terms of accessibility to those directly concerned with the patients' psychiatric care (i.e. even other non-psychiatric ED treatment staff do not have access). However a researcher with the appropriate permission, and taking into account privacy concerns, could extract valuable information about patterns of service utilisation among medication overdose patients. This could be particularly powerful if cross-linked with PAS data, and would allow for the relevant cases to be examined by psychiatric diagnosis, thereby overcoming a potential limitation of the current study which used unconfirmed self-reported mental health problems. Another possible use of the psychiatric database would be to gather preliminary data for further research examining the relationship between psychosis and ED presentations for actual or potential self-harm (by medication overdose or other means), the nature of which was only partially captured by the present research.

Medication overdose patients included in this study were most commonly discharged home. An interesting extension study would be to look at what follow-up, if any, is

offered to the majority of patients, and to what extent this is engaged with. In instances where follow-up falls through it would be of interest to know whether this is due to systemic problems (for example, a patient wants assistance, but the support system fails to deliver), individual issues (the required services are readily available, but are rejected by the patient), or a combination of both. Such an extension study could also include investigation of the clinical management of repeated presentations for medication overdose to determine the most effective responses for reducing their occurrence and severity.

The main life problems identified by patients in this study were mental health issues (including delayed diagnosis, poor response to treatment, and problematic substance use), work-related issues such as unemployment or job-related stress, and disruptions to key relationships. These findings suggest that intervention and prevention efforts which specifically target these problem areas may be of benefit to at-risk individuals. For example, earlier detection of psychiatric problems in conjunction with better treatment monitoring may reduce some of the ongoing difficulties patients experience in relation to their mental health, and ameliorate the accumulation of life disappointments and chronic stress which appeared to contribute to the current circumstances of so many study participants. Again, in this study these issues were only canvassed among the medication overdose group via semi-structured interview. Future research could consider also including comparison groups (such as illicit drug overdose and self-harm patients) in an interview component of a study of ED presentations to determine whether these problems are particular to medication overdose patients, or more widespread among those accessing ED services. The theme of escape noted in many participant narratives may also have broader applicability among illicit drug overdose and other self-harm cases, and is a notion which could be incorporated into intervention strategies, that is, strategies that assist people to find alternatives coping strategies rather than escaping via self-harm or substance use.

Problematic substance use was the rule rather than the exception among the medication overdose patients interviewed for this study. Four out of five indicated they had previously or were currently experiencing difficulties in this area (primarily in relation to heroin, alcohol, and cannabis), and at least half were intoxicated at the time of the overdose. It is not clear whether the interview group were representative

of all medication overdose patients in this regard. The PAS data gave only limited insight into the extent of alcohol or other drug use at the time of medication overdose. Concurrent ingestion of such substances was sometimes, but not always recorded, and the extent to which this represented under-recording by ED staff was unknown. Furthermore, little or no information about an individual's history of drug use was given. Improved recording of concurrent substance use at the time of presentation (where possible) may better inform immediate treatment, ensure referral to appropriate on-going support services upon discharge, and also shed light on the true proportion of medication overdose cases involving co-ingestion of alcohol and other drugs.

Among the most significant findings of this study was the high rate of benzodiazepine involvement in medication overdose presentations. While the PAS data were not surprising in the light of previous ED-based research, ambulance data, and rates of prescription, the additional information obtained from the patient interviews strongly suggests that this is an issue of great concern and one which warrants further investigation. Of particular concern was the apparent over-representation of certain classes of benzodiazepine medication relative to their rate of prescription (e.g. alprazolam). The reasons for this unexpectedly high contribution to medication-related harm need to be established, and action taken to reduce it.

A substantial number of interview participants provided information which indicated they may have been prescribed benzodiazepines inappropriately, for example, to treat depression, over an extended period of time (years in some cases), in excessive quantities, or in combination with several other types of benzodiazepine medication. A smaller number of participants described seeking these medications from multiple sources, indicating some doctors may unwittingly be over-prescribing benzodiazepines to patients with dependency issues. While a full investigation of the prescribing practices of the doctors of patients included in this study was beyond the scope of the project, the preliminary evidence suggests that prescribers and dispensers of such medications could be involved in addressing the issue of benzodiazepine misuse generally and benzodiazepine overdose in particular. This could occur through increasing awareness of the current prescribing guidelines, the risks associated with long-term use of benzodiazepines, and alternative forms of evidence-based treatment for depression such as antidepressants, and cognitive-

behavioural therapy. It may be that some patients respond poorly to any form of treatment offered, in which case the focus may shift from alleviating symptoms to the management of ongoing chronic depression or anxiety. This could include crisis planning to provide the person with a realistic alternative to overdose at times of great distress. Given the information concerning the acquisition of medications used in overdose, it would also be beneficial to encourage prescribers and dispensers to discuss the appropriate disposal of unused medications with patients, and to strongly advise against concurrent alcohol use. These issues may require closer monitoring in high risk cases.

The data also suggest that people at-risk of medication overdose may require particularly skilful psychological or psychiatric interventions. Patient interviews revealed generally poor outcomes from counselling, which of course could be expected from a group who have all recently overdosed. Nonetheless, the counselling experiences described did not indicate widespread use of highly-structured, evidence-based techniques, with most people appearing to have had generalist counselling. Such non-directed, short-term counselling may simply not be sufficient to meet the needs of some members of this group. Long-term structured psychological work with ongoing monitoring, goal-setting, and additional social support may be required for many, particularly those with longstanding mental health and social issues, and a history of self-harming behaviour. Given that most of the patients interviewed had very limited means, such assistance would need to be available at low or no cost. Changes introduced to Australian Medicare funding in November 2006 may assist in making services more accessible, with up to 12 sessions with an eligible psychologist per calendar year attracting a government rebate, although it is still too early to comment on the effectiveness of this scheme in improving treatment uptake.

Finally, the experience of undertaking this research has potential implications for both the conduct of similar research involving sensitive topics and/or vulnerable populations in the ED setting, and for introducing a brief intervention aimed at reducing medication overdose. It is recommended that any research conducted within an ED setting take full advantage of any other data sources available prior to introducing patient interviews, both to reduce the level of involvement requested of patients, and to minimise the impact on the workload of the ED. It can be difficult to

achieve representative recruitment when relying on the goodwill of a large and mobile workforce. Therefore study designs which require large representative samples need to take a whole of ED approach, and may be better supported by having senior staff members as an integral part of the research team. Smaller scale, non-representative recruitment is more readily achieved, but again may be assisted through the involvement of one or two key members of the ED staff with a commitment to the project. Where patient interviews are regarded as necessary to answer the research questions posed, the information collected should be kept to a minimum, and alternative sources of recruitment also considered where possible.

It was further concluded from the findings of the research and the experience of collecting data within the ED for a period of 12 months that while this setting was ideally suited to dealing with the acute medical and psychiatric needs of medication overdose patients, and for providing a risk assessment and referral to ongoing services elsewhere, it was not well resourced for ongoing care. Therefore while the ED could be a referral source for participants to an intervention aimed at reducing the risk of medication overdose or other forms of self-harm, the actual delivery of such a program would be better located within another community-based support service. An external treatment agency may be able to offer continuity of care over an extended period of time, or to provide linkages to other support services such as crisis accommodation, that could not routinely be made available through the ED.

References

Abbott, F., & Frase, M. (1998). Use and abuse of over-the-counter analgesics. *Journal of Psychiatry and Neuroscience, 23*(1), 13-34.

Adebe, W. (2002). Herbal medication: potential for adverse interactions with analgesic drugs. *Journal of Clinical Pharmacy and Therapeutics, 27*, 391-401.

Aghanwa, H. (2001). Attempted suicide by drug overdose and by poison-ingestion methods seen at the main general hospital in the Fiji islands: a comparative study. *General Hospital Psychiatry, 23*, 266-271.

Alchin, T., & Tranby, H. (1995). Depression and antidepressant use in Australia. *Australian Journal of Social Issues, 30*(2), 113-127.

Allgulander, C. (2000). Psychiatric aspects of suicidal behaviour: anxiety disorders. In K. Hawton & C. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 179-192). Chichester, England: John Wiley & Sons Ltd.

Allison, S., Roeger, L., Martin, G., & Keeves, J. (2001). Gender differences in the relationship between depression and suicidal ideation in young adolescents. *Australian and New Zealand Journal of Psychiatry, 35*, 498-503.

American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders. Fourth Edition, Text Revision.* Washington DC: American Psychiatric Association.

Andrews, G., Henderson, S., & Hall, W. (2001). Prevalence, comorbidity, disability and service utilisation. Overview of the Australian National Mental Health Survey. *British Journal of Psychiatry, 178*, 145-153.

Andrews, G., & Hunt, C. (1999). Treatments that work in anxiety disorders. An article published on the internet by the Medical Journal of Australia. Retrieved November 6, 2002, from http://www.mja.com.au

Appleby, L. (2000a). Drug misuse and suicide: a tale of two services. *Addiction, 95*(2), 175-177.

Appleby, L. (2000b). Prevention of suicide in psychiatric patients. In K. Hawton & C. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 617-630). Chichester, England: John Wiley & Sons Ltd.

Ashton, H. (1994). The treatment of benzodiazepine dependence. *Addiction, 89*, 1535-1541.

Austin, M., & Mitchell, P. (1998). Psychotropic medications in pregnant women: treatment dilemmas. *Medical Journal of Australia, 169*, 428-431.

Australasian College for Emergency Medicine. (2000). Policy Document - the Australasian Triage Scale. Retrieved July 14, 2004, from http://www.acem.org.au/open/documents/triage.htm

Australian Bureau of Statistics. (1998). *Mental Health and Wellbeing Profile of Adults, Australia 1997*. Canberra: Australian Government Publishing Service (ABS Cat 4326.0).

Australian Bureau of Statistics. (2006a). *National Health Survey: Summary of Results*. Canberra: (ABS Cat 4364.0).

Australian Bureau of Statistics. (2006b). *Suicides, Australia, 1994 to 2004*. Canberra: (ABS Cat 3309.0).

Australian Drug Foundation. (2002). Benzodiazepines/Minor Tranquillisers. Retrieved August 19, 2002, from http://www.adf.org.au/drughit/facts/hdaymi.html

Australian Drug Foundation. (2004). Inhalants. Retrieved December 6, 2004, from www.druginfo.com.au

Australian Institute for Suicide Research and Prevention. (2003). *International Suicide Rates - Recent Trends and Implications for Australia*. Canberra: Australian Government Department of Health and Ageing.

Australian Institute of Health and Welfare. (2006). Mortality Over the Twentieth Century in Australia: Trends and Patterns in Major Causes of Death. Mortality Surveillance Series no. 4. Canberra, Australia: AIHW (Cat PHE23).

Ayonrinde, O., Phelps, G., Hurley, J., & Ayonrinde, O. (2005). Paracetamol overdose and hepatotoxicity at a regional Australian hospital: a 4-year experience. *Internal Medicine Journal, 35*(11), 655-660.

Baca-Garcia, E., Diaz-Sastre, C., Saiz-Ruiz, J., & de Leon, J. (2002). How safe are psychiatric medications after a voluntary overdose? *European Psychiatry: the Journal of the Association of European Psychiatrists, 17*(8), 466-470.

Baldessarini, R., & Hennen, J. (2004). Genetics of suicide: an overview. *Harvard Review of Psychiatry, 12*(1), 1-13.

Baume, P., & McTaggart, P. (1998). *Suicides in Australia.* Paper presented at the Suicide Prevention: The Global Context. Proceedings of the XIXth Congress of the International Association for Suicide Prevention, March 23-27, Adelaide, pp. 67-78.

Beautrais, A. (2000). Risk factors for suicide and attempted suicide among young people. *Australian and New Zealand Journal of Psychiatry, 34*, 420-436.

Beautrais, A. (2003). Subsequent mortality in medically serious suicide attempts: a 5 year follow-up. *Australian and New Zealand Journal of Psychiatry, 37*, 595-599.

Beautrais, A., Joyce, P., & Mulder, R. (1998). Youth suicide attempts: a social and demographic profile. *Australian and New Zealand Journal of Psychiatry, 32*, 349-357.

Beautrais, A., Joyce, P., Mulder, R., Fergusson, D., Deavoll, B., & Nightingale, S. (1996). Prevalence and comorbidity of mental disorders in persons making serious suicide attempts: A case-control study. *The American Journal of Psychiatry, 153*(8), 1009-1014.

Beck, A. (1967). *Depression: Causes and Treatment*. Philadelphia: University of Philadelphia Press.

Beck, A., & Steer, R. (1993). *Beck Scale for Suicide Ideation Manual*. San Antonio, TX: The Psychological Corporation.

Beck, A., Steer, R., & Brown, G. (1996). *BDI-II Manual*. San Antonio, TX: The Psychological Corporation.

Beck, A., Steer, R., & Brown, G. (2000). *BDI-FastScreen for Medical Patients*. San Antonio, TX: The Psychological Corporation.

Becker, J., & Kleinman, A. (1991). *Psychosocial Aspects of Depression*. Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Becker, J., & Schmaling, K. (1991). Interpersonal Aspects of Depression from Psychodynamic and Attachment Perspectives. In J. Becker & A. Kleinman (Eds.), *Psychosocial Aspects of Depression* (pp. 131-168). Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Bennewith, O., Stocks, N., Gunnell, D., Peters, T., Evans, M., & Sharp, D. (2002). General practice based interventions to prevent repeat episodes of deliberate self harm: cluster randomised control trial. *British Medical Journal, 324*, 1254-1261.

Berry, J., & Harrison, J. (2006). Hospital separations due to injury and poisoning, Australia 2001-02. Injury Research and Statistics Series Number 26. Adelaide: Australian Institute of Health and Welfare (Cat INJCAT 78).

Bertolote, J., Fleischmann, A., De Leo, D., & Wasserman, D. (2003). Suicide and mental disorders: do we know enough? *British Journal of Psychiatry, 183*, 382-383.

BeyondBlue: The National Depression Initiative. (2002). What do the common antidepressant drugs treat? Retrieved December 6, 2002, from http://www.beyondblue.org.au

Blair-West, G., & Mellsop, G. (2001). Major depression: does a gender-based down-rating of suicide risk challenge its diagnostic validity? *Australian and New Zealand Journal of Psychiatry, 35*, 322-328.

Blanchard, J. (2000). The co-occurrence of substance use in other mental disorders: editor's introduction. *Clinical Psychology Review, 20*(2), 145-148.

Blow, F., Barry, K., Walton, M., Maio, R., Chermack, S., Bingham, C. R., et al. (2006). The efficacy of two brief intervention strategies among injured, at-risk drinkers in the emergency department: Impact of tailored messaging and brief advice. *Journal of Studies on Alcohol, 67*(4), 568-578.

Borges, G., Walters, E., & Kessler, R. (2000). Associations of substance use, abuse and dependence with subsequent suicidal behaviour. *American Journal of Epidemiology, 151*(8), 781-789.

Britt, H., Miller, G., Knox, S., Charles, J., Valenti, L., Henderson, J., et al. (2001). *BEACH Bettering the Evaluation and Care of Health: General practice activity in Australia 2000-01*. Canberra: Australian Institute of Health and Welfare (Cat GEP 8).

Brown, G. (1991). Epidemiological Studies of Depression: Definition and Case Finding. In J. Becker & A. Kleinman (Eds.), *Psychosocial Aspects of Depression*. Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Brown, G., Jeglic, E., Henriques, G., & Beck, A. (2006). Cognitive therapy, cognition, and suicidal behaviour. In T. Ellis (Ed.), *Cognition and Suicide: Theory, Research, and Therapy* (pp. 53-74). Washington DC: American Psychological Association.

Brown, G., Ten Have, T., Henriques, G., Xie, S., Hollander, J., & Beck, A. (2005). Cognitive therapy for the prevention of suicide attempts: A randomized controlled trial. *Journal of the American Medical Association, 294*(5), 563-570.

Brown, M. (2006). Linehan's theory of suicidal behaviour: Theory, research and Dialectical Behavior Therapy. In T. Ellis (Ed.), *Cognition and Suicide: Theory, Research, and Therapy* (pp. 91-117). Washington DC: American Psychological Association.

Buckley, N., Dawson, A., Whyte, I., & O'Connell, D. (1995). Relative toxicity of benzodiazepines in overdose. *British Medical Journal, 310*(6974), 219-221.

Buckley, N., Whyte, I., & Dawson, A. (1993). There are days ... and moons. Self-poisoning is not lunacy. *Medical Journal of Australia, 159*(11-12), 786-789.

Buckley, N., Whyte, I., Dawson, A., McManus, P., & Ferguson, N. (1995a). Correlations between prescriptions and drugs taken in self-poisoning: Implications for prescribers and drug regulation. *The Medical Journal of Australia, 162*, 194-197.

Buckley, N., Whyte, I., Dawson, A., McManus, P., & Ferguson, N. (1995b). Self-poisoning in Newcastle, 1987-1992. *Medical Journal of Australia, 162*(4), 190-193.

Buckley, T., Parker, J., & Heggie, J. (2001). A psychometric evaluation of the BDI-II in treatment-seeking substance abusers. *Journal of Substance Abuse Treatment, 20*(3), 197-204.

Callor, W., Petersen, E., Gray, D., Grey, T., Lamoreaux, T., & Bennett, P. (2005). Preliminary findings of non-compliance with psychotropic medication and prevalence of methamphetamine intoxication associated with suicide completion. *Crisis: The Journal of Crisis Intervention and Suicide Prevention, 26*(2), 78-84.

Cantor, C., & Baume, P. (1998). Access to methods of suicide: what impact? *Australian and New Zealand Journal of Psychiatry, 32*, 8-14.

Cantor, C., & Baume, P. (1999). Suicide prevention: a public health approach. *Australian and New Zealand Journal of Mental Health Nursing, 8*, 45-50.

Cantor, C., & Neulinger, K. (2000). The epidemiology of suicide and attempted suicide among young Australians. *Australian and New Zealand Journal of Psychiatry, 34*, 370-387.

Caplehorn, J., & Saunders, J. (1993). Factors associated with heroin users' AIDS risk-taking behaviour. *Australian Journal of Public Health, 17*(1), 13-17.

Carter, G., Clover, K., Whyte, I., Dawson, A., & D'Este, C. (2005). Postcards from the EDge project: randomised controlled trial of an intervention using postcards to reduce repetition of hospital treated deliberate self poisoning [Electronic Version]. *British Medical Journal*, 331, 805. Retrieved October 8, 2005 from http://www.bmj.com/cgi/content/abstract/331/7520/805

Carter, G., Issakidis, C., & Clover, K. (2003). Correlates of youth suicide attempters in Australian community and clinical samples. *Australian and New Zealand Journal of Psychiatry, 37*, 286-293.

Carter, G., Reith, D., Whyte, I., & McPherson, M. (2005a). Non-suicidal deaths following hospital-treated self-poisoning. *Australian and New Zealand Journal of Psychiatry, 39*(1-2), 101-107.

Carter, G., Reith, D., Whyte, I., & McPherson, M. (2005b). Repeated self-poisoning: increasing severity of self-harm as a predictor of subsequent suicide. *British Journal of Psychiatry, 186*(3), 253-257.

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

Cherpitel, C. (2006). Alcohol-related injury and the emergency department: Research and policy questions for the next decade. *Addiction, 101*(9), 1225-1227.

Clark, L., & Watson, D. (1991). Theoretical and Empirical Issues in Differentiating Depression from Anxiety. In J. Becker & A. Kleinman (Eds.), *Psychosocial Aspects of Depression*. Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Cochran, S., Greer Sullivan, J., & Mays, V. (2003). Prevalence of mental disorders, psychological distress and mental health services use among lesbian, gay and bisexual adults in the United States. *Journal of Consulting and Clinical Psychology, 71*(1), 53-61.

Cohen, L. (1988). Life Events and Psychological Functioning: Theoretical and Methodological Issues. California: Sage Publications.

Colman, I., Dryden, D., Thompson, A., Chahal, A., Borden, K., Rowe, B., et al. (2004). Utilization of the emergency department after self-inflicted injury. *Academic Emergency Medicine, 11*(2), 136-142.

Commonwealth Department of Health and Aged Care. (1999). *Australian Statistics on Medicines 1998*. Canberra: Commonwealth of Australia.

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*(2), 297-303.

Crandall, C., Fullerton-Gleason, L., Aguero, R., & LaValley, J. (2006). Subsequent suicide mortality among emergency department patients seen for suicidal behavior. *Academic Emergency Medicine, 13*(4), 435-442.

Crawford, M., Patton, R., Touquet, R., Drummond, C., Byford, S., Barrett, B., et al. (2004). Screening and referral for brief intervention of alcohol-misusing patients in an emergency department: A pragmatic randomised controlled trial. *Lancet 364*(9442), 1334-1339.

Cvetkovski, S., Dietze, P., & McElwee, P. (2002). Non-Fatal Heroin Overdose in Melbourne. Trends in Heroin Overdose Events Attended by Ambulances in Melbourne: June 1998-November 2001. Melbourne: Turning Point Alcohol and Drug Centre, Inc.

Daly, F., Little, M., & Murray, L. (2006). A risk assessment based approach to the management of acute poisoning [Electronic version]. *Emergency Medicine Journal, 23*(5), 396-399.

Darke, S., & Ross, J. (2002). Suicide among heroin users: rates, risk factors and methods. *Addiction, 97*, 1383-1394.

De Hert, M., & Peuskens, J. (2000). Psychiatric aspects of suicidal behaviour:schizophrenia. In K. Hawton & C. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 121-134). Chichester, England: John Wiley & Sons Ltd.

De Leo, D., Burgis, S., Bertolote, J., Kerkhof, A., & Bille-Brahe, U. (2006). Definitions of suicidal behaviour. *Crisis: The Journal of Crisis Intervention and Suicide Prevention, 27*(1), 4-15.

De Leo, D., & Heller, T. (2004). Who are the kids who self-harm? An Australian self-report school survey. *Medical Journal of Australia, 181*(3), 140-144.

Dhossche, D. (2003). Toxicology of suicide: touchstone for suicide prevention? *Medical Science Monitor, 9*(4), SR9-19.

Diekstra, R., Gulbinat, W., Kienhorst, I., & de Leo, D. (1995). *Prevention Strategies on Suicide*. Leiden, Netherlands: E.J. Brill.

Donald, M., & Dower, J. (2002). Risk and protective factors for depressive symptomatology among a community sample of adolescents and young adults. *Australian and New Zealand Journal of Public Health, 26*(6), 555-562.

Donald, M., Dower, J., Lucke, J., & Raphael, B. (2000). *The Queensland Young People's Mental Health Survey Report*. Brisbane, Australia: Centre for Primary Health Care, School of Population Health, and Department of Psychiatry, University of Queensland.

Donald, M., Dower, J., Lucke, J., & Raphael, B. (2001). Prevalence of adverse life events, depression and suicidal thoughts and behaviour among a community sample of young people aged 15-24 years. *Australian and New Zealand Journal of Public Health, 25*(5), 426-432.

Donovan, S., Clayton, A., Beeharry, M., Jones, S., Kirk, C., Waters, K., et al. (2000). Deliberate self-harm and antidepressant drugs. *British Journal of Psychiatry, 177*, 551-556.

Drugs and Crime Prevention Committee. (2006). Inquiry into Misuse/Abuse of Benzodiazepines and Other Forms of Pharmaceutical Drugs in Victoria - Interim Report. Melbourne, Australia: DCPC, Parliament of Victoria.

Durkheim, E. (1951 (1897)). *Suicide, a Study in Sociology*. Glencoe, IL: Free Press.

Ellis, A., & Ellis, T. (2006). Suicide from the perspective of Rational Emotive Behavior Therapy. In T. Ellis (Ed.), *Cognition and Suicide: Theory, Research, and Therapy* (pp. 75-90). Washington DC: American Psychological Association.

Ellis, P., & Smith, D. (2002). Treating depression: the beyondblue guidelines for treating depression in primary care. *Medical Journal of Australia, 176*, S77-S83.

Evans, M., Morgan, H., Hayward, A., & Gunnell, D. (1999). Crisis telephone consultation for deliberate self-harm patients: Effects on repetition. *British Journal of Psychiatry, 175*, 23-27.

Fergusson, D., Woodward, L., & Horwood, L. (2000). Risk factors and life process associated with the onset of suicidal behaviour during adolescence and early adulthood. *Psychological Medicine, 30*, 23-39.

Ferrier, I. (1999). Treatment of major depression: is improvement enough? *Journal of Clinical Psychiatry, 60*(Suppl 6), 10-14.

Flick, U. (2002). *An Introduction to Qualitative Research*. London: Sage Publications.

Frels, C., Williams, P., Narayanan, S., & Gariballa, S. (2002). Iatrognic causes of falls in hospitalised elderly patients: A case-control study. *Postgraduate Medical Journal, 78*(922), 487-489.

Fremouw, W., Perczel, M., & Ellis, T. (1990). *Suicide Risk: Assessment and Response Guidelines*. New York: Pergamon Press.

Geddes, J., & Cipriani, A. (2004). Selective serotonin reuptake inhibitors remain useful drugs which need careful monitoring. *British Medical Journal, 329*, 809-810.

Gerostamoulos, J., Staikos, V., & Drummer, O. (2001). Heroin-related deaths in Victoria: a review of cases for 1997 and 1998. *Drug and Alcohol Dependence, 61*, 123-127.

Gilbert, P. (1984). *Depression: From Psychology to Brain State*. London: Lawrence Erlbaum Associates Ltd.

Gilbert, P. (1992). *Depression: The Evolution of Powerlessness*. New York: The Guilford Press.

GlaxoSmithKline. (2002). *Guidelines for the management of paracetamol overdose in adults*. Ermington NSW, Australia: GlaxoSmithKline Consumer Healthcare.

Goldney, R. (2000). Prediction of suicide and attempted suicide. In K. Hawton & C. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 585-595). Chichester, England: John Wiley & Sons Ltd.

Goldney, R. (2004). Suicidal behaviour and mood disorders. In P. Joyce & P. Mitchell (Eds.), *Mood Disorders: Recognition and Treatment* (pp. 459-468). Sydney, Australia: The University of New South Wales Press Ltd.

Graham, A., Reser, J., Scuderi, C., Smith, M., Turley, B., & Zubrick, S. (1999). *Suicide: An Australian Psychological Society Discussion Paper*. Carlton, Australia: The Australian Psychological Society Ltd.

Greene, S., Dargan, P., & Jones, A. (2005). Acute poisoning: understanding 90% of cases in a nutshell. *Postgraduate Medical Journal, 81*, 204-216.

Griffin, G., & Bisson, J. (2001). Introducing a nurse-led deliberate self-harm assessment service. *Psychiatric Bulletin, 25*(6), 212-214.

Gunnell, D., & Ashby, D. (2004). Antidepressants and suicide: what is the balance of benefit and harm. *British Medical Journal, 329*, 34-38.

Gunnell, D., Ho, D., & Murray, V. (2004). Medical management of deliberate drug overdose: a neglected area for suicide prevention? [Electronic version]. *Emergency Medicine Journal, 21*(1), 35-38.

Guthrie, E., Kapur, N., Mackway-Jones, K., Chew-Graham, C., Moorey, J., Mendel, E., et al. (2003). Predictors of outcome following brief psychodynamic-interpersonal

therapy for deliberate self poisoning. *Australian and New Zealand Journal of Psychiatry, 37*, 532-536.

Guthrie, E., Kapur, N., Mackway-Jones, K., Chew-Graham, C., Moorey, J., Mendel, E., et al. (2001). Randomised controlled trial of brief psychological interventions after deliberate self poisoning. *British Medical Journal, 323*(7305), 135-137.

Hagedorn, J., & Omar, H. (2002). Retrospective analysis of youth evaluated for suicide attempt or suicidal ideation in an emergency room setting. *International Journal of Adolescent Medicine and Health, 14*(1), 55-60.

Hall, W., Lynskey, M., & Teeson, M. (2000). *What is Comorbidity and Why Does it Matter?* Paper presented at the National Comorbidity Project. Comorbidity in Mental Health and Substance Use: Causes, Prevention and Treatment. National Workshop, 6-7 March 2000. Background Paper, National Drug and Alcohol Research Centre, University of New South Wales.

Hall, W., Mant, A., Mitchell, P., Rendle, V., Hickie, I., & McManus, P. (2003). Association between antidepressant prescribing and suicide in Australia, 1991-2000: trend analysis. *British Medical Journal, 326*(7397), 1008.

Hardman, J., Goodman Gilman, A., & Limbird, L. (1996). *Goodman & Gilman's The Pharmacological Basis of Therapeutics, 9th Edition*. New York: The McGraw-Hill Companies.

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*(1), 60-66.

Hassan, R. (1995). *Suicide Explained: The Australian Experience*. Carlton, Australia: Melbourne University Press.

Hassan, R. (1998). One hundred years of Emile Durkheim's Suicide: A Study in Sociology. *Australian and New Zealand Journal of Psychiatry, 32*(2), 168-171.

Haw, C., Hawton, K., Houston, K., & Townsend, E. (2001). Psychiatric and personality disorders in deliberate self-harm patients. *British Journal of Psychiatry, 178*, 48-54.

Hawton, K. (2000). General hospital management of suicide attempters. In K. Hawton & C. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 519-537). Chichester, England: John Wiley & Sons Ltd.

Hawton, K. (2002). United Kingdom legislation on pack size of analgesics: background, rationale, and effects on suicide and deliberate self-harm. *Suicide and Life-Threatening Behaviour, 32*(3), 223-229.

Hawton, K., & Catalan, J. (1987). *Attempted suicide: a practical guide to its nature and management*. Oxford, England: Oxford University Press.

Hawton, K., Fagg, J., Simkin, S., Bale, E., & Bond, A. (1997). Trends in deliberate self-harm in Oxford, 1985-1995. Implications for clinical services and the prevention of suicide. *The British Journal of Psychiatry, 171*(12), 556-560.

Hawton, K., Townsend, E., Arensman, E., Gunnell, D., Hazell, P., House, A., et al. (1999). Psychosocial and pharmacological treatments for deliberate self harm. *Cochrane Database of Systematic Reviews, 1999 (4) Art. No.: CD001764. DOI: 10.1002/14651858.CD001764* Retrieved July 24, 2006, from www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001764/frame.html

Hawton, K., & van Heeringen, C. (2000). *The International Handbook of Suicide and Attempted Suicide*. Chichester, England: John Wiley & Sons Ltd.

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.

Hazell, P. (2004). Depression in adolescents. In P. Joyce & P. Mitchell (Eds.), *Mood Disorders: Recognition and Treatment* (pp. 358-367). Sydney, Australia: The University of New South Wales Press Ltd.

Heale, P. (2002). Wyndham Prescription and Over-the-Counter Drug Misuse Project Literature Search and Review: Turning Point Alcohol & Drug Centre, Inc. Unpublished manuscript.

Heale, P., Dietze, P., & Cvetkovski, S. (2002). *Benzodiazepine Related Ambulance Attendance in Melbourne*. Paper presented at the VAADA Annual Conference - Everyday Drugs, Everyday Problems, December 2-3. Carlton, Melbourne.

Heard, H. (2000). Psychotherapeutic approaches to suicidal ideation and behaviour. In K. Hawton & C. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 503-518). Chichester, England: John Wiley & Sons Ltd.

Helmkamp, J., Hungerford, D., Williams, J., Manley, W., Furbee, P., Horn, K., et al. (2003). Screening and brief intervention for alcohol problems among college students treated in a university hospital emergency department. *Journal of American College Health, 52*(1), 7-16.

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*(2), 87-93.

Hillman, S., Silburn, S., Green, A., & Zubrick, S. (2000). *Youth Suicide in Western Australia Involving Cannabis and Other Drugs. WA Strategy Against Drug Abuse Occasional Paper Number 2*. Retrieved April 23, from http://www.dao.health.wa.gov.au/SiteList/PolicyDiscussionPapers/tabid/178/Default.aspx.

Holmes, D. (1999). *Older People and Medications*. Blackburn, Australia: PenFolk Publishing.

Horrocks, J., Price, S., House, A., & Owens, D. (2003). Self-injury attendances in the accident and emergency department: Clinical database study [Electronic version]. *British Journal of Psychiatry, 183*(1), 34-39.

House, A. (2002). Brief psychodynamic interpersonal therapy after deliberate self-poisoning reduced suicidal ideation and deliberate self harm. *ACP Journal Club, 136*(1), 27.

Huibers, M., Beurskens, A., Bleijenberg, G., & van Schayck, C. (2003). Psychosocial interventions delivered by general practitioners. *Cochrane Database of Systematic Reviews 2003, (2). Art. No.: CD003494. DOI: 10.1002/14651858.CD003494.* Retrieved July 24, 2006, from http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD003494/frame.html

Ikeda, R., Kresnow, M., Mercy, J., Powell, K., Simon, T., Potter, L., et al. (2001). Medical conditions and nearly lethal suicide attempts [Electronic version]. *Suicide and Life-Threatening Behaviour, 32*(Suppl), 60-67.

Isacsson, G., Holmgren, P., Druid, H., & Bergman, U. (1999). Psychotropics and suicide prevention. Implications from toxicological screening of 5281 suicides in Sweden 1992-1994. *British Journal of Psychiatry, 174*, 259-265.

Jenkins, J., Kleinman, A., & Good, B. (1991). Cross-Cultural Studies of Depression. In J. Becker & A. Kleinman (Eds.), *Psychosocial Aspects of Depression*. Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Jenkins, R., & Singh, B. (2000). General population strategies of suicide prevention. In K. Hawton & C. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 597-615). Chichester, England: John Wiley & Sons Ltd.

Jobes, D., & Nelson, K. (2006). Schneidman's contributions to the understanding of suicidal thinking. In T. Ellis (Ed.), *Cognition and Suicide: Theory, Research, and Therapy* (pp. 29-49). Washington DC: American Psychological Association.

Johnell, K., Merlo, J., Lynch, J., & Blennow, G. (2004). Neighbourhood social participation and women's use of anxiolytic-hypnotic drugs: a multilevel analysis. *Journal of Epidemiology and Community Health, 2004*(58), 59-64.

Jones, A., & Dargan, P. (2002). Advances, challenges, and controversies in poisoning [Electronic version]. *Emergency Medicine Journal, 19*, 190-191.

Jones, A., & Volans, G. (1999). Management of self poisoning. *British Medical Journal, 319*, 1414-1417.

Jorm, A., Christensen, H., Griffiths, K., & Rodgers, B. (2002). Effectiveness of complementary and self-help treatments for depression. *Medical Journal of Australia, 176*(Suppl), S84-S96.

Jorm, A., Grayson, D., Creasey, H., Waite, L., & Broe. (2000). Long-term benzodiazepine use by elderly people living in the community. *Australian and New Zealand Journal of Public Health, 24*(1), 7-10.

Joyce, P. (2004a). The assessment and classification of depression. In P. Joyce & P. Mitchell (Eds.), *Mood Disorders: Recognition and Treatment* (pp. 25-36). Sydney, Australia: The University of New South Wales Press Ltd.

Joyce, P. (2004b). The clinical management of depression. In P. Joyce & P. Mitchell (Eds.), *Mood Disorders: Recognition and Treatment* (pp. 163-173). Sydney, Australia: The University of New South Wales Press Ltd.

Joyce, P., & Mitchell, P. (2004). Mood disorders and the global burden of disease. In P. Joyce & P. Mitchell (Eds.), *Mood Disorders: Recognition and Treatment* (pp. 496-500). Sydney, Australia: The University of New South Wales Press Ltd.

Kalafat, J., & Underwood, M. (2005). Crisis intervention in the context of outpatient treatment of suicidal behaviours. In R. Yufit & D. Lester (Eds.), *Assessment, Treatment, and Prevention of Suicidal Behaviour* (pp. 163-180). Hoboken, NJ: John Wiley & Sons Ltd.

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*(1), 36-41.

Kapur, N., House, A., Creed, F., Feldman, E., Friedman, T., & Guthrie, E. (1998). Management of deliberate self poisoning in adults in four teaching hospitals: Descriptive study. *British Medical Journal, 316*(7134), 831-832.

Kapur, N., House, A., Creed, F., Feldman, E., Friedman, T., & Guthrie, E. (1999). General hospital services for deliberate self-poisoning: an expensive road to nowhere? *Postgraduate Medical Journal, 75*(888), 599-602.

Kapur, N., House, A., Dodgson, K., May, M., & Creed, F. (2002). Effect of general hospital management on repeat episodes of deliberate self-poisoning: Cohort study. *British Medical Journal, 325*(7369), 866-867.

Kennedy, M., Rogers, G., & Joyce, P. (2004). Pharmacogenetics of anti depressants and mood stablisers. In P. Joyce & P. Mitchell (Eds.), *Mood Disorders: Recognition and Treatment* (pp. 223-237). Sydney, Australia: The University of New South Wales Press Ltd.

Kessing, L. (2004). Severity of depressive episodes according to ICD-10: prediction of risk of relapse and suicide. *British Journal of Psychiatry, 184*(2), 153-156.

Kingsbury, S., Hawton, K., Steinhardt, K., & James, A. (1999). Do adolescents who take overdoses have specific psychological characteristics? A comparative study with psychiatric and community controls. *Journal of the American Academy of Child and Adolescent Psychiatry, 38*(9), 1125-1131.

Kirsch, I., Moore, T., Scoboria, A., & Nicholls, S. (2002). The Emperor's new drugs: An analysis of antidepressant medication data submitted to the U.S. Food and Drug Administration. *Prevention and Treatment, 5*(1), No Pagination Specified.

Klonsky, D., Oltmanns, T., & Turkheimer, E. (2003). Deliberate Self-Harm in a Nonclinical Population: Prevalence and Psychological Correlates *American Journal of Psychiatry, 160*, 1501-1508.

Kreisfeld, R., Newson, R., & Harrison, J. (2004). *Injury Deaths, Australia 2002. Injury Research and Statistics Series Number 23.* Adelaide, Australia: Australian Institute of Health and Welfare (Cat INJCAT 65).

Kresnow, M., Ikeda, R., Mercy, J., Powell, K., Potter, L., Simon, T., et al. (2001). An unmatched case-control study of nearly lethal suicide attempts in Houston, Texas: research methods and measurements. *Suicide and Life-Threatening Behaviour, 32*(Supplement), 7-20.

Kushner, M., Abrams, K., & Borchardt, C. (2000). The relationship between anxiety disorders and alcohol use disorders: a review of major perspectives and findings. *Clinical Psychology Review, 20*(2), 149-171.

Laukkanen, E., Korhonen, V., Peiponen, S., Nuutinen, M., & Viinamaki, H. (2001). A pessimistic attitude towards the future and low psychosocial functioning predict psychiatric diagnosis among treatment-seeking adolescents. *Australian and New Zealand Journal of Psychiatry, 35*(2), 160-165.

Lenzer, J. (2004). FDA hearings confirm risks of antidepressants. *British Medical Journal, 329*, 641.

Lester, D. (2005a). The classic systems of psychotherapy and suicidal behaviour. In R. Yufit & D. Lester (Eds.), *Assessment, Treatment, and Prevention of Suicidal Behaviour* (pp. 145-161). Hoboken, NJ: John Wiley & Sons Ltd.

Lester, D. (2005b). Dialectical behaviour therapy. In R. Yufit & D. Lester (Eds.), *Assessment, Treatment, and Prevention of Suicidal Behaviour* (pp. 279-290). Hoboken, NJ: John Wiley & Sons Ltd.

Lewinsohn, P., Rohde, P., & Seeley, J. (1996). Adolescent suicidal ideation and attempts: Prevalence, risk factors, and clinical implications. *Clinical Psychology: Science and Practice, 3*(1), 25-46.

Lifshitz, M., & Gavrilov, V. (2002). Deliberate self-poisoning in adolescents [Electronic version]. *Israeli Medical Association Journal, 4*(4), 252-254.

Linde, K., Mulrow, C., Berner, M., & Egger, M. (2005). St John's Wort for depression. *Cochrane Database of Systematic Reviews 2005, (2). Art. No.: CD000448. DOI: 10.1002/14651858.CD000448.pub2* Retrieved July 24, 2006, from http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD000448/frame.html

Linehan, M., Rizvi, S., Welch, S., & Page, B. (2000). Psychiatric aspects of suicidal behaviour: personality disorders. In K. Hawton & C. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 147-178). Chichester, England: John Wiley & Sons Ltd.

Links, P., Eynan, R., Ball, J., Barr, A., & Rourke, S. (2005). Crisis occurrence and resolution in patients with severe and persistent mental illness: the contribution of suicidality. *Crisis: The Journal of Crisis Intervention and Suicide Prevention, 26*(4), 160-169.

Lo, A., Shalansky, S., Leung, M., Hollander, Y., & Raboud, J. (2003). Patient characteristics associated with nonprescription drug use in intentional overdose. *Canadian Journal of Psychiatry, 48*(4), 232-236.

Lonnqvist, J. (2000). Psychiatric aspects of suicidal behaviour: depression. In K. Hawton & C. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 107-120). Chichester, England: John Wiley & Sons Ltd.

Lynskey, M. (1998). The comorbidity of alcohol dependence and affective disorders: treatment implications. *Drug and Alcohol Dependence, 52*, 201-209.

Makin, A., & Williams, R. (2000). Paracetamol hepatotoxicity and alcohol consumption in deliberate and accidental overdose. *QJM: Monthly Journal of the Association of Physicians, 93*(6), 341-349.

Mali, G., Lagopoulos, J., Soares, J., & Vieta, E. (2004). Brain imaging of mood disorders. In P. Joyce & P. Mitchell (Eds.), *Mood Disorders: Recognition and Treatment* (pp. 125-138). Sydney, Australia: The University of New South Wales Press Ltd.

Mann, J., Apter, A., Bertolote, J., Beautrais, A., Currier, D., Haas, A., et al. (2005). Suicide prevention strategies. *Journal of the American Medical Association, 294*(16), 2064-2074.

Mann, J., Waternaux, C., Haas, G., & Malone, K. (1999). Toward a clinical model of suicidal behaviour in psychiatric patients. *American Journal of Psychiatry, 156*(2), 181-189.

Mant, A., & Wash, R. (1997). Reducing benzodiazepine use. *Drug and Alcohol Review, 16*, 77-84.

Maris, R., Berman, A., & Silverman, M. (2000). *Comprehensive Textbook of Suicidology*. London: The Guilford Press.

Martin, G. (2004). Childhood depression. In P. Joyce & P. Mitchell (Eds.), *Mood Disorders: Recognition and Treatment* (pp. 349-357). Sydney, Australia: The University of New South Wales Press Ltd.

Matthews, J. D., & Fava, M. (2000). Risk of suicidality in depression with serotonergic antidepressants. *Annals of Clinical Psychiatry, 12*(1), 43-50.

McKenzie, J., Carter, J., & Luty, S. (2004). Psychological therapies for depression. In P. Joyce & P. Mitchell (Eds.), *Mood Disorders: Recognition and Treatment* (pp. 250-261). Sydney, Australia: The University of New South Wales Press Ltd.

Mercy, J., Kresnow, M., O'Carroll, P., Lee, R., Powell, K., Potter, L., et al. (2001). Is suicide contagious? A study of the relation between exposure to the suicidal behavior of others and nearly lethal suicide attempts. *American Journal of Epidemiology, 154*(2), 120-127.

Merry, S., McDowell, H., Hetrick, S., Bir, J., & Muller, N. (2004). Psychological and/or educational interventions for the prevention of depression in children and adolescents. *Cochrane Database of Systematic Reviews 2004 (2). Art. No.: CD003380. DOI: 10.1002/14651858.CD003380.pub2*. Retrieved July 24, 2006, from http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD003380/frame.html

Michel, K. (2000). Suicide prevention and primary care. In K. Hawton & C. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 661-674). Chichester, England: John Wiley & Sons Ltd.

Milnes, D., Owens, D., & Blenkiron, P. (2002). Problems reported by self-harm patients: Perception, hopelessness, and suicidal intent. *Journal of Psychosomatic Research, 53*(819-822).

MIMS Australia. (2002). *MIMS Issue No. 4, August/September 2002*. Sydney, Australia: MIMS Australia.

Mitchell, P. (1999). Managing depression in a community setting. MJA Practice Essentials. *An article published on the internet by the Medical Journal of Australia* Retrieved November 6, 2002, from http://www.mja.com.au

Moos, R. (1991). Life Stressors, Social Resources, and the Treatment of Depression. In J. Becker & A. Kleinman (Eds.), *Psychosocial Aspects of Depression*. Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Moscicki, E. (1995). Epidemiology of suicidal behavior. *Suicide and Life-Threatening Behaviour, 25*(1), 22-35.

Muhleisen, P. (2001). Benzodiazepine misuse issues for pharmacists. *Australian Pharmacist, 20*(11), 712-718.

Mulder, R. (2004). Long-term outcome of depression. In P. Joyce & P. Mitchell (Eds.), *Mood Disorders: Recognition and Treatment* (pp. 423-432). Sydney, Australia: The University of New South Wales Press Ltd.

Mullaney, J. (1989). The measurement and classification of the affective disorders. In K. Davison & A. Kerr (Eds.), *Contemporary Themes in Psychiatry: A Tribute to Sir Martin Roth* (pp. 123-138). London: Gaskell/Royal College of Psychiatrists.

Murphy, G. (2000). Psychiatric aspects of suicidal behaviour: substance abuse. In K. Hawton & C. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 135-146). Chichester, England: John Wiley & Sons Ltd.

National Health and Medical Research Council. (1991). *Guidelines for the Prevention and Management of Benzodiazepine Dependence. Monograph Series No 3.* Canberra, Australia: Australian Government Publishing Service.

Neale, J. (1999). Experiences of illicit drug overdose: an ethnographic study of emergency hospital attendances. *Contemporary Drug Problems, 26,* 505-530.

Neale, J. (2000). Suicidal intent in non-fatal illicit drug overdose. *Addiction, 95*(1), 85-93.

Neeleman, J., & Wessely, S. (1997). Drugs taken in fatal and non-fatal self-poisoning: A study in South London. *Acta Psychiatrica Scandinavica, 95*(4), 283-287.

NH&MRC. (1999). *National Statement on Ethical Conduct in Research Involving Humans*. Canberra: National Health and Medical Research Council, Commonwealth of Australia.

Nirui, M., & Chenoweth, L. (1999). The responses of healthcare services to people at risk of suicide: a qualitative study. *Australian and New Zealand Journal of Psychiatry, 33*, 361-371.

Nock, M., & Kessler, R. (2006). Prevalence of and risk factors for suicide attempts versus suicide gestures: analysis of the National Comorbidity Survey. *Journal of Abnormal Psychology, 115*(3), 616-623.

Norman, T., Ellen, S., & Burrows, D. (1999). Benzodiazepines in anxiety disorders: Managing therapeutics and dependence. *An article published on the internet by the Medical Journal of Australia* Retrieved November 6, 2002, from http://www.mja.com.au

Norman, T., Olver, J., & Burrows, G. (2004). Antidepressant drugs. In P. Joyce & P. Mitchell (Eds.), *Mood Disorders: Recognition and Treatment* (pp. 188-206). Sydney, Australia: The University of New South Wales Press Ltd.

O'Carroll, P., Berman, A., Maris, R., Moscicki, E., Tanney, B., & Silverman, M. (1996). Beyond the tower of babel: A nomenclature for suicidology. *Suicide and Life-Threatening Behaviour, 26*(3), 237-253.

O'Carroll, P., Berman, A., Maris, R., Moscicki, E., Tanney, B., & Silverman, M. (1997). *Beyond the Tower of Babel.* Paper presented at the Suicide Prevention: The Global Context. Proceedings of the XIXth Congress of the International Association for Suicide Prevention, March 23-27, Adelaide.

Oei, T., Foong, T., & Casey, L. (2006). Number and type of substances in alcohol and drug-related completed suicides in an Australian sample. *Crisis: The Journal of Crisis Intervention and Suicide Prevention, 27*(2), 72-76.

Olsson, M., & Hansagi, H. (2001). Repeated use of the emergency department: qualitative study of the patient's perspective [Electronic version]. *Emergency Medicine Journal, 18*(6), 430-434.

Oquendo, M., Malone, K., Ellis, S., Sackeim, H., & Mann, J. (1999). Inadequacy of antidepressant treatment for patients with major depression who are at risk for suicidal behaviour. *American Journal of Psychiatry, 156*(2), 190-194.

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

Owens, D., Wood, C., Greenwood, D., Hughes, T., & Dennis, M. (2005). Mortality and suicide after non-fatal self-poisoning: 16-year outcome study. *British Journal of Psychiatry, 187*(5), 470-475.

Oyefeso, A., Valmana, A., Clancy, C., Ghodse, H., & Williams, H. (2000). Fatal antidepressant overdose among drug abusers and non-drug abusers. *Acta Psychiatrica Scandinavica, 102*(4), 295-299.

Parker, G. (2004). Subtyping the depressive disorders. In P. Joyce & P. Mitchell (Eds.), *Mood Disorders: Recognition and Treatment* (pp. 37-44). Sydney, Australia: The University of New South Wales Press Ltd.

Parker, G., Anderson, I., & Haddad, P. (2003). Clinical trials of antidepressant medications are producing meaningless results. *British Journal of Psychiatry, 183*, 102-104.

Patton, G., Harris, R., Carlin, J., Hibbert, M., Coffey, C., Schwartz, M., et al. (1997). Adolescent suicidal behaviours: a population-based study of risk. *Psychological Medicine, 27,* 715-724.

Paykel, E. (2004). Psychosocial stress and depression. In P. Joyce & P. Mitchell (Eds.), *Mood Disorders: Recognition and Treatment* (pp. 99-109). Sydney, Australia: The University of New South Wales Press Ltd.

Pirkis, J., Burgess, P., & Dunt, D. (2000). Suicidal ideation and suicide attempts among Australian adults. *Crisis: The Journal of Crisis Intervention and Suicide Prevention, 21*(1), 16-25.

Pirkis, J., Burgess, P., Meadows, G., & Dunt, D. (2001). Self-reported needs for care among persons who have suicidal ideation or who have attempted suicide. *Psychiatric Services, 52*(3), 381-383.

Potter, L., Kresnow, M., Powell, K., Simon, T., Mercy, J., Lee, R., et al. (2001). The influence of geographic mobility on nearly lethal suicide attempts. *Suicide and Life-Threatening Behaviour, 32*(Suppl), 42-48.

Powell, K., Kresnow, M., Mercy, J., Potter, L., Swann, A., Frankowski, R., et al. (2001). Alcohol consumption and nearly lethal suicide attempts. *Suicide and Life-Threatening Behaviour, 32*(Suppl), 30-41.

QSR International Pty Ltd. (2002). N6 (Non-numerical Unstructured Data Indexing Searching & Theorizing) Qualitative data analysis program (Version 6).

Ramchandani, P., Murray, B., Hawton, K., & House, A. (2000). Deliberate self poisoning with antidepressant drugs: a comparison of the relative hospital costs of cases of overdose of tricyclics with those of selective-serotonin re-uptake inhibitors. *Journal of Affective Disorders, 60*, 97-100.

Range, L. (2005). No-suicide contracts. In R. Yufit & D. Lester (Eds.), *Assessment, Treatment, and Prevention of Suicidal Behaviour* (pp. 181-203). Hoboken, NJ: John Wiley & Sons Ltd.

Range, L., & Knott, E. (1997). Twenty suicide assessment instruments: evaluation and recommendations. *Death Studies, 21,* 25-58.

Redman, T. (2002). *Working with clients experiencing complex withdrawal from benzodiazepines*. Paper presented at the VAADA Annual Conference - Everyday Drugs, Everyday Problems, 2-3 December. Carlton, Melbourne.

Reinecke, M., & Didie, E. (2005). Cognitive-behavioural therapy with suicidal patients. In R. Yufit & D. Lester (Eds.), *Assessment, Treatment, and Prevention of Suicidal Behaviour* (pp. 205-234). Hoboken, NJ: John Wiley & Sons Ltd.

Reinecke, M., & Franklin-Scott, R. (2005). Assessment of suicide: Beck's scales for assessing mood and suicidality. In R. Yufit & D. Lester (Eds.), *Assessment, Treatment, and Prevention of Suicidal Behaviour* (pp. 29-61). Hoboken, NJ: John Wiley & Sons Ltd.

Reith, D., Whyte, I., Carter, G., McPherson, M., & Carter, N. (2004). Risk factors for suicide and other deaths following hospital treated self-poisoning in Australia. *Australian and New Zealand Journal of Psychiatry, 38*(7), 520-525.

Rhodes, A., Links, P., Streiner, D., Dawe, I., Cass, D., & Janes, S. (2002). Do hospital E-codes consistently capture suicidal behaviour? *Chronic Diseases in Canada, 23*(4), 139-145.

Rivers, I. (2004). Recollections of bullying at school and their long-term implications for lesbians, gay men and bisexuals. *Crisis: The Journal of Crisis Intervention and Suicide Prevention, 25*(4), 169-175.

Rossi, S. (2003). *Australian Medicines Handbook, 4th edition*. Adelaide, South Australia: AMH Pty Ltd.

Rossow, I. (2000). Suicide, violence and child abuse: a review of the impact of alcohol consumption and suicide problems. *Contemporary Drug Problems, 27*, 397-433.

Rossow, I., & Lauritzen, G. (2001). Shattered childhood: a key issue in suicidal behaviour among drug addicts. *Addiction, 96*, 227-240.

Rossow, I., Romelsjo, A., & Leifman, H. (1999). Alcohol abuse and suicidal behaviour in young and middle aged men: differentiating between attempted and completed suicide. *Addiction, 94*(8), 1199-1207.

Routley, V., Ashby, K., & Lough, J. (1999). Adult poisoning overview - Victoria. *Hazard, 39*, 1-17.

Roy, A., Nielsen, D., Rylander, G., & Sarchiapone, M. (2000). The genetics of suicidal behaviour. In K. Hawton & C. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 209-221). Chichester, England: John Wiley & Sons Ltd.

Royal Australian College of General Practitioners. (2000). Benzodiazepine Prescribing Guidelines. Retrieved December 2, 2002, from http://www.racgp.org.au/guidelines/benzodiazepines

Safren, S., & Heimberg, R. (1999). Depression, hopelessness, sucidality and related factors in sexual minority and heterosexual adolescents. *Journal of Consulting and Clinical Psychology, 67*(6), 859-866.

Sakinofsky, I. (2000). Repetition of suicidal behaviour. In K. Hawton & C. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 385-404). Chichester, England: John Wiley & Sons Ltd.

Salter, A., & Pielage, P. (2000). Emergency departments have a role in the prevention of suicide. *Emergency Medicine, 12*, 198-203.

Schmidtke, A., & Schaller, S. (2000). The role of mass media in suicide prevention. In K. Hawton & C. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 675-697). Chichester, England: John Wiley & Sons Ltd.

Schneidman, E. (1996). *The Suicidal Mind*. New York: Oxford University Press.

Schwarz, U., Ruder, S., Krappweis, J., Israel, M., & Kirch, W. (2004). Epidemiology of attempted suicide using drugs. An inquiry from the Dresden University Clinic. *Deutsche Medizinische Wochenschrift, 129*(31-32), 1669-1673. Translated abstract only.

Schweitzer, I., & Tuckwell, V. (2004). The neurobiology of depression. In P. Joyce & P. Mitchell (Eds.), *Mood Disorders: Recognition and Treatment* (pp. 110-124). Sydney, Australia: The University of New South Wales Press Ltd.

Seivewright, N. (1998). Theory and practice in managing benzodiazepine dependence and misuse. *Journal of Substance Misuse, 3*, 170-177.

Shah, R., Uren, Z., Baker, A., & Majeed, A. (2002). Trends in suicide from drug overdose in the elderly in England and Wales, 1993-1999. *International Journal of Geriatric Psychiatry, 17*(5), 416-421.

Simon, T., Swann, A., Powell, K., Potter, L., Kresnow, M., & O'Carroll, P. (2001). Characteristics of impulsive suicide attempts and attempters. *Suicide and Life-Threatening Behaviour, 32*(Suppl), 49-59.

Skinstad, A., & Swain, A. (2001). Comorbidity in a clinical sample of substance abusers. *American Journal of Drug and Alcohol Abuse, 27*(1), 45-64.

Smith, C., & Hay, P. (2004). Acupuncture for depression. *Cochrane Database of Systematic Reviews 2004 (3) Art. No.: CD004046. DOI: 10.1002/14651858.CD004046.pub2.* Retrieved July 26, 2006, from http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD004046/frame.html

SPSS Inc. (2004). SPSS for Windows (Version 13.0. Release: 1 September 2004).

Steenkamp, M., & Harrison, J. (2000). *Suicide and Hospitalised Self-harm in Australia. Injury Research and Statistics Series.* Adelaide, Australia: Australian Institute of Health and Welfare (Cat INJCAT 30).

Stenager, E., & Stenager, E. (2000). Physical illness and suicidal behaviour. In K. Hawton & C. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 405-420). Chichester, England: John Wiley & Sons Ltd.

Stimmel, B. (1997). Pain and Its Relief Without Addiction: Clinical Issues in the Use of Opioids and Other Analgesics. New York: The Haworth Medical Press.

Sullivan, P. (2004). The genetic epidemiology of major depression. In P. Joyce & P. Mitchell (Eds.), *Mood Disorders: Recognition and Treatment* (pp. 75-84). Sydney, Australia: The University of New South Wales Press Ltd.

Swahn, M., & Potter, L. (2001). Factors associated with the medical severity of suicide attempts in youths and young adults. *Suicide and Life-Threatening Behaviour, 32*(Suppl), 21-29.

Swendsen, J., & Merikangas, K. (2000). The comorbidity of depression and substance use disorders. *Clinical Psychology Review, 20*(2), 173-189.

Swofford, C., Scheller-Gilkey, K., Miller, A., Woolwine, B., & Mance, R. (2000). Double jeopardy: schizophrenia and substance use. *American Journal of Drug and Alcohol Abuse, 26*(3), 343-353.

Taylor, C., Kent, G., & Huws, R. (1994). A comparison of the backgrounds of first time and repeated overdose patients [Electronic version]. *Emergency Medicine Journal, 11*(4), 238-242.

Taylor, D., & Cameron, P. (1998). Deliberate self-inflicted trauma: population demographics, the nature of injury and a comparison with patients who overdose. *Australian and New Zealand Journal of Public Health, 22*(1), 120-125.

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

Taylor, R., Page, A., Morrell, S., Carter, G., & Harrison, J. (2004). Socio-economic differentials in mental disorders and suicide attempts in Australia. *British Journal of Psychiatry, 185*, 486-493.

Teesson, M. (2000). Double trouble: Comorbidity between mental disorders and alcohol and other drug use disorders. *Centrelines*(October), 3-4.

Therapeutic Guidelines Limited. (1997). *Therapeutic Guidelines: Analgesic (3rd Edition)*. Melbourne, Australia: Therapeutic Guidelines Limited.

Ticehurst, S., Carter, G., Clover, K., Whyte, I., Raymond, J., & Fryer, J. (2002). Elderly patients with deliberate self-poisoning treated in an Australian general hospital. *International Psychogeriatrics, 14*(1), 97-105.

Tiller, J. (2004). Electroconvulsive therapy. In P. Joyce & P. Mitchell (Eds.), *Mood Disorders: Recognition and Treatment* (pp. 238-249). Sydney, Australia: The University of New South Wales Press Ltd.

Todd, F., & Sellman, J. (2004). Alcohol and drug misuse and mood disorders. In P. Joyce & P. Mitchell (Eds.), *Mood Disorders: Recognition and Treatment* (pp. 298-311). Sydney, Australia: The University of New South Wales Press Ltd.

Townsend, E., Hawton, K., Harriss, L., Bale, E., & Bond, A. (2001). Substances used in deliberate self-poisoning 1985-1997: trends and associations with age, gender,

repetition and suicide intent. *Social Psychiatry & Psychiatric Epidemiology, 36*(5), 228-234.

Traskman-Bendz, L., & Mann, J. (2000). Biological aspects of suicidal behaviour. In K. Hawton & K. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 65-77). Chichester, England: John Wiley & Sons Ltd.

Vaiva, G., Ducrocq, F., Meyer, P., Mathieu, D., Philippe, A., Libersa, C., et al. (2006). Effect of telephone contact on further suicide attempts in patients discharged from an emergency department: randomised controlled study. *British Medical Journal, 332*(7552), 1241-1245.

van Heeringen, C., Hawton, K., & Williams, J. (2000). Pathways to suicide: an integrative approach. In K. Hawton & C. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 223-234). Chichester, England: John Wiley & Sons Ltd.

van Heeringen, C., & Vinke, J. (2000). Suicidal acts and ideation in homosexual and bisexual young people: a study of prevalence and risk factors. *Social Psychiatry and Psychiatric Epidemiology, 35*(11), 494-499.

Verheul, R., Kranzler, H., Poling, J., Tennen, H., Ball, S., & Rounsaville, B. (2000). Axis I and Axis II disorders in alcoholics and drug addicts: fact or artifact? *Journal of Studies on Alcohol, 61*, 101-110.

Verkes, R., & Cowen, P. (2000). Pharmacotherapy of suicidal ideation and behaviour. In K. Hawton & C. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 487-502). Chichester, England: John Wiley & Sons Ltd.

Vorma, H., Naukkarinen, H., Sarna, S., & Kuoppasalmi, K. (2002). Treatment of out-patients with complicated benzodiazepine dependence: comparison of two approaches. *Addiction, 97*, 851-859.

Whyte, I., Dawson, A., Buckley, N., Carter, G., & Levey, C. (1997). A model for the management of self-poisoning. *Medical Journal of Australia, 167*(3), 142-146.

Wilhelm, K. (2004). Gender and mood disorders. In P. Joyce & P. Mitchell (Eds.), *Mood Disorders: Recognition and Treatment* (pp. 384-392). Sydney, Australia: The University of New South Wales Press Ltd.

Williams, J., & Pollock, L. (2000). The psychology of suicidal behaviour. In K. Hawton & C. van Heeringen (Eds.), *The International Handbook of Suicide and Attempted Suicide* (pp. 79-93). Chichester, England: John Wiley & Sons Ltd.

Williams, M. (1997). *Cry of Pain*. London: Penguin Books Ltd.

Wood, D., & Burgess, P. (2003). Epidemiological analysis of electroconvulsive therapy in Victoria, Australia. *Australian and New Zealand Journal of Psychiatry, 37*, 307-311.

World Health Organisation. (2001). *The World Health Report 2001. Mental Health: New Understanding, New Hope*. Geneva, Switzerland: World Health Organisation.

World Health Organisation. (2004). The International Statistical Classification of Diseases and Health Related Problems, Tenth Revision (ICD-10) (Second ed.). Geneva, Switzerland: World Health Organisation.

World Health Organisation. (2006a). Depression. Retrieved May 18, 2006, from http://www.who.int/mental_health/management/depression/definition/en/print.html

World Health Organisation. (2006b). Suicide rates per 100 000 by country, year and sex (Table). Most recent year available: December 2005. Retrieved November 7, 2006, from http://www.who.int/mental_health/prevention/suicide_rates/en/index.html

Appendices

Appendix A DSM-IV-TR Criteria for Major Depressive Disorder

The criteria for a Major Depressive Disorder, with either a single or recurrent episodes are as follows (American Psychiatric Association, 2000):

A The presence of a single Major Depressive Episode (to be categorised as a single episode), or the presence of two or more Major Depressive Episodes (to be categorised as recurrent)

B The episode is not better accounted for by Schizoaffective Disorder and is not superimposed on Schizophrenia, Schizophreniform Disorder, Delusional Disorder, or Psychotic Disorder Not Otherwise Specified

C There has never been Manic Episode, a Mixed Episode or a Hypomanic Episode (except if related to substance or treatment induced or due to direct physiological effects of a general medical condition)

Appendix B DSM-IV-TR Criteria for Major Depressive Episode

The criteria for a Major Depressive Episode are as follows (American Psychiatric Association, 2000):

A Five or more of the following criteria have been present for 2 weeks, and at least one of the symptoms is either depressed mood or loss of interest/pleasure

(1) Depressed mood most of the day, nearly every day

(2) Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day

(3) Significant weight loss when not dieting or weight gain (i.e. > 5% of body weight in a month), or decrease or increase in appetite nearly every day

(4) Insomnia or hypersomnia nearly every day

(5) Psychomotor agitation or retardation nearly every day

(6) Fatigue or loss of energy nearly every day

(7) Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day

(8) Diminished ability to think or concentrate, or indecisiveness, nearly every day

(9) Recurrent thoughts of death, recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide

B The symptoms do not meet the criteria for a Mixed Episode

C The symptoms cause significant clinical distress, or impairment in social, occupational or other important areas of functioning

D The symptoms are not due to the direct physiological effects of a substance or a general medical condition

E The symptoms are not better accounted for by bereavement (unless symptoms persist for longer than two months, or involve functional impairment, worthlessness, suicidal ideation, psychotic symptoms or psychomotor retardation

Appendix C DSM-IV-TR Criteria for Dysthymic Disorder

The criteria for Dysthymic Disorder are as follows (American Psychiatric Association, 2000):

A Depressed mood for most of the day, for more days than not

B The presence of two or more of the following:

(1) Poor appetite or overeating

(2) Insomnia or hypersomnia

(3) Low energy or fatigue

(4) Low self-esteem

(5) Poor concentration or difficulty making decisions

(6) Feelings of hopelessness

C During the 2 year period, the person has never been without the symptoms in Criteria A and B for more than 2 months at a time

D The disturbance is not better accounted for by Major Depressive Disorder (chronic or in partial remission)

E There has never been a Manic Episode, a Mixed Episode, or a hypomanic Episode, and the criteria for Cyclothymic Disorder have never been met

F The disturbance does not occur exclusively during the course of a chronic Psychotic Disorder

G The symptoms are not due to the direct physiological effects of a substance or a general medical condition

H The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning

Appendix D DSM-IV-TR Criteria for Substance-Induced Mood Disorder

The criteria for Substance-Induced Mood Disorder are as follows (American Psychiatric Association, 2000):

A A prominent and persistent disturbance in mood predominates in the clinical picture and is characterised by either (or both) of the following;

(1) Depressed mood or markedly diminished interest or pleasure in all, or almost all, activities

(2) Elevated, expansive, or irritable mood

B There is evidence from the history, physical examination, or laboratory findings of either;

(1) The symptoms in Criterion A developed during, or within a month of, Substance Intoxication or Withdrawal

(2) Medication use is aetiologically related to the disturbance

C The disturbance is not better accounted for by a Mood Disorder that is not substance-induced. Evidence that the symptoms are better accounted for by a Mood Disorder that is not substance-induced might include the following: the symptoms precede the onset of the substance use (or medication use); the symptoms persist for a substantial period of time (e.g. about a month) after the cessation of acute withdrawal or severe intoxication or are substantially in excess of what would be expected given the type or amount of the substance used or the duration of use; or there is other evidence that suggests the existence of an independent non-substance-induced Mood Disorder (e.g. a history of recurrent Major Depressive Episodes)

D The disturbance does not occur exclusively during the course of a delirium

E The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning

Appendix E Explanatory Statement and Informed Consent Form

St Vincent's Health

Participant Information Sheet and Consent Form
Medication Project
Version 3 Dated 13 October 2003

Protocol No: 70/03

Name of Participant:

U.R. number:

Full Project Title: Medication Overdose Project

Principal Investigator: Dr Paul Dietze (ph. 8413 8413)
Penny Heale (ph. 8413 8445)

Associate Investigators: Dr Alison Ritter
Professor Sandy Gifford
Mr Steve Burgess
Dr Andrew Dent
Mr William Barger

This Participant Information and Consent Form is **5** pages long. Please make sure you have all the pages.

1 Your Consent

You are invited to take part in this research project.

This Participant Information contains detailed information about the research project. Its purpose is to explain to you as openly and clearly as possible all the procedures involved in this project before you decide whether or not to take part in it.

Please read this Participant Information carefully. Feel free to ask questions about any information in the document.

Once you understand what the project is about and if you agree to take part in it, you will be asked to sign the Consent Form. By signing the Consent Form, you indicate that you understand the information and that you give your consent to participate in the research project.

You will be given a copy of the Participant Information to keep as a record.

2 Purpose and Background

Turning Point Alcohol and Drug Centre, Inc., in conjunction with Deakin University, Curtin University, St Vincent's Hospital and the Melbourne Metropolitan Ambulance Service is conducting a study of the experiences of people who have recently received emergency medical treatment in relation to experiences of prescription and/or over-the-counter medication(s) use.

The purpose of this project is to explore the factors contributing to the treatment, including the thoughts and feelings people have just before medical care was needed. We are also interested in what happens once emergency medical services are involved. The findings of this research will contribute to our understanding of medication overdose and how to best respond to it.

A total of 200 people will participate in this project.

You are invited to participate in this research as your experiences will provide important information for the project.

This research is part of the ongoing research programme of Dr Paul Dietze, and is also towards the PhD Penny Heale.

3 Procedures

Participation in this project will involve being interviewed today. The interview will take about 60 minutes and will include questions about your living arrangements, family background, health, personal circumstances and any previous similar experiences with medications. I will also ask you some specific questions about the event for which you received the card such as your use of medications around that time. You will receive $30 for your time and travel expenses after the interview. We would also like to tape record parts of the interview.

4 Possible Benefits

Possible benefits of this research include an increased understanding of the factors contributing to the event. This will help in the development of strategies to prevent overdose and to better respond to people who do experience medication related harm. There may not be any benefit to you personally.

5 Possible Risks

A possible risk of participating in this research is that you will be asked to talk about personal experiences which may distress you. Should you be upset by the interview, you will be referred to an independent counsellor. Further, if you wish, the interview can be stopped at any time.

6 Privacy, Confidentiality and Disclosure of Information

All the research information you provide will be confidential. However, a serious and imminent threat to harm yourself or others may be subject to reporting to a third person. Any information concerning the protective safety of children is subject to reporting to relevant authorities. Confidentiality of the information you provide *in respect of yourself or others* will be safeguarded except where the disclosure is required, authorised or permitted under law.

The information you provide will be kept in a locked cabinet at Turning Point for 7 years and then destroyed. Only the researchers directly involved in the project will have access to this information.

In any publication, information will be provided in such a way that you cannot be identified. No findings that could lead to the identification of any individual will be published. The vast majority of the data will be presented in aggregate form to protect the identification of individuals. However, in rare cases, direct quotes may be made from interview notes. In such cases, no information will be used that may identify the participant from whom the quote is taken.

7 Participation is Voluntary / Freedom to withdraw

Your involvement in this research is completely voluntary. You are not required to answer any questions that you feel uncomfortable with, even after giving informed consent. If you change your mind about taking part in the research you are free to withdraw at any time prior to the analysis of the data, and this will not affect your access to any services.

8 Results of Project

If you are interested in the findings of the research you will be able to have a copy of the final report. This should be available within 6 months of the final interviews being conducted. Please call either of the principal researchers (Dr Paul Dietze or Ms Penny Heale) on 8413 8413.

9 Further Information or Any Problems

If you require further information or if you have any problems concerning this project, you can contact the principal researchers. The researchers responsible for this project are Dr Paul Dietze and Ms Penny Heale, telephone 8413 8413.

10 Complaints and Research Participant Rights

If you have any complaints about any aspect of the study or the way in which it is being conducted, you may contact the Patient Representative at St Vincent's Health on Telephone: 9288 2211. You will need to tell the Patient

Representative the name of the person above who is named as principal investigator.

12 Ethical Guidelines

This project will be carried out according to the *National Statement on Ethical Conduct in Research Involving Humans* (June 1999) produced by the National Health and Medical Research Council of Australia. This statement has been developed to protect the interests of people who agree to participate in human research studies.

The ethical aspects of this research project have been approved by the Human Research Ethics Committee of the Victorian Department of Human Services and by the Human Research Ethics Committee of Curtin University.

St Vincent's Health

Consent Form
Medication Project

Version 3 Dated 13 October 2003

I have read (or have had read to me), and understood the Participant Information version 3 dated *13 October 2003.*

I freely agree to participate in this project according to the conditions in the Participant Information.

I will be given a copy of the Participant Information to keep

The researcher has agreed not to reveal my identity and personal details if information about this project is published or presented in any public form.

I understand that part of this interview will be tape-recorded and give permission to the researchers to do so.

Participant's Name (printed) ……

Signature Date

Researcher's Name (printed) ……

Signature Date

Appendix F Referral Directory

REFERRAL DIRECTORY

These services try to answer every call, but during very busy periods you may not be able to get through the first time. If you need to talk to someone, please don't give up – either wait in the queue until your call is answered, leave a message, try to call again a few minutes later, or try one of the other numbers on the list.

SERVICE	NUMBER	HOURS	OTHER INFORMATION
EMERGENCY			
Police/Fire/Ambulance	000		
Poisons Information Centre	13 11 26	24 hours/day, 7 days/week	
TELEPHONE HELP LINES			
Suicide Helpline	1300 651 251	24 hours/day, 7 days/week	
Care Ring	9326 8522	24 hours/day, 7 days/week	
Lifeline	13 11 14	24 hours/day, 7 days/week	
DirectLine	1800 888 236	24 hours/day, 7 days/week	Alcohol & drug info and referral
Kids Help-Line	1800 55 1800	24 hours/day, 7 days/week	
WIRE (Women's Information and Referral Exchange)	1300 134 130	9.30am-5.30pm, Mon-Fri	247 Flinders Lane, Melbourne, Telephone support. Interpreter service available
Men's Line Australia	1300 78 99 78	24 hours/day, 7 days/week	
Griefline	9596 7799	7am-3am, 7 days/week	
Gamblers Helpline	1800 156 789	24 hours/day, 7 days/week	
HEALTH SERVICES			
Medicines Line	1300 888 763	9am-12 noon, 3-6pm Mon-Fri	Medication information line staffed by pharmacists
Mental Health Foundation of Victoria	9427 0406	9am-5pm, Mon-Fri	270 Church Street Richmond Information, referral & support service, including mood disorders support groups
SANE Australia	1800 688 382	9am-5pm, Mon-Fri	Mental illness information and referral

Mental Illness Fellowship	9482 4189	10am-4.30 pm, Mon-Fri	
PANDA (Post & Ante Natal Depression Association)	9482 9400	9.30am-4.30pm, Mon-Thurs	Telephone support service
Maternal & Child Health Line	13 22 29	24 hours	Interpreter service available
TRANX (Tranquiliser Recovery and New Existence)	9886 0955	9am-5pm, Mon-Fri	222 Burke Rd, Glen Iris Assistance in withdrawal from benzodiazepines
PADA (Panic and Anxiety Disorder Association)	9886 9400	9am-5pm, Mon-Fri	222 Burke Rd Glen Iris Assistance for people with panic and anxiety
Hepatitis C Helpline	9349 1111 1800 800 241	9am-10pm, Mon-Fri 9-11am, 6-8pm Sat & Sun	Hepatitis C information and support (24 hour/day recorded Hep C info in Vietnamese call 1800 456 007)
VIVAIDS **Victorian Drug User Group**	9419 3633	10am-6pm, Mon-Fri	275B Smith Street Fitzroy Information & advocacy
Alcoholics Anonymous	9429 1833	9am-9.30pm, Mon-Fri	407 Bridge Road Richmond
Narcotics Anonymous	9525 2833	10am-6pm, 7 days/week	
AIDS Line	9347 6099 1800 133 392	9am-10pm, Mon-Fri 9-11am, 6-8pm Sat & Sun	For information about AIDS and other sexually transmitted diseases
Melbourne Sexual Health Centre	9347 0244 1800 032 017	9am-12.30pm & 1.30-5.30pm Mon-Thurs, 1.30-5.30pm Fri	1st Floor, 580 Swanston Street, Carlton
DOMESTIC VIOLENCE, CHILD ABUSE & SEXUAL ASSAULT			
Women's Domestic Violence Crisis Service	9329 8433 1800 015 188	24 hours/day, 7 days/week	Crisis intervention, support, information, advocacy and referral. For women and children only.
Advocate for Survivors of Child Abuse	1300 657 380	Hours variable	Self help organisation staffed by volunteers
Centre Against Sexual Assault (CASA House)	9344 2210	9am-5pm Mon-Fri. After hours call 9349 1766 Country callers 1800 806 292	24 hour confidential telephone counselling, information and referral for victims of sexual assault and non-offending family members
ACCOMODATION			
Argyle Housing Service	9417 2500	9am-5pm, Mon-Fri	2/107 Cambridge St, Collingwood Housing assistance for people within the City of Yarra
Homeless Crisis Service	1800 882 500	9am-10pm, 7 days/week	For people who are homeless or escaping violence

Appendix G Interview Schedule

Card number |___|___|___|___| Date |___|___| / |___|___| / |___|___|___|___|

Interviewer |___|___| Duration interview |___|___|___| minutes

DEMOGRAPHIC INFORMATION

1 0 Female 2 Aged _____ years
1 Male

3a Current suburb _____

3b Who do you currently live with?
1 Housemates/Friends 5 Alone
2 Parents 6 With children (not partner)
3 Spouse/partner 7 Other relative(s)
4 Spouse/partner and children 8 Other (please specify) _____

3c What is your current accommodation?
1 Owner occupied 4 Institution
2 Rental property 5 No fixed abode
3 Rooming/boarding house 6 Other (please specify) _____

4a What was your highest year of school completed? Year/Form _____

4b Have you completed any further education since school?
0 No
1 Yes, short courses only (e.g. Centrelink, hospitality courses, etc)
2 Yes, trade/technical
3 Yes, university/college

5 What is your current employment status?
1 Unemployed 5 Part time/Casually employed
2 Pensioner 6 Full time employed
3 Home duties 7 Other (please specify) _____
4 Student

6a What is the main language you speak at home?
0 English
1 Other (please specify) _____

6b What cultural or ethnic background you identify with? (e.g. Aboriginal or Torres Strait Islander, Vietnamese-Australian, Italian-Australian)
0 Australian
1 Other (please specify) _____

7 How would you describe your sexual orientation?
0 Straight/Heterosexual 2 Bisexual
1 Gay/Lesbian 3 Other (please specify) _____

8 Do you have children? (include step-children whom you regard as your own)
0 No
1 Yes ⇐ how many? _____

TREATMENT HISTORY & GENERAL HEALTH

Very briefly, are you currently experiencing any significant medical problems. I will go through the body systems one by one; please let me know if you have a medical problem in that area, how long you have had the problem, how severe it is (mild, moderate, severe) and whether it is currently being treated.

	1 = Yes 0 = No	If yes, briefly describe the problem	Duration of problem (days, mths, yrs)	1 = Mild 2 = Moderate 3 = Severe	Current treatment (e.g. none, medicated, inpatient, outpatient)
CARDIOVASCULAR Heart & blood vessels e.g. high blood pressure, arrhythmia					
RESPIRATORY Breathing/lungs e.g. emphysema, bronchitis					
GASTROINTESTINAL Stomach & intestines e.g. digestion, liver, bowel					
GENITO-URINARY Genitals & urinary system e.g. kidneys, incontinence, STDs					
MUSCULO-SKELETAL Muscles & skeleton e.g. arthritis, osteoporosis					
NEUROLOGICAL Nervous system e.g. Parkinsons, MS, epilepsy					
ENDOCRINOLOGICAL Glands & hormones e.g. thyroid problems, diabetes					
ALLERGIES e.g. food, pollen, animal fur					

	1 = Yes 0 = No	If yes, briefly describe the problem	Duration of problem (days, mths, yrs)	1 = Mild 2 = Moderate 3 = Severe	Current treatment (e.g. none, medicated, inpatient, outpatient)
DERMATOLOGICAL Skin e.g. eczema, psoriasis					
EYES, EARS, NOSE, THROAT					
PSYCHIATRIC (note next page)					
OTHER					

Now I am going to ask you about some questions about your mental and emotional wellbeing.
Would you say you have depression? When did it begin? Have you been diagnosed? When? What was the first treatment you received? (medication/counselling/etc) What other treatment/help have you had since? What medications are you on now? Do you have a psychiatrist at the moment? So far as you are aware, has anybody else in your family been diagnosed with depression? Record same details for each condition

Prompts for medications
What do you think x is meant to be used for?
Is that mainly why you use x? (Other reasons?)
What kind of instructions did you have for using x?
Do you take x as prescribed?
What do you know about any side effects of x?
How often does your doctor review your use of this medication?
Do you see more than one doctor? How many? (Reasons for more >1 doctor?)
Is your doctor aware of other medications being taken or alcohol use…?

Prompts for help seeking
Who have you sought help from (e.g. GP, friend, family, counsellor, hospital, phone line). When?
Which problem did that relate to?
What was the response?
Did you find this helpful/unhelpful?
What response were you hoping for?
Who listens to you?

	1 = Yes 0 = No	If yes, approximate date first diagnosed and briefly describe the problem	Treatment (e.g. none, medicated, inpatient, outpatient, counselling)	Currently medicated 1 = Yes 0 = No	How many relatives diagnosed? 0 = None	Relationship
Mood disorder (depression, dysthymia, bipolar)		___/___/___ / Never diagnosed				

	1 = Yes 0 = No	If yes, approximate date first diagnosed and briefly describe the problem	Treatment (e.g. none, medicated, inpatient, outpatient, counselling)	Currently medicated 1 = Yes 0 = No	How many relatives diagnosed? 0 = None	Relationship
Anxiety (GAD, agoraphobia, specific phobia, social phobia, OCD, PTSD)		___/___/___ / Never diagnosed				
Substance use disorder (dependence) Prev. problem substances Current problem substances How much x used Why do you think you use x DSM - dependence Treatment?		___/___/___ / Never diagnosed Dependent: Y/N (substance_____) IDU: no/current/past (approx last inj _____)				

	1 = Yes 0 = No	If yes, approximate date first diagnosed and briefly describe the problem	Treatment (e.g. none, medicated, inpatient, outpatient, counselling)	Currently medicated 1 = Yes 0 = No	How many relatives diagnosed? 0 = None	Relationship
Eating disorder (Anorexia, Bulimia)		___/___/___ / Never diagnosed				
Schizophrenia or other psychotic disorder		___/___/___ / Never diagnosed				
Attention deficit disorder		___/___/___ / Never diagnosed				
Other (please specify) e.g. substance related psychosis, Axis II disorders		___/___/___ / Never diagnosed				

MEDICATION RELATED EMERGENCY CARE

1 As we talk about what you experienced on (day), I am going to use the word "overdose". Is that term OK with you? Is there another word/term you would prefer to use?

2 Date and time of OD ____/____/____ at ___:___ am/pm

3 Now I just want to know a little bit about the medications and any other drugs or alcohol you took that day

Use 24 hour chart here to record substances used – prompt for details/source of any medication not already covered in health section

4 Next I'd like to ask you about the type of care you received from the ambulance and in hospital

4a How did you get to hospital? Were you taken to hospital by ambulance? Who called them? What do you remember about that?

4b What do you remember about being in the emergency department? Who spoke to you? (e.g. Psych Triage) Were you given any referrals or follow-up?

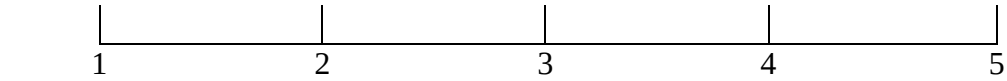
4c What happened when you were discharged from hospital?

4d Does your GP/psychiatrist know about your overdose? Who told them?

4e Was there anything you wanted to happen in hospital that didn't?

4f How did you feel about the experience afterwards?

5a Considering the overdose on (day), on a scale of 1-5, how *accidental* or *deliberate* would you say your overdose was? (if 1 equals completely accidental with no intention to od and 5 equals completely deliberate with intention to od)

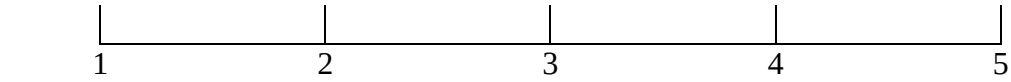


completely accidental/no intention to od

completely deliberate/intended to od

Why would you say 1/2/3/4/5?

5b Considering the overdose on (day), on a scale of 1-5, how strong would you say your wish to die was? (if 1 equals no wish to die and 5 equals strong wish to die)



no wish to die

strong wish to die

Why would you say 1/2/3/4/5?

Administer BSS and BDI (Fast Screen) here. Please note, reference period is "Thinking back to how you were feeling on (day) when you took the medication(s)". Mark card number on forms

6a How many other times have you ever received emergency medical care as a result of taking too much medication? (i.e. ambulance or hospital) – establish when was first, temporal pattern, etc

6b Earlier you described what happened when you went to hospital this time. Have there been any other times you can remember when something different happened?

7 Have there been other times where you have taken too much medication, but where you haven't had emergency medical care? How many times? – establish when was first, temporal pattern, etc

8 Have there been any situations in which you have overdosed on other drugs? (e.g. illicit drugs). How many times? – establish when was first, temporal pattern, etc

9 (If have previously overdosed) For what reasons have you overdosed on previous occasions? (on any substance)

PERSONAL & FAMILY HISTORY

1 Have you ever deliberately hurt yourself without meaning to commit suicide? (e.g. burns, cuts)

0	No	2	Don't know/can't remember
1	Yes	3	Refuse

Most recent occasion ____/____/____ best approximation
Further comments

2 So far as you know, has anyone in your family attempted or committed suicide?

0	No		2	Don't know/can't remember
1	Yes	(attempt ☐, commit ☐)	3	Refuse
			4	Not sure whether death acc. or suicide

Most recent occasion ____/____/____ best approximation
Relationship

3 Have any of your friends or close acquaintances attempted or committed suicide?

0	No		2	Don't know/can't remember
1	Yes	(attempt ☐, commit ☐)	3	Refuse
			4	Not sure whether death acc. or suicide

Most recent occasion ____/____/____ best approximation
Relationship

4a Earlier (BSS), you said you have attempted suicide ___ times altogether. Is that right?

4b When was your first attempt? ____/____/____ best approximation

4c When was your last attempt? (if > 1 attempt) ____/____/____ best approximation

4d What methods have you ever used? OPEN ENDED *(multiple answers ok)*

☐	Drug overdose/poisoning	☐	Jumping
☐	Cutting/slashing	☐	Drowning
☐	Hanging	☐	Exhaust/fumes
☐	Gunshot	☐	Other (please specify)

Further comments

SIGNIFICANT LIFE EVENTS

In the last 6 months, have you experienced unhappiness or distress as a result of any of the following issues?

	1 = yes 0 = no		1 = yes 0 = no
Problems with parents		Sexual abuse	
Problems with friends		Unplanned pregnancy	
Anxiety about school/uni performance		Suicide of a friend	
Relationship break-up		Own violent or criminal behaviour	
Financial hardship		Sexual identity conflict	
Family member's death		Physical abuse	
Problems at work		Death of a parent	
Failure at school/uni		Abortion	
Unemployment		Physical illness	
Parental divorce		Sexually transmitted diseases	
Friend's death		Physical disability	
Own alcohol consumption		Homelessness	
Own drug use		Suicide of a family member	
Violence in the home		Mental illness	
Being bullied		Other (please specify)	
		Total number of events	

What has been the biggest contributing factor to you feeling stressed lately? How has it affected you?

SOCIAL SUPPORT

1 Do you feel as though you receive much support from friends? Explain/expand

2 Do you feel as though you receive much support from family? Explain/expand

3 Do you feel as though you receive much support from your partner? (if you have one) Explain/expand

OTHER CONSIDERATIONS

Is there anything else that you feel is important to mention that I haven't already asked you about? Is there anything else you want to say?

INTERVIEWER COMMENTS

Person offered referral sheet
No
Yes

We are having this interview today because you received emergency medical attention on (date) after consuming some medications. I would like to know what substances you consumed that day. I will ask you about all the medicines and drugs you may have taken in the 24 hours beforehand. This includes prescription and over the counter medications, illicit drugs and alcohol.

For each drug type mark approximate time at which used (or range if using over a period of time e.g. drinking). Mark both quantity used and specific drug type, e.g. Zoloft: 10 x 50mg tablets @3pm, Cannabis: 3 bongs between 11.30 am and 2.00 pm.

Put a line through those substances NOT consumed. ***Time of OD (or ambulance attendance/hospitalisation?)*** ↓

	24 hours prior to overdose (Mark time in squares below, with square on far right being the hour prior to overdose, the next square being 2 hours prior to overdose, etc)																							
Time (am/pm)																								
Prescription & OTC																								
Antidepressants																								
Benzodiazepines																								
Anti psychotics																								
Analgesics																								
Methadone/Bupr																								
Other																								
Alcohol																								
Spirits																								
Beer																								
Wine																								
Other (e.g. port)																								
Other drugs																								
Cannabis																								
Heroin																								
Amphetamines																								
Cocaine																								

Hallucinogens																								
Inhalants																								
Ecstasy																								
Additional substances																								

Appendix H DSM-IV-TR Criteria for Substance Dependence

The criteria for Substance Dependence are as follows (American Psychiatric Association, 2000):

1 Tolerance, as defined by either of the following:

   (a) A need for markedly increased amounts of the substance to achieve intoxication or desired effect

   (b) Markedly diminished effect with continued use of the same amount of the substance

2 Withdrawal, as manifested by either of the following:

   (a) The characteristic withdrawal syndrome for the substance

   (b) The same (or closely related) substance is taken to relieve or avoid withdrawal symptoms

3 The substance is often taken in larger amounts or over a longer period than was intended

4 There is persistent desire or unsuccessful efforts to cut down or control substance use

5 A great deal of time is spent in activities necessary to obtain or use the substance, or to recover from its effects

6 Important social, occupational, or recreational activities are given up or reduced because of substance use

7 Substance use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance

Appendix *I* *Day of Week of Presentations for MOD, DOD & SH*

Day of the week	%			
	MOD	DOD	SH	ED Total
	(n=453)	(n=409)	(n=545)	(n=32,139)
Monday	15.0	9.8	15.6	14.8
Tuesday	11.9	11.7	14.5	14.2
Wednesday	15.5	11.7	13.6	13.8
Thursday	13.0	11.5	14.5	13.6
Friday	12.6	14.9	13.6	14.3
Saturday	17.0	20.5	14.9	14.4
Sunday	15.0	19.8	13.4	14.9

Appendix J *Length of Time between Being Seen by Treating Staff and Discharge from the ED for MOD, DOD & SH*

Time in department	MOD (n=436)		DOD (n=383)		SH (n=525)	
	%	Cumulative	%	Cumulative	%	Cumulative
No time	1.4	1.4	1.6	1.6	6.1	6.1
1-10 minutes	1.6	3.0	2.3	3.9	5.3	11.4
11 to 30 minutes	2.5	5.5	8.9	12.8	6.5	17.9
31 to 60 minutes	4.8	10.3	12.5	25.3	13.5	31.4
1 to 2 hours	10.8	21.1	15.7	41.0	20.0	51.4
2 to 4 hours	21.1	42.2	21.4	62.4	24.6	76.0
4 to 8 hours	32.1	74.3	23.2	85.6	14.9	90.9
8 to 12 hours	14.0	88.3	9.1	94.8	5.5	96.4
12 to 18 hours	6.9	95.2	3.7	98.4	2.5	98.9
18 to 24 hours	2.5	97.7	.3	98.7	.8	99.6
24 to 36 hours	1.6	99.3	1.0	99.7	.4	100.0
36 to 48 hours	.5	99.8	-	99.7	-	-
> 48 hours	.2	100.0	.3	100.0	-	-

Appendix K Ten Principles of Treatment and Care, Victorian Mental Health Act 1986 Act No. 59/1986, Amended by No. 98/1995

6A. Principles of treatment and care

It is the intention of Parliament that the following principles be given effect to with respect to the provision of treatment and care to people with a mental health disorder

1 people with a mental disorder should be provided with timely and high quality treatment and care in accordance with professionally accepted standards;

2 wherever possible, people with a mental disorder should be treated in the community;

3 the provision of treatment and care should be designed to assist people with a mental disorder to, wherever possible, live, work and participate in the community;

4 the provision of treatment and care for people with a mental disorder should promote and assist self reliance;

5 be provided with appropriate and comprehensive information about their mental disorder, proposed and alternative treatments, including medication, and services available to meet their needs;

6 people with a mental disorder should be treated near their homes or the homes of relatives or friends where possible;

7 when receiving treatment and care the age-related, gender-related, religious, cultural, language and other special needs of people with a mental disorder should be taken into consideration;

8 the prescription of medication should meet the best health needs of the person with a mental disorder and should be given only for therapeutic or diagnostic purposes and never as punishment or for the convenience of others;

9 treatment and care should be provided by appropriately qualified people and within a multi-disciplinary framework;

10 every effort that is reasonably practicable should be made to involve a person

with a mental disorder in the development of an ongoing treatment plan. Treatment and care of a person with a mental disorder should be based on this plan. The plan should be reviewed regularly and revised as necessary.